5-2019

The Niobrara National Scenic River: Exploring Co-Management Through a Case Study of the Niobrara Council

Melissa M. Mosier
University of Nebraska-Lincoln, melissammosier@gmail.com

THE NIOBRARA NATIONAL SCENIC RIVER: EXPLORING CO-MANAGEMENT THROUGH A CASE STUDY OF THE NIOBRARA COUNCIL

By

Melissa M. Mosier

A THESIS

Presented to the Faculty of

The Graduate College at the University of Nebraska

In partial fulfillment of requirements

For the Degree of Master of Science

Major: Natural Resource Sciences

Under the supervision of Professor Cody Knutson

Lincoln, Nebraska

May 2019

THE NIOBRARA NATIONAL SCENIC RIVER: EXPLORING CO-MANAGEMENT THROUGH A CASE STUDY OF THE NIOBRARA COUNCIL

Melissa M. Mosier, M.S.

University of Nebraska, 2019

Advisor: Cody Knutson

In recent decades, government staff and local citizens have increasingly employed cooperative schemes of natural resource management, in lieu of more conventional, top-down approaches of addressing user conflicts as they relate to water resources. The focus of this project was on the Niobrara Council, a partnership of local, state, and federal representatives charged with cooperatively managing the reach of the Niobrara River that was federally designated under the Wild and Scenic Rivers Act in 1991. The project's purpose was to explore the cooperative framework of the Council, using the methodology outlined by Carlsson and Berkes (2005). This methodology involved investigating the functional tasks of the Council and analyzing the linkages between those tasks and the individuals who perform them in order to develop a descriptive picture of how the Council functions. Qualitative data for this project was gathered through interviews with the Council members, meeting minutes, and enabling documents and laws related to the Niobrara National Scenic River (NNSR) and the Council. This data was used to inform a qualitative thematic analysis of the Council and clarify how relationships between participants and management activities in a co-management framework are organized, and how they might be enhanced.

The findings from this project provided a clearer picture of how the various partners involved in the co-management framework of the Council manage the NNSR. A better understanding of the roles of various partners and the specific management tasks that they were responsible for was uncovered; illustrating where various actors play key roles, how responsibility for some tasks is shared, where collaboration is most prevalent and where it is intermittent, and at which junctures entities outside of the Council play a significant part. Additionally, data was analyzed in order to define what aspects of the co-management framework could be enhanced for capacity building, the most prevalent needs being increased access to resources, enhancing institutional arrangements, supporting appropriate government policies and planning, and enhancing stakeholder participation

ACKNOWLEDGEMENTS

The completion of this project was a long process and I would like to thank the many individuals who have assisted me over the years in attaining my goals. Foremost, I would like to thank my thesis advisor, Professor Cody Knutson of the School of Natural Resources at the University of Nebraska, Lincoln. Cody was continually patient with my questions throughout the many years that he served as my advisor and always made himself available, even long-distance. In addition, Professors Mark Burbach and Anthony Schutz, who both served on my thesis committee, provided interesting and interdisciplinary insight into the many influences acting on natural resource management and how this subject could be analyzed in a productive and interesting manner. I truly appreciate the patience of each member of my thesis committee and their efforts to improve both the value of this project, as well as my experience completing it. I would also like to send a sincere "thank you" to the members of the Niobrara Council and their Executive Director, Kalli Kieborz, whose assistance with this project was invaluable.

My colleagues and the administrators at the Lower Platte Natural Resources District, the Lower Platte River Basin Alliance, and the Nebraska Department of Resources provided indispensable support and encouragement as I worked on this project. Over the last six years, the Department of Natural Resources supported my academic goals by providing me with valuable daylight hours to devote to this work, allowing me the flexibility I needed in order to complete this project. The agencies and programs that I have been fortunate to work with have provided me with frequent, real-world experiences of the complexities and advantages of purposeful collaborative natural resources management and how the success of any planning or management venture can

often be attributed to the honest intentions of those working to ensure that the day-to-day responsibilities are carried out. I would especially like to thank the female role models and mentors who have welcomed me into the profession and offered their support, advice, and friendship, while standing as true examples of sound leadership and remarkable capability.

Lastly, I would like to thank my friends and family for their unceasing faith in my ability and the many ways that they have supported my efforts. Whether through gentle prodding, the offer of a kind and understanding ear, or by entertaining my child for a few hours or a whole weekend while worked, I could never have finished this project without their help. Finally, I would like to thank my son David, whose exuberance and precocious nature often made devoting time to this project difficult, but to whom each of my efforts, successes, and lessons learned are dedicated.

TABLE OF CONTENTS

TABLE OF FIGURES

CHAPTER 1. INTRODUCTION

A common obstacle faced by natural resource managers is finding the ability to balance their management decisions in a way that both protects and enhances the diverse range of values that the wider citizenry place on specific natural resources, while also satisfying the needs and desires of the people who rely on those resources. Often, natural resource management becomes a magnet for legal, social, and political conflict; and primary management objectives are overshadowed to various degrees by this forced shift in focus. In order to increase the effectiveness of natural resource management for both the resources and those who value them, while at the same time decreasing the pervasive conflict commonly drawn into this type of decision-making, managers are increasingly experimenting with collaborative forms of natural resource management. Through collaborative natural resource management, managers, resource users, and other relevant stakeholders engage in a power sharing relationship by which all participants contribute to the decision-making process, with the goal of meeting both ecological and social goals (Plummer & Armitage, 2007a).

But, does collaborative natural resources management work, and if so, how? Even though collaborative natural resource management strategies are often employed by natural resource agencies, the question of their ability to bring about sustainable frameworks for management still exists. A thorough evaluation of this question requires both an inquiry into the legal, social, and political structure of collaborative arrangements, as well as a critique on how these systems function and what benefits they hold for natural resources and those who rely on them. In the study, the Niobrara Council, established as a collaborative management entity following the designation of a portion

of Nebraska's Niobrara River as a National Scenic River by Congress in the early 1990s, was examined as a case study of collaborative natural resources management.

The Niobrara National Scenic River (NNSR) has served as the fulcrum upon which opposing sides have converged in matters regarding federal versus local control, dammed versus free-flowing rivers, and prioritization of agricultural versus recreational and hydropower water uses. In the last half century, the Niobrara River has seen each of these disputes play out along its corridor, and the trail of allegiances held by individuals and collectives involved have, at times, crisscrossed. Because of the rich stories behind those who have taken part in the NNSR's designation and subsequent management, the current management structure employed along the Niobrara River corridor is intriguing. The Niobrara River has been vital to the many human communities who have inhabited the region surrounding the corridor over the past several centuries. What is of interest to this project, is how representatives of various interests have engaged in a collaborative framework through which the priorities of current and future inhabitants of the Niobrara River Basin can be considered and enhanced.

This project employed research intended to explore the unique legal, social, and political responsibilities of the Niobrara Council as a collaborative natural resource management entity, while also identifying specific characteristics of the Council's management framework, which may lend to a better critique of other collaborative arrangements and the theory that underlies collaborative natural resource management as a whole. Below, the co-management framework set in place by the Council was examined as a case study of collaborative natural resource management. In order to undertake this assessment, a qualitative analysis of data gathered from the members of

the Council, public discussion at Council meetings, and the enabling laws and documents outlining the Council's responsibilities for managing the NNSR, were systematically considered. This analysis was informed by the methodology proposed by researchers Lars Carlsson and Fikret Berkes in their 2005 paper, *"Co-management: Concepts and methodological implications."* It was hoped that by exploring a rich, qualitative dataset through which a systematic analysis could be applied, more information about how co-management functions "on the ground" could be obtained.

In order to provide a proper introduction to the NNSR and the qualitative analysis performed for the purpose of exploring how the Niobrara Council manages it, this project will present the following chapters. In Chapter 2, the physical context of the Niobrara River Basin will be described, including human endeavors to utilize and manage the natural resources therein. Chapter 3 will provide an overview of water management in Nebraska and its impact on the Niobrara River Basin. Chapter 4 will provide an account of the events leading up to the designation of the NNSR and the formation of the Niobrara Council as a collaborative management entity. Chapter 5 describes a few of the management conflicts that have occurred in the Niobrara River Basin since designation of the NNSR and how they may impact its management. Chapter 6 outlines some of the theoretical descriptions and assumptions about co-management as an approach to natural resource management. Chapters 7 provides a description of the qualitative methods used for the purpose of this study, and its associated results are found in Chapter 8. Finally, Chapter 9 concludes with a summary of the project.

CHAPTER 2. THE NIOBRARA RIVER BASIN

THE NIOBRARA RIVER VALLEY

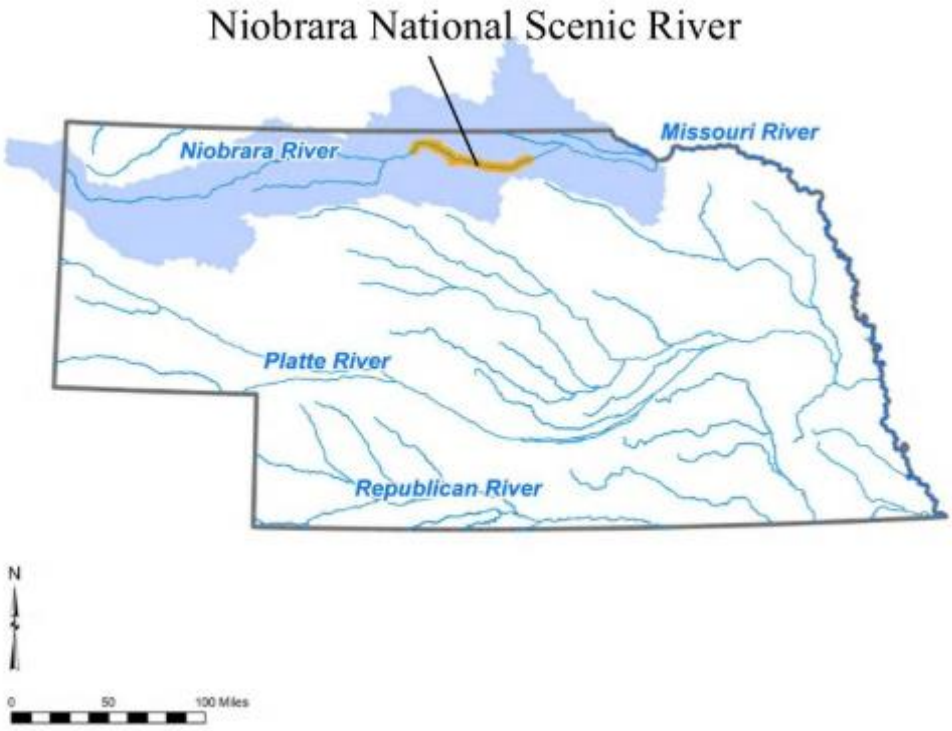

Figure 1. The Niobrara River Basin and Niobrara National Scenic River. From the National Park Service (2014).

The Niobrara River runs approximately 530 miles from its headwaters in southeastern Wyoming, across northern Nebraska, to its confluence with the Missouri River on the border between Nebraska and South Dakota. Excluding the western-most portion of the River that runs from Wyoming to the Nebraska state line, the remaining 486 river-miles running in-state make it Nebraska's longest river (Johnsgard, 2007). The Niobrara's drainage extends nearly 13,000 square miles by way of numerous tributaries in Wyoming, South Dakota, and Nebraska. Over the course of its flow from west to east, the Niobrara drops approximately 4,000 feet in altitude, cutting through the vast Sandhills region of Nebraska (Clark, 1997). Stabilized by grass cover, the Nebraska Sandhills are

the largest sand dune formation in the Western hemisphere (Bleed & Flowerday, 1998). The unique natural history of this region has resulted in a complex relationship between the region's hydrogeology and the biological communities supported by the Niobrara River environ (Flowerday & Diffendal, 1997).

In the dry rain shadow of the Rocky Mountains, the Niobrara River gradually emerges from the tablelands of southeastern Wyoming, near the town of Lusk. Through its slow course across the high plains ecoregion of Wyoming and northwestern Nebraska, the Niobrara gradually gains streamflow. As it flows through the Nebraska Sandhills, the cut of the River becomes deeper and the contrast between the rocky canyon sides along the River's edge and the surrounding rolling grassland on the plains above becomes sharper. The course of the River through the northcentral portion of Nebraska is distinguished by tapered, grassy floodplains abutted by forested canyon walls; numerous cool and shaded waterfalls; and an easily floatable, moderately shallow, stream of clear water sourced by the High Plains Aquifer.

Unlike many rivers running through the Great Plains, the Niobrara has been relatively unaltered by water development projects and still maintains much of its natural quality. In 1982, the National Park Service identified 253 miles of the Niobrara as exhibiting "outstandingly remarkable values," and a little under a decade later, 76 of those miles in Nebraska were designated as a National Scenic River by the United States Congress (*Niobrara Wild and Scenic River*, 1992). Yet, American Rivers, a national river protection and preservation organization, declared that the Niobrara was one of "America's Most Endangered Rivers" in 2008 due to the inability of local decision makers to ensure adequate flows for recreation, fish, and wildlife (American Rivers,

2008). This designation resulted from concern over low flows along the Niobrara in 2006 and 2007, in addition to pending requests from irrigators for additional water appropriations. As will be illustrated below, the presence of multiple interests along the Niobrara, the ecological and political priorities held by those responsible for managing the river, coupled with the complexity found in the hydrogeology of this river system, provided an interesting case study for an investigation of current approaches to natural resource management.

HYDROGEOLOGIC SETTING

Together, four principal geologic processes worked in tandem to shape the Great Plains region, through which the Niobrara River now flows: marine processes, alluvial (water) processes, eolian (wind) processes, and volcanic activity (Swinehart & Diffendal, 1998). Looking just past the mouth of the Niobrara River, one could include glacial processes in this mix as well (National Park Service [NPS], 2007). The geologic value of the corridor is one of the most obvious "outstandingly remarkable values" as it is visually apparent when one visits the River. From riverbed to rim, the geologic and associated natural history of the area is showcased in the strata of the canyon walls.

The current Niobrara River valley is likely not more than 10,000 years old (Johnsgard, 2007). During the Pleistocene epoch, approximately 1.6 million to 100,000 years ago, a proto-Niobrara River likely existed in what is now the north-central area of Nebraska. It was also during the Pleistocene that at least four glaciations occurred and slowly crossed into Nebraska, evidenced by plentiful glacial till deposits in the eastern portion of the state. The mouth of the Niobrara River was approximately the westernmost

extent of the glaciations, but melt from retreating glaciers may have assisted in the cutting-down of the canyon now exhibited along the River (Johnsgard, 2007).

The surrounding Sandhills landscape was also forming into something resembling present day as the last of the glaciers retreated. Beginning about 15,000 years ago, the alluvial sands deposited in the area began to form into today's Sandhills through intermittent periods of wind erosion working on hilltops, followed by sediment filling of valleys below (Holen, 1998). Periodic cycles of climatic aridity allowed for dune movement and formation, while periods of increased precipitation allowed for growth of vegetative cover and dune stabilization. Today, the Sandhills cover approximately 20,000 square miles and make-up the largest dune field in the western hemisphere (Swinehart, 1998).

An interesting feature of the Sandhills region is that in many of the rivers that flow through it, most of their streamflow derives from groundwater seepage into the stream channel. Due to the porous nature of the sandy soil throughout this region, precipitation tends to infiltrate into the ground rather than flow overland and into the streams, meaning that the Sandhills rivers, especially those further west, exhibit relatively constant, less flashy, flow regimes that are not significantly influenced by singular precipitation events (Bentall, 1998). Instead, the daily and annual discharge of streams in the Sandhills can be largely attributed to baseflow, or the water within a stream that is derived not from runoff associated with precipitation events, but from sources that reach the stream channel on a slower timescale, such as contributions from groundwater or interflow (Soenksen, et. al., 2010).

Human activities such as dam-building, diversions of streamflow for human use, and pumping from groundwater wells, can have a significant and possibly long-lasting influence on the flow regime of baseflow dominated streams. The lack of impoundments, or dams, along the length of the Niobrara River, in addition to the fact that the Sandhills area has been relatively less impacted by agricultural development supported by groundwater pumping for irrigation, means that the annual discharge along the Niobrara National Scenic River (NNSR) corridor has remained rather stable over the last century (Bentall, 1998). By one estimate, the percentage of groundwater contributing to the annual discharge of the Niobrara River at the gage near Sparks, NE, within the NNSR corridor, is 90 percent (Bentall, 1998). In Figure 2, a hydrograph of the average annual discharge of the Niobrara River at the Sparks gage from 1946 to 2018, one can see that although annual discharge was impacted by the construction of Merritt Dam and Reservoir in the mid-1960's, it remains relatively stable (Soenksen, et. al., 2010; USGS, 2019). This relative stability in discharge is in contrast to many other rivers in the Great Plains region within which streamflow has been depleted to varying degrees, especially after the advent and spread of center pivot irrigation (Perkin, et. al., 2017).

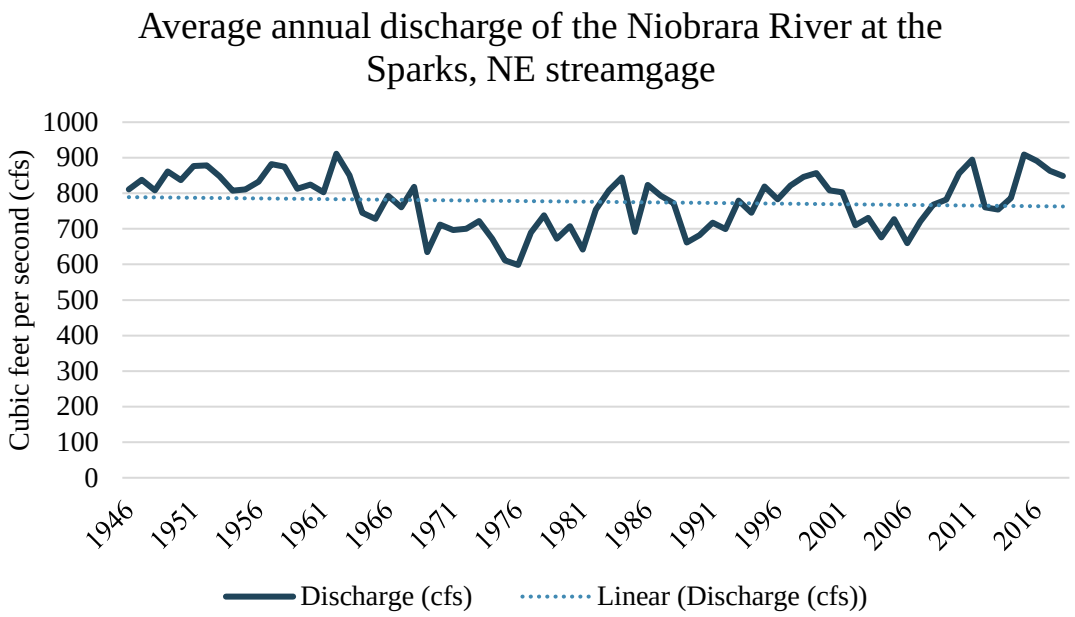

Figure 2. Average annual discharge at Sparks, NE, 1946-2018 and linear trend. Data retrieved from *waterdata.usgs.gov.*

From its source in Wyoming to its confluence with the Missouri River, streamflow along the Niobrara River increases as one moves west to east. Annual precipitation also increases from west to east, with approximately 15 inches per year falling near the Nebraska/Wyoming state line, to about 23 inches per year at the River's mouth (Bentall, 1998). The downstream increase in streamflow coinciding with increasing precipitation and associated overland runoff, is enhanced by inflow to the main channel of the River from an increasing number of tributaries that occur east of Valentine, NE. The streamflow of tributaries that feed into the Niobrara is also made-up primarily of groundwater sourced from the high water table to the south of the River, where many of the tributaries originate (Johnsgard, 2007). Yet, discharge in the eastern portion of the Basin is also more variable and influenced by precipitation events, given that there is more precipitation in this portion of the Basin (Soenksen, et. al., 2010), and more numerous routes by which precipitation can enter the main channel. Figure 3 shows

the gradual increase in average annual stream discharge at five gaging stations along the Niobrara as it flows west to east, as well as the average annual precipitation at each gage station (Nebraska Department of Natural Resources [NeDNR], 2018a).

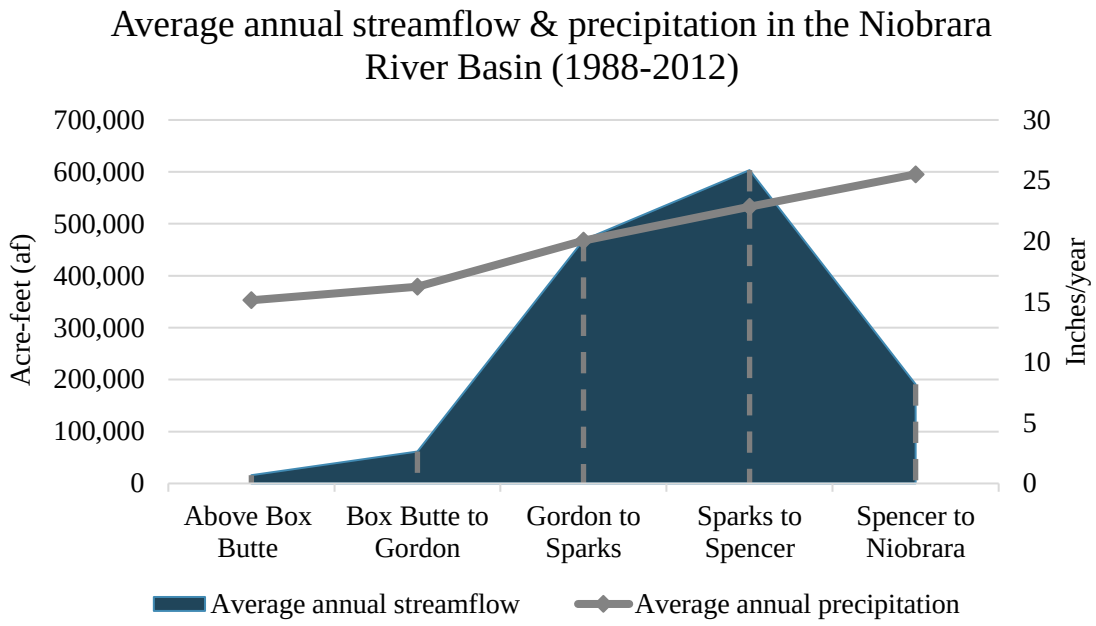

Figure 3. Average annual streamflow and average annual precipitation (1988-2012) at five streamgages along the Niobrara River.

Finally, another notable and popular hydrogeologic feature of the Niobrara River valley is the more than 200 waterfalls that occur within just the 76 mile stretch of the Scenic portion of the River (NPS, 2007). Most of these waterfalls occur on private property, and therefore, the total amount may not be fully tallied (NPS, 2007). Typically, these waterfalls occur on tributaries whose downward cut through the strata was halted by the erosion-resistant Rosebud bedrock, over which the waterfalls now flow (NPS, 2007). Due to its high groundwater table and bedrock aquifer outcrops along the valley's steep cliffs, especially on the southern side of the River, the Niobrara is the only river

corridor within the State of Nebraska that contains waterfalls (Soenksen, et. al., 2010; Johnsgard, 2007).

WATER RESOURCES DEVELOPMENT IN THE NIOBRARA RIVER BASIN

Like other river basins within Nebraska, the potential for irrigated agricultural development in the Niobrara River Basin was significantly bolstered by two important events in the 20th century: federal subsidization of large-scale water storage and delivery projects, and the invention and expansion of more efficient, center pivot technology. The first event was marked by the passage of the Reclamation Act by the United States Congress in 1902, ushering in an era of multipurpose dam-building projects and the associated organization of irrigation districts charged with delivering the stored water to nearby fields for a fee (Kuzelka et al., 1993). The two major reclamation projects in the Niobrara River Basin are the Mirage Flats Project and the Ainsworth Unit, both upstream from the NNSR. Together, these projects provide irrigation water for over 40,000 acres within the Basin (Blankenau, 2015).

The Mirage Flats Project was completed in 1946, storing water in Box Butte Reservoir in the southwestern portion of the Niobrara River Basin. This Project serves approximately 60 irrigators and delivers only a little over one-inch-per-acre to eight-inches-per-acre to its customers, which requires customers to supplement their surface water deliveries with groundwater irrigation (Shultz, 2010). The Mirage Flats water delivery infrastructure is "leaky", meaning that some of the surface water conveyed through canals to irrigators is lost via recharge into the underlying aquifer, which in turn, offers storage of the groundwater supply that the irrigators rely on (*LB1038 and Gubernatorial Appointments: Hearing before the Natural Resources Committee,* 2016;

Shultz, 2010). Inflows into Box Butte Reservoir have been decreasing since the mid-1950's as a result of improved on-farm efficiencies and conservation measures taking place upstream of the Reservoir, as well as depletions to baseflow resulting from increases in groundwater pumping (Shultz, 2010).

