DISSERTATION

‘DEMAND MANAGEMENT’ AND INJUSTICE IN RURAL AGRICULTURAL IRRIGATION IN WESTERN COLORADO: AN ANATOMY OF AMBIVALENCE

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ABSTRACT

‘DEMAND MANAGEMENT’ AND INJUSTICE IN RURAL AGRICULTURAL IRRIGATION IN WESTERN COLORADO: AN ANATOMY OF AMBIVALENCE

The Colorado River is overdrawn. Decisions made a century ago created an institutional framework allowing overuse while climate change has exacerbated it with increasing temperatures and reduced natural flows. ‘Demand management’, a key component of the 2019 Upper Basin Drought Contingency Plans, would utilize water conserved from consumptive use to create a 500,000 acre-foot storage pool, only used to protect the Upper Basin of the Colorado River in the event they were unable to meet water delivery obligation to the Lower Basin. Rural irrigators on Colorado’s West Slope would be the prime contributors to such a program, but largely responded with ambivalence. Increasingly, collaborative water governance is cited as the best way to create change in water distribution. However, if rural irrigators respond with ambivalence, why would they participate voluntarily in such a program? Using a grounded theory approach, interviews and focus groups with 45 participants, and participant observation, I explore why rural irrigators were ambivalent towards a program that would, ostensibly, protect them in times of water shortage. Drawing from the concept of sociological ambivalence and the literatures of water justice, hydrosocial analysis, and rurality, I describe the symbolic and material landscape that shapes perceptions of ‘demand management’. I argue irrigators were ambivalent because they understood the need for water conservation, but they also perceived injustice in terms of distribution, recognition, and representation. Since rural irrigators are the linchpin in any water conservation program that would address overuse in the Colorado River

Basin, their perceptions of injustice must be addressed. Findings provide key insight into water governance as it relates to crafting effective water policy.

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CHAPTER 1: DEMAND MANAGEMENT IN A RELATIONAL LANDSCAPE

"I'm doing the best I can with the water I got." Duane, rancher

"I hope this effort will not impact western slope agriculture negatively," mused Sam[1], a white, male fruit grower in his 60s who lives and farms on the West Slope of Colorado[2]. The "effort" Sam was referring to is called "demand management." It is a potential water conservation and banking program that would entail users of Colorado River Basin water curtailing their water use for a period of time. It was a key component of the 2019 Upper Basin Drought Contingency Plan (DCP) agreement for the Colorado River. The Upper Basin DCP stipulates that if a demand management program is implemented, the conserved water would be used to create a 500,000 acre feet[3] (AF) storage account of water held in Upper Basin Reservoirs and Lake Powell[4]. This storage account will be used to protect the Upper Basin in case they are unable to meet their obligations for water delivery to the Lower Basin, according to the Colorado River Compact. This is referred to as "compact security."

Sam grew quiet, reflecting as we sat in his warehouse. In just a few weeks the stillness in the warehouse would be replaced by the rumbling and bustle created by the peach harvest. After a few moments, Sam continued, explaining that despite the water challenges the basin is experiencing, he hoped "[we can] find a way that we can continue to have the agricultural

[1] All interviewee names are pseudonyms.

[2] The "Western Slope" is the region of the state of Colorado that is west of the Continental Divide.

[3] "Acre feet" is the volumetric measurement historically used in Colorado River policy, law, and agreements (Wheeler et al. 2022). An acre foot is equivalent to a football field, minus end zones, covered in one foot of water. One acre foot serves roughly two households of four to five people each per year (Colorado Water Center 2022).

[4] Colorado is the largest user of Colorado River water in the Upper Basin and is apportioned 51.75% of flows each year ("Upper Colorado River Basin Compact" 1948).

communities, irrigated agriculture that we enjoy on the western slope today. That any of these overuse problems, which are not caused by agriculture, don't end up harming agriculture." Underneath Sam's words lay fear and a sense of injustice. Sam's fear was that if water moves away from the West Slope, it could also mean the loss of his community and way of life, revealing a strong affection for the region he calls home and a willingness to protect it. Water is commonly referred to as the lifeblood of rural communities in the agricultural and arid American West, thus, as Sam's comments show, any conversation about water will never be just about water.

Water governance in the American West exists in a heavily contested landscape – both symbolically and materially. Not only are there many different perspectives, interests, and relationships with water, but there are complex and evolving governance institutions that shape how, when, and where water moves. From its inception, concerns and barriers arose that make the path to implementation of any demand management program difficult. The legal, technical, and financial challenges alone could derail a program, but social and cultural concerns are the least understood. For instance, in January of 2019, the county commissioners of Montezuma county, in southwest Colorado, unanimously voted to rescind their support of the DCP and demand management feasibility investigations (Binkly 2019). Around the same time, a county commissioner and other stakeholders in Routt County, located in north-central Colorado, publicly expressed resistance and major concerns related to demand management (Blair 2019). Despite the state of Colorado's water authority, the Colorado Water Conservation Board (CWCB), repeatedly stating investigations were only to determine if demand management was feasible and promises that it would be "voluntary, temporary, and compensated" almost from its initial public appearance, demand management was viewed with suspicion and concern by many

on the West Slope. In this dissertation I attempt to unpack why rural irrigators, like Sam, responded in this way.

1.1 Research Context

The Colorado River is one of the "hardest working rivers" in the American West and perhaps the world, intricately managed to support many humans and uses (American Rivers and Western Rivers Conservancy 2014). Water from the Colorado River Basin supports more than 40 million people in seven states[5], 30 federally recognized tribes, and two Mexican states (see Figure 1.1 – Colorado River Basin). The 1,450 mile long river irrigates 5.7 million acres of farm and ranch land, an area about the size of New Hampshire, as well as wildlife habitat (James et al. 2014). If you live in the United States and eat a salad between late November and mid-March, it was most likely grown using Colorado River water, which supports almost all U.S. winter lettuce production (Kerna, Duval, and Frisvold 2017); 15% of all crops, and 13% of all beef production in the U.S. come from the basin (U.S. Bureau of Reclamation 2012). Sixty percent of irrigated land is used as pasture or for growing forage crops like alfalfa and hay (Cohen, Christian-Smith, and Berggren 2013). Economically, it is "the lifeblood of the entire region" with $1.4 trillion in economic activity, which is 1/12th of the total gross domestic product in the U.S and at least half of the gross domestic product in each of the seven basin states (James et al. 2014). Furthermore, the river supports 16 million jobs across the basin and hydroelectric power for around seven million people.

[5] Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming

Figure 1. Colorado River Basin (U.S. Bureau of Reclamation 2021)

Yet, it is also considered one of the most overused and "endangered" rivers in the world (American Rivers 2022). Prolonged drought and low runoff, both exacerbated by climate change, combined with policies that supported overuse have led to historically low levels in the system's

main reservoirs, Lakes Powell and Mead (Kuhn and Fleck 2019; Udall and Overpeck 2017; U.S. Bureau of Reclamation 2022; Wheeler et al. 2022). The combination of multi-decade drought and overuse has reduced inflow to the basin's two largest reservoirs, Lakes Powell and Mead, which are predicted to be, combined, at 25% of full by the end of 2022 (Wheeler et al. 2022). Furthermore, there is increasing recognition that environmental needs and tribal water rights, long ignored, must be meaningfully addressed, and restored.

Divided at Lee's Ferry, Arizona, the Upper Basin includes Colorado, New Mexico, Utah, Wyoming, and a sliver of northeastern Arizona. The Lower Basin is Arizona, California, and Nevada. The "Law of the River," which refers to all the compacts, treaties, legal decisions, and laws made regarding the Colorado River and its users, governs allocation and distribution of the river's water. The 1922 Colorado River Compact details a method of sharing the river's water using the Doctrine of Prior Appropriation to settle priority. This means in periods of water shortage, priority went to the entity who had first used water, with everyone else lining up behind them in order of seniority. Based on what, at the time, was thought to be the average flow of over 17 MAF a year, the 1922 Compact allocates 7.5 million acre feet (MAF) of water to each basin. In recognition of the variable flows of the river, the Upper Basin agreed to an obligation to not deplete the flow of the river below 75 MAF over a 10-year period as measured at Lee's Ferry, just below Lake Powell. Thus, the 1922 compact effectively means that the Upper Basin must deliver 75 million over a 10-year average and then can use what is left, up to their allocation of 7.5 MAF.

The unprecedented drawdown of the nation's largest reservoirs combined with the recognition that average flows were closer to 12.4 MAF – not 17 – prompted the creation of the 2007 Interim Guidelines for operating the reservoirs and managing water deliveries at lower

inflows (Kuhn and Fleck 2019; Wheeler et al. 2022). Unfortunately, these guidelines did not do enough to curtail usage and protect the dwindling reservoirs. Negotiations between the basin states, the Bureau of Reclamation, and Department of the Interior led to the 2019 Upper and Lower Basin DCPs. The DCPs take conservation measures and reservoir level protections further than the 2007 Guidelines. In August 2021, the Secretary of the Interior declared a shortfall between supply and demand in the Colorado River Basin, triggering implementation of the DCP cutbacks for Lower Basin water deliveries. Worsening shortfall in 2022 will mean increased cutbacks in water deliveries to Arizona, Nevada, and Mexico in 2023 (U.S. Department of the Interior 2022).

This combination of pressures from multiple directions in the Colorado River Basin has been described as a "wicked" problem (Taylor et al. 2019), referring to its complexity, myriad moving pieces, and no straightforward solutions (Rittel and Webber 1973). With a wicked problem like this, multiple solutions at different scales will be necessary to avoid worst case scenarios. It is with this in mind that the 2019 DCPs were developed. Further, to prevent a collapse of the Colorado River system, Interior Secretary Touton testified in a congressional hearing in June 2022 that "more conservation and demand management are needed" (Senate Committee on Energy & Natural Resources 2022). Broadly, "demand management" refers to policies that encourage a reduction in the amount of fresh water used through implementing any of a wide variety of strategies (Brooks 2006). This dissertation will focus on the first agreement of the Upper Basin DCP: investigating the creation of a demand management program. In this context, "demand management" refers to a voluntary, temporary, and compensated reduction in

consumptive water[6] use in the Upper Colorado River Basin (Colorado Water Conservation Board 2022b).

Around ninety-one percent of available water supplies in Colorado are used in agriculture and just under a quarter of the state's irrigated acres are located on the West Slope, which is all part of the Colorado River Basin. (Colorado Water Conservation Board 2022a). Thus, to satisfy Colorado's contribution to the Upper Basin demand management pool, significant interest has centered on the West Slope where Sam the fruit grower lives. Implementation and success of demand management is dependent upon agreement on a program between the four Upper Basin states. To develop a plan to bring to the other Upper Basin states the CWCB undertook the task of evaluating the feasibility of a demand management program within Colorado.

1.2 Research Questions & Methods

Considering these significant social and cultural challenges related to a potential demand management program, in 2019 I engaged in research for the purpose of understanding perceptions of DCP demand management within Western Colorado. The overarching research questions at the outset of this project were:

1. What do potential participants think it will take to make a successful demand management program?
2. Why would people be willing to participate and what would limit participation?
3. What should a demand management program look like?

[6] The phrase "consumptive water" refers to water that is used and not returned to the system, lost through evapo-transpiration (Blaney 1952). For example, when irrigating crops, a portion of the water is consumed by the plant and through the process of evapo-transpiration does not return to the ground. The rest of the water used to irrigate, sometimes called "conveyance water," returns to the system either through traveling as groundwater or in ditches. Thus, to reduce "consumptive use" water, the amount that the plant consumes or evaporates on its way to the plant must be reduced, not the conveyance water used to transport water to and from the plant. In agriculture, this is usually accomplished through deficit irrigation or fallowing.

The objective of this research project was to reveal barriers, opportunities, and solicit ideas and feedback to help determine feasibility and then, potentially, shape a program using a grounded theory approach that would allow participant responses and my observations to shape outcomes (Charmaz 2006). To accomplish this task I conducted a series of interviews, focus groups, participant observation, and document analysis in 10 counties on the Western Slope within the larger Colorado River Basin between March and August of 2019. Four were considered "frontier" counties (population density of six or less persons per square mile), five were designated "rural." One county was considered "urban" due to the presence of a small metropolitan area (U.S. Census Bureau 2020).

Fourty-five individuals participated in interviews, two focus groups, or served as key informants, providing valuable background information. These individuals were predominantly irrigators (who would be the main participants in any program) and water managers (who might facilitate any program amongst their water-using members). Other participants included water lawyers, policy advisors, engineers, land use planners, environmental and recreational representatives, federal and state agency representatives, and knowledgeable members close to the water community and based on the West Slope. I also attended at least one roundtable meeting in each of the subbasins as well as other water related conferences, seminars, or events as a participant observer and to meet potential interviewees. Additionally, I reviewed minutes from previous meetings, relevant news articles, reports, and research related to agricultural water conservation, the West Slope, and the DCP. Towards the end of the research period, I presented some of my findings at a water conference on the West Slope, receiving feedback from both participants and non-participants that confirmed and refined results.

Once interviews started, it was immediately clear that the main thrust of the research questions needed to shift. Grounded theory allows for the research and the researcher to adapt and change as new information comes in, building theory from the ground up (Charmaz 2006). This was certainly the case here. While a few interviewees were staunchly opposed or decidedly open, most expressed responses that revealed a tense ambivalence – simultaneously curious and resistant, open and suspicious (Merton 1976). Interestingly, most interviewee responses, regardless of their stance on demand management, challenged the interview and the assumptions implied by questions about what a program should look like by asking variations of "What is demand management really?" and "Why is the burden of supporting Lake Powell falling on us?" This response fascinated me, and I rapidly pivoted my main research questions, adapting to this significant finding.

Why did demand management, a program that would – ostensibly – protect water users in the future event of shortage, provoke such ambivalence?

With increasing pressures on the Colorado River, including long-term drought, climate change, environmental impacts, and growing urban and sub-urban populations in the basin, the situation is dire. In comments before the CWCB, representatives of the environmental and law communities argued that delaying action "is folly" and urged the CWCB to move faster on implementing a demand management plan (Sackett 2021). Then, in March 2022 Lake Powell, the storage account for the Upper Basin, dropped to its lowest level since it was first filled, only 35 feet above "minimum power pool" at which point the turbines would not be able to produce hydroelectric power (Metz and Fonseca 2022). Also in March 2022, based on the lack of momentum in other Upper Basin states, the CWCB declared a "hard pause" on its feasibility study for a demand management program. CWCB chair, Jackie Brown, explained that instead of

waiting for other Upper Basin states, the CWCB opted to focus on "what can we do right now?" within Colorado (Outcalt 2022). With the increasing pressures on the river, questions that will be answered no matter what course of action is taken, include: what is the role of agriculture and rural areas in the culture and identity of the state? Beyond economic, what value do they bring? Why do they matter? And, to whom? Who has a voice in shaping what happens and who's voice is listened to?

Regardless of whether a large-scale demand management program comes to fruition, the wicked problem of the Colorado River requires multiple solutions that involve all those reliant on its' water. As the conflicts and pressures continue rising on the Colorado River, policy changes must keep pace and those tasked with implementing these solutions, like rural irrigators, must enact them. A well-crafted solution rejected by those intended to enact it is as useless as no solution at all. Thus, my research attempts to inform the broader question of:

> *How are we to craft effective and long-term solutions that address water security and reflect use within limits?*

1.3 Theoretical Framework

This dissertation is my effort to unpack why participants predominantly expressed ambivalence about a potential demand management program that theoretically would protect them and how this could inform water governance in the Colorado River Basin. The term "ambivalence" stems from the Latin prefix *ambi* meaning "both" and *valentia* meaning "strength". Thus, ambivalence is feeling a strong tension between two (or more) opposed reactions. Sociological ambivalence, described by Merton (1976:5), examines how "ambivalence comes to be built into the structure of social statuses and roles." Ambivalence is more than a psychological phenomenon; it is distinctly social as it is "tied to (changing) social conditions"

(Carolan 2010:312). “What is sociologically interesting,” wrote Carolan (2010:312 *emphasis in original*) “is not that we have ambivalent orientations towards the world but *why* we have them and *how* we manage to still act in the face of these tensions.”

Landscapes, already imbued with meaning, influence how solutions are interpreted, perceived, and responded to by participants. When participants describe how they perceive water and power are distributed, causing disproportionate harm to rural communities, it shapes how they respond to demand management – regardless of whether their perception is empirically accurate. This dissertation does not attempt to evaluate the objective reality of such perceptions, but rather to illuminate the perceived reality of participants that shapes their view of the world, actions, and behaviors. Rural irrigators are the linchpin in most forms of water conservation projects in the Colorado River Basin, and thus regardless of whether their perceptions are credited as real, they can and do shape responses to and engagement with water demand management.

Exploring these issues requires understanding the complex social-environmental processes and socio-political relationships that constitute and surround the allocation and distribution of water resources (Joy et al. 2014:962). It requires critical awareness that water problems are – at heart – problems of governance. It thus necessitates an approach which recognizes that pressures on water resources and resulting scarcities are the outcome of specific histories, practices, and relations of water resource exploitation and development. Thus, this dissertation both draws from and seeks to add to the literatures of water governance, environmental and water justice, and rurality. Informed by hydrosocial analysis, these themes are explored in this dissertation while recognizing (1) differences in local contexts and conditions and how those differences shape experiences of injustice; (2) water, like power, is relational, in

that water is not the same depending on the dynamics of water rights, power, location, and type of use; (3) and that conditions occur in the context of a dynamic and ongoing situation that has no precise answer or endpoint (Roth et al. 2014).

Recent movements in water governance, such as Integrated Water Resources Management and conversations of policy in water governance, however, reveal a reliance on data-driven, expert-based information, in which problems require technical solutions or are simply math problems to be solved, which tends to de-politicize water management (Biswas 2008; Molle 2009). This de-politicization glosses over fundamental issues of differential power and conditions of injustice. Assumptions about priorities and values, and implications for changes in water allocation and management become muted as 'normalized' conversations about water allocation within this context make uncomfortable questions less likely, and silence dissenters by rendering them absurd, non-experts (Li 2007). Examining participant responses through the lens of water justice, however, requires "seeing water control issues as basically political," explains Joy et al. (2014:969), as it is "a precondition for making the justice dimensions of distributions, participation, and recognition stand out." The questions the reviewed literatures pose orient this dissertation towards exploring:

- how experiences of injustice manifest,
- who can experience injustice,
- who can speak, who is listened to, and what words are valued.

In other words, this dissertation engages in the practice of repoliticizing water governance.

Building from the data gathered, I argue that ambivalent responses to demand management can be understood by examining perceptions and experiences of distribution, recognition, and representation injustice. Perceived injustices manifest from interpretations of

historical experiences and interactions with "flows of water." Krause and Strang (2016:635) describe water flows as a "combination of topography, power relations, built infrastructure, institutional arrangements, property relations, money and market forces, ideologies, social networks, and the properties of water itself." That is, flows of water embody, reflect, and shape the social relations and natural processes that created them. Water and water infrastructure are simultaneously passive and active as they express culture, values, power, and social relations. Thus, experiences of injustice are manifest in power imbalances between urban and rural water interests; history and current experience of loss and decline; fear and uncertainty for the future of water in the face of a changing climate and landscape; a sense that, as farmers and ranchers, they were often misrecognized, unappreciated and undervalued for their contributions to Colorado; and concerns about the process of having a voice in shaping demand management that led to interviewees taking multiple routes in response. Furthermore, the lack of any programmatic structure, rather than creating a sense of possibility, fed feelings of uncertainty, vulnerability, and resentment.

In terms of who can experience injustice, I argue (in very good company), that despite historical over-representation for rural white Americans at the federal level through the electoral college and the Senate, many today feel frustration, resentment, and a sense of being left behind (Carolan 2020; Cramer 2016; Hochschild 2016; Jackson and Grusky 2018; Wuthnow 2018). After finishing the interview and turning the recorder off, "Bob" and I continued to chat. Bob was white and looked to be in his 50s. He came back to Western Colorado from a large urban area, where he was employed for several decades, to help his aging parents run the family farm. When I told him I had worked as a research assistant for my university's water center he sighed and shook his head saying that he had some issues with them because of past involvement in his

area and their "agenda." "What agenda?" I asked. "That environmental justice stuff," he replied, waving his hand in dismissal. I wasn't surprised to hear this response based on our interview but decided, since the interview was over, to push the conversation a little bit. "Well, some might say that environmental justice could help explain your situation with demand management." He laughed, clearly a little annoyed, and responded by stating that environmental justice "was not for" people like him, that is, white men. Yet Bob had just spent two hours describing how in his eyes, he and his fellow farmers were feeling screwed by a system that benefited the powerful and a state that was not looking out for their community. Disproportionality can impact anyone, anywhere (Carolan 2020). While environmental and water justice has traditionally focused on the significant challenges faced by marginalized communities, and rightly so, we should be cautious of overlooking other experiences of injustice simply because they impact traditionally advantaged groups who do not use the normative language of injustice to articulate their experiences.

As these findings suggest, repoliticization is also about more than who. It's also an issue of where. Water justice asks questions that attune to issues of distribution, recognition, and procedure to understand how people are experiencing injustice. However, the justice literature has not paid sufficient attention to the spatial component of rurality and rural people as subjects of injustice (Bray 2021; Carolan 2020; Malin 2015; Pellow 2016). Rural communities are located at a unique crossroads of distributional, participatory, and recognition based environmental injustices that distinguish them from urban areas as these injustices are often produced by patterns of relations with urban centers (Bray 2021; Malin and DeMaster 2016). But because rural whites have historically been privileged, their experiences of injustice have often been overlooked. Location shapes access to water, meaning people in the same basin, much less the

same irrigation ditch, rarely have equivalent access. When the issues are scaled up to contestation over water supplies between rural and urban areas or basins, the dynamic and complex interdependencies between the two are essential to understanding injustice. Thus, conflict around water allocation must be understood in terms of locality and the larger basin as the relationship between scales and spaces can shape perceptions of injustice (Joy et al. 2014).

Wicked problems are characterized by their dynamic, continually evolving nature; likewise, rivers are anything but static. Policies and interventions in water management must adapt to this reality. However, any change in allocation of water resources is (and should be expected to be) contested because in a basin where use is greater than supply, (re-)allocation is never socially and politically neutral. Someone or thing always loses. Costs, benefits, and power in water (re-)allocation are distributed unevenly and shift over time. While much has been said about the Colorado River Basin, in particular the increasing competition for scarcer water resources, there is much less attention to how policy solutions play out in practice, how they are received by those who would be impacted, and thus the impact of those proposals. How are vulnerabilities to proposed solutions distributed amongst water users? Why do rural irrigators interpret actions by state agencies and respond to them the way they do?

To address wicked problems in a collaborative manner the social, spatial, cultural, and political dimensions of rural areas must be brought back in to recognize the experiences of injustice no matter who or how they are experienced. Hydrosocial analysis illuminates how flows of water are both natural and socially constructed at the same time. Water is construed with meaning and thus, discloses social hierarchies and the uneven distribution of harms. Water demand management, as a state-endorsed program, does not stand on its own. Responses to the possibility of demand management are about much more than water and creating compact

security – they are a pragmatic response in the face of uncertainty based on a history and context that is interpreted through a sense of injustice, which many interviewees believe is dismissed or at best, overlooked. While irrigators are often suspicious when it comes to discussions about how they should use water, especially when they have had negative previous experiences with powerful entities like municipalities or regulatory bodies (Eaton et al. 2022), understanding the landscape of meaning that demand management walks into is essential if we are to craft policy that achieves its desired ends.

1.4 Dissertation Overview

To answer the questions posed in this introduction I have included a literature review, an explanation of my methods and methodology, three empirical chapters organized by theme, and a conclusion. I will first develop the theoretical context of the findings in Chapter 2 by drawing from the literatures on water governance, environmental and water justice, and hydrosocial analysis. Rural sociology undergirds much of this dissertation and I will apply the concepts of environmental and water justice to rural conditions. Chapter 3 describes the methods and methodology employed in this research. Specifically, I explain how the project came about, my role as researcher, selection of interviewees, and the methodological approach that allowed me to "follow my nose."

Chapters 4, 5, and 6, the empirical results of this research, are divided thematically by axes of justice: distribution, recognition, and representation. Chapter 4 centers on interviewee perceptions of distribution and maldistribution of water and power to shape the movement and allocation of water. It also looks at interviewee perceptions of how harms and benefits of water allocation are distributed, with specific concern for the rural areas these irrigators inhabit. Chapter 5 focuses on participants' feelings about recognition and misrecognition. In particular,

that their experiences of loss and decline are not recognized or worse, dismissed. Their relationship with water is at root, different from their urban counterparts. Also, their contributions to food production, culture, and aesthetics of Colorado are not recognized. Chapter 6 explores interviewees' perceptions of representation and how the different ways they perceive what it means to "have a seat at the table." Finally, the conclusion discusses the theoretical and practical implications of these findings for water governance, as well as limitations and directions for future research.

November 24th, 2022 is the 100th anniversary of the signing of the Colorado River Compact. A deeper understanding of the symbolic and material landscape water conversations land in is essential to crafting effective and long-term water policy. Conversations in the state happening now related to water management and supporting resilient rural areas, as well as negotiations for the 2026 revamping of the Interim Guidelines, will benefit from further understanding. Fundamentally, perceiving injustice shapes how people interpret and respond to policy. Water governance policy that is effective and long-term must be attuned to this. It is my sincere hope that future policy and programs are developed with sensitivity to these insights.

CHAPTER 2: LITERATURE REVIEW

> *"The distinction of rurality is significantly vested in its oppositional positioning to the urban" (Cloke 2006:18).*

> *"Where there is discord, it often about which actors set the agenda for what issues" (Woodhouse and Muller 2017:32).*

Efforts to address water shortage due to increasing pressures and changing climatic conditions in the Colorado River Basin represent a formidable challenge. The complexity of the river and the human institutions and organizations involved in decision making has been described as a "wicked problem" (Taylor et al. 2019). A wicked problem eludes straightforward, technical solutions; it is essentially social and simultaneously complex, dynamic, evolving, and made up of a unique set of conditions and characteristics so that no two wicked problems – and thus solutions – are the same (Rittel and Webber 1973). In characterizing efforts to build compact security as a wicked problem, it is essential to acknowledge that compact security is fundamentally a social problem. It is not just a need for more water or better management because allocation and distribution of water resources are fundamentally social and environmental problems at the same time.

Water governance addressing wicked problems is increasingly moving towards sustained and active involvement from diverse and multiple stakeholders to build more effective, long-term solutions (Harrington 2017). This is done with the recognition that water governance is a process involving a multitude of interests, knowledges, experiences, and relationships with water as well as the realization that the social and the environmental continually intersect and shape one another (Budds, Linton, and McDonnell 2014; Linton and Budds 2014). The dissertation explores these intersections by examining a case of competing and conflicting interests over

water management, where participants expressed sociological ambivalence, which is to say openness and resistance to a policy solution that theoretically will protect water access in times of shortage (Merton 1976).

I draw from literature on water governance, water justice, and hydrosocial frameworks, firmly situating them in the context of rural water rights holders in the American West. The condition of rurality is especially germane because the majority of water in the Colorado River Basin, approximately 70%, is used by predominantly rural agricultural irrigators (Bureau of Reclamation 2021). In Colorado, 91% of the water used in the state goes to agriculture (Colorado Water Conservation Board 2022c). Colorado's rural Western Slope[7] has less than 10% of the state's population, but 80% of the state's precipitation, and 23% of irrigated acreage (Colorado Water Conservation Board 2022a). Conversations around water conservation in the Basin have largely focused on agriculture, making this a rural issue. Yet, despite this, the rural dimension of injustice is relatively undertheorized (Carolan 2020) as is injustice in the context of water governance and rurality. Thus, while water use affects everyone and issues of injustice only affect some, agricultural water conservation policy especially impacts rural people and their communities.

This dissertation contributes to the water justice and governance literatures by examining experiences of rural water rights holders, expanding understandings of justice with the hope of supporting lessons in building long-term, effective solutions to wicked problems of water allocation and distribution. Developing solutions to wicked problems does not mean a fixed end point, but is rather a processual, ongoing, and continual process (Rittel and Webber 1973). Combined, the literatures of water justice and hydrosocial explorations argue for the

[7] The "Western Slope" covers about half of the state's land area, from the northern border with Wyoming, down the western border with Utah and eastern border with the continental divide, to the southern border with New Mexico.

incorporation of deep social and cultural examination in issues of water governance – re-politicizing water issues often are reduced to legal, technological, and engineering problems, with a little recognition of social and cultural differences on the side. Repoliticizing water governance means highlighting the what, the who, and the where of injustice. Building from this guidance, this dissertation focuses on bringing in social and cultural aspects of water governance and experiences of injustice as understood by rural irrigators on the Western Slope of Colorado by drawing on a range of literatures. The literature review that follows addresses five core themes:

- Water Governance: What is the context of current water governance and how it developed? How are issues of water contestation and injustice understood today?
- Water Justice: How are issues of water (re-)allocation and (re-)distribution a matter of justice?
- Rurality and Justice
    - The Where of Justice: How do location and spatial relations shape experiences of injustice? How can this awareness be incorporated into water governance practices?
    - The "What" of justice: What are the different ways justice is conceptualized by different groups? Why do these differences matter in rural water governance?
    - The "Who" of justice: Who counts as a subject of justice? Who has been overlooked? Who can experience disproportionality? What does this inform us about rural water governance?
- How we get there: Hydrosocial analysis is a framework for examining how water is a product of social and material relations – making each experience of water unique. This

helps illuminate how and why depoliticized water governance creates increased contestation over water, how issues of injustice develop, and implications for how to address wicked problems in water governance.

- Implications for water governance: the recognition that repoliticizing wicked problems is a fundamental component of addressing issues of injustice

As Joy et al. (2014) explain, whenever water is contested, injustice exists because more water for someone/thing means less water elsewhere. This literature review seeks to illuminate what justice is, as informed by the water justice literature, who counts as a subject of justice, and where injustices happen. Drawing from the literature on hydrosocial analyses, the above framework is used to unpack how water is given meaning by groups who have different relationships with it. The combination of these literatures – water justice and hydrosocial frameworks – reveals how crises of water are not only about the water, but also, and perhaps even more, about the social organization around water allocation and distribution. The problems are fundamentally social. Increasingly, scholars and practitioners in the water governance literature agree that in polycentric arrangements (i.e., when power is unevenly dispersed amongst a variety of groups at various levels and scales) effective and long-term water management is more likely to occur when stakeholders are willing to participate, creating collaborative water governance. Therefore, this literature sets up a framework for developing insight into why rural irrigators are ambivalent or resistant to a potential water management program designed to theoretically protect their water rights.

2.1 The Wicked Problem of Water Governance

Identifying water for (re-)allocation and (re-)distribution to achieve compact security as a wicked problem highlights the fact that water is social in nature – a manifestation of the

consequences derived from how humans have interacted with natural systems to manage and distribute water in the Western U.S. over the past 100+ years. Wicked problems are not only complex, but the conditions shaping them are constantly changing. Thus, addressing wicked problems means testing and trying various solutions that each have their own costs, consequences, and the possibility of creating or revealing new wicked problems (Rittel and Webber 1973). Through the practice of implementing and testing solutions, followed by learning from and reflecting on the results, problems and next steps incrementally reveal themselves, but are never able to be fully solved. Rarely, if ever, are solutions fully transferrable into different contexts, time, or locations due to the social complexity of each problem. Social and environmental complexity frustrate attempts at achieving pre-defined objectives because this type of outcome-based model is not sufficiently adaptive to dynamic change and local conditions (Woodhouse and Muller 2017).

A key component of this wicked problem lies in governance – the umbrella term for the social systems of governing, including formal and informal institutions and organizations (Rogers and Hall 2003). Governance is broader than, and encompasses, government, though no agreed upon definition exists. Rather, it is "a complex process that considers multi-level participation beyond the state, where decision making includes not only public institutions, but also the private sectors, civil society and society in general" (Tortajada 2010:298). Due to the complex and evolving nature of relationships between governments and societies, ideas about what constitutes "good governance" increasingly recognize the value of including more voices and perspectives for the purpose of increased transparency and accountability (Agrawal and Lemos 2007; Kooiman 2003; Tortajada 2010). Discussions about what constitutes "good governance" signify a shift from previous hierarchical governance practices to more horizontal

approaches at multiple levels that consciously incorporate local and non-state actors. The recognition is that no one actor or perspective can possess enough knowledge, power, or information to solve the problem (Kooiman 2003). Sometimes referred to as "distributed" governance (Rogers and Hall 2003), good governance is argued to potentially lead to better outcomes for more people. But, good governance does not just occur; "it is the culmination of multifaceted, long-term processes that have to be properly planned and nurtured… overall conditions and the general environment must be made favourable" (Tortajada 2010:298).

Governance regimes, especially when it comes to natural resource use in democratic-based countries, are often polycentric (Neef 2009), which Aligica and Tarko (2012:237) define as "a social system of many decision centers having limited and autonomous prerogatives and operating under an overarching set of rules." Meaning, no one entity holds all power; governance occurs at multiple scales and levels, simultaneously, integrating a variety of organizations into the process (Aligica and Tarko 2012; Andersson and Ostrom 2008). Polycentric governance regimes are "complex, adaptive systems without one central authority dominating all others in regard to all policy arenas" (Andersson and Ostrom 2008:78). Recognizing this feature of governance regimes aids in studying complex social phenomena because it reveals the overlapping, relational, and dynamic nature of wicked problems related to natural resource use and management (Aligica and Tarko 2012). Though actions make take place at a local level they are intricately influenced by relationships at scales and levels beyond the local (Andersson and Ostrom 2008). As a concept, polycentric governance offers a unique tool to understand challenges and transformations within water governance regimes.

Water governance, more specifically, "refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources, and the

delivery of water services, at different levels of society" (Rogers and Hall 2003:16). Though again, no agreed upon definition exists (Woodhouse and Muller 2017). Water governance concerns itself with institutional operations, regulations, their impact on political choices and societal concerns (Tortajada 2010). The range of systems in place to develop and manage water systems for different uses, collectively refers to water management. Berkes (2010) and Pahl-Wostl et al. (2012) distinguish between water governance and management by explaining that governance creates the rules under which management acts, but, contends Tortajada (2010:299), they are interdependent "in the sense that effective governance systems are meant to enable practical management tools to be applied properly as situations require". Such efforts recently have been made to encompass formal and informal management mechanisms in water governance (Agrawal and Lemos 2007; Evans 2012; Taylor and Sonnenfeld 2018).

Scholars and practitioners contend that many of our problems in the realm of water stem from issues of water governance, not in the condition or presence (or lack thereof) of water (Biswas and Tortajada 2010; Molle 2008; Pahl-Wostl et al. 2012; Rogers and Hall 2003). Governance related issues are usually shared by governments and society, sometimes at multiple levels, but always in a dynamic environment (Tortajada 2010). How water governance in the Colorado River Basin has historically and currently is enacted influences how people respond and engage. Thus, the issues of creating security and certainty in water supplies for agricultural and municipal water use with potentially decreasing supplies highlight a central problem in water governance: *how to build effective and long-term water policy that reflects the diverse interests of competing relationships with water in a dynamic, ever-changing environment*. To do this is, there is growing evidence that efforts must build participation and trust so that stakeholders not only come to the table, but also stay (Bakker 2008; Baril, Maranda, and Baudrand 2006; Bodin

2017; Bulkeley and Mol 2003; Karambelkar and Gerlak 2020; Lemos and Agrawal 2006). In short, Megdal, Eden, and Shamir (2017) state, stakeholder engagement is "good water governance."