The Ainsworth Unit was completed in 1964 and stores water from the Snake River, a tributary of the Niobrara River, in Merritt Reservoir in Cherry County. This project serves more than 30,000 irrigated acres to the east of the Reservoir, in Brown and Rock Counties (*LB1038 and Gubernatorial Appointments: Hearing before the Natural Resources Committee,* 2016; Shultz, 2010). Water is delivered via the Ainsworth Canal, which is much more efficient (i.e., less "leaky") than the Mirage Flats delivery infrastructure, delivering approximately 16-inches-per-acre to Ainsworth customers. Ainsworth irrigators do not need to supplement with groundwater to maintain a full water supply, but do have the option of purchasing additional water from the Ainsworth Irrigation District, if needed (Shultz, 2010).

The second major event impacting the potential for irrigation in the Niobrara River Basin occurred in the early 1950’s when the center pivot irrigation system began to be marketed to producers, allowing for a more efficient input of water sourced mainly from groundwater wells, while reducing the amount of labor required on the part of the farmer to get water to their crops (Sherow, 2004). The production of center pivot systems coincided with yet another drought on the Great Plains in the 1950's, leading to an increase in well drilling throughout the region (Kuzelka et al, 1993). As center pivot technology improved over the next few decades, groundwater well drilling continued to expand with a significant increase in the number of wells constructed from the late 1960's

to the early 1980's (Kuzelka et al, 1993). In the Niobrara Basin, approximately 3,000 wells have been installed for agricultural, livestock, domestic, and other purposes (Blankenau, 2015). Currently, the two areas of the Basin containing the highest density of groundwater irrigation wells are in the southwest, near Alliance; and the in the southeast portion of the Basin, near O'Neill (Alexander et al., 2009).

Despite having almost 800,000 irrigated acres, the Niobrara River Basin is relatively underdeveloped when compared to other large river basins within the state (Shultz, 2010; Soenksen, et. al., 2010). Due to sandy soils found within much of the Basin preventing the spread of cropland, local communities must also depend on the economic impact of ranching, recreation, and tourism (Soenksen, et. al., 2010). The inherent conflict between prioritizing water use in the Basin for irrigated agriculture or preservation of streamflow in the Niobrara River - combined with the fact that the magnitude of the impact irrigated agriculture has had on streamflow is yet to be fully assessed - has resulted in decades of disputes that have drawn in a multitude of water users, environmental agencies, and advocates, as well as local, state, and federal water managers (Soenksen, et. al., 2010).

CHAPTER 3. INSTITUTIONAL CONTEXT OF WATER MANAGEMENT IN NEBRASKA

MANAGEMENT OF WATER QUANTITY NEBRASKA

Like many western states, water law and management in Nebraska has evolved over more than a century as new sources and demands for water arose. As of 2012, Nebraska held claim to over eight million irrigated acres, more than any other U.S. state, while at the same time, aside from years when the region was heavily impacted by drought, maintained a relatively sufficient supply of water for its various users (United States Department of Agriculture National Agricultural Statistics Survey, 2014). Climatically, hydrologically, and politically, the State of Nebraska has generally found itself to benefit from a unique set of climatic and hydrogeologic features, and a progressive eye toward water management and planning.

According to Nebraska statute, the State holds ownership of water resources for the benefit of its citizens (*Nebraska Revised Statute* § 46-702). Individuals or entities can be granted a permit to put water to a beneficial use, but this is a usufructuary right, meaning that they have the right to use the water, but they do not own the water (Bleed & Babbitt, 2015). Although responsibility and authority for administering water quantity in the state is divided between the Nebraska Department of Natural Resources (NeDNR), which manages surface water quantity; and the state's 23 Natural Resources Districts (NRDs), which manage groundwater; more recent policy changes have allowed for collaborative management of hydrologically connected surface and groundwater resources (*Neb. Rev. Stat.* § 46-715).

NEBRASKA SURFACE WATER LAW

Water within Nebraska is held by the State and managed by designated entities for the public interest. Surface water in Nebraska was first diverted, channeled, and measured by early agriculturalists in the 19th century and the first surface water appropriations were assigned in 1895 (Hoyt, 2016). In order for a user to obtain a water right, they must apply to the Nebraska Department of Natural Resources (formerly the Department of Water Resources) for a permit, which specifies the date the permit was applied for, the point along a stream where the water is diverted, the rate at which the water can be diverted, and the permitted beneficial use (NeDNR, 2018b). Additionally, except under certain excusable circumstances, a surface water user is subject to a cancellation of their appropriation if they do not use the permitted right for more than five consecutive years (*Neb. Rev. Stat.* § 46-229.02).

Nebraska surface water law follows the doctrine of prior appropriation, meaning the first individual or entity to apply for a surface water right is the first to receive a permit (NeDNR, 2018b). This also means that in times of shortage, those who applied for a surface water right first, or the senior appropriator, will receive their full permitted amount before those who applied for a surface water right later, or the junior appropriators (Bleed & Babbitt, 2015; NeDNR, 2018a). If a senior appropriator is not receiving their full permitted amount, they can place a "call" on the stream with the Department of Natural Resources (NeDNR), and NeDNR is responsible for notifying junior appropriators upstream that their appropriation will be closed until the senior appropriator has received their full permitted amount (Bleed & Babbitt, 2015). Appropriators junior to the senior right placing a call on the stream are closed sequentially, with the most junior (most recent) permitted appropriation being closed first

(NeDNR, 2007). NeDNR maintains field offices and staff throughout the state to closely monitor and administer surface water rights (NeDNR, 2018c).

In order for a surface water appropriation to be granted by NeDNR, there must be sufficient water available to satisfy the permit, and the permit must be applied to one of the beneficial uses allowed for by statute (e.g., domestic, municipal, agricultural, hydropower, instream flows for fish and wildlife, etc.) (*Neb. Rev. Stat.* § 46-229). The type of permitted use is relevant when there is a shortage in supply, as NeDNR also administers based on a system of preference of use. Preferred uses are prioritized in Nebraska statute, with domestic uses preferred over agricultural uses, and agricultural uses preferred over manufacturing and hydropower uses (*Neb. Rev. Stat.* § 46-204). In the event of a shortage within a system, a junior water user with a higher preference (e.g., more recent agricultural permit) could claim their permitted amount of water from a senior water user with a lower preference (e.g., an older manufacturing permit), but in this case, the senior appropriator is entitled to just compensation from the junior appropriator (Aiken, 2007; Nebraska State Constitution, Article XV-6).

Although the prior appropriation system set in place in Nebraska is useful in ensuring the protection of established surface water rights, especially senior rights, a criticism of prior appropriation is that it was not designed to ensure the integrity of the state's surface water systems. Theoretically, surface water appropriations could be granted to the point of effectively dewatering a stream when all rights are exercised by those holding the water rights. Surface water systems contain enough complexity, such as return flows and contributions to supply from baseflow, that dewatering occurs infrequently. However, acknowledging the inherent need for streamflow to exist within

streams, in 1984 the Nebraska Legislature allowed for the appropriation of instream flows for the benefit of fish and wildlife, as well as recreation (NeDNR, 2018b). These surface water appropriations can be granted to either the Nebraska Game and Parks Commission (NGPC), or any one of the state's 23 NRDs (Zellmer, 2006; *Neb. Rev. Stat.* § 46-2,108). As of 2018, four instream appropriations had been granted by NeDNR: one held by the Central Platte NRD for a segment of the central Platte River; one held by NGPC on Long Pine Creek, a tributary of the Niobrara River; one held by NGPC on the lower Platte River; and one for a segment of the Niobrara River granted to the Niobrara River Basin Alliance, a group of six Niobrara Basin NRDs and the NGPC (NeDNR, 2017; Nebraska Game and Parks Commission, 2018; Zellmer, 2006).

Over more recent decades, since the development high capacity groundwater irrigation systems, the potential for groundwater uses to interfere with and diminish streamflow has been documented by hydrologists, as well as day-to-day surface water users and managers (Li et al., 2016). NeDNR and its partners, including NRDs, stakeholders, and consultants, have developed a number hydrologic models to provide water managers and users a means of understanding the complex hydrological interaction between surface water and groundwater, and to better assess trends in water availability (NeDNR, 2018d). These models can be useful to water users to as they provide an alternative method of visualizing how the hydrologic components of a stream interact with one another through time, as well as providing water managers with a clearer understanding of the hydrologic, spatial, and temporal conditions under which conflicts between water users may, or already have, occurred. These modeling tools are one of

many available to assist NeDNR and its NRD partners in the collaborative management of the state's water resources (NeDNR, 2018d).

Nebraska groundwater law

In 1972, the State of Nebraska took a bold step in ensuring local control in the management of water resources. After years of consideration, some conflict, and negotiation, the Nebraska Legislature created the NRDs, whose broad responsibilities over natural resources management covered the state in a jurisdictional patchwork of 24 separate districts, roughly delineated by surface watershed boundaries (Bleed & Babbitt, 2015; NeDNR, 2018d). Prior to setting the NRD system into place, over 100 natural resources-related special purpose districts existed throughout the state, each with separate authorities and often overlapping responsibilities, causing confusion and potential conflict at both local and state-wide scales (Bleed & Babbitt, 2015). By consolidating responsibilities and sanctioning authority to the NRDs, the State was able to create a more cohesive management system, while still ensuring local control and participation in important decisions related to natural resources conservation and use (Bleed & Babbitt, 2015).

Not unlike those in other states, the citizens of Nebraska have and continue to value local autonomy and control over policies that impact their daily lives and livelihoods. The NRD system embraces a bottom-up approach to natural resources management through board members who are elected by and representative of the local population impacted by NRD decisions and activities (Bleed & Babbitt, 2015). The NRD boundaries were designed to better address variability of water supplies across the state by delimiting management authority by watershed, and thereby encouraging policy

responses that more appropriately address local water resources issues. Further, this system allows NRDs to set in place natural resources management policies and priorities that better reflect regional conditions, while at the same time, addressing the considerations and values of local stakeholders (Hoffman & Zellmer, 2013).

Today, there are a total of 23 NRDs in Nebraska, following the consolidation of the Papio and Missouri River NRDs in 1989 (Bleed & Babbitt, 2015). When first created, the NRD's primary responsibilities related to different aspects of soil conservation and flood control, but as new problems or potential conflicts arose, the various roles of the NRDs evolved (Hoffman & Zellmer, 2013). Additional responsibilities currently held by NRDs are the management and regulation of groundwater quantity and quality, recreation, enhancement of fish and wildlife habitat, and outreach and cost-share activities with land owners and producers to encourage conservation, among others (Bleed & Babbitt, 2015).

Water law in Nebraska generally holds that landowners are allowed to put groundwater to beneficial use on their property unless that use interferes with the use of others, or if there is a shortage in the groundwater supply, at which point all users must share in the shortage (*Neb. Rev. Stat.* § 46-702). This system is a combination of correlative rights and the doctrine of reasonable use, and was codified in Nebraska law for the first time in 1975 with the adoption of the Ground Water Management and Protection Act (GWMPA) (Hoffman & Zellmer, 2013). The GWMPA also gave the NRDs the authority to manage groundwater use within their respective districts (Hoffman & Zellmer, 2013). A decade later, the Nebraska Legislature passed a bill requiring that each NRD develop a groundwater management plan, outlining the means by which the

NRD would protect both quantity and quality aspects of the water resources within their districts. The groundwater management plans and any revisions to them, must be approved by NeDNR (*Neb. Rev Stat.* § 46-709).

INTEGRATED WATER MANAGEMENT PLANNING

The hydrologic interaction between surface water and groundwater is vital for water managers and users within the state to understand in order to ensure that water uses do not exceed water supplies. Most streams within the state exhibit baseflow, or groundwater-derived contributions to streamflow, to varying degrees. Further, the groundwater aquifers within the state depend on infiltration of surface water for recharge and the continued sustainability of groundwater supplies (Li et al., 2016). Given the extent to which Nebraska's surface and groundwater supplies are hydrologically connected, entities charged with managing surface water, and those charged with managing groundwater, must work together closely and coordinate management actions. The Nebraska Legislature formally recognized the need and a means for the coordination between surface and groundwater managers through the passage of LB962 in 2004, directing NeDNR and the NRDs to collaborate on integrated [water] management plans (IMPs) (NeDNR, 2018e).

Due to increasing conflicts between surface and groundwater users and the need to find a procedurally and legislatively recognized process for managing and enhancing hydrologically connected surface and groundwater resources, in 2002, the Nebraska Legislature directed the formation of a Water Policy Task Force (Nebraska Water Policy Task Force, 2003). Members of the Task Force were appointed by then Governor, Mike Johannes, and included representatives of NeDNR and the NRDs, municipalities,

irrigation districts, surface and groundwater users, representatives of environmental and recreational interests, and the hydropower industry (Nebraska Water Policy Task Force, 2003). The Task Force met regularly for a year and a half, and submitted a final report to the Nebraska Legislature in December of 2003 (Nebraska Water Policy Task Force, 2003). In 2004, the majority of the Task Force's recommendations were codified in the passage of LB962 (Hoffman & Zellmer, 2013).

Acknowledging the hydrologic connection between surface and groundwater and the need to find better means of managing this combined resource was a major step forward for Nebraska water law, but that was not the only big change ushered in by the passage of LB962. The Water Policy Task Force also had recommendations that greatly altered the day to day prioritization and ultimate goals of water managers and users throughout the state. The state's NRD were still largely responsible for the management of groundwater and the NeDNR was still responsible for the management of surface water, but LB962 directed both entities to work together on integrated management planning in basins where water supplies had been deemed insufficient for permitted uses (Bleed & Babbitt, 2015). This directive also resulted in an enormous amount of effort and funding on the part of both entities in order to work toward a coordinated system of management in which current users' water rights are fulfilled and the integrity of hydrologically connected systems are enhanced.

The integrated management planning process begins with the directive via LB962 that NeDNR annually assess the state's river basins in order to determine the long-term availability of hydrologically connected surface water and groundwater supplies (*Neb. Rev. Stat.* § 46-713). If NeDNR determines that a basin's hydrologically connected

supplies are insufficient to sustain either surface water or groundwater uses, or cause the State to be in noncompliance with an interstate compact or agreement, it will determine that the basin is fully appropriated and the affected NRD(s) will have to jointly develop an integrated management plan (IMP) with NeDNR (*Neb. Rev. Stat.* § 46-713). LB962 also designated the Upper Platte River Basin as overappropriated and required that NeDNR and the five Upper Platte River Basin NRDs develop a basin-wide plan, in addition to separate IMPs for each NRD. The conditions outlined in statute for a basin to be determined overappropriated are exclusive to the Upper Platte River Basin, therefore, no other river basin in the state could be determined overappropriated without a change brought by legislation.

In 2010, the Nebraska Legislature approved LB764, allowing individual NRDs and basins within the state to participate in integrated management planning with NeDNR without having first been designated as fully appropriated (NeDNR, 2018f). There are a number of incentives for an NRD to enter into an IMP process, including: access to additional funding resources, exemption from NeDNR's annual evaluation of fully appropriated basins, enhanced access to technical resources, and formalized channels for sharing data with NeDNR (*Neb. Rev. Stats*. §§ 46-713 and 46-715; Wiese, 2018). As of 2018, every NRD in Nebraska has initiated either required or voluntary IMP processes with NeDNR, with nine required and seven voluntary NRD IMPs in effect, in addition to two required and one voluntary basin-wide plan (NeDNR, 2018g).

The provisions included in LB962 may be unable to address past conflicts already in play between surface and groundwater users throughout Nebraska, but may provide managers with tools needed to prevent future conflicts. Integrated water management

planning required in fully and overappropriated basins allows state and local management entities to leverage various funding sources, build relationships with one another and local water users, collaborate on conjunctive management projects, and develop more sophisticated methodologies for monitoring management actions (Hoffman & Zellmer, 2013). The adoption and implementation of LB962 has advanced the State of Nebraska forward in terms of adaptive water resources management methods that embrace local authority and input, but also includes coordination by which both local and state-level decisions can be reviewed and considered.

CHAPTER 4. THE NIOBRARA NATIONAL SCENIC RIVER

FEDERAL INTEREST IN RIVERS AND STREAMS

THE WILD AND SCENIC RIVERS ACT

Since the mid-20th century, the need to protect and conservatively manage the nation's water resources has become increasingly evident to the American public (Gerlak, 2006). As the demand for water resources grows, the decisions that water resource managers make will become increasingly influenced by economic, climatic, and political pressures, potentially at the expense of the ecological requirements necessary to maintain healthy watersheds. More than any other natural resource, riverways are unique in the magnitude of multiple uses that human communities are dependent on them for, yet, many of these uses have been shown to cause immitigable alterations to riverine ecosystems (Imperial, 2005; Tarlock, 2000).

The Wild and Scenic Rivers Act (WSRA), passed in 1968, stands as a representation of the influence that the early environmental movement held over the nation throughout the 1960's and 70's, but also as a response to past federal and state policies that prioritized channelization, diversion, and storage along free-flowing rivers and streams (Clark, 1997). For streams that remained relatively undeveloped, the WSRA intended to encompass both natural and cultural resources along these corridors in an integrated conservation plan backed by federal authority. Designation as a formal recognition of a river's exceptional qualities is not limited to those attributes that benefit human needs, but extends also to those qualities that serve to enhance the ecosystem as a whole (Clark, 1997).

When the WSRA was passed by Congress, it was seen as a means through which the nation's previous, all-encompassing policy of water development could be complemented with a nationwide policy of preservation of free-flowing, aesthetically or recreationally significant rivers (Hiser, 1988). Through the WSRA, Congress effectively rebalanced national environmental preservation policy following the exploitative natural resources development policy that had dominated throughout previous decades (Hiser, 1988). This was the effect, at least, on paper. As of today, only a modest number of river miles within the continental United States have been designated as wild, scenic, or recreational. Further, the breadth of influence and vast implications for watershed protection that the WSRA could have has been largely untested in the courts (Palmer, 1993)

Up to the mid-1900's, the United States federal government maintained a policy of subsidizing and constructing large water projects for political, social, and economic purposes (Rogers, 2001). Throughout much of the western United States, and including most of the area that now encompasses the State of Nebraska, early attempts by homesteaders and entrepreneurs to implement successful agricultural enterprises resulted in economic failure. According to Gerlak (2006), in order to achieve the goal of western expansion, the federal government needed to assure citizens that it could provide an adequate amount of water at both the right place and time so that agricultural and industrial endeavors could become successful. Through the Army Corps of Engineers and the Bureau of Reclamation, the federal government was able to dramatically change the face of the country's western landscape by way of the construction of large water reclamation projects.

The construction of these immense projects peaked during the New Deal Era and continued into the 1960's, at which point, few rivers within the continental United States remained in what could be convincingly referred to as a natural state (Aiken, 1987). Though the era of large-scale funding and construction of water reclamation projects can be looked back upon by some as an example of longstanding, misguided environmental policy, the motives for such policies can be justified when viewed in the context of that period in the nation's historical development (Gerlak, 2006). These projects were built in order to prevent flood waters from destroying areas that were already economically valuable, and also to move water to areas where it was required in order to develop economic value (NPS, 2007). Whether or not the ultimate goals of federal reclamation policy were sustainable became irrelevant by mid-century because the fact remained that a new environmental policy was necessary to balance the sweeping changes that had already transpired along the nation's waterways (Waters, 2000).

Beginning in the 1960's, the American public became increasingly concerned about the ecological disruption caused by the construction of large dams, channelization, bank development, and water pollution, in addition to the view that the construction of large water projects represented inefficiently funded pork barrel projects (Gerlak, 2006; Palmer, 1993). Due to the degradation of so many of the nation's rivers, the WSRA was devised as a means of protecting the few rivers and river segments that still exhibited a free-flowing character or encompassed outstanding natural qualities. Once a river or river segment was designated under the WSRA, the goal was to preserve that waterway in its current state, in perpetuity (NPS, 2007).

In order for a river to qualify for designation under the WSRA, it must be of free-flowing condition at the time of designation, whether or not it had been under development previously, and exhibit at least one "outstandingly remarkable value" (Wild and Scenic Rivers Act, 1968; Feldman, McLaughlin & Hill, 2005). Because all rivers are distinct, these outstanding values vary, but may be in reference to "scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values" (Wild and Scenic Rivers Act, 1968). Prior to a congressional hearing on the designation of a river or river segment, a study authorized by either the Secretary of the Interior or the Secretary of Agriculture must conclude that one or more of the values present along the river are "outstandingly remarkable" to the degree that these values warrant federal protection (NPS, 2007).

A designated river in the WSRA system is further classified as either "wild," "scenic," or "recreational." This classification indicates the amount of development currently in place along the designated river. Wild rivers are free of impoundments, are difficult to access except by trail, and exhibit rather primitive shorelines, free from development. Scenic rivers exhibit many of the same characteristics of wild rivers, but are more accessible by roads, and shorelines may be more developed. Recreational rivers are usually free of impoundments at the time that they are designated, have some development along the shoreline, and are readily accessible to visitors by roads (Wild and Scenic Rivers Act, 1968). This classification scheme not only mirrors the character of the river at the time of designation, but also determines the degree of development that the managers of the rivers are permitted to allow in the future (Hiser, 1988). For example, a limited amount of development and new points of access may be allowed on a "scenic

river," more so on a "recreational river," but would be much less likely to be allowed on a "wild river." Regardless of the final classification, all development that does occur along a designated river is expected to remain modest (Hiser, 1988).

The Secretary of the Interior is charged with the responsibility of delegating administrative authority over a designated river to either the Bureau of Land Management, the Fish and Wildlife Service, or the National Park Service. If the designated segment runs through a national forest, the Secretary of Agriculture will delegate this authority to the Forest Service (Feldman, McLaughlin & Hill, 2005). Although all federal agencies are expected to manage a designated river in accordance with its classification and the general directives of the WSRA, each agency must also adhere to its own enabling legislation, which may allow for discretion as to the specific methods of river management (Amos, 2006). Further, the classification of a designated river as wild, scenic, or recreational has a significant impact on competing interests in regard to the use of the river, as well as the discretion that the administering agency is allowed and willing to provide these interests (Burce, 2008; Strom & Strom, 1993).

Congressional authors ensured that the delineation of the physical boundaries within which federal control would extend along designated rivers was clearly defined in the WSRA. Limitations on the number of acres per designated river mile were established by the WSRA in order to prevent the Act's intentions from being misconstrued by the public as a means of absorbing private land into federal holding. Federal administering agencies cannot acquire more than 100 acres per mile along a designated river (Wild and Scenic Rivers Act, 1968). To further diminish the need for, or appearance of federal takeover of private land, the WSRA outlined land management schemes for designated

river corridors in which local authorities could actively take a role in the protection of the river and river corridor, and thereby, limit the need for federal authorities to confiscate land within the river corridor (NPS, 2007).

Opposition to federal designation of riverways, especially in the western United States, may have become a pervasively held sentiment given the historic context of the relationships between, and contrasting political value systems that separate, local citizens and federal representatives. Conflicts in values, frames of knowledge, political associations, and historical contexts of environmental priorities may become explicitly obvious in the early stages of designation under the WSRA, as the initial studies of a river are conducted by the federal government (Carroll & Hendrix, 1992). These conflicts may follow through the development, assembly, and enactment of the river management plan by the federal agency charged with the responsibility of managing the protected river. Clearly, the lifeways, worldviews, economic, and educational backgrounds of local citizens and federal representatives will tend to differ, as will their approach to natural resource use and conservation (Carroll & Hendrix, 1992). This distinction may be considered more acutely given consideration of the fact that local governments and citizens in the western United States have co-evolved politically and legally with the policy of beneficial use in regard to water resources. The WSRA tends to contradict that policy in many aspects and has been shown to incite distrust and contempt for an incursion of federally directed river management policy (Gerlak, 2006; Blauwkamp & Longo, 2002).