In general, the last 100+ years of governance of river basins in the American West occurred in a top-down, managerial style with little input and involvement from on-the-ground actors (Reisner 1993). This period of centralized control became known as the "command and control" era of water management (Holling and Meffe 1996). The "command and control" era came about due to a combination of factors including westward conquest and colonization by European transplants (Limerick 1987) and the aridity of the American West, which necessitated irrigation. Projects to divert and control water for crop production 'greened' the dry land often by excluding, sometimes violently, native indigenous peoples from the landscapes they'd inhabited for centuries (Fiege 1999; Limerick 1987; Sherow 1990). The combination of aridity and the ethos of conquest and colonization created a perceived need for large scale irrigation works, which required considerable financial investment often beyond the capacity of local settlers. Many turned to the deeper pockets of private industry and the federal government (Fiege 1999). The 1902 Reclamation act established the Bureau of Reclamation and with it large-scale irrigation projects whose purpose was to control the release of water for the purpose of stabilization; creating certainty in supplies and timing, primarily for the benefit of agriculture and growing municipalities (Reisner 1993).

The era of large-scale irrigation projects and the cultural orientation towards conquest meant power in water management was often centralized in a government body, however, scholars have written many pages arguing over the extent to which power was centralized. Some, like Worster (1985) have argued that the managerial power needed to facilitate complex water

deliveries created “hydraulic societies,” where technological mastery over water reigns supreme and shifts power to elites and supports totalitarian regimes. In contrast, Reisner (1993) presented western water development as movements by powerful municipalities, strongarming smaller, rural communities. Others, like Hundley Jr. (2001) who re-examined California and Limerick (2012) in her history of the development of Denver Water, pushed back on these assessments, demonstrating how fragmentation, dispersal of power, and loose social arrangements are not only more common than bureaucratic control in the West, but also challenge the conclusion that complete control existed. Even with the recognition that the command-and-control era was perhaps not as complete as the name implies as water management was largely administered with little to no focus on public participation or stakeholder engagement (Limerick 2012).

Regardless, the command-and-control era created multiple benefits for humans. These benefits included stable food supplies, reduced risk of flooding, increased water quality, and evened out sources for urban, agricultural, and industrial water (Holling and Meffe 1996; Limerick 2012). But it also manifested “pathologies” in natural resource management agencies such as a single-minded focus on increasing efficiency of control in ways that also reduced institutional flexibility and undermined resilience in ecosystems. These pathologies fed the growth of cities in arid and semi-arid locations far from sustainable water supplies, increased dependence on exhaustible groundwater, and severely decreased resilience in ecological systems (Holling and Meffe 1996). By the 1980s, there was a growing disillusionment in a central governing body’s ability to administer, plan, and fairly distribute resources (Berkes 2010). A period of devolution and decentralization in resource management followed, largely influenced by broader neoliberal policies (Boelens, Vos, and Perreault 2018) with mixed results as it

continued perpetuating many of the same pathologies in practice (Berkes 2010; Pahl-Wostl et al. 2012).

In response to command-and-control approaches and influenced by the neoliberal turn, the concept of Integrated Water Resources Management (IWRM) gained traction. The appeal of IWRM was that it provided a path for meeting social and ecological needs while also promoting economic development by integrating the management of water and land (Pahl-Wostl et al. 2012). This promise is predicated on a commitment to gather better data to solve problems through "neutral and rational decision-making and by the application of good scientific practices and expert knowledge" (Molle 2009:68).

However, IWRM's approach continued and reproduced many of the same pathologies, including perpetuating the idea that water management is a neutral process, rendering solutions to problems as merely in need of neutral, technical fixes (Li 2007). IWRM's depoliticizing of water policy, argues Molle (2009), ignores the reality that the nexus of water and society is anything but apolitical. Molle (2009) contends that IWRM acts as a smoke screen justifying policy decisions in which solutions lie in access to monetary and legitimate scientific knowledge – as opposed to the knowledge and interests of local actors – and then calling those decisions "neutral". The increased participation of multiple "stakeholders" in governance processes meant a more diverse influence in policy and management, but the de-politicized nature of IWRM interactions also meant it was just as likely that certain stakeholders wielded greater power and influence than others (Boelens et al. 2018). Additionally, Cohen and Davidson (2011) state that IWRM's ideal unit of management, the watershed, is itself problematic, as even these are not "natural," but change as conditions and technology does. Thus, there have been profound issues with IWRM not delivering on its promise because its assumed neutrality obfuscates the fact that

the goals and objectives of meeting human needs, ecosystem requirements, and continuing economic growth are often at odds with each other and neglect issues of equitability and justice (Biswas 2008; Molle 2009).

Despite these critiques, IWRM did influence water governance in that its emphasis on coordination and integration opened the door for more collaborative approaches (Bakker 2012; Berkes 2009; Pahl-Wostl et al. 2012; Ribot, Agrawal, and Larson 2006). This collaborative turn in governance can be understood as the process of relevant actors – including non-state and state actors – engaging in collective actions that create the rules to solve societal problems (Evans 2012). Turning to a concept like collaborative governance highlights the recent shift away from top-down governing towards more horizontal processes, including collaboration among various sectors, groups, and communities (Bakker 2008). This is illustrated by Berkes (2010:491), who contends that, "governance is not something governments do, but something to be shared."

In short, bringing and keeping a diverse group of stakeholders, from various levels and scales, at the table is likely essential if water users in the Colorado River Basin, a polycentric water governance regime, are to address the wicked problems they face (Andersson and Ostrom 2008; Neal (Patrick), Lukasiewicz, and Syme 2014; Ostrom 2010; Woodhouse and Muller 2017). Drawing from the idealized vision of Habermas in the value and role of deliberative public discourse, the hope is that dispersal and inclusion of varied perspectives will neutralize or, at the very least, lessen potential harms (Neef 2009). Specifically, collaborative and participatory arrangements have been found to create space for experimentation and the integration of diverse knowledges (Merrey et al. 2007; Molle, Wester, and Hirsch 2007). Additionally, it is argued that effective efforts are more likely accomplished with a variety of engaged stakeholders because participant opinions may become more well-informed as they incorporate new information and

claims from other participants into their own preferences (Andersson and Ostrom 2008; Chambers 2005). When the scale of participatory efforts is small enough to allow face-to-face interactions, effectiveness increases (Newig and Fritsch 2009). But, note Ansell and Gash (2008), collaborative governance is notoriously challenging to put into practice and success depends heavily on trust, commitment, and shared understandings. Additionally, collaboration is not a panacea for water governance, critical evaluation of the social, political and cultural conditions within which collaboration takes place are essential to build governance that can be emancipatory (Harrington 2017). Collaborative, polycentric governance requires and is strengthened by a committed and diverse group of stakeholders – but what happens when stakeholders cease showing up or refuse to come in the first place?

2.2 Water and Justice

> *"Even if not explicitly phrased in terms of 'water justice', conceptions of water rights and (in-) justice exist and develop wherever use of the resource is in some way difficult and contested" (Joy et al. 2014:955).*

To unpack the various reasons why stakeholders either do not continue to show up or refuse to engage in "collaborative" efforts, "good" water governance must draw from concepts highlighted and developed through the analytical tool of water justice. Examining issues of contestation around water highlights the particular and unique characteristics of water that shape experiences of injustice and change the dynamics of water governance. Delineating a field of justice inquiries related to water means paying attention to the unique properties water possesses. Specifically, water's physical properties differentiate it from other environmental conditions and natural resources. Water is fundamentally essential for all life to exist. It also provides multiple added benefits to human well-being besides the essential need for life, which shapes contestation

around its use. These benefits are aesthetic, cultural, social, recreational, and deeply intertwined with livelihoods. Finally, the management and use of water reflects and can create power asymmetries in governance, which shifts and restructures relations in society. These factors, combined with the over-allocation of water in the American West, and specifically in the Colorado River Basin, has generated a context in which its (re-)allocation and (re-)distribution are heavily contested and thus ripe for examination.

2.2.1 Environmental Justice Roots

The literature of water justice builds on the work of environmental justice scholars (Joy et al. 2014). Though the origins of environmental justice movements and scholarship lay in active resistance by racialized and lower socio-economic status communities to disproportionate exposure to environmental toxins and harms (Agyeman et al. 2016; Bullard 1990; Mohai, Pellow, and Roberts 2009; Pellow and Brulle 2005), its conceptual development paved the way for the field of water justice. Additionally, the development of environmental justice (EJ) as a heuristic device can help unpack the question of stakeholder engagement and resistance through how it grapples with multiple and relational forms of injustice.

Movements organized around environmental racism grew out of the civil rights movement and, to a lesser extent, the environmental movement (Pellow and Brulle 2005). Faber and McCarthy (2003) describe how, in addition, EJ drew from movements around occupational health and safety, public health and safety, indigenous land rights, social and economic justice, and urban environmental groups (Schlosberg and Collins 2014). Narratives and definitions of what environmental justice means were initially focused on identifying distributional injustices, predominantly related to toxic harm, exposure, and environmental racism (Schlosberg 2007; Taylor 2000). Reflecting the diverse origins of the EJ movement, the First National People of

Color Environmental Leadership Summit convened in Washington, D.C. in 1991 to develop a statement establishing seventeen principles of EJ (People of Color Enviornmental Leadership Summit 1996). These principles cover a broad terrain beginning with affirming the sacredness of "Mother Earth" and the right of nature and humans to be free from ecological destruction, contamination, exposure to toxins and related harms. Foreshadowing future academic calls for incorporating the rights of nature (e.g., Schlosberg 2007), the document defines environmental justice in a broad and firmly non-anthropocentric manner.

Documentation of the inequity of distribution of environmental harms (see Chavis and Lee 1987; US General Accounting Office 1983) was translated into action at the federal level with an executive order in 1994 charging each federal agency to incorporate environmental justice into its mission, the creation of the Office of Environmental Justice in 1992 within the Environmental Protection Agency, and the National Environmental Justice Advisory Council in 1993 (Agyeman et al. 2016). The U.S. Environmental Protection Agency (2022) defines environmental justice as,

> the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys: The same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.

Unlike the People of Color Leadership Summit document, it does not include recognition of the rights of nature or culture. However, the codification of environmental justice at the federal level and increased exploration of environmental injustices has meant an increasingly broad application of an environmental justice frame. As of yet, however, no case of environmental injustice has been argued at the Supreme Court, nor has national legislation been passed; most policy and legal action is taken at the local or state level (Pellow and Brulle 2005). However,

some change has occurred with the Biden Administration, such as a new office within the Environmental Protection Agency, focusing on environmental justice (EPA Press Office 2022).

Explorations of water justice emerged from the plurality of the environmental justice movements. Agyeman et al. (2016) and others (Bullard 1990; Taylor 2000) detail how early environmental justice activists were predominantly from racially minoritized and low-income groups who were not members of mainstream environmental groups. Thus, conceptions of the "environment" and "justice" within the movement grew from a diverse array of issues and discourses (Agyeman et al. 2016; Schlosberg 2007; Taylor 2000). Over time, environmental justice has come to be understood as multifaceted and pluralist, which allows for particular themes to dominate or emerge in different contexts, as needed (Schlosberg 2007).

This makes narrowing justice down to one definition is difficult as meanings often diverge differed among academic explorations and grassroots, working definitions (Schlosberg 2007). Taylor (2000) notes that early on, EJ literature shifted from the use of the equity in defining the aspirations of the movement to the use of the term "justice" because it was broader, incorporating equity along with representation, voice, access and more. By engaging in action and discussions of the "what" of justice, EJ movements became concerned with more than issues of distribution, and thus, they pushed the expansion of theoretical notions of justice beyond distribution to incorporate questions about justice as recognition and participation (People of Color Enviornmental Leadership Summit 1996). Beyond that, EJ movements' conceptions of justice created implications for "the possibility of employing a variety of notions of justice simultaneously in a comprehensive political project" (Schlosberg 2007:46). These efforts by EJ scholars and activists have pushed the boundaries of traditional, purely distributive notions of justice, to include a broader conception of the concept and its application (Schlosberg 2007).

Schlosberg (2004:521), following the works of Fraser, suggests a "trivalent conception of justice": distributive, recognition, and procedural. Each facet bears greater or lesser weight depending on the injustice and social conditions – that is, it is not necessary to locate all three for injustice to exist. Distributive justice, the genesis for EJ action and analysis, centers on the distributions of resources, largely economic, within a society. Economic structures can function to effectively deny equity in participation when people do not have access to enough resources to allow them full participation (Fraser 2008). Theoretically, a situation of justice allows the opportunity for all to participate on the same level as full equals and co-creators in social interaction, but institutionalized injustice exists in more than just economic and resource conditions (Fraser 2008). Recognition justice is largely cultural, focusing on how greater value and respect is given to some cultural practices and artifacts over others, not on an individual level, but rather as institutionalized inequity (Fraser 2000). Recognition justice asks "whether, and how, individuals and communities are recognized" (Schlosberg 2007:15). Third, procedural justice (Fraser 2008 refers to this as "representation") involves institutional practices and processes that allow for equal voice and outcomes in democratic decision making (Schlosberg 2007). Fraser (2008) places these under an umbrella she calls, "parity of participation" to which all claims of injustice must be compared to. "Overcoming injustice" using this view of the three parts of participatory parity, "means dismantling institutionalized obstacles that prevent some people from participating on a par with others, as full partners in social interaction" (Fraser 2008:16).

Recent additions to the environmental justice literature coming from Climate Justice movements have included a focus on "restoration" justice which addresses transitions, resilience, and adaptation, bringing human consumption in line with ecological needs (Schlosberg and

Collins 2014). Recognizing the need for restoration justice has been part of the water justice conversation as this component is highlighted in situations of overuse of water (Joy et al. 2014). Restoration justice highlights the deep, structural changes needed to bring about equity. The idea of restoration justice is closely tied with the idea of "just transitions," which is a shift from talk of sustainability to transitioning to a level of consumption in balance with ecological systems (Swilling and Annecke 2012).

2.2.2 Does water qualify as "the environment"?

With a deeper understand of justice, it is important to establish how the unique properties of water both qualify it as part of "the environment", but also how these properties – such as its fluid and flexible nature – differentiate it from other natural resources. The water justice literature is indebted to the key contribution of environment movements and literature in their challenge to prevailing, environmentalist definitions of what the term "environment" encompasses. The EJ movement challenged the idea that the "environment" is a pristine place apart from humans, rather it is in relation with humans as part of lived, daily life (Novotny 1995; Schlosberg and Collins 2014). Novotny (1995) explains that EJ activists pushed the definition of "environment" beyond the environmental movement's conception as only comprising of "pure" wildernesses, national parks, and lands distant from population centers to quotidian locations as well. Illustrating this point, Bullard (cited in Mohai et al. 2009:407; Schweizer 1999) describes the environment this way: "the environment is everything: where we live, work, play, go to school, as well as the physical and natural world. And so we can't separate the physical environment from the cultural environment." In defining it thus, the EJ movement, closely connected with the civil rights movement, posed a challenge to the non-marginalized (White) and more middle and upper class-centric environmental movement. Pellow and Brulle (2005:3–

4) explain that EJ "sought to redefine environmentalism as much more integrated with the social needs of human populations" and thus, "exploitation of the environment and exploitation of human populations are linked." While a broad conception of what the environment entails may appear to dilute the concept, the importance of an EJ inquiry lies in its ability to broaden exploration of the intersection of the environment and human populations and refusal to restrict the definition of what qualifies as "environment" lie at the "heart of the movement" (Schlosberg 2007:54). Building on this, water justice, explores how water's unique properties make discussions of justice and injustice different.

The physical properties of water fundamentally distinguish it from other natural resources and environments. Its necessity, fluidity, shape-shifting abilities, and fluctuation between solid, liquid, and gas depending on temperature make it almost mythical. Certainly, its use in symbolic imagery is significant not only in most religions, but also in literature, music, and other cultural artefacts. Furthermore, the added benefits of water mean that use of flows and bodies of water are intertwined with human well-being, providing aesthetic, recreational, and livelihood opportunities. Most importantly, however, unlike other many other elements of environments and natural resources, water is essential for all life. The implications of this simple statement cannot be overemphasized. When clean water, like clean air, is not available life ceases. The dependence of life on water raises the level of conflict and begs questions of access, equity and fairness about how to re-allocate water as conditions change.

The fluidity of water means it cannot be owned, held, accessed, or managed in the same way as other natural resources (Neal (Patrick) et al. 2014). Flows of water shape society and also are shaped by society as they justify the creation and continued existence of water institutions involved in its management and control (Joy et al. 2014). Fluidity necessitates this co-

construction of flows and a complex and varied number of institutions through social and political organizations as well as technologies due to the difficulty of transporting water to the locations where it is desired and the range of conditions its presence creates (e.g., flood or drought) (Fiege 1999; Limerick 2012). In spite of extensive efforts to divert and control water flows, the fluidity of water means flows are able to transcend "boundaries of political, jurisdictional, administrative, and other orders, and [link] spatial (and temporal) scales to create 'places' where it is valued, used, and given meaning in specific contextualized ways and where it relates to specific sources of social power and cosmologies" (Joy et al. 2014:962). Though water can transcend boundaries, it is local interaction that creates and gives meaning to flows of water – the local customs, culture, and social organizations describe and define the water that is present, giving meaning to its presence. This explains why any analysis of experiences of water injustice are inevitably context-dependent – water is embedded within local communities and experiences of injustice are related to the symbolic power given to those flows (Espeland 1998).

Today, literature looking at water justice in water governance includes questioning fairness in allocation and valuation (Malin and MacIlroy 2019; Syme, Nancarrow, and McCreddin 1999), discussions of water as a human right (see Francis 2005; Keinan and Bromberg 2005), as a social movement against capitalist privatization (Davidson-Harden, Naidoo, and Harden 2007), and democratizing water governance (Zwarteveen and Boelens 2014). In general, water justice literature advocates: 1) the recognition that water has specific characteristics that affect situations of injustice unique to other resources; 2) a "re-politicization" of water governance and management; 3) that questions of scale, level, and space are essential in understanding facets of injustice in water; 4) multiple, sometimes conflicting, conceptions of

water and associated rights co-exist as do experiences of injustice (Joy et al. 2014; Neal (Patrick) et al. 2014).

Based on these commonalities, I rely on Joy et al.'s (2014:954–55) definition of water justice as a "tool to analyse and understand the implications of water (re-allocations)… provoked by a variety of processes of socio-environmental change, water governance, and policy." This definition foregrounds the idea that when water use and management is difficult or contested, issues of injustice exist. In conjunction, because of water's unique properties, justice in one location or scale often means injustice at another location or scale. For example, justice in water allocation on a contested stream for downstream users means less water is available to upstream users, potentially creating a new situation of injustice. Joy et al.'s (2014) definition guides the dissertation's exploration of 1) contestation around water allocation and demand management; 2) incorporates the materiality of water – how that shapes injustice in situations of change; and 3) the political and social dimensions of polycentric water governance, recognizing these things are not inseparable, but mutually constituted.

2.3 Rurality and Water Justice

Water is an essential component of life for every human and issues of justice impact many people. However, when focusing on its governance in the Colorado River Basin, specifically related to agricultural irrigation, it is predominantly rural irrigators and their communities who are embedded in these relations. Thus, they are the ones who must do the work and take on risk to implement agricultural water conservation policy. It is their actions that make policy real and successful – demand management is dependent on their participation. The patterns of urban/rural relations potentially expose rural inhabitants disproportionately to harms of water reallocation, redistribution, and demand management (Bray 2022; Sayan 2017).

Building on water justice frameworks, conceptualizing urban and rural relations in water governance is necessary to understand the formation of spatialized forms of injustice and resistance.

Currently, contends Carolan (2020), there is a "rural problem" – an intellectual failure of academics to understand rural grievances. Usually, explains Schafft (2021), the "rural problem" is framed as "an enduring problem of anti-modernity to be solved, typically by outside, cosmopolitan 'experts'." A shift is necessary if we are to understand the resistance and ambivalence amongst rural irrigators towards demand management; we must illuminate the rural elements that shape their experiences. To unpack experiences of injustice related to water, justice must be further conceptualized in relation to rurality. First, by conceptualizing the 'where' of rurality and the social and symbolic boundaries between it and urban areas that shape spatial inequalities. Next, discussing what justice is and how it is interpreted and enacted differently by groups. Then, expanding on who counts as a subject of injustice to include historically privileged groups. Finally, exploring what makes water unique in shaping experiences of injustice.

2.3.1 The where of injustice: Rurality and water

In 1900 over 60% of Americans lived in rural areas[8] (U.S. Census Bureau 1995), and today almost 81% of the U.S. population lives in urban areas (U.S. Census Bureau 2021). Among the urban populations fewer and fewer have anything more than superficial encounters with rural areas and inhabitants (Lichter and Brown 2011). Shifting boundaries due to urbanization and the increasing economic and ecological interdependencies between urban and rural spaces means sharply delineating what is urban and rural is not only increasingly challenging, but ultimately unhelpful in unpacking these relations (Cloke 2006; Lichter and

[8] This includes small town with a population less than 2,500, the countryside, and farms (U.S. Census Bureau 1995).

Brown 2011). Rather than drawing spatial boundaries or looking only at group identity or culture, rurality is produced by broad social, economic and political processes like neoliberalization, urbanization, and globalization (Woods 2009) and as such, can be conceptualized as a "body of thought, a representation, with politics and cultural currency" (Ashwood and MacTavish 2016:272). Key to understanding the multiple rural Americas is that rural and urban American are increasingly interdependent and any discussion of social change in on is impossible without recognizing the other (Lichter and Brown 2011).

With rapid urbanization, water conflicts increasingly occur as cities look to nearby agricultural and rural regions as sources of additional water supplies (Garrick et al. 2019; Richter 2013). Rural water injustices are profoundly linked with urbanization due to urban population growth and pressure for reallocation of rural water to quench cities' thirst (Bray 2022). However, urban/rural water conflict is not new nor a unique conflict to the American West. In fact, argues Limerick (2012:7), "the urban acquisition of rural water resources and rural resentment of this intrusion form a pattern that the American West shares with the American East, and indeed, most of the planet." The pattern of urban acquisition of rural resources happens in major east coast cities, including New York City (Koeppel 2001) and Boston (Rawson 2010). However, the way that the conflict takes shape is unique to the local conditions, power balances, and social relations of water and society, necessitating examining issues of injustice when conflict arises.

Rural areas face social and environmental burdens directly in relation to urban areas. Boundary definition, policy justification, and the processes used to claim control over water reinforce spatialized inequality (Bray 2022; Lichter and Ziliak 2017). For instance, when looking at a rural/urban water transfer in New Mexico, Bray (2022) finds that, historically, urban interests emphasized rural benefits as justifications in their attempts to control rural water

supplies as well as reconstructed previous boundaries to enact visions of shared rural/urban interests. This reconfiguration of boundaries can also impact areas outside the focus region, thus, the implication that we must look beyond the rural areas of origin. Sayan (2017:1511) finds that small-scale hydroelectric power plant development policy in Turkey does not explicitly target any traditionally marginalized group, but that it threatens "rural communities' needs, interest, livelihoods and existence, i.e., notion of rurality…."

In the U.S., the element of rurality has only recently been explicitly recognized as an integral component that can shape environmental injustices (Ashwood and MacTavish 2016; Bell 2016; Ergas, McKinney, and Bell 2021; Malin 2015; Malin and Ryder 2018; Pellow 2016; Sayan 2017). As environmental and water justice explorations have traditionally focused on low income and racially marginalized groups, it raises questions about how rurality shapes experiences of injustice. Though many studies have looked at how urban acquisition of water resources detrimentally impacts rural areas economically and socially in the American West (Garrick et al. 2019; Howe and Goemans 2003; Howe, Lazo, and Weber 1990; Kindquist 1996; Reisner 1993), the explicit focus on how rurality shapes injustice in water governance has been relatively unexamined.

2.3.2 What is justice?

Justice is conceptualized and enacted differently across social groups (Carolan 2018). In mapping and comparing the imaginaries of justice between rural farmers in North Dakota and participants in an urban agricultural cooperative in a major U.S. city, Carolan (2018) found significant divergence. Though both groups were embedded in a real neoliberal world – which shaped their perceptions of justice – rural farmers did not attribute their marginalization to it. Divergent conceptions of justice matter in that they shape how groups respond to their

experiences and others. Scholars describe a "plurality of discourses of justices" (Schlosberg 2007:165), yet Carolan (2018:30) contends that "we need to make sure that our documentation of multiplicity extends to include a diverse array of communities, in every respect of the term. This means including not only historically marginalized groups but also groups from traditionally more-privileged populations." The implication is that injustice still exists even where normative terms to describe it do not – thus, the importance of a close examination of who counts as a subject of justice and their narratives that reveal experiences of injustice.

2.3.3 Who counts as a subject of justice?

In establishing a multidimensional understanding of justice, questions about "who counts" as subjects of injustice have become central (Fraser 2009). Due to the extreme and egregious environmental injustices they have experienced, most environmental and water justice scholarship has focused on communities of racially marginalized and low income people and their discourses about justice and injustice (Agyeman et al. 2016; Mohai et al. 2009; Taylor 2000). As Carolan (2020:3) notes, this is certainly not problematic, but because the discourse has been profoundly shaped by experiences of these groups, and we understand justice to be multidimensional, "this focus leaves us less adept at talking about justice, and injustice, in the context of historically recognized groups." Fraser (2008) contends that in periods of "abnormal justice," like what we are experiencing now, where previous ideas of the boundaries of justice and notions of who can claim injustice are up for debate, scholars must be reflexive – open to the idea that claims of justice can come from anywhere, including historically privileged groups. Building on this, Carolan (2020) poses the caution that while marginalized groups must have their interests emphasized, we should not assume only they suffer injustices; any group,

including rural white irrigators, can have a valid claim on injustice (Ashwood and MacTavish 2016). His point: "disproportionality takes many forms" (Carolan 2020:5).

Justice scholarship does not currently adequately account for grievances of rural residents (Carolan 2020). Additionally, Cramer (2016), Hochschild (2016), Wuthnow (2018), have all documented various forms of rural resentments and grievances and a general feeling of being "left behind", which is driving populist movements toward right-wing politics. But none of these have situated these experiences as 'injustices.' However, Malin (2015), Malin and DeMaster (2016), and Bell (2016) address rurality and spatial isolation in shaping experiences environmental injustice. Carolan (2020) documents that indeed rural counties in Colorado receive fewer federal monies than their urban counterparts, 58% less in per capita spending. Drilling down into these federal expenditures, when it comes to specific community expenditures, or "investments", such as transportation, communications, or business assistance, rural counties receive just 46% per capita of what urban counties in Colorado do – rural counties do indeed, receive less than urban counties (Carolan 2018, 2020). Figures like this provide a little context for the suspicion rural people generally have towards government spending and taxation. Insistence on less intervention and smaller government is often not about libertarian political orientations but rather about a sense of injustice, where it is perceived that urban and non-white populations benefit and rural areas fall further behind (Cramer 2016; Jackson and Grusky 2018).

However, as previously noted, rural whites in the U.S. typically do not describe their experiences of injustice in terms of the normative language of justice (Carolan 2018). Malin, Ciplet, and Harrison (2022) discuss these experiences as "sites of resistance, acceptance, and quiescence." This difference in language has meant that grievances of rural whites who have historically been privileged, may be overlooked as subjects of injustice in the justice literature

(Carolan 2020). Again, rural inhabitants are marginalized too, and use different language to describe their experiences, which can lead to their very real experiences of injustice being dismissed, misunderstood, or ignored. In recognizing this, the connectedness between urban and rural spaces becomes tantamount to understanding the relationality embedded in injustice. Thus, the need a framework that is not only sensitive to how rural/urban interdependencies shape and reconfigure both material and social relations.

2.4 Hydrosocial Framework: Unpacking Crises in Social Relations of Water

The interdependencies between rural and urban areas, the complexity and relations of polycentric governance structures, and the materiality of water, location, and geographical relations are all intricately linked. The justice literature has recently begun looking more deeply at how rural and urban spatial relations influence contestation around water, but more work is required to get at how water injustice occurs in governance. To unpack how experiences of injustice emerge in and shape future water governance, a framework that is sensitive to the material, social, and spatial processes that shape flows of water is needed. This tool must be sensitive to the ways flows of water are understood, socially and materially.

Problems in water allocation, distribution, access, and quality are increasingly recognized not as crises of water *sui generis*, but rather as crises of social relations of water (Boelens et al. 2018). Hydrosocial analysis recognizes that water is fundamentally social and material simultaneously, a hybrid "hydrosocial" that is internally related (Latour 2005; Linton 2010; Linton and Budds 2014; Swyngedouw 1996, 2004a). Water flows are a "combination of topography, power relations, built infrastructure, institutional arrangements, property relations, money and market forces, ideologies, social networks, and the properties of water itself" (Krause and Strang 2016:635). In other words, water embodies and reflects the social relations and

natural processes that produce it; instances of water and water infrastructure are expressions of culture, values, politics, power, and social relations.

The study of human and water systems has a long tradition in the fields of sociology and human geography, but it was not until the 2000s that the term "hydrosocial" and the concept of a "hydrosocial cycle" were used to articulate co-formation and embodiment of the social water relations (Bakker 2002; Linton 2008). The concept of the "hydrosocial cycle" was initially utilized by Bakker (2002) and considerable work to further develop the framework has occurred in journal articles (see Budds 2008, 2009; Swyngedouw 2004a, 2009), conferences (see Linton 2008), special journal issues (see Budds, Linton, and McDonnell 2014; Krause and Strang 2016) and books (see Linton 2010; Swyngedouw 2004b).

Building from the construct of the *relational dialectic* in the historical materialism of Marxist tradition, the concept of hydrosocial illuminates how things become what they are by virtue of their relation to other things (Linton 2010). Drawing from Castree (2005) and Actor Network Theory (ANT) – the idea that human and nonhuman actors co-act and deserve equal recognition in their co-constitution (Latour 2005) – Linton and Budds (2014:173) explain,

> Understanding things as related internally means that the properties that constitute them emerge as a function of their relations with other things and phenomena… Considering internal relations thus means that things do not relate to each other as preformed entities (like 'water' and 'society'), nor do they emerge from these relations as independent entities.

Thus, flows of water do not exist in isolation, but rather, their constitution is a function of their relations with other things, and the constitution of other things emerges as a function of its relationship with water.

Hydrosocial analysis makes "instances" of water visible by identifying "the assemblage of historical, hydrological, political, and technological circumstances that produce" it (Budds et al. 2014:177). Instances of water are not purely natural nor can they be taken for granted since

they are constituted by the interaction between humans and the material world (Budds et al. 2014; Linton 2010). Each instance of water is defined by its constantly shifting social and material relations; their existence from one location/body/time to the next is shaped and defined by those relations. For example, "wet" water that is released from a reservoir is a specific instance of water, produced within relations that calculate and track "paper" water for the purpose of transfers and exchanges between storage reservoirs. These relations involve interstate and international river compacts, storage agreements, water rights, technology, infrastructure, and capital (Budds et al. 2014). In another example, Budds and Hinojosa (2012) describe a mining proposal that would use high mountain water in its operations and swap it downstream with desalinated water to replace the drinking water for the local population. The intense resistance of residents to this plan demonstrates how relations shape instances of water and reveal how all instances of water are not equivalent. These examples demonstrate how each instance of water is unique from other instances of water as they are specific instances at precise moments in time produced and defined through their social and material relations.

The concept of the hydrosocial stands in contrast to the hydrologic cycle – the usual method of portraying physical flows of water. Hydrologic cycle represents water flows as if they are absent human interaction and has been used to justify a century of projects that are undergirded by ideologies of mastery over water. The hydrosocial cycle unseats dominant narratives that the hydrologic cycle is politically neutral, naturally produced, and asocial (Linton 2010; Linton and Budds 2014). The hydrosocial cycle, as an analytical tool, "attends to the social nature of these flows as well as the agential role played by water, while highlighting the dialectical and relational processes through which water and society interrelate" (Linton and Budds 2014:170). Water is never simply water, but always "*produced* as a particular 'water,'

materially and discursively, and within specific moments, contexts and relations" (Budds et al. 2014:168). As a cycle, patterns are reproduced over and across time and are continually subject to the dialectical relations of interaction. Therefore, as an analytical tool, paying attention to the hydrosocial cycle attunes people to the context specific production and mobilization of water as it is locally situated and connected to larger cycles and flows, that is the social and political contexts and dynamics of water.

Hydrosocial analyses reveal the social and material relations that shape instances of water. These analyses articulate the power imbalances and emphasize the political and social nature of water governance. Following the flows of power illuminated by hydrosocial networks means that when planning how best to manage water, it is a political statement about who's water needs matter, which communities' matter, and how power is dispersed. Wicked problems, which are characterized by their social, complex, and relational nature, need analysis that is aware of and can reveal these dynamic conditions. In other words, they may require a repolitization of water governance.

2.5 Repoliticizing Water Governance?

> Sneddon and Fox (2008:72) describe water allocation in river basins as,
>
> > the contestations and collaborations among different actors seeking to articulate, define, and advance – through discourses, policies, coercion, and other means – a particular relationship between, on the one hand, human livelihood and economic activities and, on the other, river basin processes involving hydrological and ecological dynamics.

This dissertation looks specifically at contestation centered on a potential demand management program by rural irrigators on Colorado's Western Slope. Drawing from the water justice, rural, and hydrosocial literatures, the implications for water governance are that it must be attuned to the multiple complexities of relational injustices that exist in water governance. The wicked

problem of assuring compact security and addressing shortfalls in supply in the Colorado River Basin looms large. With 80% of water resources used in agriculture, many are looking to irrigators' water to fill the gaps. While water use effects everyone and issues of injustice only effect some, agricultural water conservation policy especially impacts rural people and their communities. Not only are rural irrigators the ones most impacted, but they are the ones that must implement the policies – making or breaking them. Water governance has increasingly moved toward collaborative approaches to help address these problems. But to build collaborative solutions to address wicked problems, rural irrigators need to be at the table. Therefore, it is essential to understand why rural irrigators might be hesitant or resist coming to the table.

Since water rights are "embedded in specific socio-environmental conditions and processes" and thus defined in a variety of "often contradictory or competing, legal and governance arrangements for management and control," water justice must be "relational, situated, and context-sensitive rather than universalistic" (Roth et al. 2014:949). The questions the reviewed literatures pose orient this dissertation towards exploring:

- how experiences of injustice manifest,
- who can experience injustice,
- who can speak, who is listened to, and what words are valued.

Exploring these issues implies understanding the complex social-environmental processes and socio-political relationships that constitute and surround things like demand management and (re-)allocation of water resources (Joy et al. 2014:962). It requires interdisciplinary approaches, which recognize that pressures on water resources and resulting scarcities are the outcome of specific histories and practices of water resource exploitation or development. It also requires

critical awareness that water problems are – at heart – problems of governance. These themes are explored while recognizing (1) differences in local contexts and conditions and how those differences shape experiences of injustice; and (2) these conditions occur in the context of a dynamic and ongoing situation that has no precise answer or endpoint. Thus, solutions must be adaptive, processual, and dynamic.

In other words, this dissertation advocates for the continual practice of repoliticizing water governance. Recent movements in water governance, such as IWRM and conversations of policy in water governance that rely on modern definitions of water, however, reveal a reliance on data-driven, expert-based information, in which problems require technical solutions or are simply math problems to be solved, tends to de-politicize water management (Harrington 2017). This de-politicization glosses over fundamental issues of differential power and conditions of injustice. Assumptions about priorities and values, and implications for changes in water allocation and management become muted as 'normalized' conversations about water allocation within this context make uncomfortable questions less likely, and silence dissenters by rendering them absurd, non-experts. When problems are "rendered technical" (Li 2007) they are reduced to an "intelligible field" with limits and boundaries. "Expert" knowledge is confirmed in its ability to diagnose problems and offer solutions, demarking a line between who holds knowledge and who is subject to it. Questions that are "rendered technical" are at the same time reconstructed as nonpolitical because they usually ignore the social and cultural context and practices that led to the creation of the problem.

Repoliticization is not simply a matter of who. It's also an issue of where. Water justice asks questions that attune to issues of distribution, recognition, and procedure to understand how people are experiencing injustice. However, the justice literature has not paid sufficient attention

to the spatial component of rurality and rural people as subjects of injustice. Rural communities are located at a unique crossroads of distributional, participatory, and recognition based environmental injustices that distinguish them from urban areas as these injustices are often produced by patterns of relations with urban centers. But because rural whites have historically been privileged, their experiences of injustice have been overlooked. Location shapes access to water, meaning people in the same basin, much less the same irrigation ditch, rarely have equivalent access. When the issues are scaled up to contestation over water supplies between rural and urban areas, the dynamic and complex interdependencies between the two are essential to understanding injustice. Thus, conflict around water allocation must be understood in terms of locality and the larger basin as the relationship between scales and spaces can shape perceptions of injustice (Joy et al. 2014).

Repoliticization also is contextual. Experiences of water injustice are embedded in specific historical, cultural, and social contexts with a plurality of relations with water rights, and even conflicting conceptions of those water rights (Zwarteveen and Boelens 2014). The water justice and hydrosocial literatures reminds us that water (re-)allocations today are shaped by an economic system embedded in an ongoing process of globalization and neoliberalizations, which is so pervasive as to seem natural or "commonsense" (Achterhuis, Boelens, and Zwarteveen 2010; Joy et al. 2014). When issues of water allocation arise, this logic pushes technical solutions and behavioral incentives that rely on the free market, facilitated through intensive reorganization by the state who constructs universal policy initiatives (Achterhuis et al. 2010). These logics infuse and mold the imaginaries of all stakeholders and organizations. For instance, this can be seen in the language rural irrigators use to describe injustice, which does not typically align with the normative frameworks. Repoliticization is sensitive to this nuance.

Wicked problems are characterized by their dynamic, continually evolving nature; likewise, rivers are anything but static. Policies and interventions in water management must adapt to this reality. However, any change in allocation of water resources is (and should be expected to be) contested because in a basin where use is greater than supply, (re-)allocation is hardly socially and politically neutral. Someone or thing always loses. Costs, benefits, and power in water (re-)allocation are distributed unevenly and shift over time. While much has been said about the Colorado River Basin, in particular the increasing competition for scarcer water resources, there is much less attention to how policy solutions play out in practice, how they are received by those who would be impacted, and thus the impact of those proposals. How are vulnerabilities to proposed solutions distributed amongst water right holders? How do assumptions about priorities for state agencies conflict with rural water relationships?

To address wicked problems in a collaborative manner the social, spatial, cultural, and political dimensions of rural areas must be brought back in to recognize the experiences of injustice no matter who or how they are experienced. As hydrosocial analysis reminds us, flows of water are both natural and socially constructed at the same time. Water is construed with meaning and thus, discloses social hierarchies and the uneven distribution of harms.

From here I will engage in a discussion of my methodology and methods which framed data collection for this dissertation. Then three empirical chapters will unpack data collected from interviews, focus groups, and participant observation. Empirical chapters are organized thematically looking at participant discussions of three axes of justice: Distribution, recognition, and representation. I will close with a discussion of my findings and implications for water governance in Colorado.

CHAPTER 3: RESEARCH METHODS

"A groan burst from Poirot. 'What have I always told you? Everything must be taken into account. If the fact will not fit the theory - let the theory go'" (Christie 1997 [1920]).

"An hour goes by fast when you're talking about demand management" Trent, water district employee.

In this chapter I will explain and discuss the methodology that guided my research and the methods I used. I used a qualitative, grounded theory approach to answer my initial research questions, which ultimately gave way to new, more potent research questions. I will begin by discussing the origin of this research project. I will then engage in a discussion of my methodology to explain the rationale in my decision to use a qualitative methodology. My choice to take a grounded theory approach will also be discussed. Data collections methods included: semi-structured interviews, focus groups, participant observation, and document analysis. I also explore how I fit into the research context and challenges I encountered. Then I will discuss my data management and analysis methods. Clearly articulating the rationale behind my research methodology and choices, I can hopefully illuminate how the interactions between the researcher and researched shape the findings.

3.1 Research Beginnings

This research project began with conversations at water conferences. In 2017, I attended a water conference in Tucson at the University of Arizona put on by the Water Resources Research Center. At the conference I spoke with Taylor Hawes, the director of Colorado River projects for The Nature Conservancy. She mentioned that there were not enough people doing sociological research on water issues, particularly the Colorado River. Almost two years later I

spoke with Aaron Derwingson, who is the Water Projects Director for the Nature Conservancy and works for Taylor. He described the work going on around demand management and mentioned that no one was asking sociological questions to understand what irrigator reactions to demand management might be. They were interested in research that looked at why people would be interested in participating in demand management, as well as the barriers and opportunities in participation. The data resulting from this research project were conducted to add to the state-wide discussion on the feasibility of demand management once the DCP was signed. In January of 2019 we negotiated a contract and in February of 2019 I began work. The main research questions that guided this project were "What should a demand management program look like?", "Why would people be willing to participate and what would limit participation?" and "What do people think it will take to make a successful program?".

3.2 Methodology

3.2.1 Qualitative rationale

For this research project I was interested in understanding how people defined and understood demand management to first note and then make sense of their reactions. The answers to my research questions were best addressed using a qualitative methodology and research design. Denzin and Lincoln (2005:3) describe qualitative research as "a situated activity that locates the observer in the world… qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them." Some of the key components of qualitative research include conducting research in the setting most "natural" for participants, situating the researcher in the real world, and using exploratory approaches to allow for people's interpretations and meanings to emerge (Creswell 2007; Marshall and Rossman 2011).

Conducting research in the field rather than a lab or survey instrument allowed me, as the researcher, to see the participant in their "natural," lived setting. Since this research was conducted prior to the Covid-19 pandemic, I was able to conduct it in the field with face-to-face contact, focusing on the most "natural" setting for participants. For interviews, this was the location participants felt the most comfortable in, typically their homes. Focus groups were at a central location familiar to participants. Conducting research in the lived setting allowed for collecting data in the locations where participants either would be implementing demand management or were discussing it with their peers and community. Here it would be possible to gather rich data drawn from lived experience.

Qualitative research also emphasizes an exploratory approach so that the research can "acquire in-depth and intimate information about a smaller group of persons" to "learn about how and why people behave, think, and make meaning as they do" (Ambert et al. 1995:880). This was essential for my research because at the time there were no other research studies looking at the social and cultural aspects in potential participants' responses to demand management. Thus, it was unclear what the most insightful questions related to demand management would be in a survey or what might be reasonable responses. Additionally, the research questions necessitated a complex understanding from multiple perspectives and types of agricultural and irrigation experience (Rubin and Rubin 2012). I suspected that context and conditions mattered in terms of responses to demand management, but without enough information to build on, exploration was key.

While generalization of findings can be an important component of quantitative research, I was less interested in generalization than in understanding "the processes, meanings, and local contextual influences involved" in demand management and irrigation in rural Colorado

(Maxwell 2012:94). Situating this research project specifically on the West Slope and within the Colorado River Basin allowed me to explore irrigator responses to demand management in a way that other research design efforts would not. Woodhouse and Muller (2017) contended that water governance should avoid normative and universal prescriptions, explaining that trying to universalize lessons from one river basin to another can end up causing harm as local conditions matter when it comes to governance. In this vein and learning from my own research, I'd argue that it can perpetuate representational injustice to gloss over the various contextual and relational differences between and within river basins. Rather this study is grounded within the unique context, social and cultural and political dynamics of the Colorado River Basin. While there certainly may be similarities to other basins, the goal is not to develop a normative approach to addressing water disputes, but rather to explore and develop an understanding of this specific water dispute in this particular time and context.

Finally, qualitative approaches allow for a continuous, flexible, and adaptive project (Rubin and Rubin 2012). Continuity meant the research project was able to evolve as I gathered more information. Flexibility allowed for me to investigate new avenues of interest, integrate new information, or take advantage of opportunities as they came up. Adaptability meant that when the unexpected happened, I was able to respond to it without losing traction in the study.

3.2.2 Grounded theory

Grounded theory is a pragmatic approach to qualitative research as it not only values findings as emergent, but is itself a process of an "ongoing interpretation of meaning" (Suddaby 2006:633). It is ideal for "efforts to understand the process by which actors construct meaning out of intersubjective experience" (Suddaby 2006:634). Intersubjectivity focuses on how collective experiences shape people's understanding of the world. The cyclical process of

grounded theory allowed me to build, re-evaluate, and continually refine my understanding of the data in an iterative process as new information emerged (Charmaz 2006). The iterative process meant that I was continually comparing and analyzing data. The use of data to develop theory and verifying emerging conceptions against the data are fundamental aspects of grounded theory (Maxwell 2012). Creating space for theory to be emergent allowed participants' experiences to guide the direction of my research, especially when particular patterns and themes grew dominant across individual cases (Eisenhardt and Graebner 2007).

3.3 Research Design

From the beginning I wanted to engage in an iterative research process that reflected my values as a qualitative research and recognizing that my knowledge of what was useful and relevant was incomplete (Maxwell 2012). In this section, I discuss my site selection and participant selection and access. In each case, I explain why I made the decisions for each selection. IRB approval was given in April of 2019.

3.3.1 Site selection

This study is grounded in the unique physical, social, cultural, and political context of the West Slope of Colorado. Further, this research is formed by the West Slope's relationship within the broader Colorado River Basin and beyond that to all areas outside the basin that benefit from its water. Going into this research I made the assumption that there is a real world that has material and symbolic implications for how actors act (Maxwell 2012). Findings thus reflect the unique conditions and characteristics present in the West Slope as it relates to the rest of Colorado and the Colorado River Basin. The West Slope covers the western portion of the state of Colorado from the northern border with Wyoming, south along the Continental Divide in the Rocky Mountains to the border with New Mexico and the four corners region, then north along

the border with Utah. Just under a quarter of Colorado's irrigated agriculture is based in one of four subbasins of the Colorado River (Colorado Water Conservation Board 2022a). The four subbasins each have their own Roundtable and representative (director) to the CWCB.

The Yampa/White/Green subbasin sits in the northwestern part of the state and includes ranching and coal mining. Just to the south is the subbasin comprised of the main stem of the Colorado River, which originates further east than any other West Slope river. Multiple tributaries feed into the main stem within Colorado, including the Gunnison River. The Gunnison subbasin is nestled below the main stem and incorporates the Gunnison River and all its tributaries until it reaches the main stem in Grand Junction. Recognition that there are diverse forms of agriculture practiced in the Gunnison basin, it is often divided by referring to the upper and lower portions. The Southwestern Roundtable covers the southwestern portion of the state and combines multiple subbasins of the Colorado River. These include the San Juan, Dolores, Animas, and San Miguel Rivers.

The research questions and impetus – perceptions of demand management among West Slope irrigators – implies a specific site of the West Slope. This is primarily because any demand management program that focused on agricultural water conservation through conserved consumptive use would be implemented in this region. Recognizing the diverse types of agriculture and irrigation practices and conditions across the Western Slope it was important for me to delineate each subbasin as a research site. While there were still numerous diverse characteristics within each subbasin, I decided to consider each subbasin as its own research site for the purpose of identifying populations and sampling from across the Western Slope (Marshall and Rossman 2011).

3.3.2 Participant selection and access

As Maxwell (2012) notes, because the goal of qualitative, grounded theory research is not to generalize but understand, it is less important to focus on representative sampling than it is to identify groups and individuals most likely to be familiar with the phenomena in question. Thus, some researchers prefer to use the term "selection" over sampling. To address my research questions, I was particularly interested in selecting adults who irrigated on the Western Slope of Colorado, or who had knowledgeable and representative perspectives on demand management and how others perceived it. West Slope irrigators, as the prime water users in the Colorado River basin would be subject to a demand management program, should it come to fruition. Thus, their perspectives as those most likely to be impacted were essential to this study. Additionally, water managers, roundtable members, and water lawyers, as well as representatives of water districts, environmental groups or land trusts who working with irrigators were likely to have knowledgeable perspectives. Many people in this second group were also likely to have learned from or heard the perspectives of others. I was also particularly interested in hearing from irrigators who had participated in research projects attempting to create conserved consumptive use. These irrigators not only would have firsthand experience with what creating consumptive use savings would mean for their operations, but I also assumed they would have specific guidance on what a demand management program should look like, which was the initial thrust of my questions. Therefore, conceptually, I wanted to make sure that I selected participants from each of the four subbasins, including a variety of different types of irrigators.

I began selecting participants for this study utilizing "purposive sampling" (Palys 2008). Since I wanted to start with people who were knowledgeable about demand management and were likely to know and have access to other potential interviewees, this was the best strategy.

Starting interviews with these key informants allowed me to become more familiar with the research site, people, behaviors, and terminology as well as pilot my interview schedule and edit it (Marshall and Rossman 2011; Maxwell 2012). I approached these interviewees with a different frame than I would later participants, explaining that I was just starting this research project and looking to learn about demand management and irrigation and agriculture on the West Slope in general. I was able to conduct interviews with 10 people as part of this purposive selection. In four cases I interviewed these people again as events surrounding demand management developed or to verify things I was hearing. I made sure these 10 informants had knowledge that covered all four subbasins, regardless of where they were located. To gain access to this group I was connected to each person either by a main key informant or from my own connection from previously conducting research along the main stem in western Colorado. This main key informant served as a gatekeeper, smoothing the path to access some of my initial interviewees (Peek and Fothergill 2009). My previous experience conducting interviews with some of these people meant they were willing to speak to me again and had positive associations with our previous interview.

Once these initial interviews were complete I moved to a combination of purposive and snowball sampling (Biernacki and Waldorf 1981; Charmaz 2006). At the end of each interview with individuals in my initial sample I asked if they would recommend or connect me with others who they thought might have a thoughtful, different, or unique perspective. Most interviewees suggested a few names and, in some cases, contacted them on my behalf. During data collection I added "theoretical sampling" strategies as well, selecting participants due to their relevance on my theories as I was developing them (Strauss and Corbin 1990). I continued this process of theoretical, snowball, and purposive selection of participants until it was time to leave the field.

I also engaged in opportunistic and "spontaneous recruitment" on multiple occasions (Miles and Huberman 1994; Peek and Fothergill 2009). Before attending roundtable meetings in each basin, I emailed the chair of the roundtable, introduced myself and my research and requested a minute on their agenda to explain my research and solicit participants. Every chair granted permission, and some introduced me, explaining the importance and relevance of my research to the attendees. In each subbasin I was able to recruit new participants outside of snowball sampling channels. I was also able to take advantage of spontaneous meetings while visiting various water-related locations. In one instance, an employee of a water district ended up providing valuable insight and verify trustworthiness of my findings while I waited to meet with an interviewee. Spontaneous recruitment also occurred while visiting the homes of interviewees. There were a few cases in which a relative, friend, or community member joined the interview to share their thoughts and perceptions. The ability to remain flexible and adaptive, due to my research design, enabled me to incorporate these spontaneous occurrences.

Selection for focus groups differed slightly. The first focus group was in the Southwest Basin. There I coordinated with the Southwest Water Conservation District, who solicited participants on my behalf by sharing an informational email with their listserv as well as making announcements at their meetings and giving me time on their agenda to invite participants as well. The other focus group was in the Colorado River-main stem subbasin, and I coordinated with the Grand Valley Water Users Association (GVWUA). The GVWUA had participated in the System Conservation Pilot Program and in coordination with the engineering firm who handled verification and measurement, J-U-B Engineers, agreed to recruit a focus group made up of participants, a purposive selection. A total of five people participated in the Southwest focus group and nine irrigators plus two program managers participated in the Main Stem focus group.

In total I had 45 individual participants, with informal, non-structured conversations at water meetings and in other public settings with about 10 more. Of the 45 participants, all but one was white, seven were women, and 26 were irrigators. Two women were irrigators, while the rest worked in water related fields. Ages ranged between 30s to mid-80s. 10 participants were from the Southwest Basin, nine were based in the Gunnison Basin, 13 were based along the main stem, and nine were based in the Yampa/White/Green. Another four had perspectives on the overall basin and were not based in any region on the West Slope.

3.4 My Role as Researcher

This study is grounded in the belief that while there is a real world that I can seek to understand, my understanding is and always will be "incomplete and fallible, and unavoidably shaped by the particular assumptions and perspective that [I] bring to the research" (Maxwell 2012:103). This being the case, in this section I do my best to articulate my role as the "research instrument" (Adler and Adler 1987) in which I illuminate the assumptions and perspectives I brought to this study. In addition, I discuss how my presentation of self may have also influenced and shaped data collection.

My entree to this study built off of previous work in groundwater and agriculture in the San Luis Valley of south-central Colorado and with the Colorado Water Institute looking at agricultural water conservation (Taylor et al. 2019). This previous work shaped the assumptions I had when I entered the field – that collaborative work could be mutually beneficial for stakeholders, even when it meant changes to flows of water. When I began working on this study, I believed that the most appropriate research questions would be the ones that would solicit potential participant feedback so they could end up shaping demand management. This manner of outreach was not only useful, but, to my mind, laudable. I was quickly disabused of

this notion upon entering the field. I was entering with an agenda and the assumption that demand management was a foregone conclusion, without realizing it. Thankfully, participants had other goals and engaged thoughtfully with my questions, and I was able to remain open enough to see this and incorporate it into my theory. Since conducting this study and presenting the initial iteration of its findings in the late summer of 2019, I have interviewed and met several interviewees in other contexts, and all have been positive interactions. I interpret this as evidence that regardless of my initial mistake, I have rectified it and to the best of my ability interpreted participants' experiences and perceptions with trustworthiness.

In an interview (and a focus group) I and the person (or people) I am interviewing are gendered, raced, classed, and otherwise embodied (Warren 2011). As a white, middle class, young-looking female my experience was relatively benign, and I benefitted from this in generally positive ways. I experienced participants as relatively open to talking to me perhaps because I appear non-threatening in their eyes. I cannot verify this, but it is based on previous interviewing experiences and conversation with other qualitative interviewers. I also must note that I was visibly pregnant during interviews. This may have increased rapport with some participants as we were able to discuss my family and theirs with ease. It also may have further reduced any visual threat I could have posed. At the time I presented my initial findings to Colorado Water Congress I was almost eight months pregnant and was, two years later, referred to as "that pregnant lady who talked about demand management."

In several cases during data collection interviewees wished to question or interview me prior to agreeing to start the interview. My background living for many years in a rural, agricultural town often built rapport and my knowledge of water issues in Colorado was sometimes very beneficial. With each participant, I attempted to interpret their needs for the

conversation and engage in kind. Throughout data collection I came to empathize with each individual, liking everyone I met with. Participants would sometimes share information seemingly outside of the context of the interview, however, this often proved to be useful information in the eventual development of my theory. Some participants expressed racist or sexist opinions, which was not surprising to me as I had encountered this before. While this would cause me internal discomfort, I believe that participants can have xenophobic, racist, and sexist views *and also* be subjects of injustice, worthy of empathy. Jackson and Grusky (2018) helpfully demonstrate that these attitudes increase where experiences of loss and decline are present.

Finally, a note on timing. I began gathering data in March of 2019 and continued through September of 2019. My initial report was published in October of 2019 and at the end of October I gave birth. Shortly thereafter, the Covid-19 pandemic struck. As a new parent with multiple post-birth complications, I was barely ready to re-enter the world when it shut down. Without childcare for many months, finding the time and capacity to engage in re-visiting my data for the purpose of this dissertation was nearly impossible. It was not until the summer of 2021 that I began to re-engage with my data and then commit to seeing the dissertation through. The final dissertation is the product of multiple iterations and versions, where I tested the waters, then dove in, only to climb back out of the lake saying, “too cold” and moving on to try the next.

3.5 Data Collection

Here I describe my rationale, process, and experience with data collection. Since my research questions necessitated a qualitative approach, I began by gathering and reviewing relevant documents on demand management. I then used a combination of in-depth interviews, focus groups, and participant observation to gather data for this study.

3.5.1 Document analysis

Before entering the field, in February and March of 2019 I spent time gathering and reviewing relevant documents related to demand management and agricultural water conservation. This included news articles, press releases, and reports on agricultural water conservation. By familiarizing myself with key terms, topics, relevant people, and issues I was able to synthesize that information and use it inform the development of my interview questions (Reinharz and Davidman 1992). I drew news articles from a several West Slope news outlets and online news sources. Coyote Gulch, a blog run by John Orr (2022), serves as a clearinghouse for all Colorado state related news regarding water. This was a particularly helpful cite for locating and quickly accessing relevant news articles and documents. During data collection I continued amassing related news articles and press releases. Additionally, I received several documents related to roundtable meetings, reports and powerpoint slides compiled by an interviewee, and reports on water related research on the West Slope. Each of these documents was reviewed. Reviewing all documents allowed me to triangulate findings from interviews, participant observation, and focus groups (Neuman 2011).

3.5.2 Semi-structured interviews

Expounding on the merits of qualitative interviewing, Rubin and Rubin (2012:xv) state, "qualitative interviews let us see that which is not ordinarily on view and examine that which is often looked at but seldom seen." Interviews made up the bulk of data collected because they provide several benefits. First, they yield a high quantity of in-depth data relatively quickly. Second, interviews enable me to understand the meaning of daily activities and actions (Marshall and Rossman 2011). In a few circumstances, interviewees were able to draw a picture or walk me outside and show me what they were referring to, providing clarity and a deeper

understanding. Using probing and follow-up questions allowed me to dive deeper than a survey would have to get at these meanings. Furthermore, dialogic, responsive interviewing allowed me to pivot on the spot when an interviewee pushed back against a question. I probed both why the question troubled them and what meaning it had for them. This allowed me much deeper insight than if I had stuck to the interview schedule. Finally, interviewing can build trust over the course of the interview (Rubin and Rubin 2012). As I continued to demonstrate active listening, a sincere interest in what they were saying, and expressed empathy and sympathy using body language and minimal words, interviewees gained trust in me. Often, interviewees were willing to share controversial or usually private thoughts and responses to questions as the interview went on. In many cases conversations continued well past the end of the interview, with interviewees revealing further insights and reflections.

As an interviewer, my style was based on Rubin and Rubin's (2012) responsive interviewing model and several years of experience conducting interviews in this fashion. This allows the interviewer to guide the conversation while remaining sensitive to and flexible to pursue new avenues of inquiry. The interview protocol (see Appendix B) followed a scheduled semi-standardized form where similar questions were asked of all participants, but some were tailored to specific circumstances (Denzin 1989). Interviews were progressive, meaning I began with easier topics to build rapport and then moved into more sensitive areas involving demand management, water allocation and distribution, and personal impacts (Rubin and Rubin 2012). While interviews were semi-structured, they were also co-constructed as I began experiencing push-back from interviewees regarding the assumptions they perceived to exist within my questions. Instead of changing my interview questions, I began looking for this push-back and

engaging interviewees in a dialogic interview in which we co-constructed knowledge together, sometimes deviating entirely from the pre-set schedule (Rossman and Rallis 2003).

Interviews began at the end of March of 2019 and continued until the beginning of June. The bulk of interviews were conducted in May of 2019, when I spent the month in the field. Interviews were primarily one-on-one, but in two cases included two interviewees. Interviews took place at a location of the participant's choosing. Usually this was a home, work, or office setting. Due to the challenge of covering such a wide geographic area and needing to maximize my time in each subbasin, 10 initial interviews occurred over the phone. This enabled me to contact potential interviewees via snowball sampling prior to entering the field and arrange interviews in the same geographic location around the same time. Three interviews happened over the phone due to scheduling challenges. Interviews lasted on average one hour and eight minutes, with the shortest one just over a half an hour and the longest about two hours.

At the start, Interviewees were given an IRB-approved consent form, which they were asked to sign (see Appendix A). I then explained the purpose of the study and the types of questions I would be asking, finally explaining the confidentiality of the interviews. I also requested permission to use a recording device to assist in my note-taking and allowing me to focus on the interview to ask probing questions (Emerson, Fretz, and Shaw 2011). I further explained that if interviewees wished, the recorder could be turned off. Two interviewees made this request during their interviews and one interviewee requested that no demographic information be associated with any quotes I used from them to further protect their identity. Interviews began after interviewees were provided space to ask questions of me. During the interview I would take some notes to alert me to probe further, ask a different question, or keep

in mind an idea, concept, or point made by an interviewee. After each interview I wrote up a reflection on the interview and interviewee, which I kept with my notes (Emerson et al. 2011).

The push back I started to receive from interviewees and in focus groups was an essential part of my research as it helped reveal further insights. I did not pick up on this resistance to interview questions in my initial key informant interviews. However, it quickly became clear that what I intended for interviews was not always in line with the goals of my participants (Maxwell 2012). This tension uncovered an uncomfortable truth about my research: that it was designed to legitimate demand management, provide cover for including West Slope voices in the process of developing a demand management program. In short, as designed, it served to perpetuate the idea that demand management not only was already a foregone conclusion, but to access the parameters of what would be acceptable to irrigators. Once I recognized this, though I did not significantly change my interview protocol, I was now able to listen for and probe far more subtle indications of resistance to interview questions; hearing what participants wanted to say but were not being asked about. In short, without this methodology and method of responsive interviewing, I would not have been able to pinpoint some of the origins of ambivalence.

3.5.3 Focus groups

Several reasons led me to include focus groups in the initial research design and I intended to conduct at least one focus group in each of the subbasins of the West Slope. Focus groups are a low cost way to access a higher number of people than I could do in the same amount of time with an interview (Marshall and Rossman 2011). With limited time and a wide area to cover, this seemed like an ideal way to increase my selection of participants. Focus groups are also socially oriented and can be more relaxed than a one-on-one interview. Combined with participant observation they could yield interesting results unavailable in an

interview. Results of focus groups can have high face-validity as well, since multiple people participate and engage with each other's comments (Marshall and Rossman 2011). Further, focus groups can ease access for the researcher; I hoped it enable me to hear from people who might be hesitant to agree to a one-on-one interview (Peek and Fothergill 2009).

I ended up conducting two focus groups instead of four – each very different from the other. The first was coordinated with the SWCD, based in Durango. They shared my recruitment email with the Southwest Basin Roundtable listserv which reached people from around the Southwest Basin and generously offered free use of their conference room. I provided food and beverages. 10 people RSVP'd, but only five people participated. The other focus group was coordinated with the GVWUA and J-U-B Engineers. The focus group was mutually beneficial. The GVWUA and J-U-B were very interested to hear the reflections of their farmers, as well as their perceptions of a future demand management program and I would have had little success recruiting this group of farmers. But because the focus group was organized as part of the reflection on their program, participation was high with nine participants, (43% of the participants in their program) and two program managers (J-U-B Engineers, Inc. and Grand Valley Water Users Association 2019). Their program provided a space to meet and lunch for all participants.

I opened both focus groups by welcoming and thanking everyone for attending. I then reminded them of the purpose of the study and invited questions. Next, I introduced the IRB consent form, explained that I would treat everything said in the room as confidential and requested permission to use a recording device. To make sure all voices were recorded and as a redundancy in case of recording failure, I used two separate devices on either side of the tables to record the focus groups. Instead of using my interview protocol, I designed a list of open-ended,

broad questions to elicit discussion amongst participants. Since the make-up of each group was so different I designed two different lists of questions that would reflect the experiences of each group (see Appendices C and D).

Two main reasons led to my decision to not pursue arranging focus groups in the other two basins. First, I received feedback that due to the timing of the research project, which unfortunately coincided with the beginning of irrigation season, bringing busy irrigators in for a meeting would be difficult. Second, while the Southwest Basin Roundtable listserv reached a large number of irrigators, without additional prompting they were not likely to show up. The Southwest focus group included a couple members who were not irrigators, nor were they familiar with demand management. Though I was able to adapt the focus group to provide valuable and insightful data, I determined that I needed to engage in more purposive and theoretical sampling, rather than allowing for self-selection from a broad pool of water interests. Being more conscious in my recruitment and without time to cultivate relationships with organizations willing to recruit interviewees for me meant my efforts were better spent on thoughtful selection for one-on-one interviews.

3.5.4 Participant observation

Participant observation served three purposes in my data collection. First, it assisted me in developing a greater understanding of terminology, local knowledge, and relevant individuals. Second, I was able to observe different things than could be revealed in interviews and focus groups alone (Marshall and Rossman 2011). It was at roundtable meetings that I witnessed interactions between irrigators and state agency representatives, which helped me to understand dynamics referenced in interviews. In many cases I was able to pick up on interviewees' references to events because I had attended the meeting as well. It also provided me questions to

ask or events to reference in interviews, prompting conversations or rapport that might not have occurred otherwise. Finally, participant observation served as a "yardstick," against which to measure the data I was gathering through interviews and focus groups, providing verification and triangulation (Becker and Geer 1957).

Participant observation began in April of 2019 and continued through September. I attended at least one roundtable meetings in the Yampa/White/Green, Gunnison, and Colorado River-main stem, and two in the Southwest. In addition, I attended related meetings, conferences, and CWCB director meetings that were open to the public. Alongside interviews and focus groups, my participation in observation was largely peripheral. There were a few instances where I took more of an active role, participating in the function of the farm or ranch, riding along on errands, or socializing with participants (Adler and Adler 1987). Attending meetings enabled me to make new contacts and gave people the opportunity to meet me prior to agreeing to an interview, which helped establish rapport and build trust (Rubin and Rubin 2012; Spradley 1980). After each participant observation session I would record or write up field notes describing my experience and observations of what occurred, as well as things to follow up on or questions I had (Emerson et al. 2011). Collecting data across such a large geographic area meant lots of driving and many times I would record my field notes and transcribe them later.

3.6 Data Management and Analysis

3.6.1 Data storage and transcription

Recordings from interviews and focus groups were downloaded onto my password protected computer as soon as possible post interview. Since I was on the road for long periods of time, this sometimes meant several hours later. Each participant was given a code name and their consent forms were stored in a lock box without a reference to code names. Transcription

occurred in May and June of 2019. I created a google spreadsheet with a coded name for each audio file to keep track of transcription progress. Four individuals were hired to transcribe interviews and they were granted access to the file to track their progress. Once a transcription was complete, I reviewed the document to ensure quality.

3.6.2 Data analysis

Data collection and analysis go hand-in-hand (Marshall and Rossman 2011). Marshall and Rossman (2011:207) define data analysis as "a search for general statements about relationships and underlying themes; it explores and describes and builds grounded theory". Data analysis was not bound by a time or phase of the research but began the moment this study launched and was a continual, active process. I engaged in data analysis every time I made a decision regarding what and how to probe responses, who to select, choosing how to proceed, and interpreting meaning in data collected. Maxwell (2012) describes how most accounts of data analysis in qualitative research focus on the role of categorization in data manipulation, implying that coding itself is data analysis. Data analysis was a continual process of reflection, identifying connection and categories amongst data, memoing, and using coding to help build meaning and nuance.

Analysis of data started taking shape in the field when I recognized that the outcome of this research was not going to answer my original research questions the way I had thought. Rather, new and potent themes emerged and I wrestled with what I was hearing and seeing as I collected data. Namely, that to ask what a demand management program should look like was jumping to a conclusion many participants were not ready to make. To ask what a program should look like inherently assumed *there should be a program to begin with.* Interviews and focus groups revealed that this line of questioning pushed participants to engage in legitimation

of a process for developing demand management. Many had other goals. I would leave each interview, focus group, and meeting with a little bit more of an understanding for how to proceed. This on-the-fly analysis was aided by continual memo writing and conversation with a trusted key informant (Charmaz 2006). Engaging in initial data analysis in this manner enabled me to test new theories as I continued collecting data. This in turn refined my theory.

I aimed for theoretical sufficiency due to time and financial constraints, recognizing that I both had enough data to articulate categories and themes and I could never know all there was to know or speak to each person I had been told to (Dey 1999 cited in Marshall and Rossman 2011). Once data collection reached sufficiency, I began coding my data. By the time I started initial coding I already developed some ideas about how to organize the data, themes that had emerged, and what pieces were related to each other. Thus, my initial coding quickly fed into a more focus coding where I synthesized my data, beginning to see the story emerge (Charmaz 2006). I used the processes of axial coding to develop major categories and theoretical coding to sharpen the edges of my developing theory; again reducing, synthesizing, and reassembling data (Charmaz 2006). While I began using qualitative coding software Quirkos for coding ("Quirkos" 2022), I soon shifted to coding using Microsoft Word documents as I not only found this more intuitive for my process, but it also allowed me to comment and connect data exemplars in a more holistic way, preserving context (Maxwell 2012). However, this was not the end of my data analysis journey.

The first product of this study was a report, commissioned by The Nature Conservancy on my findings (MacIlroy 2019). This report would hopefully be used to inform statewide workgroup discussions on demand management feasibility. I presented this report, written for a general audience, at the summer session of Colorado Water Congress in a panel with a

representative of the Lower Basin and a CWCB representative, we were followed by the Executive Director of the CWCB. In many ways presenting the report in this manner was another step in data analysis as well as a built-in mechanism for triangulation, establishing credibility and trustworthiness (Marshall and Rossman 2011; Maxwell 2012). I received thoughtful feedback on my presentation, and when the report was finally published in October of 2019, I received more feedback. This is a version of "member checking," in which findings are shared with participants to check if it "got it right" (Marshall and Rossman 2011:220). In this case, I shared it with a room of 200+ water people on the West Slope and anyone who accessed the report. Importantly, almost all feedback received expressed that the report and presentation revealed "truths" about the West Slope that people intuitively knew, but had never seen put to paper, nor could they have articulated fully themselves, lending credibility to my interpretation (Maxwell 2012). Feedback was incorporated into my analysis for the next stage of this study: the development of the dissertation.

Data analysis for the dissertation began in 2021 and repeated many of the previous data analysis processes as I worked to find the literature most apropos to articulating the themes I heard from my participants. This process of locating the literature and situating my dissertation in the literature after gathering data is not at all unusual in grounded theory (Charmaz 2006). In fact, (Charmaz 2006:168–69 emphasis in original) describes using the literature as a way to "anchor" the reader and to show how my theory "*refines, extend, challenges* or *supersedes* extant concepts." I re-immersed myself in the data, re-coded it, memoed extensively and even wrote multiple rounds of potential chapters as I worked to find the best way to maintain and convey the truth (little "t") of what participants had revealed to me. I finally found its literature home when I came across Carolan's (2020) "The Rural Problem: Justice in the Countryside," where he argues

that rural residents were often overlooked in justice studies. But rural residents nonetheless experience injustices; their articulations not aligning the normative language of injustice, but experiences nevertheless real.

The process of writing this dissertation is part of the final stage of data analysis, as it is an interpretive act (Marshall and Rossman 2011). By choosing what to include, summarizing words and concepts, I gave meaning to the data I collected. The final form of this dissertation began to take shape in March 2022 and was concluded in October 2022.

CHAPTER 4: DISTRIBUTION AND MALDISTRIBUTION

"It needs to be fair from all standpoints: east, west, north, south." Rick, Rancher

Les, farmer: "Make it be equal."
Matthew, farmer: "Equal or fair?"
Les: "Fair!"