The WSRA and provisions included within, in many ways reflect the social and political evolution that occurred in the United States since the era of wide-spread federal

investment in large water development projects. Although the WSRA stands as a strong response to federal involvement in the major alteration of riverways in the past, the fact that designation brings rivers and the surrounding corridors under federal protection leads some to believe that the WSRA is merely an alternate means of transferring private land and natural resources into the public domain (Tarlock, 2000). By including provisions in the WSRA which outlined a cooperative management arrangement between federal and state representatives with local citizens, Congress made a clear attempt to both ease the fears of citizens concerned about a federal take-over, and also to engage those citizens in a form of natural resource co-management (Wild and Scenic Rivers Act, 1968). The Niobrara Scenic River Designation Act of 1991 and the events following scenic designation provide a complex and engaging case study from which many of the concepts and practical realities of natural resource co-management theory can be investigated.

Federal Reserved Water Rights

State water law in the western United States developed along the premise that the scarcity of water requires that it is put to the most beneficial use in the most efficient manner possible. Consequently, beneficial use came to mean profitable use, and efficient came to mean that any water that is not consumed by a beneficial use is subsequently made available for additional appropriation or wasted (Bell & Johnson, 1991). Within this framework, preserving the flow of a river for aesthetic, ecological, or recreational purposes stands contrary to the institutional evolution of water law in the western United States (Tarlock, 1967). This does not necessarily mean that a beneficial use management framework or a preservationist management framework is better than the other, but that

state and federal water managers are required to balance a number of values in order to best fulfill the public interest.

Historically, western states have centered their water laws and policies on diversionary and consumptive uses. Over the last few decades, however, many western states have adopted instream flow rights and non-consumptive uses as complementary and legitimate components of their water administration system (Amos, 2006). Despite this progression, questions still remain in many states as to the legitimacy of a potential federal claim to instream flow rights within established state water law. This concern is heightened in the case of rivers designated under the WSRA, as potential federal reserved water rights along Wild and Scenic Rivers pose an additional threat to local sovereignty over management of water resources.

The federal reserved water rights doctrine was born out of the Winters Doctrine of 1908 which centered primarily on the water rights claims of Native American reservations (Brougher, 2011). In 1963, the United States Supreme Court decision in *Arizona v. California* allowed for the applicability of the Winters Doctrine on other federally owned lands in addition to Native American reservations. The language of the Winters Doctrine indicates that by reserving a certain area, the federal government had implied that the unappropriated water available at the time that the area was set aside was also reserved for the purposes for which the reservation was made (Huber & Zellmer, 2013). Additionally, federal appropriations are allowed "…outside the parameters of state law…" (Amos, 2006, p.1244). It follows, therefore, that a federal agency administering a reservation of land within a state may have a reserved water right claim, but the means through which the agency makes claim to that right is outlined in the federal agency's

specific enabling legislation. In all cases, however, federal agencies are allowed to make a federal reserved water right claim if they find that they are unable to meet their mandates within state water law (Amos, 2006).

Scenic designation of the Niobrara River

The interplay between federal protectionist policy and local sovereignty over private property and natural resources management has been exhibited in a fascinating way along the Niobrara National Scenic River (NNSR). The NNSR was designated into the Wild and Scenic Rivers system in 1991, but the events leading up to designation, and the manner in which local, state, and federal entities have since struggled to balance local and federal values in relation to the River, have provided an interesting example of how different parties might navigate prejudgments and conflict in order to cooperatively manage a cherished resource. The tale of the NNSR exhibits a dualism common to environmental conflicts, but the complexity that pervades the Niobrara narrative offers a unique insight into the human dimension of natural resource management, which is often not static or predictable. The unique influence of individual players who took part in the events leading up to designation of the NNSR and the formation of the Niobrara Council, as well as the policy framework through which those actors engaged one another and realigned themselves in relation to shifting disputes, illustrates the dynamic nature of collaborative natural resources management.

According to congressional testimony (*Niobrara Wild and Scenic River*, 1992) in the early 1980's, an effort to designate a large portion of what is now the NNSR into the Wild and Scenic Rivers system was led by local landowners who were concerned about and opposed to the proposed construction of a federal dam near Norden, NE (Roeder,

2002). Norden Dam, a component of the proposed O'Neill Unit Irrigation Project, would have been built directly on the main stem of the Niobrara River and obstruct its flow along approximately twenty miles (Johnsgard, 2007). At that time, the proposition of a dam constructed near to, or downstream from their property, would have posed a significant threat to the livelihoods of many local landowners. A large majority of landowners along the Niobrara corridor, therefore, supported federal designation of the Niobrara River and protection under the WSRA (Johnsgard, 2007).

The Norden Dam was first proposed as the "Meadville Dam" in a 1952 United States Bureau of Reclamation (USBR) report on the O'Neill Unit Irrigation Project, which initially called for a basin-wide project that included eight dams on the main stem of the Niobrara River and fourteen operating units throughout (Roeder, 2002). This project was expected to provide irrigation for over 60,000 acres of agricultural land and also provide power generation (Roeder, 2002). The cost-benefit ratio of the project, however, was not high and for many years the USBR proposal lacked enough federal or state support for implementation (Roeder, 2002).

The O'Neill Project was revised and proposed to Congress again in 1971, this time with the support of federal and state representatives and agencies (Johnsgard, 2007). The revised O'Neill Project, including the Norden Dam, was signed into law by President Nixon in the 1972 in the omnibus Reclamation Project Authorization Act of 1972 (Johnsgard, 2007). Consequently, a group of Niobrara River Basin ranchers organized as the Save the Niobrara River Association (SNRA) in 1975, and soon after, filed for and were granted an injunction against the USBR, claiming that the Project's environmental

impact statement was insufficient and did not adequately address the range of possible negative impacts. (Roeder, 2002).

The thousands of acres which would have been inundated by the construction of the Norden Dam included a sizable amount of the region's premier farm and ranchland. Yet, the resulting reservoir would have supplied the water necessary for increased surface water irrigation in the area, allowing for increased crop production. Here, the rationality and logistics of the proposal came into conflict with the state and federal political climate of the time, as well as the physical and climatic characteristics of the region. Many citizens saw the project as an example of unnecessary pork barrel spending that benefited only a few agriculturalists of this relatively small region, but at a high cost to taxpayers (Johnsgard, 2007). In addition, the corn market was already flooded with excess supply at that time, so the proposal to subsidize the production of corn on soil which could not sustainably support the crop, seemed illogical and economically inefficient (Clark, 1997; Johnsgard, 2007).

In order to effect permanent protection of the Niobrara River and associated resources upon which their livelihoods depended, the SNRA developed a proposal for inclusion of the Niobrara under the WSRA. The SNRA submitted their proposal to United States Senator James Exon, representing Nebraska, in 1980 and again in 1984 (Roeder, 2002). In 1985, Senator Exon introduced Senate Bill 1713 to include the Niobrara in the Wild and Scenic Rivers system, including provisions for some level of participation by a local board in the management of the proposed 76-mile stretch (Roeder, 2004). Ultimately, Senator Exon decided to withdraw his bill while the

Nebraska Natural Resources Commission conducted a study on the need for, and local opinion on, scenic designation (Roeder, 2002).

The Nebraska Natural Resources Commission study was issued in the summer of 1986 and presented results of a landowner opinion survey, indicating that attitudes for and against federal designation of the Niobrara River were split almost equally. Of the respondents, 41% were opposed to designation, 39% were in favor of designation, 11% responded that they may favor designation "under some circumstances", and 8% had no opinion on designation (Nebraska Natural Resources Commission, 1986, p.15). Of those landowners whose property included riverfront portions, approximately two-thirds favored designation. The report also explored local and state options available for protecting exceptional and relatively unaltered riverways throughout Nebraska and determined that although the State's laws related to natural resources and conservation did not explicitly address this issue at the time of the report, the potential existed for lawmakers and administrators to provide the necessary framework (Nebraska Natural Resources Commission, 1986). For example, at the time that Senator Exon introduced his 1985 bill, none of the four counties through which the proposed scenic corridor would run had zoning ordinances in place, leaving the River vulnerable to potentially negative impacts of private land use decisions (Roeder, 2002).

From the time that designation of the Niobrara became a serious proposal, conflicts emerged over the extent of spatial and administrative jurisdiction that the federal government would have over the Niobrara River. Many believed that local efforts to protect the River were already adequate enough to fulfill the intended goals of the WSRA and that formal, federal intervention was unnecessary. Throughout the debate, opponents

to designation maintained that local efforts to protect the Niobrara had been unduly dismissed by federal representatives and those who supported scenic designation (*Niobrara Wild and Scenic River*, 1992). But, by the mid-1980's, the proposed Norden Dam had been largely abandoned and few prospects for additional development along the rural Niobrara River corridor appeared likely, giving little initiative for formalized, preemptive protection or management by local entities. Yet, supporters of designation saw this lack of action at the local level as a serious threat to the Niobrara and insisted that federal control was necessary in order to ensure that the River would be protected in its natural state, indefinitely (Roeder, 2004; *Niobrara Wild and Scenic River*, 1992).

After little action was taken by local or state authorities to address protection of the Niobrara River, Senator Exon introduced scenic river designation legislation again in January 1989 and obtained Senate approval later that year (Roeder, 2002). The House of Representatives took longer to come to an agreement following the introduction of two separate House bills, introduced by two of Nebraska's Representatives. Representative Virginia Smith introduced H.R. 1673 to authorize further study of the Niobrara River by the United States Department of the Interior; and H.R. 3823, introduced by Representative Douglas Bereuter, included a proposed Niobrara-Buffalo Prairie National Park in addition to scenic and recreational designations of two portions of the Niobrara River (Roeder, 2002).

Many opponents of the scenic designation, including Representative Smith, proposed that a federal study of the Niobrara River should take place before designation. Although this stance was interpreted by some as a stalling tactic, the WSRA does include a standard study component as a requirement before designation can be approved. On the

other hand, proponents of the designation maintained that numerous studies of the Niobrara River had already been conducted. (*Niobrara Scenic River Designation Act of 1990*, 1991). Throughout the Congressional debate, the National Park Service was opposed to what was referred to as "instant designation" and maintained that an additional study was necessary for the agency to properly vet eligibility of the River for designation and investigate appropriate management options (Roeder, 2002)

As debate continued in Congress, the divide over designation of the Niobrara River began to become more apparent among Nebraska citizens. The proposed Norden Dam was viewed as a threat by some local landowners because its construction would have inundated their property in perpetuity. Designation of the NNSR, however, posed a separate threat to the property rights of those whose land was located within the Niobrara corridor. Once the possibility of construction of the Norden Dam decreased in likelihood, and the possibility of federal designation under the WSRA increased; the resulting shift among local landowners toward opposition of scenic designation served to make the federal designation controversy more polarizing and proved to be one of the largest obstacles to the final passage of the Niobrara Scenic River Designation Act (NSRDA) (*Niobrara Wild and Scenic River*, 1992).

The geographic and political distribution of opposition and support for the inclusion of the Niobrara into the federal system of designated rivers was another interesting point of contention. The results of a 1989 statewide poll issued by the Omaha World-Herald showed that close to three-quarters of all Nebraska citizens supported scenic designation, but opponents greatly outnumbered supporters in the four counties through which the proposed designated segment of the Niobrara River ran (Clark, 1997).

The Omaha World-Herald poll demonstrated that physical proximity to the portion of the Niobrara River slated for federal designation was directly proportional to opposition to designation (Blauwkamp & Longo, 2002). Congressional testimony indicated that opposition was not necessarily directed at the mandates of the WSRA, but resulted from fears that designation was a direct threat to the sovereignty that local property owners had held over this resource for generations. Further, citizens of the Basin made a compelling argument that local control over the River had historically been adequate, given the fact that the Niobrara remained largely unimpaired by human activity (*Niobrara Wild and Scenic River*, 1992). Although it came late in the debate, the commissions representing the four counties that would be impacted by designation established the Niobrara River Joint Management Board and set into place temporary regulations along the Niobrara River in order to demonstrate the ability of local authorities to provide suitable protections (Roeder, 2002). However, the establishment of the Joint Management Board occurred only a few days prior to the hearings on proposed designation held before the House Subcommittee on National Parks and Public Lands in the spring of 1990 (Roeder, 2002).

Following the 1990 hearings, the House Subcommittee on National Parks and Public Lands issued a report recommending designation of the Niobrara River via the passage of the Senate Bill introduced by Senator Exon, with amendments, which the House passed in the summer of 1990 (Roeder, 2002). The compromise bill reconciled by the Senate and House, which included a six-mile gap along the length of the designated River wherein a potential diversion dam could be constructed, and provisions restricting the amount of land within the corridor that could be acquired by the National Park

Service; was passed by the Senate before the end of 1990, but not the House (Roeder, 2002). In 1991, the final version of the Niobrara National Scenic River Designation Act was introduced into the Senate by Senators Exon and Bob Kerry as Senate Bill 248 (S.248), which was the same version passed by the Senate in 1990. S.248 was approved by the Senate on April 17th and by the House on May 14th, 1991. The Act was signed by President George H.W. Bush on May 24, 1991 (Niobrara Scenic River Designation Act [NSRDA], 1991; Roeder, 2002).

The final version of the Niobrara Scenic River Designation Act (NSRDA) included designation of both the Niobrara National Scenic River (NNSR) running through Cherry, Brown, Rock, and Keya Paha counties, as well as additions to the Missouri National Recreational River through the designations of a segment of the Missouri River and a segment of the lower Niobrara River, upstream from their confluence at Lewis and Clark Lake in northeastern Nebraska (NSRDA, 1991). The Scenic portion of the Niobrara River was further broken into two segments, one 40 miles long and another 30 miles long, separated by a six mile segment where a proposed diversion dam would have been built if the project was approved and funded (Johnsgard, 2007). That water project never materialized and the six mile segment was included in the NNSR five years later (NSRDA, 1991).

The NSRDA also provided special considerations that addressed the fact that the majority of the land abutting the NNSR was privately owned, by including special limitations on federal acquisition of private land along the corridor and the formation of a local advisory commission (NSRDA, 1991). The NSRDA limited federal condemnation of private land along the corridor to no more than two percent of the total acreage within

the boundary for fee title purchase, and no more than five percent of the total acreage could be condemned through either fee title purchase or easements. This limitation on the authority of the federal agency managing the NNSR was in addition to the restrictions on condemnation of private land already provided for in the WSRA, which limits condemnation to no more than an average of 100 acres per designated river mile, and prohibited the use of condemnation when private ownership within the designated boundary was over 50% (NPS, 2007; Wild and Scenic Rivers Act, 1968, Sec.6). According to the NSRDA, the federal managing agency could use condemnation only if it had determined, and provided notice of and public comment on its determination, that state or local managing agencies had failed to protect the resources and values for which the NNSR had been designated (NSRDA, 1991).

Finally, the NSRDA provided for the formation of the Niobrara Scenic River Advisory Commission (Commission) that was made up of local landowners, business owners, and local natural resource management representatives who would "advise the Secretary of the Interior on matters pertaining to the development of a management plan, and the management and operation" of the NNSR (NSRDA, 1991, Sec. 5(a)). The Commission was to be in effect for 10 years following the signing date of the NSRDA and was comprised of individuals appointed by the Secretary of the Interior (NSRDA, 1991). As a National Scenic River, the Niobrara was nominally administered by the Secretary of the Interior but management authority was designated to the National Park Service (NPS), and it was the responsibility of the NPS to develop a general management plan for the NNSR. The management of the portion of the NNSR that flowed through the Fort Niobrara National Wildlife Refuge, however, was delegated to the United States

Fish and Wildlife Service (USFWS) due to the fact that the Refuge was administered by the USFWS at the time of designation (Johnsgard, 2007; NPS, 2007).

Clearly, consideration of local input about the potential impact that designation could have on the Niobrara River corridor was central in the early debates over designation, final passage of the NSRDA, and in the development of and implementation of management actions along the NNSR. Notably, it can be found in both the pre-planning and final planning considerations of the NPS that the rural agricultural landscape stood as one of the most remarkable resources in the Basin, and one to be planned for and protected. The NSRDA clearly intended to encompass both the natural and cultural resources of the Niobrara River Basin in an integrated conservation plan with federal authorization and protection (NPS, 2007). The priority given to existing land owners and the historic use of the natural resources within the corridor spoke to the ultimate intention of the NSRDA as one of environmental preservation, while allowing for individual freedom over land use decisions, as long as those decisions did not degrade the current state of the NNSR corridor.

The Niobrara Council

Ultimately, the NSRDA was passed with a provision that mandated the formation of what would later become the Niobrara Council, a management entity that emerged through congressional negotiation in the hope of appeasing both the local citizens and representatives who resisted blanket federal control over the Niobrara River (NSRDA, 1991). The NSRDA specified that the Niobrara Commission was to include a local property owner and county board member from each of the four counties through which the NNSR flows, a recreational business owner, a representative from a timber operation

located within the corridor, a member of a non-profit environmental organization, and representatives from both the Middle and Lower Niobrara NRDs. The federal government was to be represented by appointees from both the USFWS and the NPS, the two agencies delegated by the Secretary of the Interior to manage separate portions of the NNSR (*Neb. Rev. Stats.*, §§ 72-2004.01-72-2012; NSRDA, 1991). The overall function and management responsibilities of the Niobrara Commission were not specifically outlined in the NSRDA, an omission that provided for a great amount of flexibility in the administrative relationship between entities responsible for the management of the Niobrara, but also the potential for political conflict once those managers began to negotiate and define their respective responsibilities.

The NPS published the first general management plan and environmental impact statement (GMP/EIS) for the NNSR in 1996. Of the management alternatives considered and analyzed, the alternative selected by the NPS in this version of the GMP/EIS provided for management of the NNSR by a local council in partnership with, and with funding and technical assistance provided by, the NPS. In 1997, the Cherry, Brown, Rock, and Keya Paha counties entered into an interlocal agreement forming the Niobrara Council; and a few months later, the Niobrara Council and the NPS entered into an cooperative agreement, as was anticipated by the NSRDA (NPS, 2007). As will be discussed in more detail below, the initial cooperative agreement and NNSR GMP/EIS would be challenged, and as a result, modified in the following years.

Following legal challenges and to provide more legitimacy and authority to the Niobrara Council, the Nebraska Legislature passed LB1234 (“Niobrara Scenic River Act”) in 2000 (*Neb. Rev. Stats.* §§ 72-2004.01 - 72-2012). The new state law recognized

the Niobrara Council as the entity through which "local participation and control" over the NNSR, in "conjunction" with the NPS, could be maintained (*Neb. Rev. Stat.* § 72-2005). By passing this legislation, the State of Nebraska made clear its intention that the Niobrara Council hold the power and legitimacy to assist the NPS in any management action required in order to protect the NNSR and associated values, and that those actions would include, but not be limited to "those authorized and delegated to it by the NPS" (*Neb. Rev. Stat.* § 72-2008).

Acknowledging local opposition to absolute federal control of the Niobrara River corridor and the insistence of local citizens to preserve autonomy over natural resource decisions, LB1234 complimented the federal NSRDA by designing the composition of the Nebraska-recognized Niobrara Council to weigh heavily toward local membership. The county board of commissioners from Cherry, Rock, Brown, and Keya Paha counties each designate a board member to serve as their representative on the Council and these are the only members guaranteed to have been elected by local citizens. The Middle Niobrara and Lower Niobrara NRDs also designate a representative that may have been elected to the District's board, or a non-elected District staff member. The Nebraska Game and Parks Commission's secretary or their designee serve as a representative on the Council. The NPS and the USFWS are represented on the Council by the corresponding regional director or their designee, but these federal representatives have, and continue to, serve as non-voting members. The remaining Council members are appointed by the Governor and confirmed by the Nebraska Legislature, and include: a landowner from each of the four effected counties, an outfitter operating within the corridor, a timber industry representative operating within the corridor, and a

representative of a non-profit environmental organization. All members serve three year terms and those appointed by the Governor serve at his or her pleasure (*Neb. Rev. Stat.* § 72-2007).

Similar to provisions in the WSRA which preclude any federal agency from participating in a project that would result in an adverse impact on a federally designated river or the values associated with such river, LB1234 provided the Niobrara Council with the authority to review and determine consistency with the purposes of the NNSR, any project within the designated corridor that is led or assisted by a state agency. Before initiating an activity within the designated boundary, a state agency must first notify the Council of their intent. If the Council determines that the proposed action is inconsistent with the purposes of the NNSR, the state agency may not initiate the activity until they have presented justification of the activity to the Governor and received approval. The state agency's justification for the proposed activity must include the current or future effects on the corridor, the social or economic need for, possible alternatives to, and mitigation measures planned for the activity (*Neb. Rev. Stat.* §72-2011).

LB1234 provided a number of authorities and directives to the Niobrara Council, but the most significant in many respects was that related to land use decisions. The Council can purchase land or obtain conservation easements, and these easements can be either inside or adjacent to the NNSR corridor (*Neb. Rev. Stat.* § 72-2008). The role of the Council in acquiring land in this manner was debated in subsequent years, but more controversial was the authority granted to the Council by LB1234 to "review, approve or reject all zoning regulations, including existing regulations, new regulations, proposed regulations, and variances of any type" within the boundaries of the NNSR (*Neb. Rev.*

Stat. § 72-2010). Where zoning regulations are not already established by county authorities, or in the case that proposed zoning regulations have been rejected by the Niobrara Council as inconsistent with the goals of the NNSR, the Council may then develop and enforce its own regulations as guided by the WSRA or the NNSR GMP/EIS (*Neb. Rev. Stat.* § 72-2010). Although this level of zoning authority is considered by some, including the NPS, as necessary in order to carry out the objectives outlined in the WSRA and the NSRDA, the fact that Council membership includes individuals that are appointed rather than elected, concerns those who believe that this level influence should only be held by those democratically accountable to their local constituency (Hicks, 2009).

Included in the designation of the Niobrara Council as a state entity via LB1234, was a provision that the Niobrara Council could receive funding for administrative costs from the NGPC. Initial legislation provided for up to $50,000 in state funding, but this upper limit on funding was removed in legislation adopted by the Nebraska Legislature in 2016 (*Neb. Rev. Stat.* § 72-2008). In addition to state funding, the Niobrara Council also receives funding on an annual basis from the federal government through the NPS. Reportedly, both funding sources have fluctuated over the years with marked reductions in recent years, causing unease among Council members and administrative staff (*LR272 Interim study to examine the Niobrara Council and its current statutory authority outlined in the Niobrara Scenic River Act: Hearing before the Natural Resources Committee*, 2015). With no taxing authority of its own, the Council has made efforts to secure alternative forms of funding, such as grants or partnerships with other entities who have access to funds for projects along the NNSR (Niobrara Council, 2018).

The passage of LB1234 succeeded in providing the legitimacy and authority needed by the Niobrara Council, and the NPS as their federal partner, for implementing necessary management actions along the NNSR corridor. Yet, it will be seen in the later summary of interviews conducted with some of the Council members, that aligning state-sanctioned jurisdiction and authorities for management of the NNSR with those required by the WSRA and the NSRDA is a process that requires a continued effort on the part of Council members to be advocates in their management role. Not unlike other entities dependent on government funding, the responsibilities and expectations outlined for the Council in enabling legislation are not currently complimented with the financial resources required to implement them. This and other obstacles to ensuring appropriate management of the NNSR will be explored further in the discussion below.

CHAPTER 5. MANAGEMENT CHALLENGES IN THE NIOBRARA RIVER BASIN

LEGAL CHALLENGES TO FEDERAL PLANNING ALONG THE NIOBRARA NATIONAL SCENIC RIVER

Since designation of the Niobrara National Scenic River (NNSR) in 1991, a number of legal and administrative challenges related to management of the NNSR have arisen. This section outlines a few of those disputes in order to provide a better picture of the institutional context within which the Niobrara Council functions. Descriptions of contemporary natural resources management disputes highlight the ways in which the Council could at times take advantage of its cooperative management framework in order to better address conflicts within the Basin; but in other situations, the benefits of the Council's cooperative framework may have fallen short of promised gains.

The National Park Service's (NPS) first General Management Plan and Environmental Impact Statement (GMP/EIS) for the NNSR was completed in 1996, five years following federal designation through the Niobrara Scenic River Designation Act (NSRDA). The boundary alternative chosen by the NPS in the 1996 GMP/EIS comprised a scaled down version of the provisional boundary provided for by the Wild and Scenic Rivers Act (WSRA), which is one-quarter mile from a river's high water mark (NPS, 2007; Wild and Scenic Rivers Act, 1968, Sec.4). The preferred boundary alternative was designed by the NPS to include "significant" and "important" resources found along the corridor, and was delineated in consideration of information gathered through a series of field investigations and the solicitation of public input (Roeder, 2002; *Sokol v. Kennedy*, 2000).