Distributive injustice focuses on the question of "who gets what" and water justice asks this question specifically focusing on water allocation, distribution, and power to shape it (Fraser et al. 2004:375; Joy et al. 2014). While questions of economic distribution are usually foregrounded in justice studies, water raises distinct issues because of its power to shape and be shaped by human interactions, and to change form and value in its relations. These factors make water justice complicated as water is many things at once: a necessity for life, a resource that is a primary factor in agricultural production, and a commodity that can be bought and sold. Thus, exploring water justice simultaneously poses questions concerning economic distribution, but also raises complex questions about need and about the power to shape distribution of a resource in continual flux. To paraphrase Fraser (2005:73), maldistribution occurs when people are unable to be full participants with peers due to structures that limit their access to, and use of, water resources necessary to maintain their livelihoods and way of life. This re-articulation of Fraser's definition draws attention to the fact that water justice concerns not only questions about equity, but also questions about sufficiency, about how distributive decisions are made, and about who gets to make these decisions and why.

Insights drawn from hydrosocial analyses underscore the importance of unpacking how social and political structures shape water distribution and how water influences those structures. In this chapter, I draw on interviews, focus groups, and participant observation with stakeholders

in Colorado to illuminate how they understand the distribution of water and power currently in the Colorado River Basin and how these understandings shape their perceptions of and support for demand management.

First, participants overwhelmingly felt that there were significant issues of what they called "fairness," but what I will argue fits into the paradigm of distributional injustice. Injustice was perceived by interviewees in the apportionment of Colorado River water and in the Compact as well as between the Upper and Lower Basins. This disproportionality is perceived as unfair because participants contend that they "follow the rules" and should not have to sacrifice water for a demand management program when others in the Lower Basin are taking unfair and unearned benefits.

Second, participants felt an unevenness in the distribution of power in relation to water. This power imbalance shapes how participants responded to demand management as many described the feeling of having a "target" on their backs which led to suspicion for this water conservation project. They saw this unevenness in distribution between those with more power and money to shape water policy, rural and urban areas, and within their own subbasins. Though many pointed out that rural areas held most of the water rights and a significant portion of senior water rights, this did little to comfort them when looking at the cost differential between agricultural water and that same water in an urban setting. In addition, participants in all of the subbasins sensed a power imbalance within the subbasins that would target their water use either because of their location, type of agriculture practiced, or because of characteristics that made them more vulnerable. While this led some participants to focus on their resistance to demand management, others emphasized the need for any program to evenly distribute the harms and benefits of a program.

Finally, participants described an unevenness in the distribution of harm in water conservation projects, like the proposed demand management scenarios. All participants spoke about the vulnerability of rural communities when water re-distribution occurs and most referenced Crowley County as an object lesson of what can happen. Crowley County is situated in southeastern Colorado and was, for many years, a booming agricultural hub. Beginning the 1960s and 70s, Front Range municipal water entities began buying up water rights from irrigators to meet the demands of a growing population. This shifted water flows from the irrigated land that once supported more than 57,000 acres of agricultural production to Front Range cities such as Colorado Springs and Aurora and contributed to the land becoming barren. This, combined with a severe economic downturn in local crop production, created a domino effect in which the communities of Crowley County shrank drastically in size and caused other issues. Because rural areas, like Crowley County, are smaller in population, have less diversity in terms of economic input, and are more dependent on the fewer businesses in their communities, they are more vulnerable to exponential harm when water is moved out of the community.

A core argument of this chapter is not that the participants in this study are objectively experiencing injustice, but rather that they *strongly perceive* there is a maldistribution of water and power to shape water policy. From the onset, it is important to note, however, that participants did not use the term 'injustice' to describe their experience but instead opted for terms such as such as "fairness," "parity," "proportionality," and "equity" as well as narratives illustrating these ideas are used instead. The perception of "unfairness" in distribution of water and power strongly shapes how participants interpret and respond to the potential demand management program, but because of their language choice the perception of injustice may be overlooked.

4.1 The Colorado River Compact, the Lower Basin, and Coordinated Operations

Across the Western Slope, regardless of basin, irrigators felt strongly, that some of the impetus to create a demand management program was unfair. Trent, who works for a water district described this feeling, "there are those, including on our board, who feel that it's a misplaced effort that this is not our problem… this is a Lower Basin problem, this is a structural problem, this is overuse by somebody else." Sam, a fruit grower in the Gunnison Basin, agrees. "This whole thing, the demand management program, is driven by overuse in the Lower Basin, so come on guys… They simply have to address their structural deficit and stop using more water than what they're entitled to." At one of the focus groups, a farmer brought this up, saying,

> Joe: I think all the users on the river need to – how do I say this – clean up their own house. Because some of the Lower Basin downstream states are like some drunk uncle you're trying to help get dry. He doesn't want to be dry! He's not even trying. You take him to all the AA meetings, the help groups, but he's still going to sneak off to the liquor store! How many people got an uncle like that?
>
> Chorus: (Laughter, hands go up around the table)
>
> Joe: Well, it's true!
>
> Terry: It is true!

The general feeling is that there is a considerable issue of maldistribution of water due to overuse by the Lower Basin and that this is perhaps driving a push for demand management.

To understand how the Lower Basin came to overdraw their allotment and why it is perceived as "unfair", it is necessary to understand both the historical trajectory of the "Law of the River" – the body of compacts, treaties, legal decisions, and laws that govern the distribution and allocation of the waters of the Colorado River – and the shifting social arrangements of water governance. Not only does the historical arc of water governance in the Basin ground discussions of water distribution and conservation today, it also reveals how perceptions of what is "fair" and "unfair" came about. The hydrosocial cycle of water in the Basin is interpreted

through an analysis of what the rules say, but also *how* the rules are interpreted and enacted (or not) – which is not the same.

4.1.1 Governance of the Colorado River

Water governance in the Basin was traditionally set at the state level with involvement from both public and private entities, such as state entities, conservation, and irrigation districts as well as some involvement from the federal government for large scale projects, such as the Bureau of Reclamation. In 1922 the seven Colorado River Basin states negotiated a method of sharing the river's water called the Colorado River Compact. In the Compact, the Doctrine of Prior Appropriation – meaning, the first to use water had the first right in times of shortage – would be the method used to settle priority. The 1922 treaty allocates 7.5-million-acre-feet (MAF) of water to each basin. This number was based on what was thought, at the time, to be the average flow: over 17 MAF a year. While subsequent analysis has revealed this number was, perhaps, overly optimistic even then, it was the number used to obtain agreement on the Compact (Kuhn and Fleck 2019). In recognition of the variable flows of the river, the Upper Basin has an obligation to not deplete the flow of the river below 75 MAF over a 10-year period as measured at Lee's Ferry. Thus, the 1922 treaty effectively means that the Upper Basin must deliver 75 million over a 10-year average and *then can use what is left, up to their allocation* of 7.5 MAF. Concern that California, which was developing faster, would claim most of the senior water rights (based on Prior Appropriation) drove the other Colorado River Basin states to try to limit them by establishing this split in the Basin. This would allow the Upper Basin states to continue developing their water resources without risk that California would claim all the best water rights.

Unfortunately, historical trends show that average flows in the river are actually much lower. The 20th century average flow at Lee's Ferry was 15.2 MAF and since 2000 the average flow at Lee's Ferry has been 12.4 MAF, a 19% decrease over the 20th century average (Kuhn and Fleck 2019; Wheeler et al. 2022). The decrease in flows is partially due to a lack of knowledge of the larger variation in flows, but also to a continued period of drought, warmer temperatures (changing snow to rain), and earlier runoff, all due in significant part to climate change (Udall and Overpeck 2017). Despite the overestimation that served as the basis for negotiations, the Upper Basin is still responsible for delivering 75 MAF over 10 years. Meaning, after water deliveries at Lee's Ferry, the Upper Basin, on average, only can use 4.5 MAF of their allotted 7.5 MAF; not their full allotment. Though the Upper Basin has never developed enough to use the entire allotment – average Upper Basin use between 2000-2020 was 3.7 MAF with 0.7 MAF of reservoir evaporation (Wheeler et al. 2022) – this is a sticking point for many interviewees because it is perceived as unfair.

Since the 1922 treaty a plethora of agreements, laws, and treaties (including an international treaty with Mexico) were established to address issues and conditions not included in the original compact. In recognition of the variable flows of the river and to gain support for building storage to help meet their non-depletion obligation to the Lower Basin, the Upper Basin agreed in 1948 to apportion their share of the river's flows by percentage. After a flat 50,000 AF for the sliver of northern Arizona located in the Upper Basin, the flows are apportioned as follows: Colorado receives 51.75% (which on average equates to about 2.5 MAF), Utah 23%, Wyoming 14%, New Mexico 11.25% (Water Education Colorado 2021). The 1948 agreement also created the Upper Colorado River Commission with one representative from each state and a federal commissioner, who chairs the commission. This commission is responsible for

representing the Upper Basin, as a collective, and individual states in negotiations with the Lower Basin and the Federal Government.

In 1956 Congress authorized the Colorado River Storage Project Act. This act allowed construction to begin on a series of dams, reservoirs, power generation stations, and other conservation[9] projects that enabled the Upper Basin to meet their non-depletion obligation to the Lower Basin and develop their existing water supplies. The main components of the Storage Project are the reservoirs: Flaming Gorge, Aspinall Unit, Navajo, and Lake Powell, which sits just above Lee's Ferry. The significance of Lake Powell is that it serves as a large "savings account" for the system, creating flexibility and security for the Upper Basin in their delivery obligations. In recent years as water storage decreased, there have been calls to fill Lake Mead first by draining Lake Powell and using it only for surplus storage (Glen Canyon Institute 2018). Notwithstanding the technical challenges of draining Powell, significant ecological, social, and political barriers to this idea exist as well (Schmidt 2016).

4.1.2 Changing conditions and the 'Structural Deficit'

By the early 2000s drought, likely influenced by climate change, was becoming a more common presence in the Basin and municipalities, like Los Angeles, Phoenix, and Las Vegas were all growing at rapid rates (Lowry 2010; Udall and Overpeck 2017). California, as the most developed state, was drawing around 5.2 MAF and was forced, for the first time in 2003, to cut back to its original allotment of 4.4 MAF because Nevada and Arizona were now able to take their full allotment (Pincetl and Katz 2007). A growing recognition that traditional ways of governing the basin, with a strong focus on states' rights and a lack of coordination at the basin

[9] The term "conservation" is used in two primary ways in this dissertation. The first definition is to hold back, or preserve, a quantity of water for storage. The second definition refers to reducing use of water in one area, to make it available for use in another.

level, were not enough to address problems. This realization, combined with the threats of climate change and drought, led to new experimentation in water governance. Focusing on addressing current shortage and preparing for future shortages, new types of coordination and cooperation between basins and states developed. A key example of this new level of coordination in water governance is the 2007 "Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Mead and Lake Powell." This example foreshadows attempts at future levels of increased coordination to address shortage in the Basin.

The interim guidelines established rules for operating the reservoirs at low water conditions as well as reduced deliveries to Lower Basin states during drought. To compensate for the overuse of the Lower Basin and prevent stoppage of hydropower generation at Hoover Dam in Lake Mead, the coordination of operations in action allowed for releases of water from Lake Powell. The effect of this "equalization" was the, some would argue significant, lowering of Lake Powell, which also creates hydroelectric power at Glen Canyon Dam. "The crisis has been exacerbated by what we politely call 'the Structural Deficit,' that is, the lower division states over-using their allocation," explains Philip, an experienced water lawyer, based on the West Slope, who has been involved in Colorado River Basin policy and litigation for several decades. "Some of [the Lower Basin entities] have, in recent years, admitted that. The Bureau of Reclamation will tell you straight up that's what's happening… They make it very clear there is structural deficit in the Lower Basin for a number of reasons."

4.1.3 Demand management enters

Many interviewees, rightly or wrongly, conjectured that there would not be a conversation about a demand management program if the Lower Basin had not overused their water allocation, which then led to lowering Lake Powell to prop up Lake Mead. Bob, who is a

farmer in southwestern Colorado, represents the feelings of several other interviewees when he contends that equalization is “the only thing” keeping Lake Mead operating. This leads many participants to surmise that a demand management program is more about refilling Powell than protecting the Upper Basin. Bob continued, “as long as Mead is going down, Powell is going down.” As Bob’s comment further illustrates, participants expressed skepticism that the water conserved would remain in Lake Powell if policies like equalization were allowed to continue or the Lower Basin did not cut back their water use further. Concern over the purpose of demand management and the safety of any savings created made the idea of demand management suspect.

Following the Lower Basin over-use interpretation as an impetus for demand management, interviewees see an unfair situation in which they are being asked to sacrifice to make up for the benefits the Lower Basin took advantage of. This feels deeply unfair and unjust. Pat, an irrigator on the West Slope who did not wish to be identified beyond their profession, spoke for many other interviewees when explaining how they view the problem and their frustration,

> This crisis is almost a straw man because the Lower Basin's been over-consuming, way over-consuming. That's resulted in the big two reservoirs being really low and the threat of losing power. Well, I hate to be that territorial, but it's not our fault with how we've been sending 9 million plus down… We could re-negotiate those interim guidelines sooner rather than later that are dictating us continuing to pull Lake Powell down, cause that's the Upper Basin storage pool.
>
> If we hadn't had those interim guidelines, Lake Powell would have 10 million more or acre feet in it now than it does. We wouldn't be worried about losing power in Powell. But [the Lower Basin] would've had to cut back way before they finally started putting together their own DCP. They would have done that 15 years ago if they'd have seen their lake going low. But they didn't, they just said, “what we'll do is borrow some more from Powell.”

Referring to the crisis as a “straw man,” Pat identifies why many on the West Slope are suspicious of demand management. It feels like they are being asked to pay for the Lower

Basin's misuse. Furthermore, the lingering sting is that the Lower Basin did not see what they were doing because equalization of the pools meant they had no real time feedback. To many interviewees, the Lower Basin was draining their bank account but did not fully realize because money just kept rolling in – the Upper Basin inadvertently bankrolled their ignorance.

Pat touches on another key point, the sense that the distribution of power is unequal between the Upper and Lower Basin with California's interests outweighing everyone else. The perception is that this power imbalance means the issue of overuse is not, and will not be, addressed. This makes demand management feel even more frustrating for some interviewees. However, according to Philip, the water lawyer, the narrative entirely blaming the Lower Basin for equalization is not completely fair,

> The algorithms and the measuring of those equalization releases are suspect at this point. The experts are saying that we, [the Upper Basin], got out-maneuvered in those areas… I'm not a hydrologist or an engineer, but I've talked to several of them, and the concept then was that 8.23 MAF10 is the desired annual release, but there would be an equal number of years of less and more. But, so far, we've only had one less, and all the rest are more and that's not the way it was supposed to work. So, there is something wrong with the program that causes us to release 9 million [from Lake Powell] every single year and in 2011 it was almost 13 million. So, that's where there is a problem.

Though the compact divided the waters of the Basin up based on faulty numbers and the Lower Basin has been over-using, according to Philip, it is the equalization algorithms that are problematic in releasing water from Lake Powell.

Philip, continued, suggesting that the drawdown of Powell was probably not malicious on anyone's part,

[10] While the compact stipulates 75 MAF over a 10-year-running-average, negotiations since the compact have set the number at 8.23 MAF to incorporate evaporative losses from reservoirs and the Upper Basin's portion of water for Mexico, who is entitled to a total of 1.5 MAF/year. This number, 8.23 MAF, is disputed by some interviewees who contend that these extra portions, for a variety of reasons, should not be included in the Upper Basin's obligation.

> there are significant issues that the upper division states have noticed are not working as they were intended, by the upper division states anyway. Maybe I shouldn't say that we were outmaneuvered [pause] maybe, everybody misunderstood. It's not fair to say that the lower division people outsmarted us, because I don't know that. Maybe everybody had an honest misunderstanding about how it all would work. Hydrology is difficult to model into the future…

Philip's experience means he is aware of the nuance of the situation and even if the Lower Basin overused and Lake Powell was drawn down, the Upper Basin still must address their use and prepare for future shortage.

> [Delivering our obligation] is our problem, because of the compact. We have an absolute legal obligation to that compact. Now, whether the things [the Lower Basin has] done have undermined the compact requirements or warped them to their benefit under the '07 guidelines, that's a legitimate question.

As Philip observes, there is room where the Upper Basin did lose out, not due to maliciousness, but the problems that happen implementing any project and the Lower Basin capitalized on them. Skip, a flyfishing guide in the Southwest, echoed the sentiments of many other interviewees by demanding that regardless, "we should be getting credit for all that extra water we put down in Mead and Powell that they use that they shouldn't have been using."

Even if they feel the Lower Basin took advantage of the situation, some interviewees were hopeful about the Lower Basin's DCP. Peter, who is engaged in Tribal water issues and the Southwest Basin roundtable is one of those. "The big gain for the Upper Basin," he felt,

> is actually the Lower Basin DCP. Because they are going to start banking water at certain elevations in Lake Mead and that will reduce the amount of equalization water that we have to release out of Powell. So the big gain for the Upper Basin is the Lower Basin following through on their DCP because for the first time in history they are limiting their use.

A few other interviewees who were more engaged with state level water policy felt similarly. The Lower Basin's DCP was one of the bigger wins for the Upper Basin because of the cuts they agreed to. However, most participants were unaware of this or felt that it was irrelevant because the Lower Basin should have already been reducing their use and took advantage of the situation

until they no longer could get away with it. Bob, like some others, feels resentful that "they're getting ready to demand manage us. We may be the first ones to take a consumptive use cut if they put in demand management next year. And the Lower Basin is taking nothing out. They couldn't have known this. I meant it was obviously great hydrology this year." Bob's comment references not only his resentment about how the situation feels unjust, but also the influence year-to-year hydrology has on water releases and use. Several interviewees mentioned how one year of good hydrology is enough to slow momentum in cutting back on use. There were many times people at meetings or in informal conversation mentioned how the best thing for advancing reductions in water use is a bad year, hydrologically, as crisis can often create a "window of opportunity" for previously unpopular ideas (Fleck and Castle 2022:1).

4.1.4 Conclusion

Past Lower Basin overuse, problematic algorithms stemming from the 2007 Coordinated Operations guidelines, and a lack of Lower Basin cutbacks meant that many participants looked at a proposal for Upper Basin demand management and felt a deep sense of injustice in how water was apportioned and the lack of accountability for overuse. Regardless as to intent, the Lower Basin benefited from years of extra water. The "structural deficit" is a key point of contention as many participants felt they were being asked to pay for it with demand management. Feelings of injustice in water distribution are thus directed at the proposed demand management program despite the protection it would afford them in the case of the Upper Basin not being able to meet its delivery obligation to the Lower Basin. The premise of this line of reasoning becomes suspect to participants as well, considering that Powell would not be as low as it is without Lower Basin overuse. Some of the antipathy towards demand management also could result from the "bad" luck of a "good" year of snowpack and runoff, as it delayed Lower

Basin cutbacks of water delivery. The optics were not helpful in setting the stage for demand management.

Water flows downhill from the Upper Basin and this defining feature means without storage the Upper Basin cannot hold onto it. Once it flows out of Lake Powell, it is gone and with it the protection of a solid savings account. In a similar way, power too, flows downhill away from the Upper Basin. However, the nuance of what constitutes power when it comes to water and how it is distributed between and within the basins also matters in how participants perceive demand management.

4.2 Water and Power are Unevenly Distributed and Relational

Another facet of water as a unique natural resource is how it influences how power is held, constituted, and distributed. Hydrosocial analysis reveals that power and water are relational, which affects how power is manifest. This matters when it comes to distributional justice because people and entities that can hold water rights are not the same. For example, the same senior water right in an irrigator's hand looks and acts differently when in the hands of a large municipal water provider. Though the right is the same, the distribution of power differs and the magnitude of the impact of this change is not distributed equally. Participants interpreted the distribution of power relating to agricultural water rights as unjust by articulating their sense of a "target on ag." Demand management, for many interviewees, was thus perceived as an example of this target in a few different ways. First, some discussed the target as the West Slope and agriculture in general as having less power and money relative to cities and the overall basin. Second, participants acknowledged and recognized that agricultural water was lower priced than water transferred to cities, something which they both benefit from and fear. Third, some participants described a feeling that targets were directed at some basins more than others within

the Western Slope because of the rights, location, or type of agriculture practiced there. These perceptions of a "target on ag" illustrate how they view the distribution of power, and thus shape how participants respond to demand management and potentially other water conservation efforts.

4.2.1 A target on West Slope agriculture

Greg, who has participated in a pilot conservation project previously, and many other interviewees figure when push comes to shove,

> the powerful people are going to set aside Colorado law, water law and we might get hurt from it. But we're gonna be disappointed and angry that the rich people and the powerful people don't play by the rules, because we played by the rules.

The perception amongst most interviewees was that as irrigators and a state "we" have played by the rules by sending more than "our" fair share of water down to Lake Powell and still aren't receiving what "we" believe is "our" full amount of entitlement of water based on the compact[11]. This interpretation makes demand management sting even more and leads to suspicion about how any future program will protect their interests without unintended consequences.

There is a profound sense of injustice at the prospect and Bob, whose comments represent those with a more confrontational approach, stated "It's a water war,"

> there's a shortage of water. It's politics: you're competing for a scarce resource. So when there's a shortage everybody wants their neighbor to be the one to take the fall. And this is happening at a multi-tier level… and generally, the person with the least power, political influence, money, and lawyers tends to be where [the fall] ends up.

[11] The key point in this statement is that people *interpret* the compact as an equal division in which the Upper Basin is not receiving its fair share. Whereas, according to water lawyer Philip, the compact actual states – and has been enforced as well – that the Upper Basin gets what *is leftover up to 7.5 MAF after* the lower basin receives their full allotment.

Philip, the water lawyer, also uses a war metaphor, describing the lack of power held, in general by the Western Slope, compared to the Front Range and Lower Basin municipalities. "We're outgunned in every battlefield," he splays his hands out in front of him as a gesture indicating he has no weapons to fight with, "so we have to be clever." This sense of being under attack, with "a target on their backs" means participants are suspicious of any program that explicitly will move water – even temporarily – away from agriculture.

Concern about disproportionality also extends to the relationship between municipal water providers and rural communities. Philip articulates what many participants believe when he described why irrigators feel there is a target on their backs.

> The worry on the West Slope is that the cost of water in Western Slope agricultural communities, if it is to be purchased in a voluntary program, is far less, ten or twenty times less, than it would be on the Front Range…. So, that creates a market focused on West Slope agriculture. If it's a free market voluntary program, that's going to be the place where people are looking. So, are we going to be able to build in some protections that will make it equitable? Which is one benefit of a mandatory program. You just say, everybody across the board has to chip in 10 percent of their [consumptive use], no compensation, it's your cost of doing business in Colorado. That's equitable; everybody chips in the same amount, a fraction, the same fraction… I think that's the greatest worry of everybody in the West Slope – that we don't have the political horsepower to prevent being the target.

Philip articulates the fact that when it comes to finding future water supplies for growing urban areas or consumptive use savings, agriculture is generally the most affordable place to get it. This is because conserved consumptive use water on the West Slope will cost much less, if users are compensated, than compensating Front Range providers for their conserved water. It's the same water, but the moment it leaves the Colorado River Basin through a trans-mountain diversion tunnel, not only has it completely left the basin (and therefore can be used to extinction, i.e., no issues with return flows or third-party impacts), it also increases in price.

Water from the same source does not have the same monetary value or meaning, depending on its location. Irrigators on the West Slope are keenly aware of this and benefit from their more affordable water supply. But they also fear how vulnerable it makes them. The fact of water price differentials, combined with the power differential participants sense between urban and rural areas, contributes to their concern that urban growth and its increasing impingement on their lives cannot be stopped – feeding a sense of despair for their future.

4.2.2 The uneven distribution of water rights and power

Similarly, water and water rights are not distributed evenly across the West Slope. Water and water rights are different depending on the history of European settlement, number of people claiming rights, and time when water right adjudication occurred. There are some subbasins and regions within subbasins where irrigators feel their rights will not protect them because of a lack of adjudication, or their rights are more junior than others on the West Slope. The Yampa, White, Green basin, for example, was settled by people of European descent, and water rights developed, later compared to much of the West Slope. In fact, at the time of these interviews, the Division Engineer had just sent out announcements requiring irrigators to add measurement gauges to some of their diversion structures, which had not previously been required. Chris, a rancher in the Yampa, White, Green basin, believed, "if it came to a strict priority curtailment[12], we would be curtailed probably proportionally bigger than most other basins."

"Realistically, if everything fails, the, the law of the river is going to kick in," observed Robert the water manager, sitting at his desk. For some interviewees, this is not a daunting prospect as they believe the seniority of their water rights (pre-1922 compact) will protect them

[12] Under 'curtailment' the Upper Basin states would be required to cut back on water use to meet their obligations to the Lower Basin. It is commonly assumed that curtailment will impact post-1922 compact water rights, which include most municipal water rights (Water Education Colorado 2021)

if the law of the river kicks in. “The mentality over here,” explains a farmer in the lower Gunnison Basin,

> is if there is a compact call, many of us have pretty high priority water, pre-1922 or at least soon afterwards. We feel pretty safe, we probably aren’t, but we feel safe… We sort of believe it’s true because we believe that Colorado water law and the system of prior appropriation was given by God and it can never be changed or altered. So, I think there’s less fear around here of a compact call then there is in Denver.

In general, many of the water rights on the West Slope are senior to many of the rights held by Front Range municipalities, so if there is a call from the Lower Basin for more water, the water will come from the junior rights first. For participants with pre-1922 compact water rights there was a general sense of safety. However, for those with more tenuous or junior rights, there was not a sense of safety, but vulnerability as Chris described above. The rules governing water management and apportionment should protect those with good water rights. Thus, the rules could be a haven, relied on to protect you in the future. When you’re outgunned, the rules might make good weapons, but their protection was not distributed evenly across the West Slope.

Doug left a lucrative career in construction to ranch in the same basin as Chris. “I work twice as many hours and I make a heck of a lot less than I used to,” he said. “But I enjoy my job a lot more than I used to.” Doug explained how he felt his younger rights and lack of experience with water battles was an example of the exposure their region has when it comes to their water security,

> the ag community has got a lot to learn on their management… the days of just free water are pretty much done with. We better start paying attention to what we’re doing. We're so far behind on the Eastern Slope. I mean, they went through this years ago and went into all those battles and it's just happening over here, and everybody thinks, oh, “it's a new rule”. But it really isn’t, a lot of that stuff isn't, you know, it's been on the books for a long, long time. We just didn't know about it.

Both Chris and Doug illustrate the vulnerability they feel with their water rights and experience in engaging in water battles when compared to Front Range municipalities. While some of this is driven by people, some of the impending doom is also driven by the hydrology of the basin.

According to Philip, the water lawyer, Chris and Doug's concern about the vulnerability of the water rights in their area is well-placed. Philip explains that if there is administration in some form under the way the law is currently written within the priority system, "some basins have far senior rights to others." There's "sensitivity to that," he observes. "If the curtailment, for example, to satisfy the 1948 compact requirements were, let's say, down to 1940 or 1950, the Yampa would be done[13]. But they wouldn't even start in Gunnison." James, who manages a water district in an area of generally senior water rights, elucidates the tension of unfairness this creates among subbasins,

> we have this struggle that we need to work out amongst the four West Slope Basins, about what is parity, what is fair, what is appropriate? Do you go strictly by administration? In which case folks [who hold very senior priority dates on their water rights] aren't interested in giving up their water for junior water rights. Justifiably so.

As Philip and James describe, the rules of water allocation protect some more than others on the West Slope. Those with more senior rights like Greg and people in James' district are not particularly concerned about their rights being called out if there is a shortage, in which case the rules as they are currently written and interpreted, protect them. However, areas with more junior rights or that are less experienced in documenting use, flows, or even adjudicating feel the target more distinctly on their agricultural water use.

[13] Here, Philip is referring to curtailment based on the Doctrine of Prior Appropriation, in which the seniority of water rights is determined by the date of adjudication. If curtailment occurs, it will work backwards, cutting water deliveries to the most junior, i.e., recent, water rights first. Philip is suggesting that if curtailment were to work backwards to water rights adjudicated in the 1940s and 1950s in order to satisfy water deliveries to the Lower Basin, then irrigators in the Yampa/Green/White Basin would not be receiving much, if any, water until the obligation was satisfied.

Not only are participants concerned about fairness between subbasins and how that influences the distribution of harms and benefits, but they are also concerned about fairness between types of irrigators. Jennifer lives and ranches in the Gunnison Basin with her family. Her day job puts her in contact with many other ranchers, farmers, and irrigators. “I don't want to see a plan that targets certain areas over others for trying to achieve [demand management] really quickly… I'm very leery.” She explained that even within the Gunnison Basin there are several different types of agricultural practiced. The Upper Gunnison is predominantly ranching, and land is irrigated for growing forage crops. Due to the geography of the area, many of the forage fields have been consistently irrigated for decades and several interviewees questioned whether fallowing was practical and possible. The Lower Gunnison and the Uncompahgre Valley, for instance, are largely row crops, which many participants contend is easier than forage crops to fallow in a conserved consumptive use program.

Among interviewees who participated in pilot programs to test out rotational fallowing to produce conserved consumptive use water, some feared that their participation sent a signal. David, a 3rd generation farmer in his early 30s, reflected on the tension in his choice to participate in that program when he wondered if his and his family’s decision to participate would make them “the sacrificial lamb” for “giving up” their water and demonstrating creating CCU was possible. Terry, who participated in the same program, felt that their position in Western Colorado, the size of their diversion, and relatively easier time fallowing than other areas meant they were more vulnerable to demand management and outside interests. “That’s what we are [saying] about that target,” he explained, “it’s quilted on the back of our shirts.” Yet, a few other participants felt slightly different – they wanted to make sure the benefits of a program were evenly distributed. “I’m afraid of the richer getting richer and the smaller guys not

even getting a chance to participate," explained Jennifer, indicating she had heard this from several others. Among this group, the concern was that the program, especially if it was a "one-size-fits-all" would go for the "low hanging fruit" or larger landowners, who might be able to create conserved consumptive use. If there were going to be benefits, this group wanted to make sure everyone had the opportunity to access them.

Thus, a key question that concerns water users about the distribution of harms and benefits. As Abby put it: "how are we spreading out these kinds of programs in a way that doesn't impact the economies of one region in disproportionately?" Losing a significant portion of agriculture in a region like the Yampa, if a strict appropriation is used or developing a program that predominantly benefits some users over others, could have disproportionate ripple effects across the region. Participants expressed concern for decisions about what parity and fairness look like between and within the basins in the event of a potential demand management program or future water-cut sharing agreement, which will continue to shape the balance of power between entities.

Almost all participants felt strongly that the distribution of responsibility for creating conserved consumptive use should be proportional between East and West slopes. Rick, a longtime cattle rancher and multi-generational Coloradoan explained why he felt this way,

> If the West Slope is a participant, we shouldn't be the total answer because half of the post compact consumptive use is water going through the tunnels [to the Front Range]. So, it's totally consumptive to the Colorado River. Therefore, Front Range entities that are transmountain diverting should bear half of the demand management requirement. I think there is a recognition though that they have to participate.

Transmountain diversions (TMDs) are flows of water that travel through pipes and tunnels from the Colorado River Basin (the basin of origin) to another basin to supplement their native flows. What Rick was highlighting was the fact that when water is used to irrigate, no matter how

efficient a watering method is, there are still return flows, or water that is not used consumptively. This water goes into the ground and over time (which varies, depending on the hydrologic conditions) returns to the river system where it can be used again by junior right holders. However, when water leaves the basin of origin it is totally "consumed", meaning there are no return flows to the basin of origin, and thus water cannot be used again in the basin of origin after it is diverted. In this case, TMD water can be used to extinction. This means there is no obligation to junior users, which creates possibilities for manufacturing and industry users like oil and gas who use the water for purposes that should not or do not create return flows, like hydraulic fracturing. As Rick argued, post-1922 compact consumptive use water is separated from the Colorado River Basin and does not have return flows, unlike irrigation. Therefore, the beneficiaries of that water on the Front Range should take on a proportionate responsibility in meeting the requirements of a demand management program.

"Fairness", "proportionality", "parity", and "equity" were all words used to describe the same basic sentiment that the burden of demand management needed to be justly distributed between the East and West slopes. Some interviewees, though skeptical of demand management, felt that a proportional division of responsibility could do a lot for East Slope/West Slope relations. Jennifer illustrated this while recognizing the fact of pricing differential between urban and rural water, the vulnerability that creates for West Slope agriculture, and the longstanding tension of rural-urban water transfers that exists for West Slopers when she said,

> I think fairness is a big piece of [demand management] and that would address the West Slope versus East Slope conundrum. It's not just that we would then have buy-in and it would feel more fair, but the East Slope-West Slope contingencies have always struggled with that balance. So, anything we can do to help that out, I feel like it's good.

Jennifer saw an opportunity for common ground as she subtly acknowledged that some of the suspicion of demand management on the West Slope could be ameliorated by Front Range

municipal water providers committing to a fair apportionment of responsibility. Acknowledging and addressing historical imbalances through agreeing to a proportional share of the burden for demand management is part of what is required to reduce West Slope ambivalence towards demand management.

4.2.3 Conclusion

When it comes to water and power, they are relational. Power depends on who holds the water rights, their location, the seniority of their right, and type of irrigation and agriculture. Participants perceived a "target quilted on their backs", which makes them leery of demand management because they are fearful of the maldistribution of harms and benefits that could come with it. Their vulnerability stems, in part, from how participants interpret the distribution of power between the East and West slopes and within the Western Slope. They see the West Slope as overall possessing less power to shape policy and distrust that those with more resources won't change water law to suit their needs. Furthermore, the more affordable agricultural water and less ability to resist makes them more vulnerable. Between subbasins, many participants articulated a sense that they were the ones who would be targeted for demand management because of their agricultural practices or their location. Thus, most participants articulated a version of Abby's question: how do we make demand management equitable? If demand management comes to pass, it would impact their livelihoods, way of life, and communities while others would be unaffected and even benefit. A fair distribution of harms and benefits was viewed as essential.

4.3 Fear of Disproportionate Rural Harm

One of the most oft mentioned and biggest concerns in response to a proposed shift of water from agriculture to urban uses is the impact it will have on local rural communities. While

some research has found that, if done thoughtfully in lease-fallow agreements rather than land sales, these impacts can be mitigated (Taylor et al. 2019). But concern is still well-founded as permanent water sales rarely are reinvested in local economies and can have cascading effects on communities (Charney and Woddard 1990; Howe and Goemans 2003; Howe et al. 1990; Metzger 1988). This connects with the broad literature examining the unique conditions that shape natural resource dependent communities. As Malin, Ryder, and Lyra (2019:109) explain, "patterns of inequity develop around sites of extraction" which are shaped by spatial isolation and boom and bust dynamics (Brown and Swanson 2003; Cortese and Jones 1977; England and Albrecht 1984; Mayer and Malin 2018), impacting resilience (Brown and Schafft 2011) and well-being (Stedman, Parkins, and Beckley 2004).