In 1997, David Sokol, a property owner along the proposed NNSR corridor, sued the Director of the NPS for using inappropriate methods of determining the boundaries of

the NNSR's federally designated corridor. Sokol was a ranch operator whose land was proposed to be included in the designated NNSR corridor, and who took issue with the NPS provisionally incorporating part of his land through a determination that it contained "significant" and "important" resources, rather than the "outstandingly remarkable values" standard that the NPS was required to use in determining the boundaries for designated rivers. The Federal District Court for the District of Nebraska disagreed and Sokol subsequently appealed the decision (Becker, 2001; *Sokol v. Kennedy*, 2000). The case was then heard in the United States Eighth Circuit Court of Appeals, which reversed the District Court's decision and found that the NPS had not complied with the WSRA in making its boundary determination, that the boundary determination process had to be carried out a second time, and that boundaries were to be determined based on the presence of outstandingly remarkable values, not "significant" or "important" values (Becker, 2001).

Following the decision by the United States Court of Appeals, the NPS embarked on another lengthy process to redraw the boundaries of the NNSR, this time ensuring that the corridor's outstandingly remarkable values were considered. In the second GMP/EIS, for which the record of decision was promulgated in 2007, the outstandingly remarkable values present along the NNSR included: scenic, recreational, geologic, fish and wildlife, and paleontological. In the preferred boundary alternative selected in the 2007 GMP/EIS, the NPS strove to equitably protect all five of the NNSR's outstandingly remarkable values, thereby employing a variable width boundary that, again, was delineated following a long information gathering and consultation process with experts and the public (NPS, 2007).

The methods employed by the NPS to delineate the boundaries of the NNSR were called into question again when another landowner along the NNSR sued the NPS when some, but not all of his property was incorporated into the boundary designated by the 2007 GMP/EIS (*Simmons v. Smith*, 2018). In this case, the landowner was an outfitter along the River who claimed that the NPS had inappropriately determined that certain outstandingly remarkable values found within the NNSR corridor (fish and wildlife, scenic, and geologic) occurred spatially from "rim to rim" along the designated portion of the River. Because the total area of the corridor from "rim to rim" comprised more land than what would be permissible for federal designation under the WSRA, the NPS was required to prioritize tracts of land and refine determinations of land to be included in the NNSR boundary (*Simmons v. Smith*, 2018). Following the ruling in *Sokol v. Kennedy* in 2000, the NPS had worked to establish more clear definitions of what qualified as an outstandingly remarkable value and the criteria used to ascertain where these values existed (NPS, 2007). In this case, the United States Eighth Circuit Court of Appeals found that the NPS had properly applied the revised criteria for establishing the new NNSR boundary, clarifying that not all land containing an outstandingly remarkable value had to be included within the boundary because of limitations on the allowable number of designated acres; but also that land not containing outstandingly remarkable values may justifiably be included in order to buffer nearby values or to prevent discontinuities (*Simmons v. Smith*, 2018)

Although it has yet to become an issue requiring legal opinion, it is interesting to note that the current boundary for the NNSR according to the 2007 GMP/EIS differs from the boundary established in the 1996 GMP/EIS, but Nebraska statute still cites the

1996 NNSR corridor boundary in enabling language related to the Niobrara Council (*Neb. Rev. Stat*. § 72-2006). This inconsistency has been noted and a proposal for updating the boundary has been offered as legislation in the Nebraska Unicameral, but no action has been taken as of this writing (*LR272 Interim study to examine the Niobrara Council and its current statutory authority outlined in the Niobrara Scenic River Act: Hearing before the Natural Resources Committee*, 2015). Imaginably, the mismatch between the NNSR boundary that the NPS and the Niobrara Council are required to adhere to will not result in any real dispute, but it could make appropriate management actions and considerations of jurisdiction questionable.

Another aspect of the NPS's 1996 GMP/EIS was challenged in 1999, when *National Park and Conservation Ass'n v. Stanton* came before the United States District Court for the District of Columbia (*National Park and Conservation Ass'n v. Stanton,* 1999). Here the plaintiffs, the National Parks and Conservation Association, the American Canoe Association, and a number of concerned citizens, claimed that they had suffered personal and informational injuries as the result of the NPS's decision to delegate its duties to the Niobrara Council (Rogers, 2001). Essentially, the plaintiffs were displeased that since the inception of the Niobrara Council and the interlocal agreement between the Niobrara Council and the NPS, little effort had been made to protect the NNSR and its aesthetic, recreational, and environmental values (Rogers, 2001). In addition, the plaintiffs charged that an informational injury was suffered, due to the fact that as a non-federal entity, the Niobrara Council was not required to publicly announce or allow for public comment on decisions, nor was it required to publish these decisions in the Federal Register (Feldman, McLaughlin & Hill, 2005; Rogers, 2001).

The defendants argued that the delegation of authority by the NPS to the Niobrara Council was within the agency's discretion under the WSRA and that entering into cooperative agreements with local entities affected by designation is encouraged by the relevant statutes. This point is valid, but only so long as the federal agency holds final reviewing authority over decisions made by the local entity, otherwise the federal agency could be charged with violating the "non-delegation doctrine" (Interagency Wild and Scenic Rivers Coordinating Council, 2004). It was further noted that unlawful delegation of responsibility to another entity is especially concerning if that entity's objectivity could be questioned or considered a conflict of interest (*National Park and Conservation Ass'n v. Stanton,* 1999). In this case, the only final authority that the NPS held was to terminate the cooperative agreement between the NPS and the Council if it were shown that the Council was not managing the designated segment of the NNSR in a manner consistent with the GMP/EIS prepared by the NPS. The court found that action by the NPS to terminate the cooperative agreement would be unlikely to occur except in extreme situations and that this did not constitute "final oversight authority" (Rogers, 2001, p.191; Feldman, McLaughlin & Hill, 2005).

As a result of the decision in *National Park and Conservation Ass'n v. Stanton*, the NPS was permanently enjoined from implementing the 1996 GMP/EIS and directed to develop a revised GMP/EIS. The new GMP/EIS was required to comply with NEPA, clearly indicate that the Niobrara Council was primarily an advisory entity, and clarify that the NPS held final authority over the management decisions along the NNSR (*National Park and Conservation Ass'n v. Stanton,* 1999; Rogers, 2001). When the second NNSR GMP/EIS was issued by the NPS in 2007, it described how the NPS would

act as the lead agency in management actions along the NNSR and encourage the use of zoning authorities held by the Council to ensure local protection of the NNSR corridor in a manner that was consistent with the revised GMP/EIS. The revised GMP/EIS also included a detailed description of methods used and the final determination of the new NNSR boundaries, as required by *Sokol v. Kennedy* (NPS, 2007).

A CALL FOR HYDROPOWER

Many of the recent developments regarding the management of streamflow within the Niobrara River lead back to 2007, when the Nebraska Public Power District (NPPD), owner of a hydropower plant near Spencer, NE, placed a call on the Niobrara River. NPPD's Spencer Hydropower Facility is located in the downstream portion of the Basin, about 40 miles upstream from the Niobrara's confluence with the Missouri River, and NPPD holds a hydropower appropriation of 2,035 cubic feet per second (cfs) for the "run of the river" facility (Aiken, 2007; Blankenau, 2015). The facility began operating in 1927, but the NPPD hydropower water right is associated with three different priority dates: 1896, 1923, and 1942 (Blankenau, 2015; Nebraska Public Power District, 2018). When NPPD made a "call" on the Niobrara River in 2007, the subsequent unfolding of events resulted in a number of lawsuits, the basis of which were two major questions: one regarding the methods used by the Nebraska Department of Natural Resources (NeDNR) to administer senior and junior appropriators, and the other concerning how those administrative questions impact the larger management decisions faced by both NeDNR and local NRDs in their consideration of balancing long-term water supplies and demands in the Basin.

The events of 2007 in the Niobrara Basin led not only to an array of lawsuits, but also a review and reconsideration of NeDNR's assessment and administrative procedures, and a decade's worth of shifting alliances with all parties engaged in a contest to identify who had the authority to determine how water is used in the Basin. Ultimately, interested parties representing every level of water use and management in the Basin, from irrigators, to local managing agencies, NeDNR at the state-level, and the federal government, were drawn into the conflict. As of now, the ramifications of the 2007 NPPD call on the Niobrara have yet to be fully realized, but have served to test and even alter Nebraska water law.

On March 2, 2007, NPPD notified NeDNR of their intent to place a call on the Niobrara River in order to satisfy their hydropower appropriation for 2,035 cfs (Aiken 2007). Prior to 2007, a call for the Spencer Hydropower Facility's water right had only been made once, and that was in the 1940's, over sixty years prior. Since that time, and apparently partially due to the absence of calls along the River, NeDNR proceeded to grant surface water appropriations upstream of Spencer (Blankenau, 2015). Most of these appropriations were for a relatively small amount, five cfs or less, yet many of the irrigators who had come to rely on those appropriations and who had not previously been subject to closing as a result of NPPD making a call on the River, were justifiably upset over receiving closing notices in 2007 without prior warning (Aiken 2007).

Following NPPD's call, NeDNR issued closing notices on May 1, 2007, to approximately 400 junior appropriators upstream from the Spencer facility (Hovey, 2007). NeDNR continued to monitor streamflow on the River and a few days later determined that streamflow had increased enough for the Spencer right to be fulfilled

(*Keating v. Nebraska Public Power District*, 2010). On May 7, 2007, NeDNR issued opening notices to the appropriators who had been closed the previous week, followed by letters explaining the procedure that was used to administer for the Spencer hydropower right (*Keating v. Nebraska Public Power District*, 2010). At NPPD's request, NeDNR refrained from issuing further closing notices over the next few months so that NPPD could pursue negotiation of subordination agreements with junior appropriators willing to pay NPPD for the opportunity to use their higher preference rights out of priority (*Keating v. Nebraska Public Power District*, 2010). NeDNR again issued closing notices on August 1, 2007, which were yet again lifted from August through October of 2007 (*Keating v. Nebraska Public Power District*, 2010).

Soon after the first closing notices were issued, a number of junior appropriators subject to the closings filed suit against NeDNR and NPPD. A number of arguments were made by the junior appropriators, including assertions that the plaintiffs' procedural due process rights were violated, that NPPD's water rights had been abandoned in the 60 years that they did not issue a call on the River, that the call itself was futile because it would not increase the amount of water reaching the Spencer facility, that NPPD had required an arbitrarily high price in subordination agreements with junior appropriators, and that NeDNR had failed to take into account subordination agreements when issuing closing notices (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2009, 2012 & 2014; *Middle Niobrara Natural Resources District et al., v. Department of Natural Resources*, 2011). Litigation volleyed back and forth through the Nebraska Supreme Court three times (2009, 2012, and 2014), each time the Court remanded the concerns of the irrigators to NeDNR, NeDNR issued orders failing to

satisfy the irrigators, and the irrigators appealed (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River*, 2014; Shultz, 2010). In its last decision on the case, the Court sided with NeDNR's determination that NPPD had not forfeited its rights by not making a call on the River between the 1940's and 2007, and that NPPD could enter into subordination agreements with some upstream users, but still call for the entirety of its hydropower appropriation (Blankenau, 2015).

The procedural due process argument brought by the junior appropriators closed by NeDNR asserted that by not holding a hearing prior to the issuance of the closing notices, NeDNR had unlawfully prohibited the use of their water rights without offering sufficient notice and opportunity for the plaintiffs to oppose the action (Gerlach, 2013). Ultimately, the Nebraska Supreme Court found that since a water appropriation is a usufructory right, not a property right, and that under Nebraska law NeDNR is the agency authorized to administer the use of water throughout the state, a predeprivation hearing or notice is not required before issuing closing notices (Gerlach, 2013; *Keating v. Nebraska Public Power District*, 2010). If NeDNR makes a decision without first holding a hearing, individuals subject to that decision are entitled to request a hearing before NeDNR following the decision (*Neb. Rev. Stat*. § 61-206).

On May 11, 2007, junior appropriators filed a request for a contested case hearing with NeDNR to determine the validity of the closing notices (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River*, 2009; *Neb. Rev. Stat.* § 61-206). Here, two questions were presented against the NPPD hydropower appropriation and the closing notices issued by NeDNR to administer for the NPPD appropriation. The first was that, considering the occurrence of past flows at the Spencer facility that would not

have fulfilled NPPDs water right, yet the absence of a call by NPPD on the River over the past 60 years, perhaps NPPD had abandoned their appropriation, either fully or partially. The second was that closing junior, upstream appropriators would not in effect increase the amount of water reaching the Spencer facility, thereby making NPPD's call on the River futile (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2009).

At the same time, some junior appropriators subject to NPPD's call were negotiating with NPPD in order to use their water rights and provide NPPD compensation in exchange for that use. If a junior appropriator with a higher preference (superior) water right wishes to compensate a senior appropriator with a lower preference (inferior) water right, the two parties can enter into a subordination agreement by which the junior appropriator compensates the senior for the right to use their superior appropriation out of priority (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2009). By statute, the compensation agreed to in a subordination agreement involving a senior hydropower appropriation cannot be more than the value of the power that would have been generated through the use of the water (*Neb. Rev. Stat.* § 70-669). Under Nebraska law, if the two parties involved in negotiating a subordination agreement are unable to agree on compensation, the issue can be determined by appraisers appointed by a county court in a condemnation proceeding, which is the path that NPPD and the junior appropriators eventually took when negotiations between the parties failed (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2009).

The irrigators asked that until the validity of NPPD's water right and the appropriateness of the call on the River could be determined, that no further closing notices would be issued by NeDNR. Yet, NeDNR issued closing notices again in August 2007 to those junior appropriators who had not entered into subordination agreements with NPPD, or who had entered into subordination agreements but not paid NPPD's demand for $0.70/acre-foot (Hovey, 2007). Later that month, junior appropriators who disputed NPPD's valuation of water included in proposed subordination agreements filed a petition for NPPD's water rights to be condemned and a valuation be determined by appraisal (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2009). The County Board of Appraisers submitted a price of $0.50/acre-foot and NPPD appealed this determination. In response, the irrigators requested and the district court granted an indefinite stay on the issue until the validity of the NPPD appropriation and the appropriateness of NeDNR's closing notices could be determined (Blankenau, 2015).

Following the first closing notices issued by NeDNR, the irrigators requested a contested case hearing, otherwise known as a postdeprivation hearing when it is called for following the issuance of closing notices by the NeDNR (Garlach, 2013). Because the irrigators were exercising their preference rights, and therefore not subject to closing, NeDNR dismissed their request for a hearing due to their lack of standing and NeDNR's lacking of subject matter jurisdiction (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2009, p. 143). The Nebraska Supreme Court concluded that NeDNR had wrongly dismissed the hearing and the issue was remanded back to

NeDNR (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2009).

Hearings were held in the summer of 2010, at which NeDNR's administration for the 2007 NPPD call and the validity of the NPPD rights were challenged by the irrigators. Following the hearing, NeDNR issued an order in late 2010 that found in favor of NeDNR's administration for the NPPD call, including the issuance of closing notices and lack of need to conduct a futile call analysis. The irrigators appealed NeDNR's decision, challenging a number of procedural aspects of the 2010 hearings, the validity of NPPD's appropriation, the need for a futile call analysis to be performed by NeDNR, as well as NeDNR's administration of a call on the River for NPPD's full appropriation without consideration of subordination agreements in place. In 2012, the Nebraska Supreme Court remanded the case back to NeDNR and directed the agency to determine if any portion or the entirety of the NPPD appropriation had been abandoned or forfeited (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2012).

Once again, on remand, NeDNR determined that NPPD had not abandoned or forfeited its hydropower appropriation, and when the case went before the Nebraska Supreme Court again in 2014, the Court agreed. The Court also agreed with NeDNR's determination that NPPD could make a call on the River for the full amount of water permitted for the Spencer facility, despite the existence of subordination agreements. It was concluded that when NPPD places a call on the River for the full amount of their appropriation, those junior appropriators with subordination agreements will continue to divert their permitted amount of water, and compensate NPPD for those diversions. Theoretically, if there is a shortage of water on the River, NPPD will not receive both

monetary payments in addition to their full appropriation (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2014). However, in the NeDNR's *2008 Annual Evaluation of Availability of Hydrologically Connected Water Supplies*, it was stated that the amount of water that NPPD was allowed to call for did not include quantities accounted for in subordination agreements with junior appropriators (NeDNR, 2007). Lastly, the Court deferred to NeDNR in the agency's claim that a futile call analysis was not needed in this case because the Niobrara was a "wet" river, and therefore, any water not diverted upstream would reach the downstream location for which the call is made (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2014, p. 509).

In a dissenting opinion on *In re 2007 Administration of Appropriations of the Waters of the Niobrara River*, Nebraska Supreme Court Justice Connolly provided a number of arguments supporting the plaintiff's claims and arguing further that NeDNR's administration of the Niobrara River since the mid-20th century had resulted in more appropriations being approved than were feasible to fulfill. In fact, in 1942, when NPPD's predecessor applied for its most recent Spencer facility hydropower water right, the United States Bureau of Reclamation recommended, and the eventual permit included, a clause stating that too many appropriations had been granted along the Niobrara River and that water allocated by the 1942 permit was conditional and subject to denial in times of scarcity (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2014, p. 512). At the time of the 2007 lawsuits, the streamflow record dating back to 1942 had showed that on average, the Spencer facility had received its full appropriation only a little under 60 days per year. Further, as NeDNR continued to

approve over 400 new permits along the Niobrara between 1942 and 2006, NPPD may have commented on proposed applications, but only placed a call on the River once (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2014). Justice Connolly wrote that in consideration of the fact that NPPD had not shown compelling interest in upstream diversions prior to 2006, and that NeDNR had continued to approve appropriations despite the fact that average streamflow along the River could not support those already in effect, to suddenly deny upstream irrigators of the water rights that they had invested in was "unjust" (*In re 2007 Administration of Appropriations of the Waters of the Niobrara River,* 2014, p. 510).

FULLY APPROPRIATED DESIGNATION AND INTEGRATED MANAGEMENT PLANNING

As litigation over the closing notices for NPPD's Spencer hydropower water right began to ramp-up, a separate but related action by NeDNR in the Niobrara River Basin refocused attention on the availability of surface and hydrologically connected groundwater supplies. Following the passage of LB962 in 2004, NeDNR was required to publish an annual report evaluating the long-term availability of hydrologically connected ground and surface water supplies for basins not already determined to be fully or overappropriated, or with an integrated management plan in development or in effect (*Neb. Rev. Stat.* § 46-713). For the first two years in which NeDNR's evaluation was required, the Niobrara Basin, with the exception of the western portion of the Basin occurring in the Upper Niobrara White NRD, was not determined to be fully appropriated (NeDNR, 2005 & 2006). But, in October 2007, NeDNR publicly noticed its preliminary determination that the Lower Niobrara River Basin, from the Mirage Flats diversion dam to the Spencer hydropower facility, was fully appropriated (NeDNR, 2007 & 2008).

In NeDNR's 2008 annual evaluation, it was stated that the Lower Niobrara River Basin had not previously been determined fully appropriated in part because, prior to 2007, there had not been a call on the River to administer for the Spencer hydropower appropriation (NeDNR, 2007). In their 2008 report, NeDNR considered NPPD's assertion that they would continue to request administration for their Spencer hydropower appropriation and determined that if conditions recorded in the previous 20 years of streamflow data were similar in the following 20 years, surface water would be available to upstream appropriators junior to the Spencer facility for an average of 2.7 days between July 1st and August 31st, and an average of 24.6 days between May 1st and September 30th (NeDNR, 2007, p. 75). Therefore, the average number of days that water would be available to junior appropriators during the growing season over the next 20 years was less than the amount of water needed for irrigation of an average corn crop in the region. This evaluation, along with the fact that the number of days available for the junior appropriators upstream of the Spencer facility to divert water had decreased since their water rights had been granted, led to NeDNR's preliminary decision that the Lower Niobrara River Basin was fully appropriated (NeDNR, 2007).

In NeDNR's annual evaluation of hydrologically connected water supplies, the geographic area to which the evaluation applies to must be defined (*Neb. Rev. Stat.* § 46-713). For the purposes of their annual evaluation, NeDNR considers the 10/50 area, or the area within which 10 percent of the water pumped from a well would be depleted from the stream over a 50 year time period, as the hydrologically connected area (NeDNR, 2007, p. 17). In the case of the Lower Niobrara River, that area includes much

of, or at least a portion of, the Upper Niobrara White, Middle Niobrara, Lower Niobrara, Upper Loup, and Upper Elkhorn NRDs (NeDNR, 2007).

Prior to NeDNR's 2007 preliminary determination that the Lower Niobrara River Basin was fully appropriated, the area of the Basin upstream of the Mirage Flats diversion dam, in the western portion of the Upper Niobrara White NRD, had already been determined as fully appropriated and either informal or formal moratoriums or stays had already been in place in this area for a number of years (NeDNR, 2004; Upper Niobrara White Natural Resources District & Nebraska Department of Natural Resources, 2011). Following NeDNR's 2007 preliminary determination that the Lower Niobrara River Basin was fully appropriated, the Upper Niobrara White NRD and the four other Niobrara River Basin NRDs were directed by statute to place stays on the issuance of water well permits or additional acres irrigated by existing wells in the portions of their Districts included in the fully appropriated hydrologically connected area. Similarly, NeDNR was statutorily directed to place a stay on the issuance of new surface water appropriations or any increase in acres already irrigated by an existing surface water permit (*Neb. Rev. Stat.* § 46-714).

As directed by statute, NeDNR held a series of public hearings in the Lower Niobrara River Basin following their preliminary determination that the Basin was fully appropriated. Following the hearings and consideration of public testimony, NeDNR issued their final determination that the Lower Niobrara River Basin was fully appropriated on January 25, 2008 (NeDNR, 2008). Testimony from the public hearings recorded in NeDNR's order of final determination included concerns about NeDNR's methods for determining a basin as fully appropriated and how those methods related to

preference law and surface water administration; the need for NeDNR to predetermine whether additional water is available in a basin prior to granting new permits; and the methods used by NeDNR to determine the geographic boundaries of hydrologically connected areas (NeDNR, 2008). In consideration of this testimony, NeDNR revised the final boundaries of the hydrologically connected area of the Lower Niobrara River Basin determined to be fully appropriated (NeDNR, 2008).

Following the final determination that the Lower Niobrara River Basin was fully appropriated, four NRDs impacted by the decision (Middle Niobrara, Lower Niobrara, Upper Loup, and Upper Elkhorn NRDs) challenged NeDNR's determination by requesting a contested case hearing (*Middle Niobrara Natural Resources District et al., v. Department of Natural Resources*, 2011). The major challenges brought by the NRDs for NeDNR's consideration was that NeDNR had not used the best available data or information in making their fully appropriated determination and that their method of analysis was flawed (*Middle Niobrara Natural Resources District et al., v. Department of Natural Resources*, 2011). Over the summer of 2009, both the NRDs and NeDNR attempted to support their respective arguments through the issuance of affidavits drafted by their analysts on the NeDNR methodology. In December 2009, the NeDNR Director issued an order dismissing the NRDs' challenges, maintaining that NeDNR had used the best available data, information, and methods in their determination (*Middle Niobrara Natural Resources District et al., v. Department of Natural Resources*, 2011).

The NRDs responded to the 2009 NeDNR order with an appeal and their challenge went before the Nebraska Supreme Court on September 2, 2010. Before the Court, the NRDs presented a number of concerns with the manner and methods by which

NeDNR had come to their fully appropriated determination, including: using the NPPD Spencer hydropower call, the validity of which was still being challenged in court, as the basis for declaring the basin as fully appropriated; not considering the subordination agreements in place upstream of the Spencer facility; using methods that were not replicable; and not using the best available data (Blankenau, 2015). In June 2011, the Court reversed and vacated the 2008 order by NeDNR declaring the Lower Niobrara River Basin as fully appropriated, citing their use of flawed methodology and failure to properly document their methodology so that it could be replicated (*Middle Niobrara Natural Resources District et al., v. Department of Natural Resources*, 2011). On June 29, 2011, NeDNR issued a "Revised Order of Final Determination that the Lower Niobrara River Basin is not Fully Appropriated" (NeDNR, 2011).