One of the most poignant examples of what can go wrong in an agriculture-to-urban water transfer is the example of Crowley County, which serve as a cautionary tale for almost every single interviewee referenced. By drawing on the story of Crowley County, participants demonstrated their fear of the worst-case scenario for what could happen to their communities. The uneven distribution of power felt by interviewees was heavily influenced by what happened to that county when municipal water providers began purchasing agricultural land and separating the water rights so water could flow to their cities. A key contention of many interviewees was that the distribution of harm, even in small water transfers, could have disproportionate and significant ripple effects throughout rural communities because they have a smaller economy and fewer economic drivers than urban areas. In addition, some participants felt resentment towards the state, who they perceived as having either facilitated transfers in the past or at the very least revealed their preference for urban water use over rural use. Rural areas are felt by participants to be harmed to a greater extent when water transfers occur.

4.3.1 The "horror story" of Crowley County

The "horror story," as David, a 3rd generation farmer in his 30s put it, of Crowley County is that it revealed the lopsided power distribution between cities and rural communities, which, in turn, can result in the unjust and disproportionate impacts rural areas experience when water is shifted from agriculture through "buy-and-dry". Buy-and-dry is the practice of purchasing and then separating water rights from the land it historically irrigated. The water is then put to another use, typically municipal or industrial. It also showed the worst-case scenario of what can happen– the long-term collapse – for an agricultural community when a key resource is withdrawn. In interviews, almost every single participant invoked the name "Crowley County" at least once to point out what could be coming with water re-distribution like demand management; the impacts, unanticipated and unintended, that can unravel a region. By referencing Crowley County, participants were trying to figure out how to move in the opposite direction; pointing out the interdependencies and vulnerabilities of rural communities to establish how they should act in response to demand management and what is fair.

Given its salience to participants, it is important to contextualize its history. Water development began in earnest in Crowley County in the early 1900s during the aftermath of the gold rush. Water developers built several canals, intending to irrigate over a million acres with water diverted from the Arkansas River and, ironically, supplemented by transmountain diversions from the Colorado River Basin. This temporarily turned Crowley County into a lush and abundant area for farming. However, by the 1960s Crowley County was struggling with drought and an economic downturn. Residents began looking to leave, which opened the door for the first large-scale transfer of irrigation water to a municipality, Pueblo, in 1955 (Sanchez 2014).

That first transfer paved the way for developers like the Crowley Land and Development Company (CLADCO), who began intentionally amassing land and the associated water rights to legally separate the water rights so they could be sold to municipalities. In 1974, CLADCO, using the Water Court process, legally separated the water from the land and began selling water. This massive shift, coupled an increasingly sagging local environment and economic downturns in commodity prices, led more farmers to sell their canal water rights, but keep the land, resulting in "buy-and-dry". By the end of the 1980s the vast majority of water rights and water were in the hands of Colorado Springs, Aurora, and Pueblo (Sanchez 2014).

Without supplemental irrigation to re-establish native grasses the de-watered land did not return to native grass plains. Instead, fields became choked with weeds and winds churned up great clouds of dust shrouding the sky without thick vegetation to hold the soil down. Additionally, without the tax base of agricultural operations, purchasing of supplies and equipment, coupled with a reduction in population base, businesses shuttered, and Crowley County's population shrank from 5,222 in 1950 to 2,988 in 1980 (U.S. Census Bureau 2022a). In the wake of the collapse of the agricultural economy, the county welcomed two prisons. Currently prisoners make up almost 50% of the total population 5,922 residents of the county (U.S. Census Bureau 2022b). Leaning in, David said, "Nobody wants that to happen to their community."

As the story of Crowley County illustrates, the material and social ripple effects of buy-and-dry can be significant, even catastrophic, to a community (Kindquist 1996; Metzger 1988; Weber 1990). Without remediation, formerly irrigated land does not return to native vegetation, but can lead to dust storms and weeds without established plants holding soil down (Sanchez 2014; Sutherland and Knapp 1988; Western Governors Association 2012). Materially, there may

no longer be sufficient water to maintain canal levels for other users making farming virtually impossible. With fewer people drawing from a ditch there can be increased responsibilities for ditch maintenance amongst remaining irrigators. There may be a significant decrease in quality of life as changes to the community, environment, and landscape can make it a less inviting place to live (MacIlroy 2014). The loss of community members and impacts to the secondary agricultural economy as purchasing drops and businesses close, means people who stay are left with a shell of their former home. With a loss of some of the farming and ranching, rural communities also lose residents, business, children in schools, and a tax-base (Kindquist 1996). These effects decrease quality of life for the remaining members and drive more people out, further eroding the community. Thinking about this chain of events in Crowley County, Clint, an ivy-league educated farmer in his 60s, summarizes these impacts, "[the people of the West Slope] don't want to lose their lifestyle. They don't want to lose the culture, don't want to lose their community."

Crowley County figured prominently in respondents' resignation and sense of foreboding that the process of shifting water for demand management is a "slippery slope." Carrie, a West Slope native who works in the energy industry and is a longtime attendee and member of her local basin roundtable, vocalizes this thought,

> The overarching question is we have used what we use for over 100 years, there is not an easy way to use less. So, are you asking us to use less on a truly temporary basis or are you asking us to change the make-up of agriculture on the west slope of Colorado on a more or less permanent basis? And I think it is a slippery slope question with that.

The fear Carrie articulates is that a temporary shift in water now might launch a chain of reactions that end up permanently shifting water use away from agriculture and into the more powerful hands of municipalities, with impacts similar Crowley County. The "slippery slope" argument that any changes to water use, even temporary ones, could lead to a permanent loss of

water permeates conversations about demand management. Additionally, the state's role in facilitating demand management becomes suspect when discussing how long a "temporary" conservation of water for demand management would last. Carrie signals this suspicion by adding "truly" to the concept of temporary and juxtaposing it against a definition of permanent in which demand management continues on and off, indefinitely.

A few interviewees, who were strongly opposed to a potential demand management program, drew on Crowley County to highlight a perceived complicity of the state with municipalities. Bob, for instance, observed, "We know what's [happened] on the eastern plains. I mean… you can't put people into cattle cars and haul them off. You basically have to wipe out the jobs and then all these towns dry up and go away." For Bob, the "grab" for water in the Crowley County experience revealed what he sensed as a larger plan to actively create the exponential effects that cause communities to deteriorate. Further, Bob viewed the state as complicit in allowing it, facilitating change of use for the water, and valuing growing urban populations over maintaining healthy rural communities. While this perspective was not universal among interviewees, it was also not unique to him.

Another irrigator, Pat, elucidated this connection between disproportionate rural loss, demand management, and the role of the state in facilitating the process:

> I understand why [the state is] doing [demand management]. Chances are they're not going to be putting any water into it unless they buy it from us. And, if you want to get to the sociological answer, we don't want to get buy-and-dry. We don't want to be Crowley County. [The state is] responding, "Well this is voluntary, temporary and compensated. How could you object to that?" … One of the rationales for doing it is "if you don't do it, we're going to just come and buy-and-dry it, and that's worse." So, they're saying "well this is the kinder and gentler way."

Here, Pat references the fact that most water rights are owned and used by agriculture (around ninety-one percent in Colorado, thus it makes sense that the state would turn to agriculture for

meeting the needs of a demand management program. The farmer describes their sense that when the state hears pushback related to fears of "buy-and-dry" the state's response is to make the potential program seem more 'reasonable', but behind that, there remains a threat that if they don't cooperate, the state will facilitate whatever it thinks is in the best interest of most of the state, preferencing large population centers. Referencing Crowley County, in this example, outlines the role of the state in facilitating the permanent purchasing and drying up of agricultural land. The fear people are responding to is that state power overrules free choice and the state does not have their back, so consequently they will be forced to participate. Without safeguards for rural communities, the impacts were seen to be potentially devastating.

Many interviewees felt that the ripple effects of a potential demand management program to the local economy were important considerations. It matters to maintaining their way of life, even if the economic output was minimal to the state. James, a water district manager, expressed the concern of many other interviewees when describing how he sees the impacts of a potential demand management program or any significant water conservation project on the broader economy of the region,

> It's going to be another difficult situation for the supporting community and the economy… so, the fertilizer people or the fuel people or the tractor people. The equipment sits there for a year, you know? [So] the supporting agricultural industry is going to be affected as well.

These impacts ricochet around communities with compounding effects of the businesses that support and supply those industries and have the potential to impact other parts of the economy not directly dependent on it. Thus, interviewees are concerned that if agriculture is significantly impacted, they will see the repercussions of that loss echoed in the ancillary businesses in their community.

"Once they start taking water and we have people sitting around their farmhouses in a sea of dust, collecting welfare checks, that takes out the secondary ag economy," explained Bob. "The environmentally inclined have taken out all the extraction industries as nearly as we can tell. I mean they're not going to wipe [ag] out overnight. But once it starts, it's a slippery slope… if they take out ag and we lose all the rest, we got no economy." Bob notes the reverberating impacts he fears will happen if agriculture is significantly reduced. But his interpretation of his experience gave him a place to direct his blame, towards environmentalists for promoting and the government for enacting regulations that "get rid" of natural resource extraction and cause the collapse of his community. Ashwood (2018) explains it is logical for people who experience this kind of seemingly dispassionate loss to place blame on the state and federal government. Though also facilitating beneficial programs, they are interpreted as facilitating the destruction of these industries historically and currently through enacting regulations and allowing water transfers – the ripple effects and unintended consequences of redirecting water for other uses.

Drawing on the Crowley County narrative provided insight into participants' ambivalence toward demand management. For instance, Clint, a farmer, stated, "I am not against exploring [demand management], but I want my community to say we're not going to participate. I don't want my farm in it. No way. When you participate, you just prime yourself to be the one that's going to get buyed and dried." Terry, a farmer in his 40s who farms in the main stem region, also felt conflicted when he said,

> I'm still against [demand management] … [but] we don't want to see this valley dry up and if [demand management is] a way to keep this valley from drying up like they've done in other areas, I'd rather see a third of the ground not farmed than the whole valley… necessary evil in my mind.

Both irrigators were drawing from the story of Crowley County to demonstrate their openness and opposition to demand management – either in the belief that participation will lead to the

eventual destruction of the agricultural economy in the region or as a lesson to justify active participation that resists that same destruction through building a more diverse economic base.

Doug, the one-time construction foreman now rancher, summed up the crux of the equity question on distribution of harms and benefits this way, "there's 24 shareholders on the X ditch and if you did away with the X ditch, she'd lose 24 people, 24 ranchers in that community." While 24 ranchers are not many people compared to urban populations, it is the entirety of Doug's ditch and a significant portion of his regional community, tax base, and neighborhood. While, percentagewise, 24 people is barely a drop in the bucket compared to the population of Denver and other Front Range municipalities, these 24 people and their families form an integral part of Doug's local community. The loss of one ranching family by order of magnitude is equivalent to losing a few thousand people in Denver[14]. With a population of three-quarters of a million, this would barely register in Denver, but in Doug's town, it could be devastating.

4.3.2 Conclusion

Fear, suspicion, and opposition towards demand management is not only informed by concerns about water access; it's also shaped by concerns about unequal distribution of consequences, a sense of less power, and a perceived preference among government officials for urban areas in shaping water policy. Crowley County was a visceral and real reminder for participants of the consequences of permanent water transfers as it resulted in the disintegration of a community. The history of buy-and-dry in Colorado influenced participant responses of ambivalence about demand management, particularly because of the disproportionate risk and harm experienced by rural communities and the recognition that rural areas often have less financial, social, and political capital than municipalities and developers. While the overt

[14] Denver's population in 2020 was 738,594 (U.S. Census Bureau 2022b).

practice of "buy-and-dry" has lessened in Colorado, participants are still wary of it happening again, in covert, and government sanctioned ways. This too fed their ambivalence toward demand management.

4.4 Conclusion

Distributional water justice asks who gets what when it comes to the allocation and distribution of water. Hydrosocial investigations attune to questions of how power is constituted and reshaped in these relations. Though no participant used the normative term of "injustice", they nonetheless perceived that they had and could experience disproportionate harms when it came to the "who gets what" of water allocation and distribution. In this chapter, I showed how participants communicated this perception by using terms like "unfair," "proportional," and "parity" and articulated three main ways they had witnessed and might experience distributive injustice. First, through the stipulations of the Colorado River Compact, Lower Basin overuse of water, and then the coordinated operations of Lakes Powell and Mead, which drew down the Upper Basin storage account. Second, in the distribution and constitution of power between urban and rural areas as well as between and within the subbasins of the Western Slope. Third, and finally, in the disproportional impacts felt by rural areas who are felt to be more vulnerable to shifts in water distribution due to their smaller size and economy.

Regardless of whether participants objectively experienced distributional injustice, by and large they perceived it. This influenced how they responded to the possibility of demand management. In this way, perception shapes reality as it has concrete implications for the implementation and success of creating and sustaining conserved consumptive use for a compact security pool. Creating effective and long-term water policy to address the wicked challenges that exist in the Colorado River Basin requires engagement from these stakeholders. However,

injustice is not only concerned with distribution, as participants touched on throughout their comments, being recognized for experiencing these injustices also matters in how participants engage with demand management. Recognizing their very real concerns about what equity looks like in the distribution of harms and benefits to their livelihoods and communities is thus essential in finding paths forward in creating conserved consumptive use.

CHAPTER 5: RECOGNITION AND MISRECOGNITION

"There are farmers and ranchers who hear the idea of demand management and hear that there's a proposal for them not to produce. That's something that's just antithetical to who they are. They're producers. They produce." Trent

"We're trying to protect the existing way of life on the western slope." Sam

Like racism, urban prejudice toward rural people, places, and spaces often operates at subtle levels" (Carolan 2020:37).

Recognition justice asks "whether, and how, individuals and communities are recognized" (Schlosberg 2007:15)? Focusing largely on the cultural, this aspect of justice examines how greater value and respect is given to some cultural practices, rights, and identities over others (Fraser 2000; Schlosberg 2004). Importantly, "misrecognition," wrote Fraser (2005:74), "cannot be reduced to a secondary effect of maldistribution… nor conversely, can maldistribution be reduced to an epiphenomenal expression of misrecognition…." It is a distinct and separate component of justice, yet it is still related to the unjust distribution of resources as they are "tied together in political and social processes" (Schlosberg 2004:528).

Carolan (2020) convincingly argues many people living in rural areas feel the sting of being misrecognized. The things that make up their way of life, such as "hobbies, habits, dress, speech styles, and practices – are often undervalued relative to those linked to a more cosmopolitan lifestyle" (Carolan 2020:37). Misrecognition of rural communities, livelihoods, and culture can be interpreted as a dismissal of the way of life they value. The feeling of misrecognition can feed resistance, especially when combined with a sense of loss and decline, which is inferred to be a group-wide experience and characterized as unjust (Jackson and Grusky

2018). This has implications for how people respond to ideas like demand management, that are seen as imposed from an outside, urban, state government agency.

This chapter showcases three spaces where rural agricultural irrigators felt mis- or not recognized, misunderstood, or desired recognition: 1) in how experiences of loss and decline have marked their recent years; 2) in the unique meaning of and relationship with water and irrigating for those whose livelihoods are dependent on it; 3) in the challenges in the production of food, the added values of agriculture, and what a sacrifice of water would mean to their identities and potentially livelihoods. Many interviewees articulated how they felt demand management could potentially be the next loss in a string of losses – all this culminating in the general decline of agriculture. A sense of disconnection from urban areas, who could not fully appreciate their predicament due to the differences in their relationships with water fed ambivalence toward demand management. This was because participants were afraid that the distribution of harms would be unevenly impacting them, and even more so, their struggles would neither be seen, nor appreciated.

5.1 Loss and Decline

Many interviewees perceived a pervasive rural decline. “I think agriculture is dying in western Colorado,” Greg declared baldly. While very few people said what Greg, a third generation West Slope farmer in his early 50s, did explicitly, the fear of a decline was present in the way people communicated their experience of loss. Participants spoke often of experiences of loss and decline that have shifted rural economic bases and destabilized lives. Participants perceived loss and decline in a few different ways. First, the string of losses was seen to stem from “rural restructuring” or changes in natural resource development and extraction such as lumber and coal, industries that used to support the economic base of their communities (Nelson

2001). This also includes the increase in exurban housing development has also changed the atmosphere of some rural communities, driving up land prices. Second, the decline in agriculture, felt by some participants, was interpreted through a loss of traditional practices that both improved resiliency and were better for the environment. For older producers, the lack of young people going into farming and ranching further indicated the decline of the industry. All this perceived evidence of loss and decline fed a pervasive sense among participants that water was the next thing to be taken.

5.1.1 Rural restructuring

Bob, a West Slope native, moved away to pursue his career but returned home to help his dad who turned to farming after the logging industry collapsed. He echoed the sentiments of several other interviewees when he described the changes he had seen in resource extraction industries during his lifetime,

> In my county, we've got oil, gas, mining, carbon dioxide, we had lumber; that's what my dad used to do. He was in lumber. It's wiped out. My dad… tried to save it. There was a big mill right down river here on the [X river] ... But I mean, our economy's traditionally been extraction and ag. [Environmentalists] are pushing to try to get rid of oil and gas, obviously, climate change and all this stuff that's happening with the regulations and the new legislature… But lumber is pretty much gone.

Rural economies in the Inter-Mountain West have traditionally, as Bob highlights, been tied to extraction, agriculture, but are increasingly shifting, unevenly, to recreation and tourism industries (Nelson 2001; Winkler et al. 2007). But participants felt that because they are often dependent on only a couple of industries as economic drivers, the shifts in those industries are felt differently than they are in larger urban areas, often magnifying perceptions of greater loss and impact. Bob, like many others interviewed, directed his blame for these losses towards environmentalists and government entities for enacting regulation that, he believed, would "get

rid" of extraction and cause the economic and social collapse of his community. To him, efforts by these entities were strong evidence of the lack of understanding they have for rural areas and their needs. Any loss of water for irrigation, as a main resource base, is part of this trajectory.

The region where Greg lives has seen another shift besides the loss of extraction industries, as farmland was sold off for housing developments, contributing to a loss in his way of life. He described the location of his farm and explained, "the little area [X] where I live in my lifetime has changed from an agricultural area to housing and hobby farms with a little bit of agricultural left." Abby, who works in water management planning on the West Slope, describes this phenomenon in another region,

> That whole area [X], historically was really big ranches and we're starting to see a lot of subdivisions go in, especially a lot of ranchettes and so the landscape is changing based upon wealth moving in… People are getting older, and they don't want to run the ranch anymore and the kids have gone to Denver, so there's nobody to run it. So, it just makes sense to subdivide it, sell it off, take your money, and go do something else. That trend is coming toward us.

The pattern that Greg and Abby described, of agricultural land being sold and developed into subdivisions or ranchettes, which are rural, low-density parcels of land, usually between 35 and 70 acres (Harner and Benz 2013), is happening increasingly on the West Slope as ex-urbanites look to enjoy the perks of the countryside, an idealized "ranch life," and farmers and ranchers age and look to cash in their 401k – water rights. This "rural restructuring" (Nelson 2001) resulted in the "transformation of the rural landscape" where rural in-migration and human-land relationships have shifted the economic and socio-cultural base of many rural communities, "disrupt[ing] individual and collective identities" (Ooi, Laing, and Mair 2015:59). Additionally, a few interviewees mentioned that with the demand for housing developments, land prices went up, pushing them and anyone who wished to enter the agricultural profession out of the market; thus, further eroding their way of life as it changes the make-up of their community.

Abby continued, describing the impacts not only to water management and the environment, but also to the character of the community,

> There is a water management and river health impact in terms of how it changes the timing of when people need water and if they historically are diverting in May and June and July, but now suddenly, they're going to be diverting also in the fall it's going to change the timing of when people are using their water. And then it also changes the landscape… as the landscape starts to get chopped up into smaller lots what does that mean for the river corridor? Should we be thinking about trying to protect the river corridor from some of that, so we don't end up like Vail where there are townhomes right along the river for the entire stretch?

While irrigation for agriculture has indisputably changed water flows and timing, it has also been doing so for over 100 years, creating riparian areas and altered timing runoff. These human-nature interactions will get shifted again as land use changes and if conservation programs, even temporary ones, are enacted. Thus, the questions Abby raises are about the losing the character of a place as well as legal concerns about third-party impacts, and ecosystem impacts such as supporting wetlands and wildlife habitat.

While Abby highlights many of the impacts to land-use changes raised by other interviewees, for Greg and others experiencing this firsthand, it is personal,

> The whole ambiance of the place has changed. And, I don't say that, I mean, for me, it's sad, but I'm just one little guy and no longer the majority there. So, the people who moved in there and bought and built houses, they're happy and the farmers who sold 'em their land and made big money, I guess they're happy too, so [shrugs].

Greg's body language while talking involved several shrugs and hand gestures of "what are you going to do?", which implied his resignation towards the inevitability of change, but also a deep sense of sadness at the loss. The shift of agricultural land to developments in some communities caused real emotional pain, which Greg illustrated, as ties to previous iterations of their community die off through change.

5.1.2 Loss of patterns of action: Impacts to identity, resilience, and sense of control

Irrigating with water creates patterns, shaping the landscape and the communities that live within them. These patterns come to define how people interpret themselves and their experience. Some of these patterns become intertwined with what it means to be a rancher or a farmer, the repetition of actions or way of life that create an identity and an understanding of how things should be. Interviewees spoke with warmth about the culture and lifestyles, the patterns of agriculture on the Western Slope. Within this umbrella were stories about what it means to be a farmer or rancher, and wealth of skill and knowledge these occupations require which gets passed on from one generation to the next, one neighbor to another. These narratives also spoke of the loss of knowledge as patterns change. They illustrate the intangible value of culture and identity, a difficult thing to quantify, and the ease with which they can be lost as a side-effect of changes in water management.

An example of this decline in the social fabric of ranching and farming communities', shared predominantly by older interviewees, is the increasing average age of most farmers and ranchers and the implications for knowledge transference. For instance, when I asked him what the big concerns in his region were, the first thing Robert, a water district manager who has been involved in state-wide water conversations for multiple decades, said was, "Most of the decision makers look a lot like me, they are in their 60s. The younger generations – I'm not saying there aren't any – but there is not a lot of new blood coming into the farm community in a big way, and that's a concern." This concern was echoed by other interviewees who saw practices and knowledge get lost between generations.

Duane, who walked with a pronounced limp said of himself, "I've been a cowboy most of my life," "Now, I can't hardly ride… I'm a 'has been,' but it's better to be a 'has been' than a

‘never was,’” he chuckled. He went on to describe the impacts of having a significantly aging population of farmers and ranchers and a lack of young people entering the profession.

> Duane: … we've lost our infrastructure.
>
> Kelsea: For farming and ranching?
>
> Duane: [nodding] There's isn’t too much money on it. The young people don't want it to be their life, I guess. Some of them consider it a life of misery and the others that are in it really just love it and enjoy it. I’m one of the enjoyers.

Later in the conversation, Duane described what he sees as the impacts of the loss of that “infrastructure” when talking about fires in California, “There isn’t hardly any beef or sheep or goat. So, what they've replaced it with is big fire; big fire burns up whole towns. They forgot all the things our grandfathers knew: if you graze off, you get rid of all the fuel that burns really fast… They forgot all the principles.” When there is a lack of people entering a profession, the years of knowledge and experience that become practices and patterns, for better and worse, are not passed on. Duane witnessed this loss of infrastructure over the course of his lifetime as the population of farmers and ranchers has radically decreased and looks to continue decreasing.

Similarly, an exchange in one of the listening sessions revealed how knowledge around water management and farming can be lost through improvements to water delivery systems that shift patterns and practices, even within one generation. Tim, a farmer in his 50s, starts by describing how he thinks a potential demand management program could work, where he would be able to establish a crop before cutting off irrigation for the season, but the exchange quickly became something else – a conversation about a loss of resiliency through efficiency improvements.

> Tim: What if you had something like, you could grow wheat, irrigate it like you normally do, quit irrigating and you got it in from the end of June right to the end of July, but in the fallow program. Then you fallow it and agree not to run any water on it til the next year or something. That way you can get a crop, plus

> they are paying you to fallow, plus you're getting some water and then you've got the ground cover thing. Just a thought.
>
> Terry: Well, that's kinda the way this valley has always operated. Specially, I know everybody has [shifts in his seat], if you plant your whole farm in corn, your whole farm needed water at the same time. So you planted some wheat, so that when you were watering wheat you could [roll it across those acres] when they started rationing, am I right? That's how everybody did it.
>
> Chorus: Yeah
>
> Tim: Especially before the pipelines when they rationed it all the time, I mean, we really worked the rotation of wheat and beans and corn because -
>
> Terry: And you did it for water management.
>
> Tim: for water management as much as anything because the beans didn't hardly take water till the wheat were done and you were under ration every year.
>
> Terry: And I've noticed we've kinda gone away from that since the pipelines went in. But that's the way we used to do things.

As these exchanges show, the loss of some of the practices and knowledge has occurred because of a shift in irrigation delivery systems to become more efficient. Adaptable, resilience-building practices that were born out of necessity, and remain relevant, can be lost if the knowledge is not passed down as systems change. Certainly, improvements making water delivery more reliable and reducing the amount of water diverted from a river are benefits, but it is also important to note that they come with costs. When knowledge and practices that make irrigators more adaptable to changing conditions are lost, resiliency is lost as well. There are unintended consequences as water patterns are shifted.

Hovering around these conversations about tangible and perceived losses witnessed on the ground were conversations about the changing climate and what it meant for flows in rivers and creeks. This intangible, unpredictable future threat increases the feeling of uncertainty for irrigators. The changes in flows and a long-term drought trend means that water is part of the narrative of loss, decline, and mounting anxiety for what the future will bring. This is a condition

that is out of their control – more water cannot be managed into existence. Rising pressures on less available water puts interviewees in a tenuous spot. They are aware that if the decreasing trend of natural supplies continues, the target on their water grows and there is nothing they can do about it. In fact, most interviewees, even if they disagree with it, understand that for municipalities with power there is a clear answer as to where most of that water will come from: agriculture. In the context of uncertain climactic conditions, coupled with the perception that agriculture is in decline, this feels like a threat and loss of control, which many felt those not in agriculture do not understand.

5.1.3 Loss leads to suspicions of more loss

Carrie, a roundtable member in her subbasin, described a suspicion she has heard repeatedly amongst people in her region,

> People think that [demand management] is really an attempt to get people to eat less beef and help climate change rather than that water is available for other uses, since it is the majority of water being used in the state.

Carrie raises the concern, expressed by others, that demand management is about flexing environmentalist and state agendas through water conservation. A few other participants aired similar theories. All interviewees, whether they agreed or not, were able to articulate the fact that people are suspicious of the ulterior motives of a demand management program. "There's suspicion that [demand management] goes right back to, 'somebody's trying to take my water,'" observed Luke, a silver haired employee at a water district, "and there's a basis for wondering who wants what out of this?" Previous experience with loss has primed residents to be on the lookout for future losses and unintended consequences, feeding a sense of fear and anxiety when natural resource use comes up.

5.1.4 Conclusion

When the conversation about demand management emerged, it entered an arena with dead or dying industries that had formerly sustained these areas. Rural restructuring also fundamentally destabilized some participants' identities and sense of their community. Participants' narratives showed how being dependent on natural resource use and extraction can shape interpretations of efforts to shift water, even for a conservation program, as attacks on their local communities and the livelihoods. Combined, these powerful feelings of loss and decline drove feelings of ambivalence toward demand management as well as the fear discussed in the previous chapter of a target on ag, but also that agriculture is, generally, in decline. Some interviewees viewed demand management as another nail in the coffin for agriculture and rural communities. As Jackson and Grusky (2018) reason, this sense of loss and decline fuels resistance to anything perceived as illegitimate, which for many participants, was demand management.

5.2 The Relationship Between Water and Irrigators

"Certainly, on the Western Slope," continued Luke, "it's a very emotional tie to our water and to our lands." Luke was responding to a question about why irrigators might be skeptical when they heard about demand management. His comment illustrated a key, but often overlooked, fact about the tie between water and irrigators: that it is a relationship that becomes imbued with meaning. Participants described their relationship with water in a way that is deeply interconnected with their way of life and communities. When water is removed from the patterns of their daily activities, they were no longer farmers or ranchers – their identities were lost. Because their income is based on being able to grow a crop (whether row, forage, or animal) and water is a key component of being able to accomplish that, producers are dependent in a different

way than those who consume water just for daily living. While everyone needs water, producers need water to irrigate so they can do their jobs and, they hope, thrive in a capitalist economy. Ironically, water rights are also viewed as a way out of agriculture, if needed. Water rights holders prodigiously guard their ability to do what they want with those rights, including selling them to highest bidder. Further, water is viewed by many participants as the lifeblood of their community as they are dependent on the continual flow of water to support agriculture. But communities across the Western Slope are not identical, and their relationship with water varies in myriad ways. Participants fear that when policy is created by those without a complete understanding of the particulars of irrigating in a local setting, unintended consequences can be damaging to a rural community. While everyone needs water, those who depend on it showing up at the right time and right place to produce food, earn money to feed their families, make purchases, and engage in activities that support their communities, have a profoundly different relationship than those who use it domestically.

5.2.1 Developing an agricultural identity

Duane, called himself an "enjoyer" of ranching and irrigating described himself in this way at the beginning of our interview, "I'm doing the best I can with the water I got. Yeah, I've spent my whole life fixing washed out ditches, beaver dammed-up ditches, water fights between neighbors, you name it. I'm a ditcher, I guess you'd say." Identifying himself as an "enjoyer" and "ditcher", Duane clearly relished his lot in life and though not as mobile as he had once been, still was involved in daily operations of his family's ranch. Pat, who also was over retirement age, explained this phenomenon of people working the ranch well into their 70s and 80s, "when you retire my belief is you don't want to just quit cold turkey. If you have areas where you are interested and have something to offer, you should do it. That's why I'm still doing it." To both

ranchers, ranching was a part of their daily life, their identity, not something they could walk away from even though they were "retired."

Doug, who is a decade or two younger than both Duane and Pat and did not come from a ranching background, told his story about his path,

> [Ranching] is something I've wanted to do all my life and I just, I've never really had the opportunity to do it. When I got to the age where I was tired of construction and I had enough money to maybe step into it, I decided I better do it or I ain't never going to do it. So, it was time. I had a midlife crisis – I don't know what you call it… It's a lot easier to get up at six in the morning and work till nine o'clock at night if you like what you do.

While acknowledging the challenges of a life in ranching, Doug's story shows how his passion for what he does ties him to his work and his identity. Most participants willingly shared their stories of how they came to ranch or farm. Nestled within these narratives were descriptions of their emotional ties to their labor and illustrations of their identities.

James, for example, was a middle-aged water district manager. He told a story to illustrate the depth to which the culture of ranching is part of someone's identity and also their community.

> My wife works with a woman who lost her husband recently. They just had a small ranching operation, and she sold all her cows yesterday, her cattle. She was crying all day long cause that was in her blood. I mean that was such a sad thing, to just turn your back on what you've done for generations. Now you no longer have a cattle operation.

James shared this story to demonstrate how patterns of behavior shape identity, observing that:

> Ranchers have the culture of this is what they've done, this is their livelihood, this is what for generations they've done on this land, and to all of a sudden hit a screeching stop on that or change the way they've been doing things, it's a difficult adjustment.

Terry, a farmer from another subbasin, further explains the identity of a farmer succinctly, when he says, "In my mind it just don't make any sense not to farm farmable ground. [I] grew up as a farmer and a farmer needs to be farming the ground, that's how you make money." Both speak to

the role that the actions and patterns of farming and ranching are integral to identity and culture. Farming isn't farming to Terry without growing crops. Ranching isn't ranching without cattle, without land, without the patterns of action that make it ranching. Even if a program like demand management were to diversify their income streams, the disruption to habitual actions and the patterns of farming and ranching disrupts a way of life.

5.2.2 Water and agricultural livelihoods

In addition to the identity and cultural component of irrigators' ties to water, there is a livelihood component which impacts their financial well-being. Doug explains,

> That water is your livelihood. You can't ranch or farm without water… it's very important to me. I mean a rancher can't give himself a raise without water. You can't grow, you can't increase hay production without water, he can't increase his herd production without water. In order to get a raise, a rancher basically needs water.

As Doug described, the relationship that irrigators have with water is different than it is for people who have an hourly wage or salary. Like Doug, participants shared how an irrigator's income is dependent on water showing up at the right time and place, thus, to be asked to use less is like asking an employee to take a voluntary pay cut or continue without a raise, in spite of doing good, essential, work.

Furthermore, the connection between land, water, and livelihood is an important component for irrigated agriculture, as this exchange at one of the focus groups illustrates,

> Joe: I mean, you take irrigation away from the ground we own and bam, it ain't green, I can tell you that.
>
> Bruce: We have nothing.
>
> Joe: Well, you still have some ground, but…
>
> David: It'd be worth nothing.

Not only are irrigators dependent on water for irrigating crops, but their financial well-being is also dependent on the status of their land. Land without water, in an arid region, is worth much less. Thus, if they purchased land and water is re-distributed or diminished, they've lost on their original investment. The concern about financial well-being is a key part of the skepticism of demand management, despite the state's efforts to make clear that they are only considering voluntary and compensated ideas. Many participants felt there would not be enough money to compensate their financial or emotional loss.

In response to a question about his first reaction to a pilot program to conserve consumptive use, Joe, a farmer along the main stem replied immediately,

> Joe: Skepticism! (laughter)
>
> Me: About what?
>
> Joe: Well, I wouldn't ever want to do anything that would jeopardize our water rights, that's my main concern.

Joe articulated a key sentiment held amongst many of the participants, but that also can easily be overlooked by those in state policy and who use water domestically only: the very rational fear that doing anything different with water could jeopardize your right to that water. Colorado Water Law holds that a water right is based in historical consumptive use, thus you have a diversion right, but also you only legally have a right to consumptively use the portion you have historically used. Furthermore, you can lose your right to that historical consumptive use if you "abandon" it or do not use it for a certain period of time (Jones and Cech 2009).

While abandonment has rarely been tested in court, the fear of losing something so vital to their livelihoods looms large, as Doug discussed here,

> You're going to have a fight. You're going to have some people very, very angry over the deal because they consider, an ag guy considers those rights, his, those water rights, even though he doesn't own the water, he still has water rights and they had the forethought go ahead and get those water rights just to prevent

somebody from taking it from them. And so that's gonna be a huge issue when you start asking ranchers and farmers would give up portions of their water.

To Doug it was obvious that irrigators would react with resistance to demand management simply because of how "an ag guy" thinks about their water rights. Doug is clear that irrigators do not own the water, but the right to divert the water and put it to consumptive use. The distinction between owning rights to divert water and actually owning water is sometimes unclear for irrigators and outsiders. Nevertheless, as Doug explains, part of the view of a water right is that the owner has a sense of possession and proprietary right because they claimed those rights first, and feel this should be recognized.

Water rights were also perceived to be akin to an investment, something of value which irrigators did not feel they should be asked to sacrifice for a greater good. After explaining that he decided to participate in the pilot program because he saw that people he trusted were participating, Joe said he still has the same concern about a larger program that was not experimental. Joe stated,

Joe: Well, if you have something somebody wants, they should be willing to pay for it.

Terry: Right.

David: Well said.

Joe: They shouldn't just expect you to give it to them.

Irrigators felt a strong sense of ownership of their water rights. They also valued these rights as part of their financial portfolio, an essential component of their livelihoods and continued well-being. This helps explain the tension between the fact that many irrigators I spoke with hated the practice of buy-and-dry, but were actively opposed to any attempts to curb their ability to sell their right to the highest bidder, if needed. Greg was unequivocal when he declared, "You see,

we, none of us want to see buy-and-dry but by golly if I want to sell my land and my water to somebody I don't want that right taken away."

As Doug described earlier, ranchers and farmers only get raises if they increase their production or improve it in some way; water is a primary component of that. "There is some thinking, 'well, what's in it for me?'" explained Robert a lifelong farmer and water district manager, "The family farmer, if he works hard his whole life, the check at the end of the career is selling the farm." Thus, one of the foremost reasons irrigators were unwilling to do anything that would potentially impact their ability to sell water rights and land to anyone was because of the role they play in their future financial well-being. James also sees this phenomenon,

> while agriculture is concerned about surrendering the water to municipal use by purchase, they also jealously guard their right to do that. This is our 401K, you know? We have a very valuable asset here that we want to have the right to dispose of whenever we want to. But protect agriculture! Thoughtful agricultural people will admit that it's a quandary.

Recognition that water fills many functions and is intimately tied to their livelihoods, is an important component in understanding why irrigators might become ambivalent or resistant to demand management. If it reduces their allotment or changes their water right, it could potentially harm their financial well-being. Though many irrigators across the Western Slope share this sentiment and close relationship with their water and land, these relationships are not the same across the region.

5.2.3 Recognizing the diversity of rural agriculture

Participants spent time walking me through fields of grazing cattle and alfalfa, driving ditch lines, and explaining how their water flows. Most participants spend their days with these fields, ditches, and water and thus know the intricacies of their properties, the different soil types, the ways water moves through their land and their region. This type of knowledge shapes

how they manage their land and their relationship with water. Almost all participants agreed with Matthew, when he said, “there is probably no one size fits all.” Many felt that to try to create a universal demand management program on the Western Slope would be an example of recognition injustice as it would overlook the geographical, agricultural, and irrigation diversity in their operations and potentially perpetuate uneven harm and benefits.

Doug gave a specific example of what this meant in practice for the region that he ranches,

> Efficiency projects work really well in the right aspect, but in the wrong aspect, I think it will hurt us in the long run. If we were all to put sprinkler systems in, we'd have more water in the river early, less water in the late… you're going to have an earlier dry up season in August, September, because you're not going to have the return flows… That's my opinion, what I see on the ground.

He went on to describe the way water flows through his property and back to the river as well as the neighboring ranches surrounding his. The conclusion he came to was that to take on an approach similar to the pilot programs that had already happened would not work in his area. This did not mean he would refuse to participate, but rather that without the recognition that conditions were different, his region and their unique differences were being overlooked and potentially neglected.

Another example is the role of alfalfa for West Slope irrigators. To outsiders, the higher-than-average water consumption of alfalfa might be the only visible characteristic. Thus, cutting back alfalfa production or crop-switching seems rational. Irrigators, however, described alfalfa as a reliable, resilient crop that can be depended upon in times of water shortage because it can withstand temporary, occasional deficit and still provide a meager income. Alfalfa serves as a buffer in their production, providing income even when other crops fail. Explaining why outsiders might think West Slope agriculture is too focused on producing alfalfa and should cut back or switch to less consumptive crops, Matthew stated, “waste is in the eye of the beholder.”

This conversation regarding how to recognize the diversity of agriculture practiced on the West Slope came up in the listening sessions as well, as this exchange shows,

> Matthew: So, should some take the burden?
>
> Bruce: Yeah, does it fall just to the big farmer? Like the X and the Y do it when you've got all these little high-country communities, most of their ground is in grass, they don't tear it out. Those guys do not want to – they are not set up to and they are not going to want to be setting out acreage. So, are we going to be end up footing the bill for the whole Western Slope?
>
> Matthew: Is it fair for them to say if it's easier for us to do it, they need a break?
>
> Terry: Why should it be easier for us to do it?

This discussion demonstrates the perception that it would be unfair for the differences between regions to not be reflected in a demand management program. "There can't be sacrifice zones that demand management programs create," asserted Sam, "I hope this will be an opportunity for there to be a better understanding of the Western Slope, how each basin is different and what works in one basin may not work so well in another." These exchanges illustrated how if the diversity of agriculture practiced on the West Slope is not recognized in a demand management program, it could result in uneven and therefore, unjust impacts.

"I see two viewpoints," summed up John, a lifelong rancher involved in his local roundtable,

> one is those of us who see a threat; we see threats to all this more administration and more government looking into your water and possibly saying you're gonna have to do this and do that, that seems like a threat. There's also the group that sees opportunity; those who are saying, "you know, we can make things better if we were to reduce… maybe this is an opportunity to curtail some of the bad practices." Some of them aren't bad practices, but if you're not an irrigator, you might think so.

John identified and simplified these two responses to demand management, summing up many of the contingent issues the conversation raises. In this comment he notes the sense of there being a threat to agriculture, the negative perception of the intervention of the state in administering

water conservation, and the risk of ripple effects and unintended consequences, particularly when pushed by people who don't fully understand irrigation on the ground. These comments all illustrate how the same object or action can mean different things depending on how people relate to and understand it (Espeland 1998). Changes to irrigation practices, perceived to come from people who don't fully recognize or understand what it takes to irrigate and the nuances of water flows, feed a sense of ambivalence toward demand management.

5.2.4 Conclusion

Water conforms to the shape of the container holding it. So too does the relationship with water change depending on who uses it. As the participants described their relationships with water, they showed that in using it to grow crops they develop a tie to it that goes beyond an exchange, it becomes emotional. This tie shapes their daily patterns and activities, building identities, culture, and community. Furthermore, their livelihoods become deeply intertwined with the presence and dependability of water. While no one person can control the weather, climate, or drought conditions, irrigators comments subtly indicate that dealing with less due to those things is different than voluntarily using less of this vital resource. With less water irrigators are unable to give themselves a raise, they are losing on a resource that supports their livelihood by turning into something they can sell or someday, retire on. This relationship is fundamentally different than it is for those who only use water domestically. Finally, participants articulated that the location of water use shifted the way it was used and that to ignore those key differences was to overlook the varied ways the Western Slope is not homogeneous.

Indeed, their relationship with water shapes how they think of themselves, and the well-being of their families and communities, now and into the future, as well as their practices and patterns that differentiate them from other agricultural areas and connect them to a community.

The nature of this difference changes how people relate to water, what it means to them, and their level of fear when that relationship could potentially be altered. Recognition of these differences and the varied meanings of what water means to an irrigator are integral components of justice in rural agricultural irrigation, whereas a lack of recognition of these things feeds right into building ambivalence toward demand management.

5.3 The Contributions of Irrigated Agriculture

Participants described how they felt that the value of their work as producers of food was not appreciated nor recognized as it should be. This was apparent through participants words in three different ways. First, when they articulated a sense that urban people did not really understand where their food came from or what it took to produce it – this was shared amongst almost all participants. People are dependent on their daily actions because people need to eat and yet, participants felt their contributions were misunderstood, denigrated, or simply not seen. Second, participants described the aesthetic, recreational, and amenity value of irrigated landscapes. By creating places people want to be, producers add to the positive perception of "rural landscapes" that urbanites value and enjoy, but rarely, participants felt, did they receive recognition for the effort and water it takes to make those landscapes happen. Third, participants felt there was an expectation that they would contribute to demand management, but little acknowledgement of what that sacrifice fully entailed. While many were not completely opposed to participating, they felt the sacrifice they would be making should be recognized and not expected.

5.3.1 Eating clouds and the decline of the agricultural profession

Duane grew up ranching in the same area he now works with his son and grandson. Duane drew on his lifelong experience ranching to describe why he is concerned about a large-

scale demand management program, “well, those [urban] people forgot they got to eat… They're going to eat the clouds, I guess. You have to have agricultural producers for the nation to survive, you got to figure out a way to raise food. Nobody gets by without eating. Nobody's figured that one out.” While the potential for a demand management program was described as “temporary” and “compensated,” Duane’s comment spoke to the heart of what he and many other participants felt: that their work was essential and meaningful. He also was making a larger point about the disconnect he, and most other participants, felt between the work they do to make food and an understanding by urban residents of where their food comes from and what it takes to make that food. Duane and others clearly bristled with resentment that the labor they do on behalf of feeding people is not really understood and therefore, undervalued, and unappreciated.

Participants also felt strongly that the appreciation of agriculture in society had deteriorated. This was very interconnected with their general perception of loss and decline discussed earlier; their stature in society was also declining. Perhaps this was because people did not understand what it took to grow food or did not recognize the value of the profession of feeding humans. “What I think people want to know is: is agriculture as a livelihood valued? And by whom?” explained Carrie, a knowledgeable member of her basin’s roundtable. “I think [farmers and ranchers] feel it is valued mostly by the true locals in the communities on the West Slope, but I think there is a big outstanding question about whether or not they are valued and understood from the Front Range people.” This statement rang true throughout interviews.

Keith was a jovial guy in his early 40s, who often cracked self-depreciating jokes. Keith also farms with water diverted from the main stem of the Colorado River and articulated a sentiment shared by many participants,

> You watch TV and you’re seeing “Colorado Native” commercials or Coors, or peaches. You’re buying Olathe sweet corn and people want to buy local, they

> want to buy things that are grown in their neighborhood. Well, they need to put their money where their mouth is because that doesn't happen unless we are sitting here (taps his pointer finger at his spot at the table).

Keith's frustration was the double-standard he felt in seeing the popularity and promotion of Colorado products increasing, while at the same time the possibility of water for agriculture being reduced. He also referenced the idea that the cost of a "compensated" demand management should be borne by the population of Colorado in general, since he sees the benefit going to the entire state. Asking producers to give up water was a tangible way of seeing de-valuing in action because participants interpreted it as a lack of understanding for the importance of water in irrigated agriculture and to rural communities. Without water they cannot grow food, and if they aren't growing food, they aren't doing the things that make them farmers and ranchers, and the added benefits of an irrigated landscape are changed.

Participants also gave examples to illustrate misunderstanding between what they do and know and what outside perceptions are. This example of the misunderstanding non-agricultural people might have about how agricultural production works came from Doug. He described a situation where his ditch company was challenged by a non-agricultural organization. Doug explained why,

> [Organization A] wanted us to separate the irrigation water from the livestock water… They wanted us to wait a week before we turned the water back on for livestock water… It's pretty hard to get 9,000 head of cows to all drink at the same time, you just can't do it… they just thought that we could manage our cattle, you know, "it's 10 o'clock, you can go get a drink!" … They just didn't know, and they were educated people!

Not only did participants feel their urban counterparts did not understand where their food came from, but also what it took to produce it. Things that seemed commonsense to irrigators, were easily overlook or ignored by those who did not operate ranches or farms. This

frustration was amplified by participants when thinking about the potential impacts of outsiders making demand management policies.

5.3.2 The value of an irrigated landscape

Several participants noted the appreciation for working rural landscapes that recreational visitors and transplants had, even if they didn't feel they valued the landscape for its food production. "If nobody irrigated, it'd go dry!" laughed Duane, "it has a blessing, irrigation does, not only to raise crops." Not only does irrigated agriculture provide food, contended participants like Duane, it created multiple benefits, aesthetically and for ecosystems, that outsiders appreciated even if they did not understand how those qualities were created. Adam, who runs an orchard and is in his late 30s, attempted to summarize the ways irrigation practices had changed the environment, that now was dependent on continued irrigation. "We've got this built environment [now]. We've got cottonwood galleries, ditches, we have a wildlife habitat that enjoys irrigated fields and water from ditches… Also, environment and recreation are tied to this built environment."

When fields are fully fallowed, they are typically required to keep the ground bare to show that no plants are taking up water. Not only does this have an aesthetic impact, it also can cause issues with blowing dust impacting health and safety. To illustrate this point, Keith, told a story about how irate his neighbors in a subdivision became when the rancher across the street sold his land and there were no longer sheep grazing the irrigated meadows. Carrie also highlighted the disconnect participants perceived between appreciating the aesthetic value, but not the production value, contending, "Colorado has become a mecca for recreation, and that is great, but I think we will start to see some intense clashes between recreation and grazing, for

instance, on public lands and it really will change the flavor of the Western Slope." Greg expressed this as well, when he said,

> The people whose feelings are going to be most hurt are the recreationists who will no longer be able to drive through the valleys and see the nice green fields and pastures that we are providing for them at no charge, their viewscape… The bicyclists that ride by, I think they're enjoying the green, I guess that's one of the reasons they choose my road.

The aesthetic value residents and recreationists of irrigated landscapes is something participants felt should be recognized. Though it often was appreciated, they felt the connection between implementing water conservation programs, like demand management, and the aesthetic loss and potential health issues of dried-up fields was not.

These examples illustrate how irrigators often feel like the non-monetary values they provide as a by-product of their work have come to be expected and are part of the landscape that people appreciate but undervalue. This is backed up by literature showing recreationists and tourists value open and working landscapes over commercial or residential landscapes (Orens and Seidl 2009). However, in the context of demand management, appreciation of this value contribution to recreationists felt overlooked by participants. The disconnect may lead to future clashes building on and further exacerbating existing resentments rural people can feel when it comes to recognition of their contributions.

5.3.3 Conclusion

In summary, participants felt their contributions through agriculture were not being recognized. A sense that agriculture was devalued through a lack of understanding pervaded interviews and tied in closely with the sense of loss and decline, feeding that perception. Much of this section speaks to the participants sense that they are underappreciated for their role in creating a sense of place, making Colorado feel like Colorado. Whether it was through

supporting the beneficial and aesthetically appealing aspects of a built environment created by 100+ years of irrigated agriculture, locally produced food, or supporting wildlife.

5.4 What do Irrigators Want?

Mis- and not recognizing the value of irrigated agriculture is one thing and recognizing what it is that irrigators want is another. In this section I explore where participants identified what they wished was recognized. Namely, this meant participants wished that the subtext of sacrifice that was apparent to them was recognized by those asking them to conserve. Feeling like they were being asked to sacrifice, without it being recognized as such, was a frustration that added to participants' ambivalence. They also wanted to know that the sacrifices they made for a demand management program would be worth it – that their efforts would make a difference for Colorado.

5.4.1 Recognize what you are asking us

Overall, participants articulated a sense that when it came to potential demand management program, the public and policymakers did not really understand the gravity of what they were asking irrigators to sacrifice. This clearly added to participants' reactions of ambivalence. Keith was straightforward, "The broader takeaway, to put it bluntly – maybe this is so simple it doesn't need to be said – but decisions have real effects on us that we don't have control of." Carrie explained further,

> not a lot of people have the funding to just go out and put in pivots or modernize their infrastructure when you look at that overall bottom line for them. So, reducing supply, their water usage, really means they are going to lose money somewhere down the line. If they don't reduce their herd that means they will have to buy hay from someone else which is an expense.

Cutting consumptive use does not just reduce an irrigators water, it can involve changing practices, new equipment, and shifting patterns of production – all of which have costs as the effects ripple out into their communities.

Another component participants identified, which they felt was overlooked by policymakers, was the impact to their communities when water is reduced or re-distributed. David, who has a couple of kids in the local school, sighed when he said,

> I would hope that there would be some more education and open-mindedness about what the impacts – you know the number of farmers and the people directly in agriculture may be a small number of voices but there are a lot of other impacts that would come about taking just you know taking a bunch of that and totally changing that industry and those communities.

The recognition that shifts in water distribution have impacts beyond the irrigator was important for participants. Similarly, other participants described concerns such as local schools losing students if ranches and farms were less viable, making their community less of a community. Many felt these changes were generally ignored or unrecognized by policymakers.

A group of farmers at one of the listening sessions all participated in a research project to see if conserving consumptive use was possible and what the impacts were to their fields. Their experiment would, theoretically, inform and shape a potential demand management program. While everyone at the table was willing to experiment, one participant made it very clear they would not participate in a wider, non-experimental program. Terry stated that he participated in the research project because "I can't be a naysayer without more information." He then went on to explain that he was not comfortable with the possibility that by participating in a demand management program he would be exposing his farm to buy-and-dry. The rest were open to a potential demand management program, but not if they felt the only sacrifice was coming from agriculture on the Western Slope. "Would it be fair to ask for recognition of this?" mused

Matthew, a farmer in his 60s, that "we'll do our part, but we need to make sure it makes some difference and don't assume that you're entitled to our generosity."

Farmers in the pilot program also described and rejected the perception that fallowing fields meant a vacation for them. Even though they were not growing a crop, many felt it still took almost the same amount of effort and time to keep the field bare, which some farmers took issue with. They described increased chemical inputs to kill weeds as well as additional time cutting them down mechanically. It was clearly a frustration to many of them, particularly to those who were attempting to increase soil health through no-tillage practices, which are argued to be better environmentally. "It kinda defeats the purpose," said Elliot, who switched to no-till practices after seeing the benefits to his soil health.

In an interesting exchange, participants in this focus group described how their peers who did not participate in the pilot program looked at their participation.

> Elliot: Down at the coffee shop they [other ag people] think that if we gave [hedge fund speculators] an inch they'd take a mile, so we're crazy. They think we've gone off the deep end with all this stuff.
>
> Matthew: They [hedge funds] already took half a mile before we started. That's the big fly in the ointment is water speculation is totally here regardless of what we do. It's going to happen with or without us.
>
> Terry: And I think it gives a lot of us a bad name for being involved in the program last year, in the neighborhood.

Participation in the pilot program had benefits, most of which were monetary. Some felt their next crop yield and quality was better, others did not (J-U-B Engineers, Inc. and Grand Valley Water Users Association 2019). But all had noticed the increased presence of hedge funds buying up agricultural property with rights to their ditch. Not only did this cause them to be suspicious, but it also meant they were being blamed by their peers for encouraging this practice simply by participating in testing out whether conserved consumptive use was possible. While

not a direct correlation, it does indicate that there may be social consequences in some regions for participating in a voluntary demand management program. This could be a deterrent for some irrigators.

Several participants felt that state water policymakers did not recognize irrigators for their contributions to making food production, rural Colorado viewscapes, and sacrifices they would be asked to make in a demand management program. Some, like Duane, were more resentful, "We'd appreciate some help from the state, instead of shuffling us down the drain. A political pat on the back, basically, from the people in charge. Just stick up for us instead of selling us out." The tension in Duane's comment illustrated how demand management is felt on a personal level amongst participants: how easy it is for their experience to be overlooked, the impacts to their communities not recognized. Placing blame on the state for facilitating this appears logical, because of the multiple interests state water policymakers must balance.

5.4.2 Make it worth it

If they are going to participate in a demand management program, participants wanted to know that their sacrifice would make a difference. David, like Matthew, represented many others' thoughts when he said,

> I want to see something that we can plan on and depend on to answer the overallocation of the river… I want to see something moving forward that's an actual, productive goal to work toward that is maybe answer to this question of drought and the fact that there is so much more demand on the Colorado River than there ever has been and it's growing so fast. I mean we have to do something; I just feel like it's close to almost a crisis at this point.

David, like many other participants, faced the fact of overallocation and demand for the Colorado River, but he wanted to know that any contribution and sacrifice he made to addressing the crisis would be meaningful. "It's gotta work and it's gotta make sense," said Keith, indicating

that recognition justice also means that their contributions are making a difference and not wasted on allowing unrestricted growth in an already water-stressed region.

5.4.3 Conclusion

In this section, participants articulated what they wished for in terms of recognition. Primarily, this was what they could potentially be sacrificing, the cost – socially, culturally, and financially – of what demand management could mean for them. It also reveals a desire amongst some participants to make sure, that if they are going to go through the trouble of demand management, they want to know that it was worth it, that it made a difference for Colorado. This section illustrates how outside, often subtle, misrecognition of agriculture and irrigating can have a profound impact on participant responses to demand management.

5.5 Conclusion

As a distinct component of justice, recognition justice looks at whether and how communities and groups are recognized. While distributive justice examined who got what, recognition justice is concerned with the cultural practices and identities that make up a way of life, and how they are or are not valued. This chapter identified four ways interviewees perceived experiences of misrecognition or a desire for recognition. First, by articulating experiences of rural loss and decline in their way of life, this includes rural restructuring that resulted in changes to the economic base of their communities; the movement of water and land away from agriculture to housing; the gradual loss of patterns and actions that together make a way of life; and a decline in hope for the future of agriculture with fewer young people wanting to or able to enter the profession.

Second, recognition that water is part of interviewees' identity and livelihood is about more than finding the right price to pay them to reduce irrigation. Interviewees revealed how

their relationship with water was profoundly different from those who use water domestically. Through actions, knowledge, and experience, water becomes part of their identity and culture – an emotional tie is created. Furthermore, water is the cornerstone of their livelihood, whether it is their day job, their raise, or their 401k. Plus, the Western Slope is not homogeneous in terms of water practices; to put one price on water to create conserved consumptive use not only overlooks those unique differences, but also potentially opens up some to unfair harm or benefits. Third, participants sensed that the value of agriculture, as a profession, was not appreciated, understood, and declining. They expressed frustration at the lack of recognition they received for their contributions to growing food and the multiple benefits irrigated landscapes provide to the state, making it a place people enjoy being. Finally, I explored what irrigators wanted in terms of recognition. This was primarily recognition of what was being asked of them when it came to demand management and water conservation.

When groups perceive misrecognition, such as the interviewees in this project describe, the combination led many to feel resentful. They felt both mis- and un-recognized for their contributions and value to society, the loss and decline they experience as rural resource dependent communities, and the role water plays in their well-being. Injustice of this kind can be interpreted as a dismissal of their livelihoods, culture, and rural communities. The hydrosocial nature of these relations helps understand why irrigators looks askance at a possible demand management program, building their ambivalence. Relations between water and people are not uniform across society and recognizing the points of difference and valuing them matters in creating effective, long-term water policy.

CHAPTER 6: REPRESENTATION AND MISREPRESENTATION

"You're not going to get [ag water users] to contribute to the process without at first isolating them and saying, 'what is most important to you?' And you taking heat of that and starting a relationship that way." Jennifer, rancher

Justice is not only about the distribution of goods, harms, and benefits, or recognition. There is a third axis of justice that emerges from the economic and cultural aspects of distributive and recognition justice. Representation concerns the political dimension of justice as it is "centered on issues of membership and procedure" (Fraser 2005:75). Fraser (2005:76) specifies that there are "distinctively political obstacles" that are "not reducible to maldistribution or misrecognition," but are still "interwoven with" and shaped by them. However, the key differentiation is that issues of representation arise from how a society is politically constituted rather than economic structure or cultural status. Representation often asks "who has a voice?" in decision making, but also looks at who's voice is heard and why. These issues clearly overlap with distribution and recognition but are not reducible to them.

Representation justice addresses who is being included and excluded in decision making, what symbolic and social boundaries inform and legitimize who gets a seat at the table, and whether all voices are given equal participation in public deliberation or fair representation. Misrepresentation is thought to occur "when political boundaries and/or decision rules function to deny some people, wrongly, the possibility of participating on a par with others in social interaction – including, but not only, in political arenas" (Fraser 2005:76). This chapter explores rural white irrigators experiences of, and concern for, misrepresentation as well as ideas for what constitutes fair representation in demand management feasibility discussions and possible program design.

Above all, participants were concerned with achieving and defining equity. First, participants referenced how the uneven distribution of population and political capital between urban and rural Colorado impacted representation of their communities. This, they felt, manifest itself in power dynamics that had historically shaped rural landscapes and would likely shape their future livelihoods, particularly when it came to water. Being at the mercy of a growing and sizable urban population that, participants felt, largely misrecognized them and their contributions fed fears that they would be overpowered in ballot measures directly impacting them. Second, participants were very concerned with what it meant to "have a voice" which many defined as a "seat at the table" in demand management discussions, although some participants rejected this definition because they viewed the process and/or demand management itself as problematic. Third, participants described why it was important to question who qualified as a stakeholder and address the barriers to participation many faced. The result of a broadening of stakeholder input by broadening the tent could be a demand management program that was more equitable and reduced unintended and unanticipated consequences. In doing so, they articulated how equity could lessen ambivalence toward demand management and add to its legitimacy.

6.1 Population, Politics, And Power

The implications of (mis-)recognition and (mal-)distribution documented in the last two chapters could be catastrophic, participants felt, when it came to decision-making regarding water. Participants described a sense of being subject to representation and political power of a population that largely did not see them and their livelihoods. Participants drew on historical examples of urban water entities acquiring West Slope water to parallel the demand management conversation and inform their current response. Political power was not only a matter of larger

population size, but also social and political capital that could be mobilized in the event of drastic water shortage. This sense further informed the belief that the future of rural agriculture was bleak. Participants also spent time articulating the boundaries of the Western Slope in terms of who belonged to the region and who did not when it came to water decisions. Tensions around this and between subbasins intensified feelings of disenfranchisement and sometimes resistance to demand management itself.

6.1.1 Rural/urban imbalance in representation

Despite historical over-representation for rural white Americans at the federal level through the electoral college and the Senate, many rural Americans today feel frustration, resentment, and a sense of being left behind (Carolan 2020; Cramer 2016; Hochschild 2016; Jackson and Grusky 2018; Wuthnow 2018). The last decade of politics in Colorado suggests this holds for rural Coloradoans as well, evidenced by their shift to populist candidates and movements. In 2013, 11 rural counties out of Colorado's 64 counties voted on whether to secede and form the 51st state with five approving secession (Estabrook 2013). In the 2016 presidential election, 42 counties, most of them rural, went for Donald Trump, though the popular vote in the state went to Hilary Clinton by five percent (Associated Press 2017).

The fear that their interests were being overshadowed or drowned out by those on the Front Range developed out of several experiences. For example, at the time I was conducting interviews there was talk of an initiative to get wolf reintroduction on the next statewide ballot (Budner 2019). Wolf reintroduction came up often outside of interviews while chatting socially with some rancher participants, all of whom expressed concern about the idea. Each felt that urbanites, environmentalists, and "liberals" loved the idea and because it would happen "out there," away from where urban residents lived. But "out there" is where ranchers live; they

would be the ones dealing with any impacts to their herds. In November of 2020, Initiative 114 on wolf reintroduction in Colorado passed by a margin of just under two percent (Ballotpedia 2020). Ditmer et al. (2022) found that voting for wolf reintroduction correlated highly with voting for Biden for president and that most support came from the Front Range, with less support coming from the Western Slope, the area most likely to be impacted by wolf reintroduction. Reactions from those opposed included frustration and anger at the fact that something that directly and disproportionately impacts ranchers' livelihoods, such as wolf reintroduction, could be decided by people who would likely never be impacted by the decision (Niemiec et al. 2020; Peters 2022).

The large differential size in population between the Front Range and West Slope further fed the fear of Front Range desires overshadowing West Slope interests because it could be translated directly to votes. This concern is closely connected to distributive injustice, in that the distribution of power is uneven, but it extends beyond it because it is about having voice and representation in shaping policies that directly affect their lives. When the distribution of power is uneven it often manifests in the uneven distribution of political capital to shape how power is used. Philip explained, from a legal perspective, how political power to influence a voting population could cause a shift of water from agriculture to the Front Range municipalities,

> I think the greatest worry of everybody in the West Slope is we that don't have the political horsepower to prevent being the target. The Front Range water providers are all very sanguine, you know, "we love the Western Slope… and we like the vistas, and the green valleys, and seeing the cows." But when they can't get enough water to fill their fire hydrants that will change. It will be survival of the fittest at that point. And it won't be hard to convince the voters that if we don't do this, when you turn on your tap you might not see any water come out. 80 some percent of the population is in that situation, who's going to win the ballot? Not us. How many legislators do we have out of a hundred? 15 maybe.

Philip articulated what many participants believe when he described the inability of irrigated agriculture to prevent being the target for water supplies because of a lack of representational power. The growing power of municipalities lies partly in their overwhelming population size, increased representation at the state level, and the political capital to mobilize legislators and other political elites. The threat of impacts to water supplies, to which Philip alluded, could translate into votes for legislators who promise taps will never dry out in urban areas. "We can never, by population, compete with the Front Range" summed up Jennifer, "all it takes [to lose Western Slope water] is a Front Range mobilization."

Again, history plays an important role in informing these fears. "We are all taught from the cradle to be Denver haters," said Greg laughing, "[though] I am not really." Past experiences and history with municipal water entities and buy-and-dry shaped how participants felt about disenfranchisement by Front Range providers today. Robert, who has watched water relationships shift and change over the course of his long career, described what he saw,

> I was pretty disappointed last fall when the demand management issue first came up in the drought contingency plans… I would almost say we [the East Slope and West Slope] were respectful and working quite well together and it went back to "I'll draw my sword! We're not having this!" And how quickly we fell back to our old positions. That gut reaction that, "these guys are coming for my water." Which in history they did. It's not as bad as prior things, but it was kind of disappointing.

Robert highlights the importance of history in shaping reactions to water policy today. In the past entities, like Denver Water[15], used their power and influence to shape the rules and the

[15] Denver Water is the most recognized water entity on the Front Range and often is referenced as the stand-in for all other large municipal water providers. This means they often (fairly and unfairly) are blamed for urban water issues and overuse. Denver Water, in recent years, has made efforts to engage in water management in more collaborative ways. For example, the "Grand County Learning by Doing Cooperative Effort" (LBD) is a cooperative program in which Denver Water and Northern Water have partnered with organizations and governmental entities in Grand County (on the West Slope), where they have active water diversions. The goal of LBD is to "maintain, and where reasonably possible, restore or enhance the aquatic environment" (Grand County Learning by Doing 2022). Thus, Denver and Northern share in addressing harms and burdens related to their diversions of water to the Front Range. In addition, they have an active and progressive water conservation program that has reduced individual urban use

distribution of water in the state, pulling water over from the Western Slope (Limerick 2012). With less power and development, participants felt the Western Slope had little choice but to capitulate. Thus, any move made by a Front Range municipal water provider today is closely watched and suspect due, in part, to a history of being strong-armed by the region and disenfranchised from decision making.

Not only were participants concerned about disenfranchisement with the Front Range, but they were also concerned about the power of the Lower Basin. "We have very few votes compared to Los Angeles or Las Vegas," said Duane, "it's that old saying, sort of a golden rule, 'the guy with the gold makes the rules.'" Duane's aphorism illustrated the concern that political power to reshape water distribution was a function of political and social capital that translated money into votes and rules. The participants who expressed this concern were focused on two things. First, the fact that agriculture in the Lower Basin is economically much more lucrative and, by tonnage, more productive than it is in the Upper Basin (Cohen et al. 2013; U.S. Bureau of Reclamation 2012). Participants referenced hearing some use this differential as a reason to shift water from less productive agricultural ground (i.e., Upper Basin) to more productive ground (i.e., Lower Basin). Second, participants felt that the large voting public in the Lower Basin could be mobilized and draw on significant political capital to redistribute water downstream, if needed.

Greg voiced another aspect of this tension, mentioned by several participants, when he told a story about how he and his wife were on the Front Range recently and saw a housing development on the edge of a city going up. "I got to thinking, the people that buy these houses

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(continued from previous page) from an average of 211 gallons/day to 165 gallons/day between 2007 and 2015 and are actively working towards an individual average of 40 gallons/day for indoor use and 12 gallon/sq. ft of yard space (Kirk and Unger 2018).

haven't the foggiest idea of where their water is coming from, and they don't care. The only thing they care is if they open the tap and if nothing comes out, they're going to figure out the way to get it." The sense of fear from many participants stemmed from the belief that urban residents did not see or recognize rural agricultural irrigators, and this too could translate into misrepresentation or a lack of sufficient representation when it came to water policy. Greg continued by expressing resignation when thinking about the future of agriculture in light of the growing power of cities, observing that, "[demand management] is death on an installment plan. I think if agriculture is dying in the Colorado River basin, in deference to municipal use, or other higher uses or at least richer uses, I don't think there's any way to keep it alive."

Many participants similarly perceived a direct link between the uneven distribution of power and a misrecognition or lack of recognition of their livelihoods. For participants, political capital was a function of the differential size in population as well as the ability to mobilize those larger population to action at the voting booth using money and power. Maintaining water for cities would always trump agricultural water. Which, participants reluctantly recognized as Keith, a farmer, acknowledged when he said, laughing, "unfortunately, I have to agree that [urban] people are entitled to drink water." The ability to mobilize large urban populations is predicated on Front Range residents not seeing or recognizing how their voting actions impact rural irrigators. This realization fed participants' sense of illegitimacy in demand management because not being seen meant their interests and concerns were not being heard.

6.1.2 Is there a cohesive West Slope community?

Another aspect of representational justice is defining who belongs to a community and the symbolic boundaries used to define it. Symbolic boundaries are often used to enforce or rationalize social boundaries, but also can "contest and reframe the meaning of social

boundaries" (Lamont and Molnár 2002:186). These boundaries are used to determine who is part of a community and thus, who has a voice within or on behalf of the community. For participants, symbolic boundaries were used to see who qualified as a member of the West Slope, differentiating the social boundary of "us" (West Slope) and "them" (Front Range). This matters in determining who is able to speak on behalf of the West Slope and engage in negotiations and conversations on the feasibility of demand management.

The general sentiment amongst some participants was that "The West Slope" needed to stick together despite their differences, such as types of agriculture. Peter's comment illustrated this, "we, being the rural part of the state, we're small communities and we have got to stick together. There's a really big world out there that's way bigger than us, so what we have is each other. That's important." Peter felt this was important regardless of groups' final position on demand management. Sticking together as the West Slope meant continuing leveraging the political power of the whole West Slope at the state and federal level, so that they would be able to shape whatever program came to fruition. Peter, and others who shared this sentiment, viewed it as the best way to make sure the voices of the West Slope were heard.

Like Peter, most participants felt strongly that the Western Slope not only needed to act together, but was, in terms of boundary setting, already together. As Sam noted, it could be because he had a larger perspective than just his subbasin, but his emotional tie to the identity of belonging to the Western Slope mattered.

> For us, here, there's the immediate farming community. For me that is both growers and ranchers… so there's that agricultural community. But there is also [my local] community - the immediate area community that depends on agriculture as its main industry. Then, beyond that is the Western Slope in general. I feel some connection to it [all] and maybe just because I'm on the River District and deal with problems that are more than just basin specific, but I feel part of the Western Slope. It has a value and a set of values that are worth perpetuating. It's going to be an uphill battle, but… But, you know, the - the

> Western Slope - (tears up) I can't believe it (pause) it means a lot to me. So. Sorry, I – (pauses) it's just that one took me by surprise. It does mean a huge amount to me. This place and the people in it - they are worth celebrating. I hope they can survive.

Sam's emotional response to thinking about who belongs to the Western Slope not only articulated the strong ties of belonging he felt, but also the fear he has for preserving the way of life and values that he and others feel are part of the Western Slope. Identifying who "we" are in terms of the West Slope matters in decision-making because it gives legitimacy and authority to certain people as representatives of the West Slope. The social boundary of "us" and "them" can provide cohesion, belonging, and strength, which can translate into the difference between a voice that is heard and validated and a voice that is dismissed.

However, not everyone felt the same. Symbolic and social boundaries were also used by some participants to differentiate groups within the West Slope. Areas with more junior water rights, differences in type of agriculture practiced, locations more conducive to shepherding water downstream, or newcomers were all discussed as potentially symbolic boundaries that made some areas more vulnerable to demand management, according to participants. These distinctions were used to explain how there was no cohesive West Slope community, but also to say that to imagine one was to overlook how these distinctions could be used to exploit vulnerabilities of some areas when it came to representation. These perceived boundaries and the differences they represent meant it would be impossible for only a few 'representative' voices to speak for the whole Western Slope as they would have neither the authority nor legitimacy to speak for the region.