Following a reversal of fully appropriated status for a basin, NeDNR is not required to perform an annual evaluation of hydrologically connected water supplies in that basin for four years (*Neb. Rev. Stat.* § 46-713), and therefore, an NRD involved in a status change would not be required to participate in an IMP development process in that timeframe. In 2010, LB764, was passed by the Legislature and allowed voluntary IMP development to occur jointly between NeDNR and NRDs within basins or subbasins that had not been determined to be fully appropriated (*Neb. Rev. Stat.* § 46-715). The Lower Niobrara NRD initiated a voluntary IMP process with NeDNR in 2011, and that IMP went into effect in 2014 (Lower Niobrara Natural Resources District & Nebraska Department of Natural Resources, 2014). The Upper Loup NRD initiated its voluntary IMP process in 2015 and their IMP went into effect in 2016 (Upper Loup Natural Resources District & Nebraska Department of Natural Resources, 2016). The Upper

Elkhorn and Middle Niobrara NRDs initiated their IMPs in 2015 and both are currently in different stages of development; the Upper Elkhorn's should be effective in early 2019 and the Middle Niobrara's is scheduled to be completed early in 2020 (NeDNR, 2018h; Upper Elkhorn Natural Resources District & Nebraska Department of Natural Resources, 2018). The Upper Niobrara White NRD was already engaged in a joint action planning process when LB962 was passed by the Nebraska Legislature in 2004, and was therefore allowed to modify but continue its planning process in the development of an IMP for the western, fully appropriated portion of the NRD. That initial IMP was approved by Upper Niobrara White NRD and NeDNR in May 2009, and amended in July 2011 (Upper Niobrara White Natural Resources District & Nebraska Department of Natural Resources, 2011). The Upper Niobrara White NRD recently initiated a voluntary IMP process for the eastern portion of their District, the area which was declared fully appropriated by NeDNR in 2008, before the Nebraska Supreme Court's reversal (NeDNR, 2019).

In 2015, the five Niobrara River Basin NRDs and NeDNR also made initial steps toward the development of a voluntary basin-wide plan. As a preliminary action in the planning process, the NRDs and NeDNR enlisted the help of the University of Nebraska Public Policy Center to perform a survey of Niobrara River Basin water users, water managers, private citizens, and other interested parties in order to ascertain their knowledge of and priorities for the basin-wide planning process. The results of the survey indicated a strong preference for local input in the planning process and the desire to see the Basin managed for long-term sustainability that considered the needs of current water users. Top priorities for the basin-wide planning processes included proactive planning

that addressed issues of supply and demand throughout the Basin, as well as the need to consider balance between upstream and downstream uses. Protection of streamflow for fish and wildlife was also a high priority among respondents (Shank, 2015). But, before the basin-wide planning process gained momentum, it was paused temporarily as a new path for managing streamflow in the Basin was explored.

INSTREAM BASIN MANAGEMENT AND INSTREAM FLOW OPTIONS

In the spring of 2016, the Nebraska Legislature approved a bill that made a fairly significant change to the state's water law. LB1038 allowed for an appropriation for hydropower to be permanently transferred to an instream basin management appropriation to be jointly held by the Nebraska Game and Parks Commission (NGPC) and any NRD(s). An instream basin management appropriation is to be used for the maintenance of streamflow for fish, wildlife, and recreation, and can also be used for purposes of implementing an integrated management plan that was developed by NeDNR and an NRD within the Basin. An important aspect of a new instream basin management appropriation is that it would hold the same priority date and preference category of the original hydropower right, rather than losing the earlier, original date and being assigned a more junior appropriation date (*Neb. Rev. Stat.* § 46-290).

LB1038 was initiated by the NGPC and the five Niobrara Basin NRDs (Upper Niobrara White, Middle Niobrara, Lower Niobrara, Upper Loup, and Upper Elkhorn NRDs) following an agreement that they made with NPPD, the owner of the Spencer hydropower facility and its associated hydropower appropriation. The five Niobrara Basin NRDs entered into an interlocal agreement in 2013, forming the Niobrara River Basin Alliance (NRBA), through which they could collectively address water issues that

impacted the Basin as a whole (Lower Niobrara Natural Resources District, 2018). In 2015, the NRBA, the NGPC, and NPPD signed a memorandum of understanding (MOU) which outlined a plan for the NRBA and NGPC to purchase the Spencer hydropower facility and its associated water rights. The MOU included a provision that the signatories would collectively advocate for statutory changes that would allow for the transfer of a hydropower water appropriation to an instream basin management appropriation (Niobrara River Basin Alliance, Nebraska Game and Parks Commission & Nebraska Public Power District [NRBA, NGPC & NPPD], 2015). Their efforts were successful and the Governor signed LB1038 into law on April 18, 2016 (Nebraska Legislature, 2018).

The 2015 MOU included a $12 million total cost to be paid by the NRBA and NGPC to NPPD for the Spencer hydropower facility, following the adoption of appropriate legislation. NPPD would provide $3 million in an in-kind contribution, and the remaining $9 million was to be provided by the NRBA and NGPC through grants and other sources of funding already available to the agencies. The MOU outlined that, of the $9 million to be contributed by the NRBA and the NGPC, $1.5 million will be sought from the Nebraska Environmental Trust and $3.5 million will be requested from the Water Sustainability Fund (NRBA, NGPC & NPPD, 2015). As of the time of this writing, a purchase agreement had been signed by the involved parties, but funding had yet to be fully secured (Axtell, 2018).

At the same time that the framework for LB1038 and the purchase of the Spencer hydropower plant was being negotiated, the NRBA and NGPC were taking steps to further protect streamflow downstream of the Spencer facility. Prior to the Spencer hydropower facility call and the fully appropriated determination by NeDNR in 2007, the

NGPC commissioners directed their staff in 2006 to initiate studies on the need for and impact of a potential instream flow appropriation on the Niobrara River for the purposes of protecting fish and wildlife, including a number of endangered species (NGPC, 2018). NGPC staff initiated six different studies that looked at various aspects of a potential instream flow appropriation on the Niobrara River. These detailed studies looked at the overall hydrology and how streamflow in the Basin had changed over time; the quantification of and connection between streamflow regimes and habitat for fish and wildlife; adequate streamflow requirements for recreational floating; the economic impact of recreation along the River; and finally, the economic value of the River to local agriculture, industry, and municipalities (NGPC, 2014). In order to fund and perform these studies, the NGPC staff partnered with multiple entities, including the Nebraska Environmental Trust, the USGS, the NPS, private consultants, and the University of Nebraska. In December of 2014, NGPC staff presented the findings of their studies in a series of public meetings throughout the state (NGPC, 2014).

In 2015, the NGPC and members of the NRBA jointly filed with NeDNR for an instream flow appropriation on a 39 mile stretch of the Niobrara downstream from the Spencer hydropower facility, to the River's confluence with the Missouri River (Bergin, 2015; NeDNR, 2017). The instream flow appropriation was granted by NeDNR in October 2017 (NeDNR, 2017). The instream flow appropriation consisted of a series of different flow amounts requested at different times of the year, in order to provide the conditions necessary for the seasonal life history needs of fish and wildlife. The flows requested for these "bioperiods" ranged from 1,765 cfs to 2,270 cfs and were supported in

the application documentation by the studies commissioned by the NGPC over the preceding decade (NeDNR, 2017; NGPC, 2018).

As stipulated in Nebraska statute, this instream flow appropriation would be junior to all preceding surface water appropriations along the Niobrara River. Because the date of the instream flow application is more recent than any preceding surface water appropriation on the River, the NGPC and NRBA could not make a call on the River and force surface water irrigators to close their diversions (NeDNR, 2007). The instream flow water right, therefore, could not interfere with existing surface water rights, but it could hinder future surface water appropriations by decreasing available unappropriated water (Zellmer, 2006). Current and future groundwater uses, by which most irrigation in the Basin occurs, would not be impacted by the instream flow appropriation (NeDNR, 2017).

With the instream flow appropriation in place downstream from the Spencer facility, and the likely transfer of the Spencer hydropower right into an instream basin management appropriation, water managers within the Basin now have access to a number of management tools that were not available a decade earlier. If successfully acquired, the instream basin management appropriation holds the potential to be applied in a manner that addresses the needs of local citizens while maintaining or enhancing streamflow for fish, wildlife, and recreation. By collaborating on the passage of LB1038, the state, local management agencies, and users along the Niobrara River took a significant step in demonstrating their ability to protect streamflow in the River, and potentially making a federal reserved water right claim for the NNSR less likely (Bergin, 2015).

Although LB1038 provided managers with a new set of options, the ultimate impact of the legislation on the Niobrara River Basin is uncertain. Language in LB1038 was specific enough to the Niobrara River Basin, that it is unlikely, but not impossible, that it will be applied to other basins in the state (*LB1038 and Gubernatorial Appointments: Hearing before the Natural Resources Committee*, 2016). Countering that specificity is the vagueness in the LB1038 regarding the purposes to which an instream basin management appropriation can be applied. Maintenance of streamflow for fish, wildlife, and recreation is assured, but how the appropriation will "assist in the implementation of an approved integrated water management plan" will later be determined by the Niobrara NRDs and NeDNR through the processes of developing and implementing their IMPs (*Neb. Rev. Stat.* § 46-290). By holding of one of the major controlling water rights in the Basin, the potential exists for the NRBA and NGPC to seek opportunities for conjunctive management and streamflow retiming projects in order to increase the reliability and availability of the Basin's ground and surface water supplies, or to allow an increase in groundwater irrigated acres in portions of the Basin (*LB1038 and Gubernatorial Appointments: Hearing before the Natural Resources Committee*, 2016).

Remaining federal options on the Niobrara National Scenic River

Despite actions taken at the state-level, the potential exists for the federal government to make a claim for a federal instream flow appropriation on the NNSR. A successful instream flow claim might hold promise for the future integrity of the Niobrara, but what legal, procedural, economic, and political obstacles would the federal government face in making this claim? Further, considering actions taken in the Niobrara

River Basin by state and local water management entities over the past decade, is a federal reserved water right for the purposes of protecting and enhancing the NNSR necessary?

The NPS is specifically held to the "non-impairment mandate" which directs the agency to manage the National Parks for the enjoyment of the public, up until that enjoyment impairs the potential enjoyment of future generations. This mandate includes the conservation of wildlife and plant resources in addition to conserving scenery, natural features, and historical objects. Of all federal agencies charged with administering federal lands, the NPS has the most flexible internal policies by which it can pursue various means in order to fulfill its congressional mandate (Amos, 2006). The enabling legislation of the NPS "…commits the agency to work with state administrators to protect park resources while reserving all legal remedies under federal law" (Amos, 2006, p.1247). The NPS therefore, will work with state agencies and within state policies to protect the resources that they have been charged with, but the agency is allowed to consider and select the most appropriate available authority on a case-by-case basis (Amos, 2006).

Although it does not appear likely that the federal government will attempt to make a reserved water right claim along the NNSR at this time, it has the capability to do so in the event that it has been determined that the available flows no longer meet the requirements outlined in the Niobrara Scenic River Designation Act (NSRDA). Although not specifically quantified by the federal government, the flows must adequately provide for the intended purposes of the NSRDA (NPS, 2007). Depending on the circumstances particular to the Niobrara River, the ultimate quantity that the federal government would

be entitled to could be large enough to significantly affect other surface water appropriators within the Basin.

The purpose or quantity for which an administering agency might make a claim for a federal reserved water right aside, there remains procedural impediments at the state-level that the federal government would have to maneuver. Water law in western states places a number of obstacles in the way of federal instream appropriations and examples include: whether an instream flow right can be granted to a federal entity under state law, the need for a physical diversion in order to perfect the water right, the beneficial uses for which an instream flow right can be applied, and the priority date under which that right is filed (Amos, 2006; Huber & Zellmer, 2013). Like many western states, Nebraska water law has been amended over time, but is not entirely clear that there exists a means through which the NPS might make a claim for a state instream appropriation on the NNSR.

When the State of Nebraska made the application and appropriation of an instream flow right possible in 1984, it expressly defined an instream appropriation for recreation or fish and wildlife purposes as beneficial (Longo & Elder, 1994). In order to determine if the instream appropriation is in the public interest, the Director of NeDNR will weigh the environmental, economic, and social costs of granting the instream appropriation against the environmental, economic, and social costs of potential out-of-stream uses of the water (*Neb. Rev. Stat.* § 46-2,116). The only entities that Nebraska law allows to hold these rights, however, are the NRDs and the NGPC (*Neb. Rev. Stat.* § 46-2,108). Fifteen years after the right is granted, it will be reviewed by the Director of the

NeDNR to ensure that the appropriation is still serving a beneficial use and is still in the public interest (*Neb. Rev. Stat*., § 46-2,112).

With respect to the physical diversion requirement still required by some western states in order to perfect a water right, the courts have shown that this requirement is not necessary in order to perfect a right in Nebraska (*In re Application A-16642*, 1990). It is well accepted that the priority date for a federal reserved water right is the date at which the federal government reserved the land, or in this case the river, into the public domain (Gray, 1988). The priority date for a federal reserved water right along the portion of the Niobrara River administered by the NPS would therefore be 1991, the year in which the NSRDA was passed.

It should be noted that Nebraska statutes relevant to instream flow appropriations make no mention of federally held instream rights. Without a legally sanctioned means of holding an instream flow right according to Nebraska law, the NPS may have to resort to a claim of a federal reserved water right if it were deemed necessary in order to fulfill the directives of the Wild and Scenic Rivers Act (WSRA) along the NNSR. Another option open to the NPS is to work collaboratively with either the NGPC or the NRDs in the Basin in order to acquire a valid state instream flow appropriation along the designated portion of the NNSR. This option would require the cooperation of the state entities not only in the acquisition of the appropriation, but also in the management of the appropriation in order to ensure that it continues to serve a beneficial use. Although an instream flow appropriation granted under state law could be suitable to the purposes of fulfilling their obligations for managing the NNSR, it would come with a number of disadvantages compared to a federal reserved water right, including a more junior

appropriation date, the requirement that the right is reviewed every 15 years, and more vulnerability to potential changes to the state's water rights administration system.

The socio-political obstacles that federal agencies are likely to face if it were determined that a claim for a federal reserved water right along the NNSR was necessary are complex, pervasive, and long-standing. The relationships between property owners in the western United States and the federal government have historically been contentious – even more so when water was involved. Because water rights have historically been left to the states' discretion and landowners have long operated within the "take what you can get" mentality promoted by the prior appropriation doctrine, property owners in the western United States have generally responded with resistance when the federal government has attempted to either influence or control land and natural resource decisions (Blauwkamp & Longo, 2002). The relationship between the federal government and the citizens of the Niobrara Basin has proved no different.

Despite designation under the NSRDA in 1991, controversy concerning the role of the federal government along the NNSR corridor has continued in Nebraska. This fact is not confined to the Niobrara Basin or the State of Nebraska, as some observers have witnessed the conflict between local sovereignty and federal authority as one of the main restraints on successful water resource management throughout the United States (Gerlak, 2006). As actors along the NNSR engage and renegotiate their roles and strategies for managing the NNSR, it becomes clear that this conflict is not simply a matter of "feds" versus "locals", but a more dynamic exchange of authority and influence by all parties, wielded in order to sustain the resources provided by the NNSR to meet their individual needs.

CHAPTER 6. CO-MANAGEMENT OF THE NIOBRARA RIVER

NATURAL RESOURCES CO-MANAGEMENT

Citizen participation in natural resources management is becoming more common and is often even mandated by state and federal environmental legislation. The National Park Service's (NPS) 2007 general management plan and environmental impact statement (GMP/EIS) explicitly stated the fact that the reservation of land throughout the United States, which includes tracts of private property, into the National Park System has been and would continue to be important to consider as the federal government works to balance the need to protect valued natural resources with the importance that American citizens place on private property rights (NPS, 2007). In light of this actuality, a different skill set is necessary in order to reduce conflict and encourage focused cooperation between citizens and federal environmental agency representatives (Decker, Brown & Knuth, 1996). These specialized traits are not necessarily a required skill held by natural resource managers, but those involved with natural resource management and policy would be served well by welcoming the human dimensions viewpoint. Ewert defines human dimensions research in the natural resources field as the "scientific investigation of the physical, biological, sociological, psychological, cultural, and economic aspects of natural resource utilization at the individual and community level" (Ewert, 1996, p 6). Natural resource managers considering a human dimensions viewpoint in order to enhance management outcomes must be able to embrace a diverse set of worldviews and be comfortable accepting, working with, and applying the knowledge that can be gained from citizens and natural resource users.

Human dimensions research can mediate the multidimensional and intricate conflicts that exist between humans and the environments within which they exist. These conflicts are implicit for a number of reasons, including the fact that different societies and the policy makers within those societies have diverging views of the costs and benefits of resource use now, and the potential use by future generations. Further, many communities consider natural resources as common property and generally, one's use of a resource will preclude the use by another. Yet, when rights to natural resources are held privately, these rights are often drafted in a manner that encourages maximum use. Lastly, in many cases, there are time lags between current natural resource use and the potential use of that resource in the future (Ewert, 1996).

A further implication of the human dimensions perspective in natural resource management is the need to tie conservation and planning to the issue of privately held land surrounding public land targeted for natural resource conservation, as was the case along the Niobrara National Scenic River (NNSR). Recent research is making the concept and need for regional-scale ecosystem management much more evident. Targeted management skills that take into account the cultural, economic, and value-based behaviors of humans living within these regional ecosystems are required in order to witness a more valuable and sustainable form of natural resource management (Field, 1996).

When we consider issues in natural resources management, we are inevitably considering the ways in which humans organize themselves in relation to the natural resources that they utilize and depend on (Carlsson & Berkes, 2005). This leads to further considerations of governance and the socio-political strategies used to impart our shared

values on the ecosystems within which we subsist and the rules under which natural resource use is administered. Command and control natural resource management strategies overseen by the state provide some benefits to resource users and managers, but these one-size-fits-all approaches have been shown to fall short when confronted with the complexity and uncertainty presented by socio-ecological interactions (Whaley & Weatherhead, 2014). Natural resource management frameworks that embrace partnerships between resource users and managers are increasingly employed in order to prevent outcomes that are overly reactive to or inflexible when presented with unexpected ecological circumstances, and also to promote self-determination among resource users who have a high stake in those outcomes (Whaley & Weatherhead, 2014).

One of the most applicable aspects of human dimensions research is its role in defining and outlining human values in relation to the environment and natural resources. In order for a resource manager to develop a working knowledge of the socio-ecological relationship, they must have a clear understanding of what the nature of human valuation is, how these values might be influenced and modified over time, and what these influences hold for the future of natural resource management in any given ecosystem. The human dimensions perspective is better able to predict what strategy will be most beneficial to a community in the long or short-term and what values held by that community will direct the eventual course of action (Ewert, 1996).

Connecting people to and including their values and opinions in the natural resource management decisions that directly impact their livelihoods is, to researcher Fikret Berkes, a standard of good governance (2007). Collaboration between natural resource users and managers can take a variety of forms and incorporate user

participation to different degrees, but Berkes endorses applying the "subsidiarity principle" in instances where good governance is a goal. The subsidiarity principle "prescribes that there be as much local solution as possible and only as much government regulation as necessary" (Berkes, 2007, p.31). This contrasts to more prevalent conceptualizations of command and control natural resource management schemes, and is certainly not a strategy immediately available to many management institutions and communities, but it provides a frame of reference when considering the spectrum of natural resource management frameworks that are conceivable and appropriate to a specific circumstance.

WHY CO-MANAGEMENT?

Collaboration, or "a negotiated order that continuously emerges among members as a result of communicative interactions" can be actualized between state natural resource managers and user groups in a number of ways, some more formal than others (Plummer, 2006, p.711). For example, natural resource managers may simply notify user groups of planned management actions, or they may invite resource users to the table in a recognized effort to share in problem-solving and/or decision-making. Of the many collaborative options, this analysis will focus on a type of collaboration in natural resources management described as "co-management", which specifically identifies the sharing of power and responsibilities between resource users and managers (Plummer, 2006). A co-management arrangement includes at least one "vertical linkage involving the government and a user group, and some formalized arrangement for sharing power and responsibility" (Berkes, 2009, p.1693).

Because co-management seeks to merge spheres of authority and influence that have historically operated independently, this form of collaboration in natural resource management is designed in a manner that invites challenge (Plummer, 2006). In fact, the obstacles that commonly cause tension in collaborative relationships, such as power imbalances, clashes between cultures and world-views, and difficulty in building inroads between organizations, are those that co-management seeks to confront through a process of continuous problem-solving in order to negotiate a means by which the strengths of each party can be capitalized upon for the benefit of the resource (Carlsson & Berkes, 2005; Plummer, 2006). Due to the diversity of benefits provided, the number of users impacted, and the complexity involved in establishing appropriate management strategies, rivers are seen as ideal resources to which the tenants of co-management can be applied, and for which iterative problem-solving may lead to better management strategies than those designed and applied by a command and control management system (Carlsson & Berkes, 2005; Plummer, 2006). Because of the potential conflicts and emerging benefits that could arise along riverways co-managed by the federal government and local users, the application of co-management along the NNSR provides an interesting case study of how this framework may operate in the real world.

Zachrisson (2006) has identified three general "tendencies" that explain the growing popularity of co-management approaches to natural resource management in the United States and abroad over the past several decades. The first reason is the obvious failure of many top-down management approaches to effectively support and enhance targeted ecological systems and surrounding human communities. One of the largest limiting factors that top-down approaches have been unable to overcome is the

complexity of interactions between social and environmental systems that can lead to unexpected outcomes. A second important factor leading to the increased implementation of co-management arrangements is the fact that decreasing budgets have pushed environmental agencies to adopt more decentralized forms of administration (Plummer & Fitzgibbon, 2004). Lastly, ideological approaches advocating increasing public participation in governance has grown in popularity in recent decades (Zachrisson, 2006; Gerlak, 2006).

The three general tendencies that Zachrisson identifies as factors leading to the popularity of co-management are clearly associated with the three main benefits that this approach lends to natural resource management: problem solving, the sharing of resources, and establishing legitimacy (2006). Although co-management is often cited as a logical method of conflict resolution and decision-making (Agrawal & Gibson, 1999), Carlsson and Berkes (2005) prefer to focus on its ability to engage participants in problem solving. The formation of a co-management arrangement should not be limited to an occasion of choosing between available options, but creating a socio-political space within which actors are allowed to investigate options, negotiate, and act upon decisions that are collectively accepted. By focusing attention on co-management as an evolving relationship, benefits such as participant engagement in collective problem solving, the sharing of resources, and establishment of legitimacy, are more realistically conceptualized as potential outcomes of the process, rather than initial assumptions about the co-management relationship (Carlsson & Berkes, 2005). Although the adoption of a co-management approach to natural resources management does not ensure that conflict resolution between resources users and managers will occur, it does offer participants a

space within in which the ongoing processes of negotiation, bargaining, and fact-finding can be welcomed and a shared understanding might be developed (Plummer & Fitzgibbon, 2004).

The sharing of financial, technical, informational, and human resources are a few of the more apparent benefits to those who enter into a co-management partnership. It is often the case that local communities lack the formal authority, organization, and resources that are required to effectively protect the natural resources that they enjoy and are dependent upon (Agrawal & Gibson, 1999). Many communities also lack the technical resources and expertise necessary to gather data and make proper decisions about complex ecological systems. By entering into a cooperative relationship, citizens and governmental authorities both benefit from the ability of the other to fill-in many of the informational, financial, political, and personnel-limiting gaps in their individual capacities' to manage natural resources (Berkes, 2002).

Although state agencies often have access to many of the resources required for the tasks involved in natural resource management, they lack local knowledge and first-hand experiences with the targeted resources (Carroll & Hendrix, 1992). Due to the complexity of social-ecological systems and the dynamic manner in which they respond to change, managers require knowledge that is available at number of different scales. They must, therefore, bring into the management framework a variety of stakeholders who have knowledge acquired at different levels and use those "scale-specific comparative advantages" in the process of problem-solving (Berkes, 2009, p.1694). In fact, it is often at this stage, when a variety of actors with different sets of knowledge are engaged in translation and problem-solving, where the most obvious benefits of a co-

management framework are witnessed. It is important for resource managers to bridge the informational gap between themselves and resource users in order to obtain the information required in order to properly monitor and respond to feedback a various social and ecological scales (Berkes, 2009).

The benefits of enhanced problem-solving and resource sharing that co-management offers to participants may initially be more obvious than the third benefit: establishing legitimacy. The meaning that citizens attach to the presence of government agencies engaged in activities related to natural resource management is a social construct developed through past experiences and information passed through word-of-mouth, and can often lead to institutional constraints when resource users and agency representatives establish a co-management relationship (Sandstrom, Crona, & Bodin, 2014). Due to the fact that river systems likely pass through a number of communities and tend to run adjacent to private property, government agencies charged with river protection and conservation must recognize the need to establish legitimacy among a diverse stakeholder group in order to accomplish their goals.