While some participants felt the Western Slope needed to stand together, others looked around at the other regions of the Western Slope and felt a tension. "It's a beggar thy neighbor situation," said Bob, which is to say he believed everyone was looking around trying to figure

out who was going to take the fall for demand management. This tension emanated from fear that if there was a cohesive unit – the entire West Slope – some would be sacrificed because demand management was easier to implement on them. During a follow-up conversation with Bob, several months after our interview, he responded to a statement I made that almost everyone on the Western Slope felt they were targeted, not just his region. He insisted that it just was not true, "not everyone has a target on their backs." Bob was right in some ways. It is likely that based on the type of agriculture predominantly practiced and the senior water rights held by people in the Upper Gunnison, implementing demand management or a compact call is less likely there relative to other regions including Bob's. Further, participants in every other subbasin of the West Slope articulated the sense of being targeted. Believing his area is more vulnerable was an emotional strain and driving force for Bob in his efforts to speak out against demand management because he felt representatives for his region did not have his and his fellow farmers' best interest at heart and thus lacked the legitimacy and authority to speak on their behalf. Bob and others who shared his viewpoint did not view the Western Slope as a whole, or one community, and were doing what they perceive as their best to defend the future of irrigated agriculture in their own region.

Another aspect of differentiating the social boundary of "us" and "them" that came from within the West Slope addressed the role of newcomers, and who qualified as a member of the community when it came to decision-making. Conflicts existed around who belongs connect to population growth, not only on the Front Range, but also on the West Slope, as Rick described,

> I mean, we're already suffering greatly by the pressures of tourism and recreation and masses of people moving to these communities, newcomers that don't know anything about our way of life. They like what they see. They like what they experience, but they want to bring their methods with them. That's where the conflict occurs.

Conflicts around social boundary setting in who belongs when it comes to representation feed the sense, for some like Rick and Bob, that agriculture is under attack as increasing contestation around symbolic boundary setting intensifies. The shift occurring in parts of the Western Slope as more people move into these communities, making changes that are, some participants felt, somewhat ignorant of agricultural ways and livelihoods. Thus, boundary setting becomes a strategic act of determining who is most likely to share their interests. By attempting to articulate who belongs and who does not have the authority or legitimacy to speak for irrigators, participants were able to able to assess and navigate the risk of demand management. For Rick, this meant excluding newcomers.

However, Jennifer, who worked and ranched not far from Rick, disagreed with this assessment. "The community has been extremely supportive of protecting ag water," she said,

> because they realize the secondary benefits of it and realize that the senior water rights that we have in this space are really good. Any detraction from that will detract from all communities in our basin. So, we have, I would say, from a community standpoint, those that are not ag related actually are very supportive of continued irrigation practices by ag users.

Like Greg, who discussed how his area was changing rapidly, Rick, Jennifer, and Bob all live in areas that have seen considerable population growth due to exurban migration to their amenity rich areas. This shift in population, habits, and practices away from agriculture suggests that the changes increase tension around who belongs to the West Slope and thus has legitimacy in determining what happens to it. This is especially potent when contentious issues like demand management arise, raising the stakes around boundary setting for who is a legitimate member of the community and thus has a right to have a voice to determine what happens to it.

6.1.3 Conclusion

Overall, most participants expressed fear and concern that (mal-)distribution and (mis-)recognition could easily manifest in representational injustice. Representation injustice, in these examples, stems from distributional and recognition injustices. The history of Front Range water providers using their power to bring water from the West Slope and lopsided voting initiatives where Front Rangers were able to make decisions that would potentially impact West Slope livelihoods were key examples. Political power was perceived to be derived from a large voting population that could be mobilized using political capital. Participants feared seeing this power use in initiatives like wolf reintroduction, but for water; where the mass of urban citizens is able to outvote smaller rural communities with little understanding of how that impacts those areas. Some participants felt it was important for the Western Slop to unite in addressing demand management to leverage the power of the entire Western Slope in negotiations and discussion. Others felt that because their communities were more exposed, having a cohesive voice weakened their position; leaders of a cohesive West Slope could not look out for everyone. Thus, they needed to fight demand management on their own. Boundary setting to determine who belonged to the Western Slope mattered immensely when it came to decision-making. Those perceived to have little understanding of the importance of agricultural water (newcomers), were labeled as outsiders, and thus their voices were delegitimized. Identifying the social boundaries of and within the West Slope reveals how boundary setting shapes ambivalence towards demand management. It reveals that not all voices that are elected or nominated to speak on behalf of the West Slope are viewed as legitimate or recognized as having authority. In the face of fear related to being overwhelmed by urban might, this adds to feelings of ambivalence and resistance towards demand management.

6.2 A Seat at the Table?

When it came to discussing what the feasibility of a demand management program participants expressed divergent opinions on their involvement in decision making. Specifically, contentions revolved around the meaning of "having a seat at the table." Disagreement revealed concerns about how a "seat" legitimized the process as well as questions like who gets a seat, who gives out seats, how many seats there were, where the table was, and what gets discussed at it and for how long. Most, but not all, participants expressed that first and foremost, a seat was required to influence the conversation about demand management. Some were angry they were not included from the beginning, but still wanted a seat, while others felt that taking a seat was the only way to prevent federal engagement. Others rejected a seat at the table. Part of this group felt the premise of demand management was illegitimate, and thus, there was no point in being a "collaborator." For this group, having a voice was rejecting involvement and the rhetoric of having a seat at the table. Others who rejected a seat did so because they felt that taking a seat at the table legitimized the conversation and process of demand management. These responses to taking a seat at the table are all about what fair and just representation means. They also inform and are shaped by participant responses of ambivalence to demand management.

6.2.1 What is the seat at the table?

"The general consensus from knowledgeable water people," stated Abby, "is that we just need to make sure we're at the table to protect what we have and so we figure out a way so we're not being sacrificed for the rest of the state." Abby's summary of what she heard from her subbasin was representative of what I heard from most interviewees. Thus, getting a "seat at the table" meant gaining access to legitimate representation, which was viewed by many participants as an essential step in the process of determining the feasibility and make-up of a demand

management program. Doing so would enable them to curb unintended consequences and harms caused by demand management, shaping it into something that could, potentially, benefit them.

Some participants expressed that a "seat at the table" was essential because "decisions have real effects on us that we don't have control of," said Keith in one of the focus groups. This feeling came from a sense that in the past they had not have a say on things that impacted them. Therefore, they would not have a seat now or, insofar as they had representation now, their voice would not be listened to, as the exchange from the focus group continued,

> Tim: It's not right and it's not fair to not have a seat at that table.
>
> Keith and others: Yeah
>
> Bruce: A voice. We want to have a voice.

The perception that demand management had, from the beginning, been forced on them illegitimately due to the Lower Basin's overuse fueled the sense that they did not have and would not get a full or meaningful "seat at the table" to shape a program. Yet, they still wanted a seat to constrain potential harms and unintended consequences from a demand management program. This is a key instance in their interpretation of representational injustice, and it fed some irrigators' feelings of ambivalence toward demand management.

Federal oversight was something almost all participants commonly wanted to avoid. Coming to the table was presented as a reasonable thing to do to avoid federal intervention. Trent, who worked at a large water district representing many West Slope water users, saw part of the perceived unfairness and injustice felt by others on the Western Slope as the result of a well-justified fear, but to not come to the table would be to face a loss of control in shaping a demand management program if it came to fruition. "Fear," explained Trent, "is an important part of any discussion." He continued describing why, from his perspective, the conversation is still essential despite the fear.

> We have to understand that what you might not find attractive about having to go through this effort and this expense is that it is proactive, and it is for a reason. The reason is to avoid the alternative that we find entirely unacceptable – much, much less attractive. It is necessary to put that out there… farmers certainly don't want to not produce, and consumers and municipalities don't want to cut back, conservation ethic notwithstanding. We're talking about real cuts, deep cuts, and that's not comfortable for anybody. We're not selling something particularly attractive, but this is an effort to avoid something that is fearful, that is fear-worthy, and I think it needs to be – it has to be – a part of our conversation. It is a part of ours.

Because of his position representing the interests of his board and members, Trent saw and heard the fear that permeated conversations about demand management on the Western Slope. However, he also wanted to make clear that by not engaging in conversations about demand management a bigger and more threatening consequence – "the alternative" of curtailment by the federal government and administration by a federal river master – could occur. While clearly acknowledging that any water cut is painful and fear is justified, Trent also articulated how federal management could have larger and more indiscriminate impact to the West Slope. Thus, taking a "seat at the table" was framed as a pragmatic and protectionist stance in the face of looming federal oversight. This framing presents federal oversight as the ultimate loss of representation.

Despite the risk of federal involvement, not all participants shared the desire for a "seat at the table". A small, but vocal, group of participants opposed taking or requesting a seat for a few different reasons. Bob was one of these opponents and viewed the entire conversation about demand management as, "bullshit."

> As soon as our [county commissioners] figured out that this is basically the same thing we've been fighting for the last 10 years and they're basically going to start trying to dry up our county, then they were not prone to go along with this bullshit… They kind of pushed it over to a straight up opposed. Neutral probably would have been wiser a bit because we're getting a lot of flak for not having a seat at the table… [Group A, they're saying], "we participated, so we have a seat at the table." People who don't participate aren't going to have a seat at the table and that's kind of where we are right now.

As Bob notes, he and other vocal opposers like him do not believe they have or will get a seat at the table. Nor would they want one due to their openly opposed stance to demand management. Regardless of whether his county commissioners' have the power to prevent implementation of a state-wide practice, Bob and the commissioners' actions were symbolic acts of resistance to what they perceived as an illegitimate program that would threaten their community. Perceiving that participation in the conversation about demand management would legitimize it – an example of misrepresentation – Bob and others like him engaged in resistance by refusing to ask for or seek a seat at the table. Bob, clearly, did not feel ambivalent about demand management. However, words and actions taken by his county commissioners and himself were well-known throughout the West Slope, and it is likely their feelings about the legitimacy of demand management fed others' feelings of ambivalence.

Others, who were not openly opposed to demand management, were still opposed to taking a seat at the table. Jennifer's comment illustrated this,

> [Producers] really don't want to come to the table as water rights holders to just be told, 'well, you're going to have to give something up.' They know they're going to have to give something up. Every time they come to the table, they have to give something up! They get tired of coming to the table.

Some irrigators, like Jennifer, feel that a "seat at the table" is not representation because, in their mind, coming to the table tacitly legitimizes the process in which they inevitably will be asked to give something up. Coming to the table is first step in losing, connecting back to Greg's description of demand management as "death on an installment plan." While the producers Jennifer described were not opposed to demand management, they were opposed to participating in its creation. Jennifer continued, "That's not what the state wants to hear always, but it's within their right because they are the ones that are always going to lose."

Undergirding much of these conversations was questioning superficial notions of what it meant to have a seat at the table. Having a seat was about more than being present and involved. As participants reveal, it's about whether your voice is heard, who the other participants at the table are and whether they are trusted, and who gets to set the agenda. Some participants worked to counter-frame the agenda for demand management by questioning its premise and the state's role, as Bob articulated,

> At this point, the only thing I care about is the big river issues, not the demand management bullshit, because I don't think it's about - it's not a valid thing to be doing in my book in the first place. I don't give a crap about demand management and how it's going to work. I'm a big river person… Colorado is giving away our water.

Bob actively tried to rewrite the agenda, and thus, delegitimize demand management by articulating how it was irrelevant since it did not address the problem of overuse in the basin. Additionally, he suggested that by focusing on demand management, the state was not looking out for the best interest of its citizens in its negotiations, or as Duane put it, "sold [us] downstream." Bob's attempt to shape the agenda was intended to cast the entire premise of demand management as unjust, but it also was about focusing on what he viewed as the more important issue: Colorado and the Upper Basin's unfair compact obligation.

Having a seat at the table is about more than getting to be there. It is about who has the power to shape the table, the agenda, and whether all participants are trusted. If other participants are not trusted and agenda setting is not open, then it is not a real seat and the process is illegitimate. This sense further feeds ambivalence or outright opposition towards demand management.

6.2.2 CWCB workgroups: Representation and questionable legitimacy

Recognizing that "water right holders and other stakeholders have a vital interest in understanding the elements and conditions of any possible demand management program" the CWCB pre-emptively launched outreach efforts to "engage in a state-wide discussion" in January of 2018 (Colorado Water Conservation Board 2018:3). Based on feedback from these initial efforts, the CWCB announced in March of 2019 they would create nine workgroups made up of representatives from a variety of stakeholder groups to explore, investigate elements of, and make recommendations on demand management feasibility (Newman and Kwon 2019). This process began taking place during the course of interviews and focus groups. Groups were to be organized topically: Law and policy, monitoring and verification, water-rights administration and accounting, environmental considerations, economic considerations and local government, funding, education and outreach, and agricultural impacts, with a ninth group on Tribal interests formed at a later date (Gardner-Smith 2019b). Citizens could volunteer or nominate others for a workgroup, but the CWCB would determine who constituted each group. 74 participants were eventually selected for the workgroups. This effort was very likely a well-intentioned effort at creating a program reflective of stakeholders input, however, it also became a current example, during my data gathering, of issues in representational justice that feed ambivalence towards demand management.

Initially, the CWCB proposed to keep workgroup meetings closed, complete with Non-Disclosure Agreements (NDAs) to be signed by each participant. After immediate negative feedback on the six-page NDAs, the state created a single page confidentiality agreement (Gardner-Smith 2019b). Within a few weeks, after more negative feedback, especially from Western Slope water rights holders, the CWCB dropped any confidentiality agreement and

opened workgroup meetings to the public (Gardner-Smith 2019a). Morgan, a staff member at the CWCB, explained during an informal conversation the decision to use confidentiality agreements. Morgan described how they were trying to find a way to create a space for open and frank conversation. The hope was that workgroup participants could be honest and brainstorm without fear of their ideas being critiqued in the public sphere until they had been vetted by the group. After rescinding the confidentiality agreements and opening meetings to the public, the CWCB still reserved the right to withhold any sensitive information or discussion from public view.[16] Unfortunately for the CWCB, participants interpreted the NDAs as a sign of the workgroup's questionable legitimacy which shaped further feelings of ambivalence towards the process of discussing demand management.

The growing sense of the questionable legitimacy of the workgroup process could be seen in my data and public comments. Many participants questioned the CWCB initial decision to determine the make-up of the groups behind closed doors with most feeling that the process was not transparent. Some participants shared that they had volunteered or been nominated. A few participants said they would be surprised if the CWCB picked them because of their public comments. Bob's description of how he perceived the process of forming the workgroups was representative of those participants',

> [CWCB employees] came down to the [basin] meeting a few weeks ago. They were basically looking for volunteers for the [demand management] workgroups and [this person] went out of [their] way to say, "yeah, we don't want any obstructionists on these workgroups. We only want cooperators. So if you're an obstructionist, don't even bother applying to any of those workgroups," I wasn't going to anyway, but so [shrugs]. You only handpicked experts who are [uses air quotes] cooperators. I use the term "collaborator."

[16] Covid-19 ended up disrupting the workgroups, and all were moved online to Zoom meetings. It is unfortunately beyond the scope of this dissertation to unpack the impact that moving the work groups to Zoom had on the workgroup process and representation. Additionally, it is beyond the scope of this dissertation to evaluate the workgroup process and outcomes.

Bob's strong language and use of the term "collaborator" ties back to how he and others in the opposition camp perceived and challenged superficial notions of what it meant to have a "seat at the table." The perception that only "yes" people could determine the feasibility of demand management was heightened by the fact that they were not selected or felt excluded from even entering their names in the selection process, creating symbolic and social barriers to pursuing or being given a "seat at the table".

Bill Trampe, a rancher in Gunnison County who has served as a representative of his agricultural water community on water related boards, spoke to the CWCB directors in July of 2019 about the perception of the workgroups. Trampe stated the people he represented felt they needed access to the workgroups and to be allowed to participate because,

> they recognize the fact that we probably better show up and participate in some fashion, so that our brethren on the east side of the mountain [the Front Range] will also be willing to participate… We feel like we've been shut out of this initial process. If you're going to go behind closed doors and develop these ideas, we feel that that's the wrong way to do it, that it should be open from the very beginning, and we can't figure out why these different workgroups have things that they think they need to do behind closed doors (Gardner-Smith 2019a).

Like Bob, Trampe, in his public statement, highlighted the sense that the selection process for the workgroups was neither representative, nor transparent. Participation was essential for two reasons: first to protect irrigators' interests. Second, by showing up, Trampe felt the West Slope was setting an example for the Front Range, as if saying "we're here so you should be too." Even though Trampe and those he represented were not selected to participate they wanted access to the meetings, which the confidentiality agreements and lack of public access prohibited. Thus, they felt they were shut out of the process and of having "a seat" twice over.

Trampe's comment also illustrated what participants, like Bob, were beginning to articulate at the time of data collection: that when the table was created (i.e., the workgroups),

getting “a seat at the table” came with conditions, exclusions, and a lack of transparency culminating in the feeling that the CWCB was controlling the decision-making process rather than facilitating participation in it. His observation put into the public sphere what my participants’ felt about the process for who was invited to be at the table. The people invited to the table were those who possessed some list of qualities that were acceptable, but the qualifications were never made clear. Additionally, some participants felt the workgroup process revealed that the agenda was already set and only those who agreed with the agenda were allowed into discussions. The perception of secrecy through the NDAs, rather than creating a safe space for conversation, meant those who would potentially be impacted by any demand management program were shut out of both participating in and learning about what transpired in the discussion. This led participants to question the legitimacy of the procedures for representation in demand management discussions and the objectives of the CWCB and further fed their ambivalence about demand management.

6.2.3 Conclusion

Discussing what it meant to have a “seat at the table” was a way for participants to articulate their perceptions of representational justice. Issues that emerged relating to representation fostered ambivalence towards demand management because they challenged ideas about what it meant to get a “seat at the table.” Though most participants articulated a desire for a seat, their reasons for desiring it and what it meant varied. Some of them felt it was essential to protect themselves and their communities from unintended consequences, while others articulated that it was the best way to prevent federal oversight. Those who rejected a seat at the table did so because they perceived the process to be superficial and questioned its legitimacy. As the process of the formation of the workgroups illustrated, having a seat came with having

restrictions and, regardless of whether it was intentional or not, participants felt that seats were limited to people already onboard with the agenda. Additionally, they were selected in a non-transparent manner and NDAs compounded the feeling of being excluded. Though the CWCB very likely had good intentions, it backfired in the sense that the process led participants to question the legitimacy of the workgroups before they had even begun working which added to their feeling of ambivalence toward demand management.

6.3 Building Equity in Representation

What does a legitimate process look like to participants? Interview questions were originally constructed around questions about what participants would like to see in a demand management program if a program came to fruition and most participants spent time discussing this. When it came to what a program should look like, participants frequently focused on what would make a program representationally equitable. Using several examples of what they would like to see in a demand management program, their examples all articulated an emphasis on equity in sharing the harms and benefits of a program between their communities, the entire Western Slope, and Colorado broadly. This emphasis on equity in a demand management program served as a key metric for evaluating fair and just representation

However, participants defined equity in different ways, including both as a voluntary and mandatory program as well as a compensated versus uncompensated program. Additionally, some participants viewed fair representation as the choice to participate or not in a demand management program while others felt choice itself was problematic, as it meant all entities, including municipal water providers, could opt out. This, they argued, could lead to something procedurally unjust, i.e., where the burdens of demand management were not equitably shared. Several participants called for a broadening of the tent to learn from and gain buy-in for demand

management from farmers and ranchers who normally do not show up to meetings but are affected and have important input. I address each of these themes below.

6.3.1 The lesser of two evils

Many participants clearly stated that the best way to have, and express, a voice when it came to demand management was through a voluntary program, as this exchange in a focus group illustrated,

> Joe: No new rules or mandatory regulations on us. If we are going to decide something, it should be decided here [taps table].
>
> Terry: Voluntary. Stress the word voluntary.

A voluntary program, as described by participants, allowed them a choice in participation in demand management. This means, "People wouldn't shut off their ditch unless it was their choice," said James. To some participants, having a choice about participating allowed people who disagreed the freedom not to participate. As one interviewee said, "For everybody who says, 'No, absolutely not!' I say, 'Fine,' this is what a voluntary program, this is what we fought for, and hopefully you find comfort in that. It's voluntary." Jennifer summed up concerns about the lack of choice stating, "what they're basically saying is… we'll decide whether to participate." The irrigators represented by these comments want their voice to be represented by the choice to participate in a program that is voluntary. This belief was widely held across participants.

However, a minority of participants felt uncomfortable with the implications of what a voluntary program would mean in practice. John sighed deeply and shifted in his chair as he said,

> So honestly – and I want to preface this by saying how much of a free market, anti-socialist person I am – I'm pushing the voluntary, compensated to start with because that makes sense, it fits my free market viewpoint. But I think the only way you can do this is if we have to curtail… If we do do it, it should be uncompensated, mandatory, some situation I hate. Really, I just almost choke saying that, but because of all the things we've just talked about with the pitfalls and the money and the administration of it, you're going to create winners and losers anyway… I hate to say that cause I normally do not like that sort of thing

> from the government, but I don't see how this voluntary compensated can play out.

John's comments reflected the view of a few other participants, all very involved in their roundtables and at higher levels of representation, who all clearly felt uncomfortable with the admission that a voluntary compensated program was not likely to be successful, even though it fit better with their free-market views. Choice in participation opened more possibilities for inequity in sharing the burdens of demand management. This was closely tied to sharing distributional harms: Is it a question of how to share the burdens of water overuse. Allowing individuals and organizations a choice in their participation? Or requiring that everyone, regardless of who they are, to participate? Which is more procedurally just?

One of the key problems with a voluntary program John and others articulated was that voluntary meant voluntary; everyone has a choice to participate or not. This fact did not sit well as it meant the Front Range municipal water providers also had a choice in participation. "How do you make sure it's equitable if it's totally voluntary? How can you ensure that the burden won't fall on the Western Slope?" asked Philip, describing what he heard in informal conversations among people like John. The benefit of a mandatory program, explained these participants, was that there would be protections or "sideboards". Philip described a universal, mandatory program as "your cost of doing business in Colorado… everybody chips in the same amount." Philip continued, explaining, "you have to decide which [voluntary or mandatory] has the worst impact, right? No seriously, we're talking about the lesser of two evils." In other words, equity in representation means burdens would be equally distributed across participants.

These concerns about equity and choice were further reflected in conversations about compensation. When I asked Sam if there were unacceptable places for money to fund demand management to come from, he initially said not really, but then sat back and went silent for a few

moments. “I had not thought of this right off,” he started, “I would be very leery of front range water users making a pot of money for west slope fallowing. That’s a very slippery slope, I don’t think we want to get anywhere near,” he paused again, and said,

> so, we set up this demand management program and then the Front Range buys its way out. That they say, “we won’t contribute water, we’ll put some money in so you guys, agriculture on the West Slope can take the money, we don’t reduce our uses any more.” The real bottom line is the front range has to put up water. If there’s money after that we can talk about how that would look. But I’d be nervous, fox in the hen house.

Participants also felt the Lower Basin should not be able to buy their way out of a fair procedure as well. “*Everybody* shares in this pie of pain,” (spoken emphasis highlighted) explained a water district employee. When asked about what compensation in a potential demand management program should look like, money instead of water from Front Range municipalities was a non-starter for almost all participants. This was viewed, as Sam alluded to, as both unfair and unjust because it would heighten irrigators’ sense that demand management was buy-and-dry, just in a different form. The history of municipal water acquisition was never far from irrigators’ minds. For cities to be able to buy themselves out of sharing the pain was perceived as procedurally unjust and furthered questions about what equity means. Is it freedom to choose? Sharing an equal burden? Is equity compensation or a condition of using water in Colorado?

6.3.2 It takes effort to broaden the tent

The final theme that emerged concerning representation centered around making sure there was equity in who had a voice by broadening the tent to better include the people most likely to be familiar with the unintended and unanticipated consequences of the methods of creating conserved consumptive use. Broadening the tent means not only making the effort to reach out to more irrigators and making conversations more accessible to people who will have to implement the policy, but also to build different kinds of tents, or ways, for agricultural water

users to participate in its development. That is, as a program begins to take shape, would policymakers test it in the field amongst those who, maybe had not helped form it, but could provide perspective on it? This finding is not just about bringing people to the table or even legitimizing a seat at the table but broadening ideas about who is considered a stakeholder and how much voice they get in shaping what demand management looks like.

The best way to mitigate potential impacts, Doug and other participants argued, is by working with the agricultural communities since they already know and have experienced many of the potential secondary impacts. Several participants equated equity in representation with broadening the tent of irrigators who were involved in discussions about demand management and its feasibility. To illustrate why this was essential in his eyes, Doug told a story about work he did on his community's park that backfired. "The community is very proud of the park. It brings a lot of people in. They get their water to irrigate that from the X ditch, even the water in their bathrooms." In the process of lining the ditch to prevent water loss through seepage, a seemingly good idea to improve water loss, a significant unintended and unanticipated consequence arose. "The park actually kind of dried up because they didn't have enough water. So, it worked maybe a little too good." Doug, who has extensive experience in irrigation and vested interest in maintaining his community's park, still almost dried it up. The takeaway lesson for him was that though he intended to improve the efficiency of the ditch, his "improvement" of lining the ditch had a significant consequence that he did not anticipate; he dried up the park by altering the pattern of historical seepage. Thus, intentions, even the best, can still bring about harmful outcomes – outcomes that no one predicted when they first began the project. Therefore, engaging with a diversity of users with multiple levels and types of experiences is essential in

evaluating the impacts of a potential demand management program. Such local knowledge was considered essential for policy development.

Water, despite a plethora of measurement, modelling, and forecasting, still moves in some mysterious ways, especially in its interactions with humans, meaning not all consequences can be foreseen even by those closest to it. Doug went on to explain how this lesson in unintended and unanticipated consequences can scale up rapidly, with ripple effects out into the broader community. Thus, seeking out the voices of people who are closest to the operation of a demand management program is viewed as a necessary component of representational justice.

> The transition to more "efficient" methods could be a loss and [result from a] lack of working with ag communities. If you work with ranchers and farmers and say, you know, "We'll help you manage your water a little better; put some sensors in or even a sprinkler system or so forth to where you're using less," I think a lot of ranchers and farmers would probably go for that.

In talking about increasing inclusion of stakeholders, participants also referenced the considerable population of irrigators who did not normally show up at meetings but had insight worth seeking out. However, "that community is very hard to get," acknowledged Doug, "because they, and myself included, you kind of get in your own little work zone or whatever and you just want to be left alone. The last thing you want to do is go to a meeting and I go to enough of them as it is." Participants described fellow irrigators not participating for similar reasons, but added that when they did participate in various water meetings or the roundtables, they felt they were not usually listened too. A few participants further stated that it was important to have accessible conversations for hashing out water law and its application that avoided "legalese" and excessive, inaccessible jargon that hindered fuller participation. Jennifer, who articulated something similar, added that it was essential that irrigators were reached out to, though she recognized the effort that would take.

Bringing people who did not want to come to the table was not just about having an accessible conversation, it was also about the state being open to soliciting help. “Instead of telling them, ‘this is what we're going to do,’” said Doug, “tell them, ‘hey, we're looking for ideas… we've got this problem. What can you do to curtail your water? What can you do to better manage your water?’” Being open to new ideas and creating a safe space for them to happen had been one of the purposes of the workgroups created by the CWCB, however, participants did not view them that way, partly because of the suspicion of the initial NDAs, the lack of transparency in who was selected, and the fact that many of them were not selected.

Clint was the only participant to directly equate making discussions of water law and procedure accessible to irrigators with justice. He described representation as engaging in a “civil space where “we” as the non-governmental sector decide what we're going to let our constitution rights mean and what's fair and just and right and how we do that.” Clint’s comment, though unique to the set of participants, articulated what many were trying to communicate about having a voice. Having a voice means a space where those impacted have a say in what their rights mean in practice. Clint continued, contending that, “a layman's discussion is the right kind of discussion to be having instead of the purely legal one, … that layman version's got real value. To even talk about this to my neighbors, just leaning up on the backside of a pickup… I mean it’s how you do it to do stuff appropriately.”

Several participants including Jennifer, Abby, and Doug all recognized that these types of one-on-one, layman’s conversations are a considerable challenge for a state agency. So, they each offered suggestions for how to rethink the state’s current efforts to engage with difficult to reach irrigators. Doug suggested that “people would respond better with a group that they're used

to working with and that they trust that trust" like the Colorado Cattleman's Association. Jennifer, who does a considerable amount of outreach in her day job, counseled that

> any group that looks at demand management needs to build in appropriately in your project budgets one-on-one time with landowners. Because ag users are not difficult people and they get a bad rap for that. But what I've learned through my work, one of the reasons we're successful is because we have private conversations… You will never find great success with individual ag water users unless you're willing to go into their homes or have a private one-on-one meeting with them. They will not discuss their business, whether it's ranching or water in a group of people. Now, if you have things you want to share with them, by all means call a meeting. If they're interested, they'll come and listen. But you're not going to get them to contribute to the process without at first isolating them and saying, 'what is most important to you?' And you taking heat of that and starting a relationship that way.

Abby and a few other participants, who also work with landowners, echoed Doug and Jennifer's recommendations, explaining that irrigators were hesitant to publicly share information about their operations and opinions on irrigation specifics. Doug, Jennifer, and Abby all shared instances where resistant landowners and irrigators had willingly changed their minds after engaging with them one-on-one in private conversations and relationship building. Thus, large public meetings where irrigators and landowners were asked to share information were more likely to generate negative reactions to any sort of conservation or easement initiatives than one-on-one conversations. Regardless, the essential step was to reconsider the importance and necessity of actively including hard to reach stakeholders to broaden the tent. Doing so, many participants felt, was an important step in representational justice and would increase the legitimacy of whatever demand management program came about.

6.3.3 Conclusion

When it came to articulating how demand management should look, participants largely described ideas around what made a program equitable rather than specific programmatic decisions like what amount of compensation was fair. Instead, they talked about what would

make the idea of things like compensation, equitable. While everyone, but Clint, avoided the use of words like “just”, they verbalized representational justice in their responses. This included discussions and disagreement as to whether equity was choice in participation or mandatory and equitable burden sharing. Participants, drawing from the past, shared concerns about how misrepresentation could manifest again in the future. Past issues of representation justice occurred when the political power of cities, derived from large populations of voters and political capital, used that power to gain access to water on the Western Slope. The fear that this could happen again lives on and shapes how irrigators respond to demand management.

Equity was also about asking who is a stakeholder and who has a voice in shaping demand management. It is more than inviting stakeholders to meetings; it’s about recognizing barriers that prevent them from getting there and from sharing their perspectives. Several participants explained that it was essential to broaden the tent to include more irrigators who are not regular contributors at water meetings for a variety of reasons including, ability and desire to attend meetings, accessible conversations, and an unwillingness to share private thoughts and experiences publicly. Outreach to these hard-to-reach irrigators was important because, as participants described, they possess thoughtful, on-the-ground perspectives that could potentially provide keen insight and prevent unintended and unanticipated consequences of a demand management program. However, the barriers to their engagement in traditional ways, would preclude them from voicing their thoughts. Achieving equity in demand management is a challenge, but by engaging with irrigators perceptions of what makes a program equitable could add legitimacy and reduce ambivalence towards demand management.

6.4 Conclusion

Representation justice is concerned with how a society is politically constituted, asking if the relations of procedures and rulemaking are just, and who is included and excluded by the procedures. In addition, representation justice inquires if all voices are given equal chance in participation and being heard. The symbolic and social boundaries that inform and legitimize who gets a seat at the table are a key part of representation justice as well. Misrepresentation occurs when some people are denied the ability to participate on par with others in the decision-making process. This chapter engaged with participant ideas and concerns about equity. Particularly, questions like what makes representation equitable? What does equitable participation look like and how does that compare to engagement efforts thus far? How do superficial notions of what it means to have a "seat at the table" add to ambivalence towards demand management? Who is a stakeholder in demand management conversations, how are symbolic boundaries used to enforce social boundaries, and who is heard?

For residents of the Western Slope the urban-rural divide is exacerbated by physical and symbolic distance, creating social boundaries that can manifest in inequitable impacts derived from representation. This divide shapes the political realm in Colorado. When it came to demand management, participants expressed concerns about misrepresentation first and foremost in relation to this boundary. Their concern was largely that the uneven distribution of population, political capital, and thus, power to mobilize larger urban populations could translate into being outvoted or outmaneuvered on issues that directly impact their livelihoods and communities. A potent example of this was the upcoming wolf reintroduction ballot measure. Additionally, participants expressed fears that the lack of recognition and misrecognition could feed this misrepresentation, where they were not even seen. This sense of being subject to the powerful

whims of an unseeing, mobilized urban population fed participants' fears for how future water policy might be shaped and ambivalence about demand management.

Furthermore, participants were divided about what equitable participation should look like. While most participants expressed a desire for a "seat", their key concern was that they should have a say in anything that might impact their livelihoods or communities. But not everyone wanted a seat; a few participants felt that even if they had a seat, it would be essentially meaningless because they would not have power to shape the agenda, or even be heard. This was also manifest in participants descriptions of what demand management should look like. Their articulations centered around equity rather than programmatic details and differed as to whether equitable participation was having a choice in participating or everyone sharing the burden, including municipalities, through mandatory participation. Finally, participants shared thoughts on why it was essential to increase recognition of who is a stakeholder as well as identify and ameliorate barriers to their participation. This effort, they believed, would pay off because soliciting input from a wider and more varied field of irrigators could help prevent unintended and unanticipated consequences of demand management. Additionally, it would address some of the ambivalence directed at demand management due to irrigator concerns about equitable representation and the legitimacy of feedback.

A key theme that permeates this chapter is whether and how representation justice is a product of, or separate from, issues of distribution and recognition. I argued in the first section on population and power that representation injustice stemmed from injustice in distribution and recognition, but while representational justice overlaps with and is informed by injustice in distribution and recognition, it is not reducible to them. In the discussion of issues in this chapter, representational justice is intimately tied in complex ways with issues of recognition or

distribution. For instance, in the section on what it meant to have a seat at the table, power to shape the agenda or select who participated in CWCB workgroups was not evenly distributed. Additionally, broadening the tent by considering who else is a stakeholder involves barriers in access that stem from recognition of who those stakeholders are and the conditions that shape their lack of participation. The fact that participants primarily articulated their thoughts on representational injustice using the terms equity, parity, and proportionality indicates that they view it as deeply connected with both being seen and concerns with how the harms and benefits of demand management are shared. When these concerns are overlooked, bypassed, or dismissed it fed their ambivalence toward demand management. It was not simply about distribution of benefits and burdens or recognition of concerns but having a voice to actively shape the policy that decides distribution and what and whose concerns are addressed.

CHAPTER 7: CONCLUSION

> *"You've got to write a future where you can feel somewhat confident that your kids will appreciate waking up to every day. 'Cause if they grow up with some of these changes that I have a hard time living with, then they have an easier time than me. You gotta have them foremost in your mind as you write the future." Clint, rancher*

> *"People who must act must hope. People who hope must act, not always correctly but always creatively, and they will not let the world end in desert" (Bingham 1996:348 emphasis in original).*

In this final chapter I summarize the findings from the three empirical chapters. I then discuss the implications of answering my emergent research question: *Why did demand management, a program that would – ostensibly – protect water users in the future event of shortage, provoke such ambivalence?* This discussion has two foci: 1) to illuminate how these findings can be used pragmatically in water governance to support building effective, long-term policy around managing demand for water; 2) how this research contributes to the literatures of water governance, environmental and water justice, and rurality. I will then discuss the limitations of my research before providing concluding remarks on this research and the Colorado River Basin.

7.1 Summary

This dissertation looked specifically at reactions of ambivalence and contestation from rural irrigators on Colorado's Western Slope toward the idea of a demand management program. If implemented, a demand management program would require irrigators to conserve their consumptive use of water through fallowing or deficit irrigation, i.e., grow less. This water would be stored in Upper Basin reservoirs and Lake Powell and only be used when the Upper Basin is unable to meet their compact obligation to the Lower Basin, effectively serving as a

backup savings account. Such a 'savings account' would theoretically protect the Upper Basin if water supply does not meet their delivery obligations to the Lower Basin. Maintaining compact compliance allows the Upper Basin more flexibility and control in managing their water (Water Education Colorado 2021). Ninety-one percent of water resources in Colorado are used in agriculture and just under a quarter of Colorado's irrigated land is located in the Colorado River Basin on the Western Slope (Colorado Water Conservation Board 2022a). Thus, many are looking to these farmers and ranchers to meet the needs of a demand management program.

In this dissertation I showed how the ambivalence expressed by irrigators and other stakeholders' is a product of perceptions and experiences of distributional, recognition, and representational injustice. Addressing injustice described by irrigators is essential for meaningful collaborative water governance that creates conserved consumptive use. "Overcoming injustice," explains Fraser (2005:73), "means dismantling institutionalized obstacles to participatory parity that prevent some people from participating on par with others, as full partners in social interaction." But to dismantle these obstacles and achieve parity of participation, we must first understand what these obstacles are, how they are carried forward across space and time, and who experiences them.

7.1.1 Who gets what?

In Chapter 4, I addressed issues of distribution and maldistribution as described by participants. Distributive justice is primarily concerned with "who gets what" (Fraser et al. 2004:375). In terms of water this is not just about the distribution of water resources – though that is an important component – it is also about the distribution of harms and benefits that stem from water allocation and distribution and the power to shape water transactions and allocation. The maldistribution of water, power, and harm is a consequence of water's relational and

contextual qualities. In this chapter I described participants' perception that water and power are not, and have not been, fairly distributed and that rural communities bear the brunt of the harms when water is reduced in their communities. These perceptions made demand management appear illegitimate, which fed feelings of ambivalence in many participants' eyes.

Participants perceived that the overall situation in the Colorado River Basin was unfair due to the historical maldistribution of water. The Lower Basin had made unfair and illegitimate gains consuming more than their fair share and the 2007 Interim Guidelines equalization caused the pre-emptive drawdown of Lake Powell, obscuring Mead's lowering levels and the Lower Basin's need to cut back use. Moreover, participants suspected that their efforts to fill a demand management pool in Lake Powell might be futile if the Lower Basin does not seriously curb their use.

Additionally, participants perceived a "target" on their backs because of the uneven distribution of power between rural areas and cities. There were also concerns about the distribution of harms and benefits related to demand management's implementation on the West Slope, with irrigators concerned that certain conditions in their region would focus demand management on them. In both cases, water rights held by two different entities are not equivalent due to the characteristics of who holds the rights, their location, the seniority of the right, and flows of water in the basin of origin, shaping who had power and authority to influence water flows.

Finally, participants' shared concerns that rural communities experience a disproportionate share of harm when water is reduced in their communities relative to urban areas. Participants described harms by talking about the loss of a way of life, declines in the secondary agricultural economy, environmental and aesthetic changes, and employment. Every

single participant referenced the example of Crowley County in elaborating on their concern. The example of urban buy-and-dry in Crowley County illustrated three things for participants': 1) the power differential between cities and rural areas; 2) the domino effect of water leaving a rural community, making the area less habitable for the remaining residents; 3) resentment towards the state, who participants perceived as facilitating, or at the very least showing preference for water moving to urban areas. Crowley County served as the model of the perceived uneven distribution of power between cities and rural areas and the vulnerability of rural areas to massive shifts in water distribution coupled with the uneven and long-lasting burdens borne by rural communities resulting from this.

7.1.2 Who is seen and valued?

While distributive justice looks at how benefits, harms, and materials are distributed, recognition and misrecognition concern questions about how groups and their culture are perceived and valued by others. In Chapter 5, I explored participants' sense of being misrecognized or not recognized and how it fed resentment, which shaped their ambivalence toward demand management. Above all, participants felt the struggles of rural irrigators and communities were not seen. People have different relationships with water, and these are not uniform across society, thus recognizing and articulating points of difference as well as valuing these relationships is essential crafting effective, long-term water policy.

Primarily, participants articulated that not only did they experience loss, decline, and burdens of maldistribution of water resources, but that these hardships and struggles were dismissed, or at the very least not recognized as loss by urban Front Range residents. Participants articulated the experiences of rural restructuring that resulted in the loss of natural resource economic bases; the movement of water and land away from agriculture; the gradual loss of

patterns of water use that create their way of life, identity, and give them meaning; and a decline in hope for the future of the agricultural profession as fewer young people are entering the profession. Experiences of loss and decline further predisposed them to suspicion that demand management would be the next natural resource their communities would lose access to and, moreover, that this loss and its ripple effects would be invisible to most Coloradoans. It's one thing to experience uneven burdens, it is another thing to feel that the unevenness is ignored.

Participants also described how water is part of irrigators' identities and livelihoods – creating an emotional tie and differentiating their relationship from those who use water in a domestic setting. Water was part of their identity, culture, and way of life through actions, knowledge, and experience. In addition, for many irrigators, water was the bedrock of their financial stability as their rights are one of the most valuable things they own, and water's presence intimately connected with their financial wellbeing – facets and consequences of demand management they felt others ignored. Finally, participants felt that the value of the agricultural profession itself was both misunderstood, declining, or not recognized by outsiders. Many felt frustrated that the contributions of their profession – that is growing food and the multiple aesthetic and ecological benefits of irrigated agriculture – were not recognized nor appreciated even though irrigated agriculture was one of the things that made Colorado a pleasant, aesthetically pleasing place to be.

7.1.3 Who can speak and who is heard?

Chapter 6 addressed representation, the third axis of justice, which focuses on issues of procedure and membership (Fraser 2005). It is intertwined with the first two axes but differentiated by its concern with who is included and excluded in decision making and if all voices received equal or equitable opportunities in public discourse. Representation justice

highlights issues of legitimation through how symbolic and social boundaries are used to determine who has a right to sit at the table, the size of the table, and what gets discussed.

Chapter 6 foregrounded participants' concern about representation and the perceived undue influence the urbanized Front Range had over the rest of Colorado. Participants referred to the potential upcoming Wolf Reintroduction ballot measure as well as other experiences where population size and political capital meant rural areas were outvoted on issues that directly impacted their lives and communities. This also shaped participants ambivalence toward demand management because they feared that the ability to mobilize larger populations could easily be used to transfer water away from agriculture and rural communities

Participants talked about having a "seat at the table" in a few different ways. For some it was the best defense in the event of a demand management program, while others viewed the very idea of having a seat as a farce. Multiple participants felt that without a concrete program in place their participation was merely theoretical. Others rejected a seat because they refused to legitimize the process. The CWCB workgroups, designed to foster support, ended up feeding ambivalence as participants interpreted them as either only looking for "yes" people or not getting the right people to the table.

Though almost never using the word "justice," participants articulated that just representation, when it came to demand management, meant equity in having a voice that was heard. Participants were divided between defining equity as the freedom to choose to participate in a program or that every user of Colorado River water shares the burden of demand management but noted that *if* demand management moved forward, the tent needed to be broadened to include insights from people who had knowledge grounded in the irrigation practices of their local area. Individuals, they observed, who were often absent from participatory

decision making either because they were not invited or saw little point to participating because their voices would not be heard. Representation justice meant not applying a universal type of conservation practice in a demand management program since regions and types of agriculture varied tremendously across the West Slope. Local knowledge must have a seat at the table and be listened to.

7.2 Discussion

The wicked problem of assuring compact security and addressing shortfalls in supply in the Colorado River Basin looms large. Drawing from the water justice, rural, and hydrosocial literatures, the implications for water governance are that it must be attuned to the multiple complexities of relational injustices that exist in water governance. While water use affects everyone, issues of injustice only directly affect some and agricultural water conservation policy disproportionally impacts rural people and their communities. Not only are rural irrigators the ones who would be most impacted by a demand management program, they are also the ones that must implement it. Regardless of whether their interpretation of demand management is objectively valid, it is none the less real as their perceptions shape their behavior and actions.

Rural irrigators participation is pivotal in addressing water usage in the basin. Fortunately, water governance has increasingly moved toward collaborative approaches to help address their concerns. But to build collaborative solutions in addressing wicked problems and develop water policy that is effective and long-term rural irrigators need to be at the table. It is more challenging than simply providing them with a seat, however, because if the historic context and breadth of rural irrigators' concerns are not engaged with, irrigators will continue to respond with ambivalence regardless of whether their concerns are directly about demand management or relate to broader issues that overlap with it.

7.2.1 Ambivalence is pragmatic

Conversations about water are never just about water. The landscape that investigations of demand management feasibility entered was already imbued with meaning. This landscape influenced how demand management was perceived, interpreted, and responded to by participants. In some sense, demand management simply came along at a moment in time in which rural communities are facing significant loss and challenges on multiple fronts and responses to questions about the policy provided a means for expressing larger frustrations and fears. I did not attempt to evaluate the veracity of participants perceptions. Rather I sought to interpret what the landscape of meaning looked like based on participant responses so that their ambivalence toward demand management not only became understandable, but also sensible.

Ambivalence is an understandable pragmatic response. Demand management reaches deeply into so many parts of the livelihoods and identities of rural irrigators on the West Slope. On the one hand, rural irrigators are very aware of the conditions and situation of the Colorado River and the necessity for changes in water use. They are among the first to see and experience reduced flows, drought conditions, and climate shifts in a way domestic water users do not. Even the participants who expressed skepticism for anthropogenic climate change were nonetheless aware that the system was overallocated and that less water and conservation programs would likely be the norm. Many participants acknowledged that there are improvements that can be made in their water use and some were already engaged in working with environmental non-profits to make these changes. On the other hand, participants articulated perceptions and experiences of injustice that fed resistance to demand management. Many of these injustices were shaped by the symbolic and physical distance between themselves and urban areas like the Front Range. Not only are the West Slope and Front Range distanced by the Rocky Mountains,

but they are also distanced by a history of relations that shaped how participants perceived the Front Range. It is a long history that is more potent and continuous for the West Slope than it is for the Front Range where many residents are new to the state. Colorado added over three-quarters of a million people between 2010 and 2020 (Bradbury and Burness 2021)[17] and most of them reside along the Front Range. The high growth rate along the Front Range feeds the sense of threat and the perception of maldistribution in power and influence between urban and rural and promoted further suspicion among participants. This suspicion was fortified by direct evidence from places like Crowley County and events like the wolf reintroduction ballot measure, both of which figured prominently in participants' minds. It is notable that the ballot measure on wolf reintroduction narrowly passed in November of 2020, mostly on support from Front Range residents. More recently, in early 2021 the Governor's Office instituted a "Meat Out" day, encouraging Coloradoans to voluntarily not eat meat for a day. This immediately prompted a backlash in rural and more conservative areas for a "Meat In" day to support local ranchers and processors (see D'Souza 2021). Things like Meat Out and wolf reintroduction feed the symbolic distance between these regions and the sense of 'us' versus 'them' in rural and urban relations. They also continue to provide visceral evidence that rural areas can be overpowered, are not recognized, nor necessarily appreciated. They fear that if water allocation and distribution go to the ballot, they will lose. Thus, rural irrigators will likely continue to be suspicious of any program or concept that will require them to cut back their water use if they perceive it as coming from the Front Range.

Additionally, participants' suspicion of the state is not unfounded. Thinking about instances like Crowley County, their interpretation that the state has taken an active or tacit role

[17] An increase of 14.8%, the fifth highest growth rate in the nation (Bradbury and Burness 2021).

in helping facilitate water transfers to urban areas in the past feeds their current distrust. Participants consistently expressed concern about the further consequences population growth along the Front Range and the municipal water needs and the continually increasing influence and voting power of cities that accompanies it would have for the representation of their interests. Watching the growth of the Front Range from the West Slope and knowing that a city would never be allowed to run dry again feeds fear about the movement of any water away from rural agriculture. The role the state, and state officials, would need to play in such a situation would not be to the benefit of agriculture.

Water is not an inert resource, guided and managed entirely by the will of those who wish to use it. I used hydrosocial analysis to draw this out: how flows of water are both given meaning by human interaction and how they shape relations between water and humans, humans, and their identity. These interactions build a landscape of meaning, so when demand management entered this landscape, it reminded participants of past losses and also raised the specter of future losses. Thus, demand management could not have entered as a neutral water conservation program for compact security because of these "incommensurable" world views (Espeland 1998). Jackson and Grusky (2018:1097) contend that to understand change and resistance among certain groups today it is essential to grasp that "the late-industrial experience is, in short, increasingly one of omnipresent loss and decline." This perception of loss and decline is "increasingly interpreted as a group-wide experience and increasingly represented as illegitimate" (Jackson and Grusky 2018:1099). Demand management was therefore viewed by participants as illegitimate, creating a tension which fed ambivalence. In this context it is sensible to be resistant and suspicious.

7.2.2 Policy implications

"What can we do right now?" When the CWCB directors voted to put demand management on hold, chair Jackie Brown stated that this was their guiding question while waiting for the other Upper Basin states to catch up. Colorado needed to focus within Colorado on what could be done to address looming shortage in the basin. In response and drawing from the findings of this dissertation, I suggest focusing on repoliticizing water governance, crafting methods of and rethinking strategies for listening, and supporting a vision for water in Colorado that sees and encompasses all water users and locations. Applying these findings means using them to guide the crafting of water policy. Overarching all policy recommendations is the question, how do Coloradoans share the benefits and burdens of irrigated agriculture?

The first step is to engage in the process of repoliticizing water governance. Repoliticizing involves active recognition of the injustices all communities perceive and recognition of the contributions they make. In the context of this dissertation, recognition is a vital step in the development of policy because it communicates that the people who must implement the policy are not only seen but valued. Recognition of this matters in implementing effective policy because it can translate into meaningful representation and participation.

This means acknowledging and working to address distributional differentials in power and influence between rural and urban areas as well as reckoning with histories of water acquisition that many feel were unjust. Some progress has been made in this arena through past programs like the "Learning by Doing" partnership between Front Range municipal water providers and some West Slope irrigators for water sharing. However, this model is not a universal solution. This is because repoliticization also means recognition that universal models are a way of misrecognizing communities and conditions of irrigators (Woodhouse and Muller

2017). Repoliticization means respecting the context, complexity, and relationality of flows of water and governance. Effective policy must be nuanced and reflective of the reality on the ground.

Repolitization also actively recognizes that the who and where of injustice is much broader than often assumed. Simply because rural white irrigators have traditionally been privileged relative to other populations and are still in many ways, does not mean they do not experience injustice. Thus, in thinking about diversity, equity, and inclusion policies it is important to recognize no group of people is a monolith and to think more broadly about how injustice is experienced. Rurality, gender, race, profession, and natural resource dependence reshape the terrain of injustice. Injustice is in the eye of the collective beholder, and the injustice rural irrigators perceive, regardless of its legitimacy, has very real implications for their actions in response to water policy. Rurality can and does shape experiences of injustice and must be recognized as such.

Repoliticization is policy which communicates that thriving rural areas are indispensable to Colorado, and addresses injustices made manifest through policy. Water policy never only touches water. Through hydrosocial examination that looks at the embedded relations of water, people, and land I saw how rural areas are places where water policy goes hand in hand with rural and agricultural policy. Because water is so deeply integrated into rural communities it is necessary to go beyond "ecosystem services," the recreation economy, and pricing water to pay individual irrigators to fallow or deficit irrigate. Economic evaluations to determine the "correct" price for water in programs like demand management, though important, are an incomplete understanding of how flows of water shape and interact with irrigators and communities. None of these fully capture the non-monetary contributions and meaning of water to rural

communities. Pairing water, rural, and agricultural policy means focusing on supporting rural communities to increase their resiliency and health as part of any water conservation program. It means an emphasis on soil health, thoughtful irrigation practices and water use, and agricultural practices that are reflective of and integrated with community well-being. It is supporting rural communities so they are places residents want to be and can look to the future with hope. Rural community health and vitality is an essential key to water policy.

The second policy recommendation I make is that to craft effective, long-term policy, it is essential for everyone involved in the policymaking process (i.e., policymakers, irrigators, water managers) to listen and demonstrate actively hearing. Organizations themselves cannot listen, but employees can and, as I learned during this research project, are often subject to vitriolic diatribes that can feel very personal. One of the most important insights of this dissertation came from Jennifer, when she said, "you're not going to get [irrigators] to contribute to the process without at first isolating them and saying, 'what is most important to you?' And you taking heat of that and starting a relationship that way." Listening involves the practice of recognizing that as employees of an organization, especially a state water agency, they are carrying the baggage of that agency and its history with them into conversations with irrigators. Irrigators see this. Employees may not be aware that around them is a sea of history that they may have had no part in, but carry forward in all interactions, whether they intend to or not. Irrigators must also work to see the constraints carried by employees working for a state agency.

Listening builds relationships and trust. This starts with hearing the emotions and frustration, but also learning to see the feelings behind it. Loss of water for irrigators is hard, no matter the reason. This was also a key finding in my research on lessons from river compact administration. In three instances forced reduction of water deliveries occurred based on

violations of interstate compacts and in all three instances irrigators experienced strong feelings including loss and grief (MacIlroy and Holm 2021). This dissertation hopefully reveals that underneath the angriest responses to demand management are people who care deeply about something they believe is threatened - this is probably about more than water. The outcome of listening beyond the initial emotion is hopefully the development of a relationship. Again, people do not have relationships with organizations, they have relationships with people who represent organizations. Relationships take time and effort because they involve the building of trust. Irrigators who had relationships with employees of land trusts, environmental organizations, water districts, or the CWCB mentioned that they knew who to call if they had a question or problem. Unfortunately, too few irrigators spoke of having trusting relationships with CWCB employees.

Thus, listening needs to be more fully integrated into policy development to address issues of injustice, particularly representation. There are barriers to this relative to the Colorado River, as negotiations around river policy can have restrictions on public access, usually necessarily so. However, integrating listening into policy development is complicated, and the attempt to create workgroup sessions for demand management was fraught with tension initially. This may mean a need to rethink how listening is accomplished. Several participants who worked either for or with land and water trusts repeatedly mentioned the importance of relationships as well as the value of each person's insight. Outreach needs to be more than a checkbox, or a script that is followed, but a fully open, integrated, and funded process that actively seeks out those who don't necessarily show up to a roundtable meeting or who actively reject a seat at the table. Several participants offered multiple insightful and experienced-based suggestions for how to reach those people, which mostly centered around showing up repeatedly,

one-on-one, hearing them out, and demonstrating that you heard them. In addition, they mentioned that effort to reach the reticent and less involved communicated recognition for those people and the broader community.

Third, this dissertation points to the need to continue working towards and implementing a vision of Colorado that clearly articulates that every entity and resident shares responsibility for water. Providing a compelling narrative that connects water users of Colorado through emphasis on our interdependencies, is a way to build recognition justice. This vision will recognize that this is a conversation about the value of all Colorado agriculture and rural communities and how they contribute to the essence of what makes Colorado, Colorado. Importantly, this vision spreads a message that to be a Coloradoan is to be someone who knows where their water came from, who actively engages in water conservation, and is proud of it.

This vision can acknowledge that irrigators are both heavy users of water and innovative entrepreneurs who grow food, predominantly for urban residents. In the coming years, agricultural water on the West Slope will be reduced. We can expect there will be grief, sadness, anger, and frustration from rural irrigators and their communities. For the Colorado River Basin to function, Coloradoans from all over the state need irrigators to engage in conservation, but it does not need to go unappreciated, undervalued, or unrecognized. This also applies to rural communities. The rural areas and communities irrigate land for food, provide ecosystem benefits, and relationally define the more urbanized parts of the state. How do we share the benefits and burdens of irrigated agriculture? How can a holistic vision address the injustices experienced by the rural inhabitants of Colorado and all water users? How can holistic water governance build and spread a vision for rural Colorado that inspires hope, purpose, and a sense of being seen, valued, and heard? Water carries with it hope, purpose, and the ability to survive.

I want to be clear that none of this is said to vilify the CWCB, its directors, or employees. The CWCB has an incredible amount on its plate in terms of dealing with and addressing water use and management in and on behalf of Colorado. They are facing an unprecedented situation with no easy solutions and little thanks for their work to balance all Colorado's water uses. The employees I have met and talked with, just like the irrigators I have interviewed, are all attempting to do their best against impossible odds. Many of them are passionate people who care deeply about the people of Colorado and the security of its water supplies. However, the barriers to success with water policy can look and be interpreted differently from their position in a state bureaucracy. Backlash can appear and feel personal. Most often it is not, as it is about what an employee or policy represents, rather than who the people are. It is important to recognize employees are not hired for their water emotional intelligence, and yet that is sometimes what is asked of them. It is my hope that this dissertation can help illuminate some of the unrecognized and unaddressed barriers that were brought into the conversation about demand management feasibility.

7.2.3 Limitations

There are a number of limitations in this dissertation project. First, this was a point-in-time study conducted between February and September of 2019. This period was after the initial announcement that demand management feasibility might be happening and during the time when the DCP was signed (May of 2019) and overlapped with the formation of the CWCB workgroups. By the time the workgroups were initiated, data gathering for the dissertation had concluded. The insights gained from this research reflect a very specific and highly contentious moment in time. The results may, and probably do, reflect a slightly different vision of demand management than irrigators would have a year or two later as water supplies in the Colorado

River continued to deteriorate. Indeed, the predominance of demand management may also have heightened the sense of injustice rural irrigators on the Western Slope feel because it was so new and fresh. However, this may also have been a prime time to access these broader perceptions of injustice and the material and symbolic landscape that demand management entered. Further, experiences of past injustices rarely fade away and frequently reemerge in new contexts when they remain unaddressed.

The point in time nature of this study also did not track whether and how views or opinions of demand management shifted over time as the state implemented workgroups, greater outreach, or new information and insights emerged. This is particularly relevant when it comes to the conditions of the Colorado River. Some participants have suggested that the sense of urgency to act and importance of conservation projects increases when conditions of the Colorado River and Lakes Powell and Mead deteriorate. With increasingly dire predictions of reduced flows into Lake Powell, it is likely that demand management has only become more probable in the near future (Kuhn, Fleck, and Schmidt 2022).

Another limitation of this study is the potential limits of who was interviewed or able to participate in a work group. Early in the research process I refined my sample to people who generally were involved or knowledgeable as to what demand management was. Some of my early participants and focus group participants were unfamiliar with the term and thus requested I explain it to them, potentially influencing their ideas about the feasibility and program. Thus, by selecting people who were more involved with their local basin roundtables or with water districts, I may have skewed my results. However, these people were the ones with the most awareness of the situation and more likely to have a representative awareness of what others in their communities thought. In soliciting recommendations as part of snowball sampling at the

end of each interview, I reframed my request to indicate I was interested in talking with people who were aware of what demand management was, regardless of their opinion of it. Regardless, my practices of snowball sampling and focus group sampling could have limited the range of perspectives that were shared. Furthermore, there were several potential participants, who due to scheduling conflicts were never interviewed. While every attempt was made to solicit a variety of knowledgeable perspectives, the research also was limited due to funding and time constraints.

Though it was necessary to bound the case, and time limits served as a reasonable boundary, conducting more interviews could have increased the diversity of perspectives and meaning for water in rural communities. By limiting my selection to people who were involved in water or irrigation, I may have missed key insights related to the multiple identities inhabited by irrigators, as well as water. Broadening my selection to others in these communities outside of irrigation, could have created a fuller picture of the role of and meaning of water for these areas. Additionally, it would have been beneficial to conduct a focus group in each subbasin and interviews covering more of the unique agricultural regions within subbasins.

An additional limitation of this research was the shifting nature of the main research question as participant responses shifted my perspective on what was relevant. While this is a characteristic and often strength of grounded theory, pursuing relevant emergent themes, it also meant that follow up and probing questions towards the end of interviews were very different than at the beginning as I picked up on emergent themes. Other relevant and potentially interesting themes may have been overlooked. One of the intentions of this research was to inform policy and workgroup conversations about what conditions made irrigators more likely to participate as well as the barriers and opportunities in participation. In the end, because the focus

of research shifted, but I still needed to produce a report for my funders, it is possible insights from participants during data collection may not have been pursued.

A final and important limitation of this dissertation is that it does not meaningfully address perceptions of demand management among the tribes based on the West Slope. While this study did not attempt to address water injustice faced by the two tribes located in Colorado, both of which are on the West Slope (Ute Mountain Ute Tribe and Southern Ute Tribe), both tribes were among the first in the Basin to establish quantified water rights. However, the Southern Ute have yet to access their water, which is a common problem among tribes in the basin. When it comes to addressing who has legitimacy and power in shaping water policy, there are considerable issues and barriers faced by the tribes. Lee-Martinez (2022) highlights this in her discussion of contestation around developing a National Conservation Area along the Dolores River in southwestern Colorado.

7.3 Concluding Remarks: Demand Management and the Colorado River Basin

There is a collective reckoning about water allocation and distribution happening in the Colorado River Basin as I write this, weeks before the 100th anniversary of the Colorado River Compact. Sneddon and Fox (2008:72) describe water allocation in river basins as,

> the contestations and collaborations among different actors seeking to articulate, define, and advance – through discourses, policies, coercion, and other means – a particular relationship between, on the one hand, human livelihood and economic activities and, on the other, river basin processes involving hydrological and ecological dynamics.

The contestations and collaborations currently occurring are a response to the shifting ground and recognition that the status quo cannot hold any longer. The Basin is reaching its collective

tipping point and actors are all working to "articulate, define, and advance" their relationships with water.

While the conditions and context in each state and region are different, the key takeaways of this dissertation contribute to and can inform how challenges of collaborative water governance get addressed. Demand management symbolizes many things to different people with different relationships with water. But at the time of this study of the West Slope of Colorado it symbolized, first and foremost, illegitimate loss. No matter the context and regardless of one's position in line for water, a reduction in water allocation is painful and will likely evoke resistance. The future feels uncertain when recent experience is perceived to be one of loss. There may not be raises, there will be increased pressure to give up more, the status quo will not hold. Even when it is necessary for the status quo to change, it is hard to do so. This is the future for water not only on the West Slope, but in the Colorado River Basin and other water supplies facing overuse. It is fear worthy. It is loss, which causes grief. There *should* be grief and we should not be surprised. People can experience two opposing responses at the same time – ambivalence – recognition that something needs to change and the necessity of action and resistance to the very things they must do.

Just like conversations about the feasibility of demand management, any conversation about water re-allocation and distribution emerges into a landscape already populated with previous experiences, patterns of action, and fears about future impacts that shape how people interpret and respond to it. In the case of demand management, it was viewed as illegitimate and attempts to engage stakeholders in conversations about what a program could look like were also interpreted as attempts to legitimize it and locate the parameters for what is acceptable. Drawing out this landscape of populated with perceptions and experiences of injustice helped to illuminate

how people's responses and actions were pragmatic. In collaborative water governance, starting from this recognition is a more fruitful place to engage in any conversation about water and its use in a world rife with wicked problems and uncertainty. Therefore, in response to Bob, who in Chapter 1 said environmental justice was not for people "like him," I argued, environmental justice is for everyone.

At the end of our interview, Sam, talking about how to make demand management work, threw up his hands and said, "this is rocket science." It is rocket science because water governance in the Colorado River Basin is a complex problem, with multiple moving parts, constantly shifting conditions, and in need of responsive, adaptive solutions. But it is also something harder than rocket science because it's a wicked problem in which there are many actors with differing interests and relationships with water and a history that influences patterns of use today. Wicked problems require multiple solutions at various scales and levels, of which demand management for the purpose of compact security for the Upper Basin would only be one and it is hard enough.

Obviously, it is hard; what irrigators and policymakers must do is impossibly complex and frustratingly contentious. Irrigated agriculture a useful place to explore how people interpret and understand loss in the West, why such losses are seen to be illegitimate, and how they shape responses of ambivalence to demand management. This dissertation is relevant because the engagement of irrigators in some form of demand management is pivotal for the entire Colorado River Basin. Responses of ambivalence stem from perceptions of injustice and have real implications for action, making irrigators more reluctant to engage in initiatives like demand management. Regardless of whether their experiences of injustice are factually accurate or

perceived of as valid by others, understanding why ambivalence is sensible can and must shape policy going forward if we are to face and address this wicked problem.

We do not need rockets (yet). We do need water. We need people to grow food and we need people to participate in decision making to ensure that the inevitable challenges we will continue to face are met collaboratively and effectively.

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APPENDIX

Appendix A – IRB Consent Form

Colorado State University
Consent to Participate in Research

Title of Study: Exploration of Perceptions of a Voluntary Water Conservation Program in the Upper Colorado River Basin

Introduction
My name is Kelsea MacIlroy. I am a graduate student at Colorado State University, working with Lynn Hempel, Ph.D. in the Department of Sociology. I would like to invite you to take part in my research study, which looks at perceptions about voluntary water conservation possibilities in Western Colorado.

Procedures
If you agree to participate in my research, I will invite you to join a focus group at a time and location designated by me and/or an interview at a time and location of your choice. The focus group/interview will include questions about your job or operation, agricultural water use, conservation, barriers and incentives for conservation, and the future of the basin. The focus group/interview should last about one hour. I may also ask if I can spend time observing you in your job. You may tell me when, where, and how long this observation will be.

With your permission, I will audiotape and take notes during the focus group/interview. The recording is to accurately record the information you provide, and will be used for transcription purposes only. If you choose not to be audiotaped, I will take notes instead. If you agree to being audiotaped but feel uncomfortable or change your mind for any reason during the interview, I can turn off the recorder at your request. Or if you don't wish to continue, you can stop the interview at any time.

I expect to only ask you to participate in one focus group or interview; however, follow-ups may be needed for added clarification. If so, I will contact you by mail/phone to request this. Follow-up for clarification will only happen one or two times at most and only refer to questions already asked in the interview.

Benefits
There is no direct benefit to you from taking part in this study. It is hoped that the research will provide guidance and insight in the development of voluntary water conservation programs in Western Colorado.

Risks/Discomforts
We do not anticipate any risks to you participating in this study other than those encountered in day-to-day life. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks. Some of the research questions may make you uncomfortable. You are free to decline to answer any questions you don't wish to, or to stop the interview at any time.

As with all research, there is a chance that confidentiality could be compromised; however, we are taking precautions to minimize this risk.

Confidentiality
Your study data will be handled as confidentially as possible. If results of this study are published or presented, individual names and other personally identifiable information will not be used.

To minimize the risks to confidentiality, research records will be kept in a locked file; only the researcher will have access to the records.

I will transcribe the audio recordings as soon as possible after the interview, and then destroy the recordings. When the research is completed, I will save the transcriptions and other study data for possible use in future research done by myself. I will retain these records indefinitely after the study is over for possible use in future research. The same measures described above will be taken to protect confidentiality of this study data. I may be asked to share the research files with the sponsor or the CSU Institutional Review Board ethics committee for auditing purposes.

Compensation
You will not be paid for taking part in this study.

Rights
Participation in research is completely voluntary. You are free to decline to take part in the project. You can decline to answer any questions and are free to stop taking part in the project at any time. Whether or not you choose to participate in the research and whether or not you choose to answer any questions or continue participating in the project, there will be no penalty to you or loss of benefits to which you are otherwise entitled.

Questions
If you have any questions about this research, please feel free to contact me at +1-602-616-9960 or *Kelsea.Macilroy@colostate.edu*.

If you have any questions about your rights or treatment as a research participant in this study, please contact the Colorado State University Institutional Review Board (IRB) at: 970-491-1381, or e-mail RICRO_IRB@mail.colostate.edu .

****

CONSENT

Do you consent for your interview to be audiotaped?
___Yes
___No

If you wish to participate in this study, please sign and date below. You will be given a copy of this consent form to keep for your own records.

_____

Participant's Name *(please print)*

_____ _____

Participant's Signature Date

Appendix B – Interview Schedule

Introduce myself, the study, and focus group/interview process. I hope that this study will help to inform the process of developing future voluntary water conservation projects in the Upper Colorado River Basin. You've been asked to participate because you have thoughtful and knowledgeable insight into this process. Explain informed consent and confidentiality.

- Please introduce yourself.
    - What is your name?
    - Please tell me about your farming or ranching operation.

- Would you tell me about the top three water related issues in your area?
- How do you think about those in terms of your operation (farm/ranch/etc)?

- Did you participate in any pilot projects/conservation measures/efficiency improvements?
- If applicable: Why did you participate in the pilot/conservation measures/efficiency improvements?
- In your experience, what things deterred or discouraged people from participating?

    Potential probing questions:
    - What structural issues/assets existed?
    - What geographical/topographical issues/assets existed?
    - What legal issues/assets existed?
    - What social or cultural issues/assets existed?

- Thinking about the new DCP, what are your impressions of demand management?
    - What does voluntary mean or look like?
    - Compensated?
    - Temporary?
    - Parity?
- If demand management is not feasible, what are the alternatives? What impact could that have on your livelihood?

- Why would someone (referring to farmers, ranchers, irrigators, irrigation/water managers) voluntarily join a future conservation program?
    - How do impacts to your community influence your decision?
    - How would those need to change?

- What do you hope comes out of the demand management conversation?
- Is there anything else that you want to mention that I have not asked about?
- Do you have any questions for me?

Thank you so much for your time.

Appendix C – Focus Group Questions, Southwest Focus Group

Introduce myself, the study, and focus group/interview process. I hope that this study will help to inform the process of developing future voluntary water conservation projects in the Upper Colorado River Basin. You've been asked to participate because you have thoughtful and knowledgeable insight into this process. Explain informed consent and confidentiality.

- Go around table for introductions
    - What is your name?
    - Please tell us about yourself and why you're here today.

- Would you tell me about the top three water related issues in your area?

- Did you or do you know anyone who has participated in any pilot projects/conservation measures/efficiency improvements?
    - If applicable: Why did you participate in the pilot/conservation measures/efficiency improvements?
    - In your experience, what things deterred or discouraged people from participating?

- What do you know about the DCPs?

- What do you know about demand management?
    - What does voluntary mean or look like?
    - Compensated?
    - Temporary?
    - Parity?
- If demand management is not feasible, what are the alternatives? What impact could that have on your livelihood?

- Why would someone (referring to farmers, ranchers, irrigators, irrigation/water managers) voluntarily join a future conservation program?

- What do you hope comes out of the demand management conversation?

- Would anyone like to add anything?

Thank you so much for your time.

Appendix D – Focus Group Questions, Main Stem Focus Group

Introduce myself, the study, and focus group/interview process. I hope that this study will help to inform the process of developing future voluntary water conservation projects in the Upper Colorado River Basin. You've been asked to participate because you have thoughtful and knowledgeable insight into this process. Explain informed consent and confidentiality.

- Go around table for introductions
    - What is your name?
    - Please tell me about yourself and your operation?

- Would you tell me about the top three water related issues in your area?

- Why did you decide to participate in the pilot program?

- What things deterred or discouraged people from participating?

- What were the big lessons or takeaways from the pilot program?

- What are your thoughts about demand management?
    - What does voluntary mean or look like?
    - Compensated?
    - Temporary?
    - Parity?
- If demand management is not feasible, what are the alternatives? What impact could that have on your livelihood?

- Why would someone (referring to farmers, ranchers, irrigators, irrigation/water managers) voluntarily join a future conservation program?

- What do you hope comes out of the demand management conversation?

- Would anyone like to add anything?

Thank you so much for your time.