Because the introduction of top-down natural resource policies tend to disrupt the existing political, social, and economic institutions previously set in place, it is important that representatives of government agencies understand that the character of their interactions with communities will directly influence the outcome of management programs (Berkes, 2002; Carroll & Hendrix, 1992; Agrawal & Gibson, 1999). But, building trust to the point that knowledge and values can be shared freely takes a considerable amount of time and is not demarcated by a finish line (Sandstrom, Crona, & Bodin, 2014). The collaboration process, whereby the differing values and goals of the

various participants are shared for the purposes of negotiating those that will represent the group as a whole, is a means in and of itself for building trust, but the maintenance of trust requires that shared values and goals are revisited (Berkes, 2007). By focusing on the development of a co-management relationship as an iterative process of building trust and legitimacy between participants, agency representatives are more likely to find political and social support for the natural resource management policies and programs that they would like to introduce (Agrawal & Gibson, 1999; Plummer & Fitzgibbon, 2004).

Resource managers can create an environment conducive to the process of co-management by first considering the ways in which a policy framework can be provided in order to encourage institution building (Berkes, 2007). In consideration of the fact that most resource users have not had past experience jointly problem-solving with government agency representatives, and also that those agency representatives are often not experienced in strategies of community engagement, organizational linkages between the two groups must first be provided (Berkes, 2007). These linking factors may be represented by individuals or groups within the region whose legitimacy within the community or social bridging characteristics facilitate initial collaboration and eventual networking (Berkes, 2009). As the co-management process continues, the network linkages of the participants will evolve, providing for the growth of trust and legitimacy that extends beyond the co-managing group (Berkes, 2009).

As mentioned above, not all forms of natural resource co-management that include user participation can be considered co-management; this term is better reserved for cases in which users have the power, and are allowed by state authorities to make

decisions about certain natural resource management objectives (Zachrisson, 2006; Sandstrom, 2009). In a situation in which a resource user group is only engaged in a management process for the purpose of advising or consulting with a government managing entity, it is crucial that the expected role is communicated to the user group so as to avoid future distrust or resentment (Lieb-Milburn, 2016). A true approach to natural resource co-management is one in which both resource users and state representatives acknowledge that all parties possess vital assets and the appropriate amount of authority needed to enact holistic and widely-accepted natural resource policy.

A distinct, but closely related approach to natural resource management is adaptive management, whereby ecological uncertainty is acknowledged and the potential to manage a system perfectly does not exist (Berkes, 2007). Instead, managers assume that mistakes will be made and focus is turned to learning from those mistakes and monitoring feedback received from the ecosystem under focus (Berkes, 2007; Hoffman & Zellmer, 2013). When the learning dimension of adaptive management is combined with the linking mechanism of co-management, a system of adaptive co-management is constructed through which socio-ecological systems can be more comprehensively explored and their influences on one another analyzed (Trimble et al., 2015; Whaley & Weatherhead, 2014). Although these two systems have different origins (adaptive management emerged within the field of applied ecology and co-management arose through commons resources theory) the two ideologies complement one another and the implementation of one often results in borrowing aspects of the other (Berkes, 2009).

In most instances where co-management of a natural resources system is employed, the participants find that their efforts rarely lead to a final goal or condition.

Instead, goals are often renegotiated by involved parties, broken into increments, or redirected based on feedback from the system being managed (Berkes, 2007). Adaptive co-management frequently emerges from a co-management process as a logical progression of the social learning and collective problem-solving that occurs, as managers and users experiment with chosen methods to influence the system and the social and ecological impacts are assessed (Berkes, 2007; Hoffman & Zellmer, 2013). In fact, Berkes, mentions that if adaptive co-management does not grow out of co-management at some point, it is likely that the co-management experiment has failed to benefit the natural resource system or the impacted users due to the inability of the managers to see the dynamic response of the socio-ecological system under focus (Berkes, 2009, p.1699).

Finally, it must be considered that there are advantages to command and control, or top-down approaches, to natural resources management, such as regulatory consistency, equity amongst users, coordination and efficiencies in streamlining implementation, and sensitivity to a wider, public interest (Hoffman & Zellmer, 2013). Likewise, there are disadvantages to co-management, such as difficulty engaging and empowering marginalized groups, inadvertently bolstering the disproportionate amount of power that may already be held by local elites, or the possibility that it provides state authorities a means of co-opting local management systems previously in place (Berkes, 2009). If the aspiration of government representatives is to truly implement a co-management framework that benefits all parties and the resource, it is important that in planning for the co-management process, the facilitators consider issues such as justice

and equity and that those whose livelihoods are dependent on the resources to be managed have a voice in the process (Berkes, 2009).

The WSRA may have equipped federal agencies with the legal framework necessary to preserve nationally recognized rivers, but the more significant barrier to sustainable preservation of these rivers and surrounding ecosystems is the inability to enlist the confidence and cooperative support of the communities living within river corridors (Berkes, 2002). An understanding of the community values and perceptions held in regard to their surrounding environment is likely to inform and enhance decision-making processes, and hopefully, provide for more widely accepted implementation of resource conservation policies (Carroll & Hendrix, 1992). Effective management of the NNSR must take into account the values and perceptions held by stakeholders living within the Niobrara River corridor. Without recognition of the community perspective, river management by federal agencies will fail to effectively relate management policy to those who demand the highest measure of accountability (Brosius, Tsing & Zerner, 1998; Davenport, 2003). Lacking a valid position in the eye of the affected local community, federal management entities not only risk losing political acceptance by the impacted community, but the potential loss of ecological integrity within the river corridor as well.

Although the theoretical benefits and disadvantages of collaborative natural resource management have been broadly explored by researchers, a consistent and systematic means of investigating how or whether co-management works in the real world has not been established. A number of methods for assessing the success or failure of any particular example of co-management have been proposed, such as the Institutional Analysis and Development Framework developed by Elinor Ostrom

whereby an action arena and the internal and external forces that impact interactions and outcomes are described and analyzed (2011). Other examples of proposed frameworks for evaluating co-management include resilience-based assessments (Plummer & Armitage, 2007b) or social-network analyses (Carlsson & Sandstrom, 2008), but the absence of a settled-upon approach of analysis by human dimensions researchers studying co-management means that methodical comparisons are not currently possible.

For the purposes of this project, one proposed methodology for exploring an existing co-management framework, that which was described by Carlsson and Berkes in their 2005 paper, *"Co-management: Concepts and methodological implications,"* will be used to inform a qualitative, thematic analysis of the Niobrara Council. The purpose of this analysis will not be to determine whether the co-management framework of the Niobrara Council "works", but to explore how the Council members have approached their management roles and tasks, and how actors implement management activities related to the NNSR within the institutional framework set in place by the Council. The use of a systematic approach to uncover and describe how the Council members co-manage the NNSR will not only be useful to the broader study of collaborative natural resource management, but also to the Council members themselves as they can more objectively consider the perceptions held by their co-managing partners and reflect on approaches to improve the process and outcomes of their work.

CHAPTER 7. METHODS

Success of any natural resource management approach is dependent upon the local context, including characteristics of the resource, the resource users, external factors that influence both, and the specific design of the institutions created to manage them (Agrawal & Gibson, 1999; Zachrisson, 2006). A well-designed co-management approach should be able to account for all of these factors and provide the participants with the means to adequately deal with unexpected outcomes of their management decisions. In order to encourage this, it is important that through the formalization of the co-management process, a forum is created within which stakeholders with varying interests can thoroughly discuss and resolve emerging issues (Plummer & Fitzgibbon, 2004; Olsson, Folke & Berkes, 2004).

By instituting the Niobrara Council as a venue for discussion and negotiation between environmental managers representing the federal government and representatives of resource users within the corridor, the federal Niobrara Scenic River Designation Act (NSRDA) established the framework for a working co-management arrangement. Whether or not this framework has led to a resilient and accountable co-management arrangement in practice has yet to be formally assessed. Therefore, the purpose of this research is to explore the management framework set into place along the Niobrara National Scenic River (NNSR) through an investigation of the perceptions of the Niobrara Council members in regard to their roles and management responsibilities, and also what internal or external factors support or limit their work.

An intuitive approach to an analysis of a specific natural resources co-management arrangement might be to simply map the administrative and organizational

frameworks that have been set into place and deduce from these the formal linkages that exist between participants. Although it is valuable for a researcher to reflect upon the formal relationships that have been agreed to by participants engaged in the process of co-management, this approach tends to exclude from analysis the participants themselves and how they function along the interface between the socio-political management setting and the environmental setting. In other words, an analysis of the formal linkages between participants involved in natural resource co-management does not represent how these individuals interact with each other or how they and the policies that they implement interact with and influence the natural resources that they manage. Carlsson and Berkes (2005) proposed an alternative approach to the analysis and conceptualization of real-life cases of co-management. These researchers outlined a framework for co-management analysis which begins with the assumption that participants are engaged in a process of problem-solving that continuously responds to the emerging outcomes of management decisions and independent interactions within the managed ecosystem.

The distinguishing aspect of Carlsson and Berkes' (2005) approach to co-management analysis is that it assumes that co-management is a problem-solving process, and therefore, suggests that the researcher focus on how the management arrangement functions. The formal structure and legal aspects that frame the co-management process are integral components of the analysis, but guide, rather than comprise the data gathered in the analysis. This research approach recognizes that collaborative partnerships cannot be mandated by natural resource policy (Agrawal & Gibson, 1999). Co-management is, instead, a process in which parties engage one another in the creation of a social-political space where the development of knowledge and skills needed to solve natural resource

problems is regarded not as simply a means to an end, but as an ultimate goal (Carlsson & Berkes, 2005).

QUALITATIVE RESEARCH STRATEGY

In order to explore the co-management framework in place along the NNSR and carried out by the Niobrara Council, a qualitative content analysis method was employed. One reason why qualitative research is appropriate for an inquiry into co-management of natural resources is because the iterative processes carried out through a qualitative procedure reflects those processes carried out in the co-management framework itself (Plummer, 2006). Although qualitative analyses are often not regarded as carrying the same level of objectivity as quantitative analyses, the rigor required to apply qualitative methods of analyses, and the richness of the content that results, make it an ideal method for studying the dynamic relations presented in a collaborative natural resource management framework and for providing insight into social behavior (Ritchie & Spencer, 1994).

The approach used in this qualitative analysis was deductive, as its purpose was to explore the Niobrara Council's co-management framework in a manner that was informed by the methodology proposed by Carlsson and Berkes (2005). As opposed to an inductive approach, through which a researcher expects a theory to emerge from their analysis, the analysis described below was chosen in order to experiment with and gain from the Carlsson and Berkes theory already developed (Cho & Lee, 2014). Broadly, the qualitative approach used in this project followed the conventional process of thematic coding as a means of identifying and categorizing data, but was bolstered by the Carlsson

and Berkes framework, through which a more systematic investigation could be employed. The precise methods used in this analysis are further described below.

Data collection procedures

Data collected for the purposes of this project included transcripts of interviews with Niobrara Council members, a subset of minutes from Niobrara Council meetings, and enabling documents outlining the purposes and requirements related to the designation of the NNSR and the Niobrara Council as the entity charged with its management. Prior to interviews being conducted with members of the Niobrara Council, approval for the project was sought and received from the University of Nebraska-Lincoln, Institutional Review Board, in July 2016 (Appendix A). An initial email describing the purposes of the project, what would be requested of Niobrara Council members willing to participate, and a copy of the draft interview questions, was sent to the Council's executive director in May 2016. The Niobrara Council's executive director subsequently notified the Council members of the project and that they would be contacted directly with a request that they participate.

The first email directly soliciting participation of the Niobrara Council members in an interview for the project was sent in October 2016 to all Council members for which an email address was provided by the executive director. One Council member, who did not correspond via email, was contacted directly by the executive director and provided the same information. This first contact contained a description of the project, the rights and responsibilities of those willing to participate, a description of the telephone interview procedure, directions for scheduling an interview, and a copy of the informed consent form that each participant would have to agree to (Appendix B).

Due to a low response rate, approval from the University of Nebraska-Lincoln, Institutional Review Board was sought and granted in December 2016 (Appendix C) to revise the original project description, allowing for a second contact to be made, again requesting participation of the Niobrara Council members in the project. A second email and informed consent form was sent in January of 2017 to the members of the Council who had not yet participated in an interview. At the suggestion of the Niobrara Council's executive director, one more attempt to encourage participation in the project was made in the spring of 2017. Approval to revise the project description was sought by the researcher and approved by the Institutional Review Board in March 2017 (Appendix D). In the third attempt, a sign-up sheet was drafted and made available at the March 2017 meeting of the Niobrara Council, on which Council members could select a convenient date and time to be contacted for an interview. Of the sixteen Niobrara Council members, nine interviews were held with Council participants between the fall of 2016 and spring of 2017.

The inclusion criteria used for this study allowed for and sought participation by any Niobrara Council member willing to be interviewed. Once a Council member agreed to an interview, a date and time for the interview was confirmed and a reminder email that included the informed consent form and interview questions was sent to the participant. The interviews were semi-structured, meaning that the initial set of questions were established prior to the interview and asked of all participants, but interviewees were also allowed to elaborate or digress as the interview proceeded. Each interview was digitally recorded and transcribed by the researcher.

Ethical considerations regarding participation were taken into account before consent to participate was obtained from the Niobrara Council members. The largest ethical concern related to this project centered on the fact that many Council members are appointed to their positions on the Council by the Governor of Nebraska. Potentially, participants would be anxious about expressing politically controversial feelings or perceptions. In order to mitigate any anxiousness that the participants might have had, it was made clear prior to each interview that their identities would not be revealed through the procedures used in the project; all physical or digital representations of conversations would be stored on a password protected computer; and after the completion of the project, all documentation would be destroyed by the researcher. Further, data was presented in the findings as aggregate and the affiliations that participants represent on the Council were not disclosed in order to protect their identities. These considerations were also detailed in the project proposal that was submitted and approved by the University of Nebraska-Lincoln's Institutional Review Board.

In addition to the content provided by the Niobrara Council member interviewees, documentation relating to the designation of the NNSR, and the development and enactment of management obligations held by the Council, were also gathered as sources of data. Information related to the development and enactment of management tasks was found in the Council's meeting minutes. Information related to the designation of the NNSR was found in the Wild and Scenic Rivers Act, the Niobrara Scenic River Designation Act, the Niobrara Scenic River Act, and the NPS's Final General Management Plan and Environmental Impact Statement for the NNSR. This documentation was included in order to provide credibility and validation to the findings

of the project through triangulation, whereby a richer and more robust set of perspectives could be analyzed. Although the use of a number of data sources can at times lead to an uncovering of contradictions in the narrative, they also place a check on the researcher by reducing bias and the potential for misinterpretation or misrepresentation (Cho & Lee, 2014).

Niobrara Council meeting minutes from 1999 through 2016 were obtained from the Council's executive director and used to provide more detail about both the common and infrequent management issues considered, or actions taken, by the Council. Because of the large amount of data found in the 17 years of meeting minutes, subsets of the minutes were selected in order to make the analysis more manageable. In addition, it was theorized that through the selection of minutes to be included, the analysis could be enhanced through a comparison of minutes representative of the origination of the Council to the minutes representative of the current Council. Therefore, the two subsets of the Council minutes included in the analysis were from 1999-2000 and 2015-2016.

It was found that both subsets provided a significant amount of information that was useful to the analysis, but the amount of detail that was included in the 1999-2000 subset greatly outweighed the amount of information provided in the 2015-2016 subset. The 1999-2000 subset of minutes contained more detailed descriptions of meeting discussions and provided more pages of content that could be coded. Therefore, the amount of coding attributed to the 1999-2000 subset exceeded the amount of coding attributed to the 2015-2016 subset, and the significance of quantitative differences between the two code-sets could not be assessed. Instead, the occurrence of codes and

subcodes attributed to each subset are presented in the findings as a percentage of the total number of codes assigned to the subset.

Enabling documents related to the designation of the NNSR and the formation of the Niobrara Council were included in the analysis in order to provide information on the original intent of the management setting and framework. These documents were helpful in the early portion of the analysis in which the setting, participants, and management tasks were explored, but were not as useful in the later steps of the analysis that focused on capacity-building needs and remedies. Codes for this subset of documents, therefore, were not included in the summaries of the capacity-building needs and remedies steps.

Data analysis procedures

The research approach as outlined by Carlsson and Berkes (2005) is task-oriented and focuses on the function of the relationships that develop between participants. Participants are regarded as both integral to the formal political arrangement of the co-management system and as active players in the relationships that they have collaborated in the development of. Rather than inferring the behavior of participants from descriptions of formal political linkages, behavior and the management roles that participants play will be qualitatively examined. These assumptions are necessary in order to analyze the co-management system as a capacity-building process through which participants are better able to resolve emerging problems and conflicts, both as individuals and as members of the co-management partnership (Plummer & Armitage, 2007a; Sandstrom, 2009).

Based on this methodology, the purpose of the research approach employed here was to analyze and better understand the co-management arrangement set into place

along the NNSR as administered by the Niobrara Council. The central research question in this analysis simply asks: how do the Niobrara Council participants manage the NNSR? In order to explore potential answers to this question, a thematic qualitative analysis was carried out using data provided through interviews with the Council members; subsets of the Niobrara Council meeting minutes; and the enabling language found in the Wild and Scenic Rivers Act (WSRA), the Niobrara Scenic River Designation Act (NSRDA), the (Nebraska) Niobrara Scenic River Act (NSRA), and the Niobrara National Scenic River 2007 General Management Plan and Environmental Impact Statement (GMP/EIS). An overview of the steps in the methodology used in this analysis are shown in figure 4.

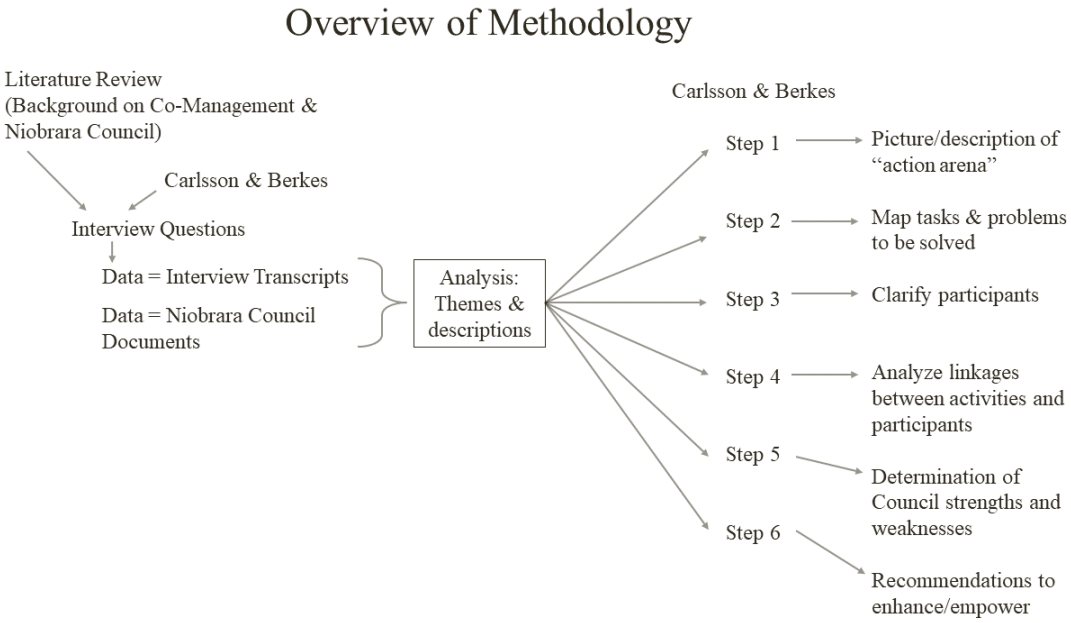

Figure 4. Overview of methodology used in the analysis of the Niobrara Council co-management framework

Although the methodology that Carlsson and Berkes proposed in their 2005 paper was not employed in a step-by-step manner in this analysis, the broader outline that they offered for an investigation into a co-management framework was used to inform and

more systematically consider the qualitative analysis described below. The Carlsson and Berkes methodology consists of six major steps, which provided the primary thematic categories for the qualitative coding process. In order to prompt the contribution of applicable qualitative data from the Niobrara Council members who participated in interviews, interview questions were guided by, but not exclusive to, the six steps in the Carlsson and Berkes methodology. Although the selected interview questions provided a general theme to direct conversation during the interviews, more information about the interviewees' perceptions of the Council's management framework was uncovered as conversations easily diverged toward related topics of more significance to them. The six major steps in the Carlsson and Berkes methodology and the accompanying questions asked of the interview participants are listed below:

1. Define the social-ecological system under focus
    - (Question) How far does the influence of the Niobrara Council extend?
2. Map the essential management tasks to be performed and the problems to be solved
    - (Question) What are the Council's top priorities when it comes to managing the Niobrara National Scenic River (NNSR)?
3. Clarify the participants in co-management activities and related problem solving processes
    - (Question) Do participants share equally in decision-making and problem solving activities?
4. Analyze linkages
    - (Question) Has the Council reduced conflict between local citizens and managers along the NNSR?

5. Evaluate capacity-building needs
    - (Question) Is the Council flexible enough to adjust to changing conditions and/or new scientific information?
    - (Question) What could be changed in order to make the Council a better tool for problem-solving?
6. Prescribe remedies
    - (Question) What are the strengths of the Council?
    - (Question) What are the weaknesses of the Council?

In addition to the information provided through the interviews, documents related to the Niobrara Council and Council meeting minutes provided qualitative data that was used to more fully describe the context of the themes uncovered in the analysis.

Coding process

The coding process used in this analysis consisted of a number of steps through which codes were assigned, reviewed for accuracy and consistency, re-coded, and then reviewed again. To facilitate the analysis, the computer-assisted coding software, MAXQDA, was used, which allowed for easier assignment of codes, review, and visualization of the analysis. Following transcription of the interviews with the Niobrara Council participants and the collation of meeting minutes and enabling documentation, the first step in the process was simply to become more familiar with the data by reading and re-reading the material. At this stage, a few initial codes were made and memos recording early thoughts on the analysis were written in order to help plan for the upcoming stages of the analysis.

The next step in the analysis was to use provisional coding and segregate segments of data into the six major categories identified in the Carlsson and Berkes methodology, which was followed-up with review and recoding, where necessary. Provisional coding, rather than descriptive coding, was used in the first run through the data because the goal was to use the six-step Carlsson and Berkes methodology to inform the analysis and provide a systematic way of organizing the data. Memoing occurred throughout the project, but was used extensively following the first round of provisional coding in order to better describe the six categories that the data was being split into and to provide documentation of the data characteristics that determined initial coding.

In the second round of coding, the data organized into each of the six subsets of codes were considered separately and further evaluated through a processes of descriptive coding, which allowed for finer categorization of the themes found in the data through subcoding. As in the first round of coding, the second round was followed by a phase of review of the new subcodes and reassignment, where necessary. Both review phases were assisted by MAXQDA's Smart Coding Tool, which isolates the segments of data assigned to a certain code, allowing the researcher to review consistency and appropriateness of coding. Once the coding and review phases were complete, charts found below in the findings section were created using the visualization tools accessed through MAXQDA.

CHAPTER 8. RESULTS

Consistent with the qualitative procedure used for this project, results are described below according to the six steps identified in Carlsson and Berkes' proposed methodology for investigating a co-management framework (2005). Under each step in the methodology, a figure depicting the relative contribution of each document set to the total amount of coding related to that step is provided. In each step it is seen that the Minutes 1999-2000 contributed the greatest amount of content, and therefore, the greatest amount of coded data. In order to provide a better picture of what information the coded data provided to each step in the analysis, subsequent figures showing the contribution of coded data by subcode for each document set are also included.

STEP 1) DEFINE THE SOCIAL-ECOLOGICAL SYSTEM UNDER FOCUS

The first step in the Carlsson and Berkes methodology is to "define the social-ecological system under focus" (2005, p.73). Here, it must be made clear what will be defined as the "unit of analysis." Because nature provides a diverse set of resources through space and time, and humans use and benefit from these resources in a variety of ways, it is necessary to narrow-in on the "organizing principle" of the study (Carlsson and Berkes, 2005, p.73). Co-management of natural resources involves a dynamic interplay between environmental and socio-political systems, offering a number of distinct intersections to which a researcher's focus could be applied. Further, the influence of a natural resources co-management undertaking could be perceived at a very local scale, such as the immediate impact to property owners along the corridor; or at a more broad scale, such as the power that impacted citizens have to sway state or federal legislation. The focus of this study is the Niobrara Council. Although the jurisdiction that

the Niobrara Council has over the management of the NNSR is somewhat easily defined by the boundaries of the federally designated portion of the River, the objective here is to more specifically analyze how the Council itself manages the NNSR.

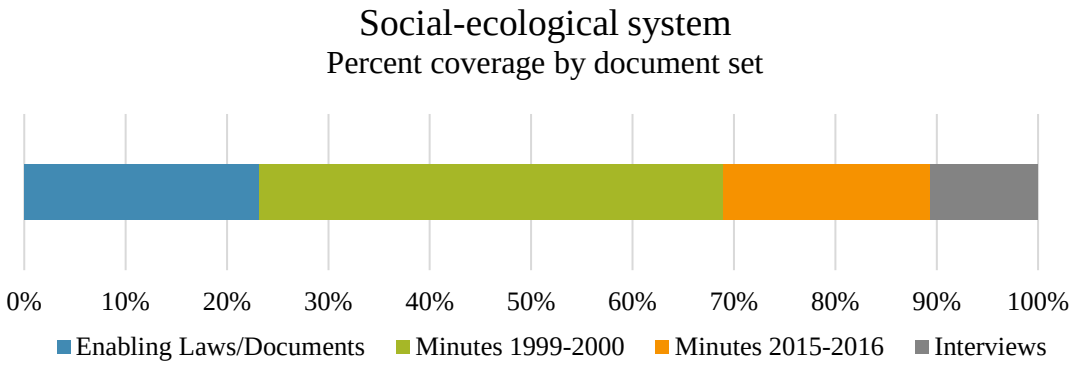

Figure 5. All coding related to the social-ecological system, showing the percentage of codes attributed to each document set.

Figure 5 shows the contribution of each document set to all coding that was attributed to the social-ecological system. As expected, the Minutes 1999-2000 contained the largest amount of content and provided the largest contribution of coded data. Conversely, the Interviews with Niobrara Council members contained the least amount of content, and therefore, provided the smallest contribution to the coded data related to the social-ecological system.

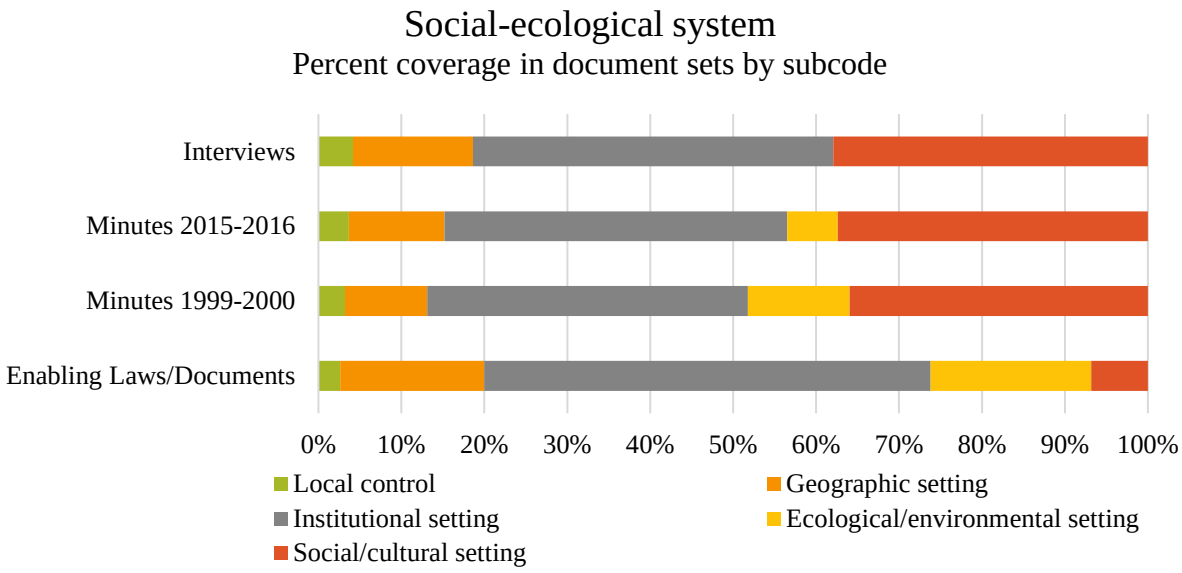

Figure 6. Contribution of subcodes to all coding related to the social-ecological system for each document set.

Figure 6 shows the contribution of each subcode to the total amount of coding related to the social-ecological system in each document set. Through the descriptive coding phase of the analysis, five main themes related to the social-ecological system were identified by subcode: **local control, geographic setting, institutional setting, ecological/environmental setting, and social/cultural setting**. A summary of the data representative of each subcode is included below.

LOCAL CONTROL

Enabling Laws/Documents related to the Niobrara Council refer to maintaining **local control** through the inclusion of language such as *"…in order to maintain an aspect of local control"* and *"…giving consideration and respect to local and governmental input and private landowner rights."* In the two subsets of Minutes, **local control** was identified as a value in the corridor that had to be taken into consideration when planning and implementing management tasks, such as the need for the National Park Service

(NPS) to be careful about *"…stepping into some sensitive areas with local landowners"* in their process of investigating and delineating the boundaries of the Niobrara National Scenic River (NNSR). An interesting aspect of the value held for local control among residents of the corridor was revealed in the controversy that emerged when a local property owner wanted to sell their land along the NNSR to the NPS. Even though it was the landowner's hope to sell to the NPS, it was evidenced though public comment at the Niobrara Council meetings and in the eventual position voted on by the Niobrara Council, that local ownership of property was a top priority along the corridor.

GEOGRAPHIC SETTING

The **geographic setting** was most often referenced in directives or discussion related to the physical boundaries of the *"…immediate 76 mile stretch, plus"* area of the NNSR corridor. Here, there was discussion on the official boundaries of the NNSR and mention of the fact that the boundary recognized in Nebraska statute does not match the revised boundary currently recognized by the NPS, and how this inconsistency is *"…kind of a critical fail there - where they don't agree on what is the corridor or even what they're supposed to be managing, really"*. The geographic setting was also mentioned in discussions related to the zoning authority held by the Niobrara Council and its ability to acquire conservation easements. In the Minutes 1999-2000 subset, discussion on the **geographic setting** focused on the NPS's efforts to redraw the boundaries of the NNSR following the *Sokol* lawsuit decided in 2000: *"This time around, the boundary will be based on hard science;"* and in the Minutes 2015-2016 subset, discussion on the **geographic setting** was more often held in regard to *"…supporting public access"* along the River, including the potential purchase of Rocky Ford by the Council.

INSTITUTIONAL SETTING

Codes related to the **institutional setting** often described membership of the Niobrara Council and their associated roles and responsibilities, as well as how the Council or NPS *"…shall cooperate"* with other agencies and entities in its management tasks. The roles and responsibilities of entities participating on or associated with the Niobrara Council are documented extensively in the Enabling Laws/Documents, for example, the *"National Park Service would provide numerous services and retain management control over such core functions as natural and cultural resources management and law enforcement,"* and

> *Believing in the utility and logic of local land use control of private lands within the federal boundary, the National Park Service would encourage that Niobrara Council be accorded pro forma notification by the counties of all zoning variance requests originating within the Scenic River boundary.*

Much of the data describing the **institutional setting** highlights the complexity that the Niobrara Council must work through at the federal, state, and local levels in order to function properly. In describing the revised General Management Plan and Environmental Impact Statement (GMP/EIS) at a Council meeting, it was stated that *"…the NPS would come to the council because the council has a state authority that is desirable,"* highlighting the need for the Council partners to obtain complimentary powers in order to affect their cooperative goals. Often, actions taken by the Council related to the **institutional setting** would include the negotiation of formal arrangements, such as cooperative agreements, legislative bills, and resolutions voted on by the Council.

Institutional limitations were also mentioned, such as the need to improve upon a *"…coordination process conducted between county zoning"* and the Council.

Ecological/environmental setting

Much of the data related to the **ecological/environmental setting** dealt with issues that arise from impacts of human use and influence on the NNSR. The Niobrara Council's management activities often target those areas where the human dimension and the ecological dimension overlap. This focus was addressed in the Enabling Laws/Documents:

> the NNSR *…shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values.*

The **ecological/environmental setting** did not emerge in the Interviews with the Council members, but that is likely because the interview questions related more to the institutional, rather than physical, aspects of the NNSR. The earlier subset of meeting Minutes contained a number of discussions on studies and mitigation of invasive species, as well as forest fire management planning; while the later subset of Minutes focused more heavily on the implementation of fire prevention activities, such as fuel reduction projects.

Social/cultural setting

Data related to the **social/cultural setting** focused on the role of the Niobrara Council as a representation of the local viewpoint and its role as an intermediary between the NPS and the public. One interviewee described the Council's role in this way:

"…kind of the liaison between the Park Service and the local people, I guess. Trying to get a feel for what they want and what the local people want," and another member stated that *"…the Council can be a cushion between the Park Service"* and the public. Also mentioned were the efforts of the Council, both required and voluntary, to inform the public and *"solicit input regarding management options"* or ask for *"the public to react to this proposal"*. Another common theme found in the **social/cultural setting** data was that of proper representation by the Council. Most, but not all, of interviewees agreed that the Council was *"…a good representation of the public and their concerns"* and that *"…the people that are on the Council have an immediate tie to the communities that the river flows through"*. That tie to the local community was illustrated further in a discussion of the influence that the Council has on the public and that *"…they can usually garner quite a bit of people to get together behind any issue"*. Lastly, it was seen in discussions during the Council meetings that education and outreach was a high priority, including partnerships with local high schools on the development of the *"Niobrara Class"* curriculum.

SOCIAL-ECOLOGICAL SYSTEM CODING SUMMARY

The five main themes uncovered in the data related to the social-ecological system provided a better picture of the circumstances and influences present within the co-management setting. The two themes that emerged from the data under social-ecological system most frequently were **institutional setting** and **social/cultural setting**, and the theme that emerged the least often was **local control**. The theme **local control** revealed the strong sentiment held by many citizens in or near the NNSR that property along the corridor should remain under local ownership. The theme **geographic setting**

provided a better picture of the physical boundaries and jurisdictional constraints that co-managers of the NNSR must work within. The theme **institutional setting** brought forth more information about how those who developed the enabling documents for the NNSR and the Niobrara Council intended the various Council members with different affiliations to formally cooperate with one another, as well as with those outside of the Council. The **ecological/environmental setting** theme did not contain an extensive amount of information about the ecology of the NNSR, but rather how aspects of the NNSR's ecology was influenced or studied by humans. Lastly, the **social/cultural setting** theme showed how the local Council members used communication, outreach, and other influences to bridge the gap between the people local to the NNSR and the federal representatives charged with cooperatively managing the NNSR.

STEP 2) MAP THE ESSENTIAL MANAGEMENT TASKS TO BE PERFORMED AND THE PROBLEMS TO BE SOLVED

The second step is to "map the essential management tasks to be performed and the problems to be solved" (Carlsson & Berkes, 2005, p.73). The purpose of this step is to identify what tasks must be performed by the participants in order to adequately manage the resources under their responsibility. In the case of the Niobrara Council, much of the data needed to accomplish this task was outlined in the Enabling Laws/Documents, but the Minutes and Interviews datasets provided richer insight into the actual actions taken and issues addressed by the Council members and their partners.

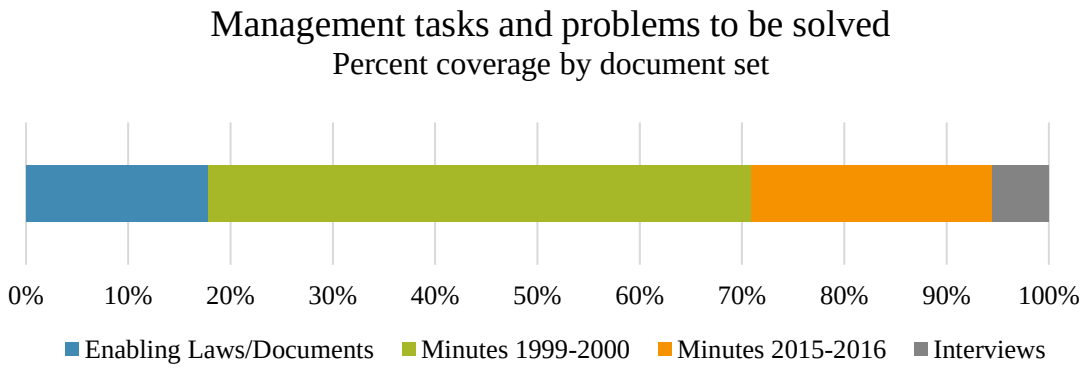

Figure 7. All coding related to the management task and problems to be solved, showing the percentage of codes attributed to each document set.

As in the previous step, the relative contribution to the total amount of coding under management tasks and problems to be solved was dominated by content from the Minutes 1999-2000 (Figure 7). However, as shown in Figure 8, the coding categorized under this step of the analysis shows more variability between document sets when the subcodes are displayed. The primary subcodes that emerged through descriptive coding in this step of the analysis were: **cooperate, resource use/protection, internal administration, plan, public outreach, fund, study/monitor, and train**. In the process of descriptive coding for this step in the analysis, it was noted that there were a large number of segments coded under **resource use/ protection**, and that the topics of these segments differed enough to warrant further categorization. A third chart (Figure 9) and summary of subcodes, therefore, is included within that subsection of the report that describes the finer categorization of subcodes comprising the **resources use/protection** subcode.

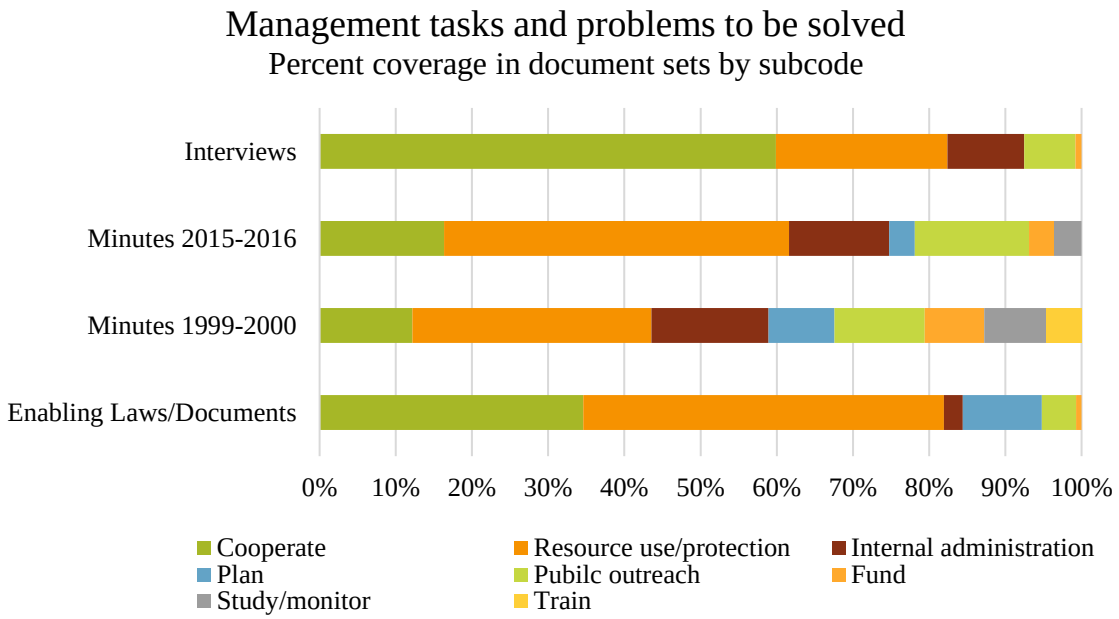

Figure 8. Contribution of subcodes to all coding related to the management tasks and problems to be solved for each document set.

COOPERATE

Data categorized under the **cooperate** subcode referred to cooperation by partners both within and outside of the Niobrara Council, and it is interesting to note the relative contribution of content coded under **cooperate** for the Interviews and Enabling Laws/Documents datasets. The Enabling Laws/Documents state that *"…the States and their political subdivisions shall be encouraged to cooperate in the planning and administration of components of the system"* and that the NPS *"…would seek cooperative agreements with other federal, state, and local agencies and departments to facilitate and standardize responses."* Cooperation was also discussed in regard to the Niobrara Council and local outfitters, emergency management agencies, national environmental management groups, high schools, and others who would partner in either short- or long-term planning or projects. In regard to cooperation with the local community, one

interviewee responded: *"I think it really does achieve the goals of keeping local people engaged as a vital part of that management process."*

When the overall goal of cooperative management of the NNSR was discussed by interviewees, responses indicated that the Council members agreed that the effort was intended to occur *"...hand in hand"* and that the *"...purpose being to maintain the integrity of the River, and to support one another in the preservation of the River."* One respondent stressed that "*Neither federal or state trump one another, and it's a coordination process."* Although the goal or purpose may have been agreed to for the most part, there were also indications that the Council members did not agree on how far they had come in building a working, cooperative relationship. As one member remarked: *"I don't really think that they have a cohesive goal or purpose. Amongst the members, I don't think that they really agree on what they are supposed to be doing."*

INTERNAL ADMINISTRATION

The relative occurrence of the **internal administration** subcode was fairly equal in the Interviews, Minutes 2015-2016, and Minutes 1999-2000 document sets, but not nearly as abundant in the Enabling Laws/Documents. Topics under this subcode relate to the day-to-day activities such as budgeting, contracting, researching, and communicating with the public, that the Niobrara Council administrative staff perform in order to keep the Council functioning. Council administrative staff were also called upon to contact and negotiate with State of Nebraska representatives on behalf of the Council over issues such as *"...council authority, financial matters, employee issues, and contractual questions."* **Internal administration** content was also related to the requirements that the Council was expected to uphold as far as organization of the Council members into those

that *"…shall jointly serve as the executive committee for the council"* and those assigned to subcommittees, or the frequency of Council meetings: *"…the Council shall meet on a regular basis with a minimum of six meetings per year"*.

PLAN

The majority of the coding related to **plan** or planning activities occurred in the Enabling Laws/Documents and Minutes 1999-2000 datasets, which was expected since most of the directives for planning activities and the initiation of planning activities would occur in the early stages of building a management framework. Still, it was slightly surprising that this subcode was not represented in the Interviews and infrequently mentioned in the Minutes 2015-2016 datasets. Content categorized under **plan** often related to the many planning activities required of the NPS (e.g., *fire management plan, resource stewardship plan, long-range interpretive plan*), in addition to the development and implementation of the GMP/EIS. There was a great deal of discussion about the NPS's efforts to revise the GMP/EIS in the Minutes 1999-2000 document set, specifically, activities related to *"…the boundary issue, the NPS will be mapping the seven outstandingly remarkable values (ORV's). Those are the resources that will have a bearing on the decision of the boundary."* At the recommendation of their executive director, the Niobrara Council also took part in strategic planning in its early years as *"…a way for the council to set up goals and objectives on a timeline. It allows us to evaluate our effectiveness, plan for the future and develop future programs."*

PUBLIC OUTREACH

Content coded under **public outreach** was found most frequently in both subsets of Niobrara Council meeting minutes and often related to a number of community events,

programs, and educational resources organized or provided by the Council. In discussion of public outreach efforts along the NNSR, the importance of actions taken in order to *"…orient the visiting public to the nationally significant natural and cultural resources of the Scenic River and Refuge,"* was mentioned, as well as the need to educate visitors on *"…the importance of respecting private landowner rights and privacy."* In an effort to mitigate the negative impacts of some visitors on the NNSR, a River Code of Ethics was issued by the Niobrara Council and a United States Fish and Wildlife (USFWS) representative *"…complimented the council on the "Code of Ethics" and stated that it had helped the [USFWS] with some problems on the river."* Public outreach efforts were also made in the annual river clean-up days organized by the Council for which *"…the outfitters are very willing to help with several different aspects of the clean up."*

Content under **public outreach** also suggested a potential point of contention between the Council and the NPS. Although it appears that public outreach efforts are performed cooperatively, the Council may have an advantage in efforts made with locals because they are *"…that face to the community. You know, instead of the federal face you have a local face. To get into your schools, to get into your church groups, your youth groups, and that goes a long way."* and that *"…the Council is very good at educating. Better than the Park Service, by far."* Finally, in the implementation of their conservation easement program, the importance of the Council's education efforts were highlighted at a Council meeting when it was said that *"…the success of this program is going to be with the council members themselves. They will have to be educated and ready to present the idea of conservation easements to any interested party."*

FUND

Content categorized under the subcode **fund** was found more often in the two subsets of Niobrara Council Minutes than in the Interviews or Enabling Laws/Documents. This finding was initially surprising due to the number of times that the subject of **fund** came up in the interviews, but in those instances, it was often discussed in the context of building capacity or the exchange of resources, which are both discussed below. Much of the data coded under **fund** in the two subsets of Minutes related to monthly budgeting carried out by the Council's administrative staff and the budget subcommittee, as well as efforts to *"…establish funding priorities and ranking factors"* for projects presented to the Council for funding (e.g., road improvements, the Niobrara Class project at local high schools, invasive species mitigation projects, bridge and public access improvements, etc.). Certainly, efforts to secure funding were explored, such as through the cooperative agreement with the NPS, which *"…provides a way to funnel federal dollars through to assist local projects;"* or through the State of Nebraska, for which the Council would *"…ask the legislature for funding in the form of an 'A' bill with a sunset clause."* Often in the dataset, it was seen that *"…obtaining grants and funds [was] an immediate priority issue for the Council."*

STUDY/MONITOR

A number of discussions occurred in both sets of Niobrara Council minutes related to efforts by different entities to **study/monitor** various issues along the NNSR. These included studying potential legislation, water quality, invasive species (i.e., purple loosestrife), trends in visitor use, ice jams, condition of infrastructure, and wildlife. In considering proposals or potential actions in the NNSR, a subject would often be referred

to a *"study group"* or ad-hoc committee, which would bring a proposal back to the Council. Often, the lack of sufficient study was brought up when individuals or entities opposed a proposed action, for example, *"…the decision to close the portion above Cornell Dam was made prior to any official study,"* or *"…the MNNRD opposes the removal of Cornell Dam until an environmental, social, and economic impact study on the removal of the dam be completed."*

TRAIN

The only significant amount of content under the subcode **train** was found in the Minutes 1999-2000 document set, and from the datasets studied, training did appear to be more of a focus for the Niobrara Council during that timeframe. It may also be the case that as both federal and state funding were reduced over the years, finding financial resources to cover the cost of training became more difficult, resulting in fewer mentions of **train** in the Minutes 2015-2016 and Interviews datasets. Certainly, there was evidence that *"…scholarships and funding available for this training"* were sought by the Council's administrative staff, there were times in which partners were *"…willing to offer some additional training at no cost…as long as it can be coordinated,"* or when experts were invited to *"…come address the council."* Training on zoning was also sought and the Council staff was directed to *"…contact all four county administrators in writing and ask them the types of training they feel they need, or what types of requests they do have."*

MANAGEMENT TASKS AND PROBLEMS TO BE SOLVED CODING SUMMARY

The data coded under management tasks and problems to be solved was categorized under eight different themes, seven of which are summarized here

(**cooperate, internal administration, plan, public outreach, fund, study/monitor, and train**), and the subcodes under the eighth theme, **resource use/protection**, are summarized further below. Data related to the theme **cooperate** revealed that although most parties associated with the cooperative framework implemented by the Niobrara Council understood that cooperation was a primary goal, there was less consensus on whether that goal had been or could be achieved. The theme **internal administration** uncovered the great amount of work that is put into the day-to-day functioning of the Niobrara Council and highlighted the important role that the Council's administrative staff play behind the scenes. The data categorized under the **plan** theme was more strongly represented in the datasets corresponding to the initiation of the Niobrara Council and often detailed the lengthy and detailed planning activities carried out by the NPS. The theme **public outreach** brought to light the need for and efforts made by the Council to inform visitors on how to minimize or mitigate their impact on the NNSR, and the significant amount of resources that the Council devoted to educational programs such as the Niobrara Class. The data related to the theme of **fund** was often mentioned in context of the maintenance of the Council's budget and administrative efforts required in order to obtain new funds and appropriately spend those already acquired. The theme **study/monitor** occurred in discussions where it was expected, such as those related to potential studies of ecological aspects of the NNSR; but also in discussions where it wasn't expected, such as when the lack of study was used as an argument against a proposed action in the NNSR. The theme **train**, although it was mentioned less often in more recent datasets, still indicated that that the Council understood the importance of devoting time and resources to training both the administrative staff, and the Council

members themselves. The themes most prevalent under management tasks and problems to be solved were **cooperate** and **resource use/protection**. The subcodes under **resource use/protection** are described in more detail below.

Resource use/protection

Due to the amount and variety of content related to **resource use/protection**, it was decided to refine the data and further categorize it into additional subcodes. Categorization of the subcodes under **resource use/protection** are displayed in Figure 9 and summarized below:

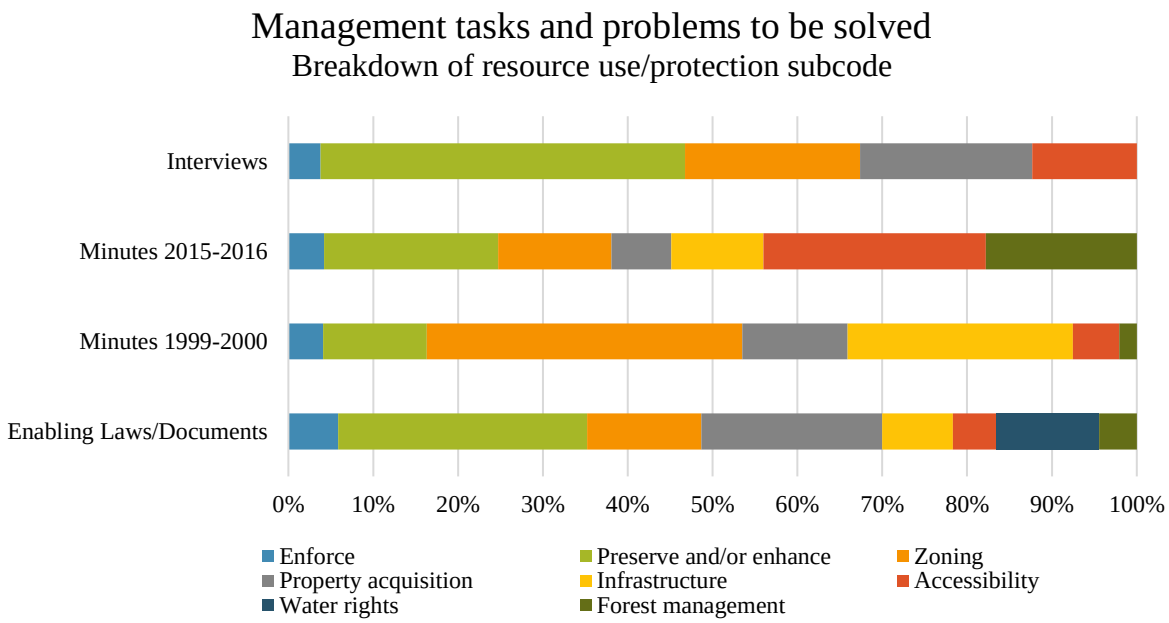

Figure 9. Contribution of subcodes to all coding related to the resource use and protection subcode for each document set.

Enforce

The coding related to **enforce** was distributed fairly evenly between the document groups. Content included under **enforce** would often relate to sharing and/or delegation of different authorities along the NNRS, some that were performed prior to Scenic

designation and others that were new to the corridor. The Enabling Laws/Documents clearly state that *"Federal law enforcement agents have minimal jurisdiction over private land and other non-federal property."* In many instances, the Niobrara Council members made efforts to integrate the enforcement duties of different entities, such as seeking authority for *"…[USFWS] officers the right to uphold state game and fish laws"* through state legislation. In another example, *"The Niobrara Council and the [NGPC] had signed an agreement for law enforcement/visitor safety services."* As expected, there were also some instances of opposition to, or disagreement on the appropriateness of actions taken by the Council members. For example, there were *"…concerns about the National Park Service Commercial Use Authorization (CUA) process"* and one interviewee stated, *"I get people walk up to me all the time say how can they do that? They can't do that, but they do."* In between the two timeframes represented by the Minutes document sets used in this analysis, the authority of the Niobrara Council to enforce limitations on alcohol procurement along the NNSR became a contentious issue. A preview indicative of this conflict was seen in discussions in the Minutes 1999-2000 document set, in which one Council member stated: *"…the council should take a general position of 'responsible use' and not address each liquor license as it comes up since the council has no power over who receives a state liquor license."*

PRESERVE AND/OR ENHANCE

The responsibility of the Niobrara Council and the NPS to **preserve and/or enhance** the NNSR and associated values was mentioned more often in the Interviews and Enabling Laws/Documents than in the subsets of Minutes. In the Enabling

Laws/Documents, the ultimate priority of the NPS and partners was to ensure that the NNSR,

> *…be administered in a manner that protects and enhances the values which caused the segment to be included in that system, without limiting other uses that do not substantially interfere with public use and enjoyment of those values.*

In both the Minutes and the Enabling Laws/Documents, the NPS reiterates that *"…the overlying value that needs protected is preservation of the agricultural and rural characteristics of the area"* and that *"…the conversion of ranch and farmland for non-agricultural purposes would be discouraged"* along the NNSR. These examples indicate a recognition of the rural characteristic as a NNSR value to be protected in a similar way to the NNSR's other outstandingly remarkable values (ORVs). The theme of **preserve and/or enhance** was also seen in the decisions of the Council as recorded in the meeting minutes, in which motions to approve proposed actions were measured by whether they were *"…consistent with the desired future conditions for the Niobrara National Scenic River."* As one interviewee stated, *"…those [ORVs] are the guiding tenants of management of the river and basically all decisions that are made."*

Zoning

Coding related to **zoning** was more prevalent within the Minutes 1999-2000 document set than in the other three document sets, likely because establishment or revisions to zoning policy and regulations were occurring for both the Niobrara Council and some of the counties along the NNSR at that time. The Enabling Law/Documents clearly expressed that *"…the federal government does not have zoning authority over*

privately owned lands," but the affected counties had made efforts to provide consistency in land use policy by *"…generally adopting land protection recommendations made by the National Park Service."* There was also discussion in the Minutes related to the best avenue to be used for enforcing land use guidelines, given that both the Council and the counties held this authority. One opinion was that *"…zoning could be a more useful tool if the Niobrara Council would utilize it through the counties."* In land use proposals brought before the Council, the standard for approval or disapproval was whether or not the proposed action was *"…consistent with the desired future conditions for the Niobrara National Scenic River,"* yet, there were reported *"…frustrations with the zoning procedure"* among landowners along the NNSR. One interviewee brought up the difficulties presented by the discrepancy between the boundaries designated by the NPS in the 1996 GMP/EIS and the 2007 GMP/EIS, relating that the Council had *"…the ability to influence zoning and construction along the river corridor, but they don't use it very well because they have never tried to get the corridor in the state law."*

Property acquisition

Property acquisition along the NNSR by either the NPS or the Niobrara Council has shown to be one of the most contentious issued between managers and landowners in the corridor. Possibly, in an attempt to assuage those tensions, the Enabling Laws/Documents state that *"…the National Park Service would actively promote the utilization of conservation or scenic easements acquired from willing sellers,"* and in the Council Minutes, NPS representatives would *"…make the case that the money should go through the Niobrara Council"* in order to acquire those easements. The ability to acquire easements, whether through the NPS or the Council, are a means of mitigating *"daily*

confrontations with development" along the corridor. The ability to acquire property along the NNSR is one power that the Council had to affect real preservation goals, yet it has not always been used to its full potential. One interviewee claimed: *"They do have the ability to protect access and the area through easements. I see that as a strength that they haven't used much - it's not to say they haven't used it all."* The theme of **property acquisition** was also discussed a number of times in the Minutes 2015-2016 *"…regarding acquisition of and public access at Rocky Ford."*

INFRASTRUCTURE

The Minutes 1999-2000 dataset contained the largest proportion of coding under **infrastructure** and a surprising finding was the extent to which discussions in the Niobrara Council meetings at that time related to roads along and leading to the NNSR. Although the importance of roads in relation to co-management of a Scenic River might be surprising to an outsider, this issue is certainly important to local people and businesses who utilize local infrastructure, as reflected in the minutes of Council meetings at which *"…they talked at great length about the current road conditions."* Negotiation over who would be responsible for contributing financially to road projects was a common theme: one meeting participant *"…asked if there was a way to make it so the canoers are the ones to pay for the road upkeep;"* another remarked, *"…that the entire burden shouldn't be put upon the outfitters. The local people go up and down the road just as often."* The NPS's role in contributing to road maintenance due to increased visitor use following Scenic designation was pointed out by the NPS representatives, stating *"There is increasingly more public use of county infrastructure, which is severely impacting the infrastructure. The NPS wants to be the advocates for these types of*

projects," and further, a past NPS representative *"had promised that river roads would improve with the scenic river designation."* Although discussions on roads and other infrastructure would often lead to complaints of one entity or another not contributing their fair share, there were also efforts made to determine *"…what can be done in terms of joint funding,"* indicating interest in cooperative strategies for pooling resources in order to remedy common resource use problems.

Accessibility

The topic of **accessibility** appeared in the datasets in frequent instances where *"The overall concept of public access was discussed."* This theme appeared in a higher proportion in the Minutes 2015-2016, which is likely a result of the debate going on at the time over *"…the Rocky Ford property and public access or access in general,"* and the Niobrara Council's efforts to find a resolution, given that *"Everyone in general would like to see long term public access at that location."* Overall, the directive of the NPS in managing the NNSR for public access is to ensure that:

> *If resources are negatively impacted or the visitor experience seriously degraded, the Service would take management actions within the limits of its jurisdiction and in concert with partners to avoid, restore, or mitigate recreation-caused impact.*

This management priority was reiterated in the interviews with Council members, and one interviewee commented that *"The Council wants the river to be used by the public, that's what it's for, to enjoy it"* and that *"…they want to keep it a clean, natural, flowing, body of water that people can use, but not abuse."* Finally, **accessibility** was mentioned in relation to visitor safety, with some stating concern that *"…river users are not being*

adequately informed by all of the outfitters on safety and courtesy issues" and a number of efforts made by the Council to increase safety through proposed programs such as a *"Kids don't float" life jacket check out station,"* and others.

WATER RIGHTS

Despite local apprehension to the potential implications of federal designation of the NNSR on local **water rights**, this theme did not appear as a significant topic in the Interviews or Minutes datasets, possibly because the threat of a federal reserved water right has shown to ebb and flow in the years since designation, depending on shifting administrative circumstances in the Basin. The Enabling Laws/Documents state that designation *"…shall not be construed as a reservation of the waters of such streams for purposes other than those specified in this Act, or in quantities greater than necessary to accomplish these purposes,"* but at a minimum, designation *"…does require that flows needed to protect river values be maintained."* The NPS is required to ensure that any *"Action inside a Wild and Scenic River boundary that in any way impairs the free-flowing condition of the river or section of a river is expressly prohibited,"* including any impacts to available streamflow which may result from the actions of local water users.

FOREST MANAGEMENT

Although the topic of **forest management** occurred in the earlier document sets, including the Enabling Laws/Documents, where it was stated that *"Procedures including conscientious forest management practices (timber cutting and thinning), hazard fuel reduction, prescribed fire, and suppression of wildland fire"* would be carried out, this theme occurred in the highest proportion in the Minutes 2015-2016 dataset. Early efforts to plan for wildfires are seen in the management tasks and problems to be solved

subcode, **plan**, but it appears that following the 2012 wildfires that occurred in the Niobrara River region, discussions of fire mitigation strategies increased at Niobrara Council meetings. In the Minutes 2015-2016 dataset, the Council took a number of actions approving *"…fuel load reduction"* and *"thinning"* projects as they were deemed *"…consistent with the desired future conditions for the Niobrara National Scenic River."*

Resource use/protection coding summary

Data under **resource use/protection** fell under a number of groupings, of which **preserve and/or enhance** and **zoning** were the most prevalent. The data categorized under **enforce** provided insight through a few instances captured in the datasets where the Niobrara Council clarified, negotiated, or collaborated on enforcement authorities along the NNSR. The data coded under **preserve and/or enhance** offered information about how the Council strove to balance a number of management obligations along the NNSR with the more encompassing directive to preserve the corridor and its resources for future generations. As one of the major authorities held by the Council, the data under the **zoning** subcode provided interesting perspectives on how the Council members and the local landowners viewed, implemented, and were impacted by the Council's zoning decisions. The data that was coded under **property acquisition** frequently related to measures taken by the NPS and the Council to limit the need for acquiring property along the NNSR in order to achieve management goals, even though their ability to acquire property was well-defined in the Enabling Law/Documents. Instances in which **infrastructure** was mentioned in the data were often in regard to the parties most responsible for the deterioration of, and therefore, the maintenance of infrastructure along the NNSR. The topic of **accessibility** in the data was commonly discussed in matters

where the Council endeavored to balance public access to the NNSR with public safety and private property rights. In regard to **water rights**, the majority of the data considered in this project described the potential need for, but also limitations on, the ability of federal representatives to potentially make a claim for water rights along the NNSR. Although it wasn't anticipated as a primary objective along the NNSR, there was a fair amount of data coded under **forest management** describing significant efforts to plan for and mitigate forest fire events.

STEP 3) CLARIFY THE PARTICIPANTS IN THE CO-MANAGEMENT ACTIVITIES AND RELATED PROBLEM-SOLVING PROCESSES

After analyzing the specific tasks and functions that are performed in the implementation of the Niobrara Council's co-management role, the third step is to "clarify the participants in co-management activities and related problem-solving processes" (Carlsson & Bereks, 2005, p.73). At this point in the analysis, the goal is to link the participants to the activities performed in the implementation of co-management and use this data to reconstruct the organization of relationships in the co-management arrangement. Through the qualitative analysis of the different datasets gathered, a better understanding of the organization, rights, duties, and power-sharing arrangements within the Council may be gained. It was hoped that by looking deeper into the remarks of the Council members in meeting minutes and interviews, and the framework for their respective roles provided in the enabling documentation, clarification could be provided regarding how these activities and associated relationships are carried out under real-life circumstances.

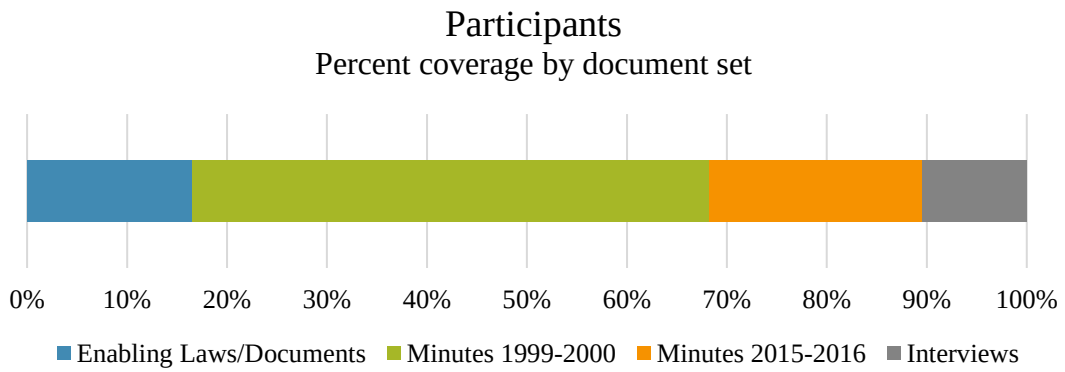

Figure 10. All coding related to the participants, showing the percentage of codes attributed to each document set.

Again, it was found that the Minutes 1999-2000 subset contributed the most content categorized under the **participants** subcode (Figure 10). In the coding process, the **participant** subcode was further refined and the entities who engaged in the co-management process, whether they were the party taking action or the party influenced by an action, were defined (Figure 11). For example, the NPS is directed in enabling laws to monitor visitor use along the NNSR, so a segment of data discussing that directive would include coding for both the NPS in its management role, and the visitors as the party for which that management role or task is carried out. In the summaries below, parties categorized under each **participant** subset are listed, as well as a consideration of

whether the data shows any trend in their contribution to the co-management process over time.

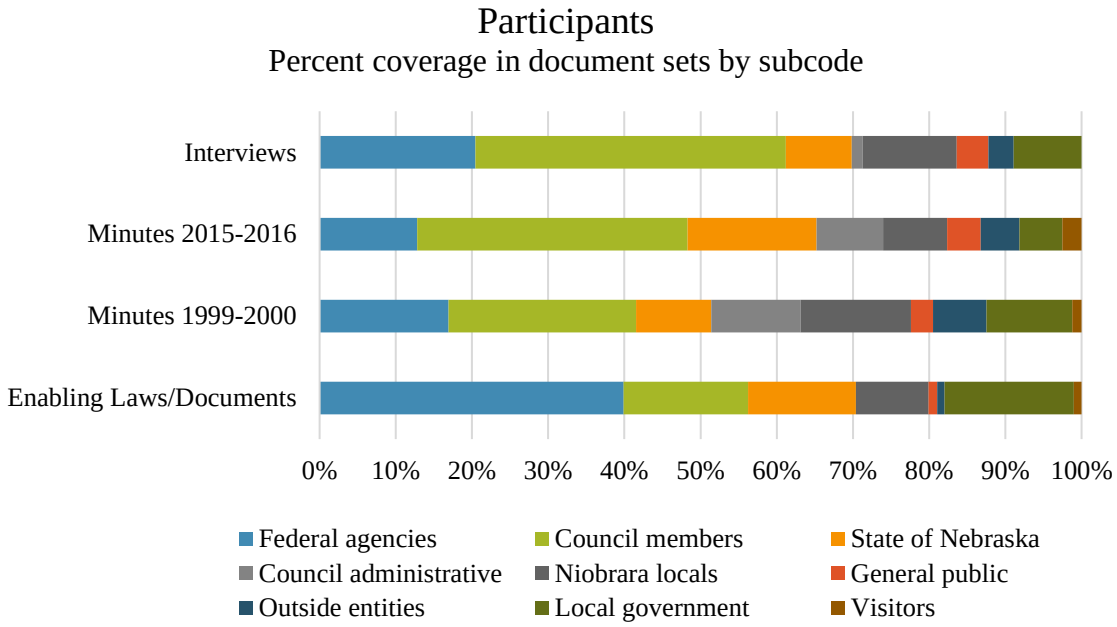

Figure 11. Contribution of subcodes to all coding related to participants for each document set.

Federal Agencies

Content referring to **federal agencies** was more prevalent in the Enabling Law/Documents dataset, but this subcode was well represented in all document sets. Parties included under the **federal agencies** category included: the United States Federal Government; the United States Secretary of the Interior; the National Park Service, including the National Park Service's superintendent and staff; the United States Fish and Wildlife Service and its staff; the Federal Highway Administration; and the National Oceanic and Atmospheric Administration.

Council members

As expected, the **Council members** were mentioned most frequently compared to other participants in the Interviews dataset, which can be attributed to the fact that most of the interview questions were selected to investigate the role of the Niobrara Council members. The smallest proportion of content coded under **Council members** occurred in the Enabling Law/Documents dataset. **Council members** in this analysis included mentions of: appointed or designated members of the Niobrara Council, including federal representatives; Council members acting as representatives of the Council; Council members acting on their own behalf; the Council's executive committee, subcommittees, and ad-hoc subcommittees; voting and non-voting members (federal representatives) of the Council; the Niobrara Scenic River Advisory Commission (defined in the NSRDA); the Four-County Inter-local Niobrara Council (1997-2000), and the State-Recognized Niobrara Council (2000-current).

State of Nebraska

References to various parties categorized under **State of Nebraska** often appeared in the data when issues related to legislation impacting the Niobrara Council was discussed, or when members of the Council interacted with state officials while carrying out Council business (e.g., budgeting, audits, legal representation, etc.). Agencies and individuals mentioned under the **State of Nebraska** subcode included: the Nebraska Game and Parks Commission; Nebraska State Senators and their staff; the Nebraska Governor's Office and staff; the Nebraska State Legislature Committees of Budget and Revenue, and Natural Resources; Nebraska's congressional representatives; the Nebraska State Treasurer; the Nebraska State Attorney General's Office; the Nebraska Emergency

Management Agency; the Nebraska Department of Environmental Quality; the Nebraska Department of Natural Resources (formerly, the Department of Water Resources); the Nebraska Division of Administrative Services; the Nebraska Department of Transportation (formally, the Department of Roads), among others.

Council administrative

References to the Niobrara Council administrative staff occurred most prevalently in the two Minutes document subsets, where the administrative staff reported on actions taken in the previous month and received direction from the Council members on what actions to take in the coming months. Individuals included under **Council administrative** included the Council's executive director, legal counsel, and office assistant.

Niobrara locals

Although not representing a significant portion of the content, **Niobrara locals** were mentioned in each of the datasets. Parties included under the **Niobrara locals** subcode were: private landowners and residents living within or near the NNSR corridor; outfitters with operations along the NNSR, including the Niobrara River Outfitters Association; individuals involved in the timber industry along the NNSR; local schools, staff, and students; and citizens of Cherry, Rock, Brown, and Keya Paha counties who were represented by their respective county commissioners serving on the Council.

General public

Parties included under the **general public** subcode represent a broader set of individuals than those under **Niobrara locals**, referred to in the Enabling Laws/Documents simply as the "*public."* This grouping was represented in each document subset, but to a lesser extent than **Niobrara locals**. Individuals or groups who

may have been classified under **general public** include: individuals for which the Niobrara Council and NPS managed the NNSR, whether or not they had an interest in the NNSR or ever visited; those who had an interest in the NNSR, but lived outside of the general area surrounding the NNSR; those for which the Council provided public notice of their meetings; members of the public who commented at Council meetings; those for which the NPS issued public notice of its decisions and actions related to the NNSR; the state-wide news media; those who engaged with the Council at education and outreach events; and those who paid local, state, or federal taxes that supported the NNSR, but who may not have been immediately impacted by the decisions of the Council.

Outside entities

Outside entities in this analysis were represented by individuals or collectives that either had an interest, or took an active part, in the management tasks of the Niobrara Council along the NNSR. Entities included under this subcode were not a major proportion of the participants mentioned in any of the four datasets, but they were most prevalent in the two subsets of Minutes, likely because they were often mentioned in discussions of Council projects and other business. Examples of groups categorized under **outside entities** included: national or regional environmental groups (e.g., The Sierra Club, National Audubon Society, Friends of the Niobrara, the National Parks and Conservation Association, and The Nature Conservancy); the Nebraska Environmental Trust; universities that assisted the Council or NPS on various studies within the NNSR; the South Dakota/Nebraska Purple Loosestrife Initiative; the Heartland Regional Watershed Forum; consultants hired to assist with project planning and/or implementation along the NNSR; contractors hired to assist in administrative or natural

resources management tasks; and entities that provided scholarships or grant funding to the Council.

Local government

Coding of segments referring to **local government** occurred within each of the four datasets, but was notably prevalent in the coded content of the Enabling Laws/Documents. This finding resulted from a number of instances in which the enabling documentation described the authority that would be retained by local management entities following designation of the NNSR, and how the NPS and Niobrara Council would partner with those entities on other management actions, where appropriate. Entities categorized under **local government** included: the Cherry, Rock, Brown, and Keya Paha County Boards of Commissioners; the Middle and Lower Niobrara Natural Resources Districts; municipal governments; county sheriff offices; county emergency management offices; local and volunteer fire departments; public school districts; and the Region 24 Emergency Management Agency.

Visitors

Content categorized under **visitors** did not make up a significant portion of the participant coding in any of the four datasets in this analysis, although this group was often indirectly referred to in discussions of management goals. **Visitors** were defined as those who: physically visited the NNSR; were monitored by the NNSR managers and for whom mitigation activities were employed; and for whom the Niobrara Council and NPS strove to enhance the experiences of along the NNSR.

PARTICIPANTS CODING SUMMARY

The most frequently mentioned participants in the data considered in this analysis were federal agencies and Council members. This was an expected finding considering that those were the two parties most frequently engaged in actions along the NNSR, whether they were the party taking action or affected by an action. Also coded under participants were those representing the State of Nebraska, Council administrative staff, Niobrara locals, the general public, outside entities, local government, and visitors.

STEP 4) ANALYZE LINKAGES

The fourth step in the analysis is to "analyze linkages" between the participants and the management tasks based on the qualitative data collected in steps two and three. In this analysis, the data required to perform a full network analysis was not collected, but would be useful to this step and the previous step in a future analysis. Instead, a simple reconstruction of the management tasks and problems to be solved, each shown in the proportion to which they were reported in all four datasets combined, are displayed in Figure 12, and then displayed in relation to the participants that were tied to those activities in the coding, as seen in Figure 13. Similar to the coding and analysis of the participants in step three, individuals or entities were coded if they were either the actor employing an action, or an individual or entity impacted by the action. In both of the figures below, the resource use/protection subcodes are displayed individually and identified with an asterisk, rather than aggregated under one resource use/protection category.

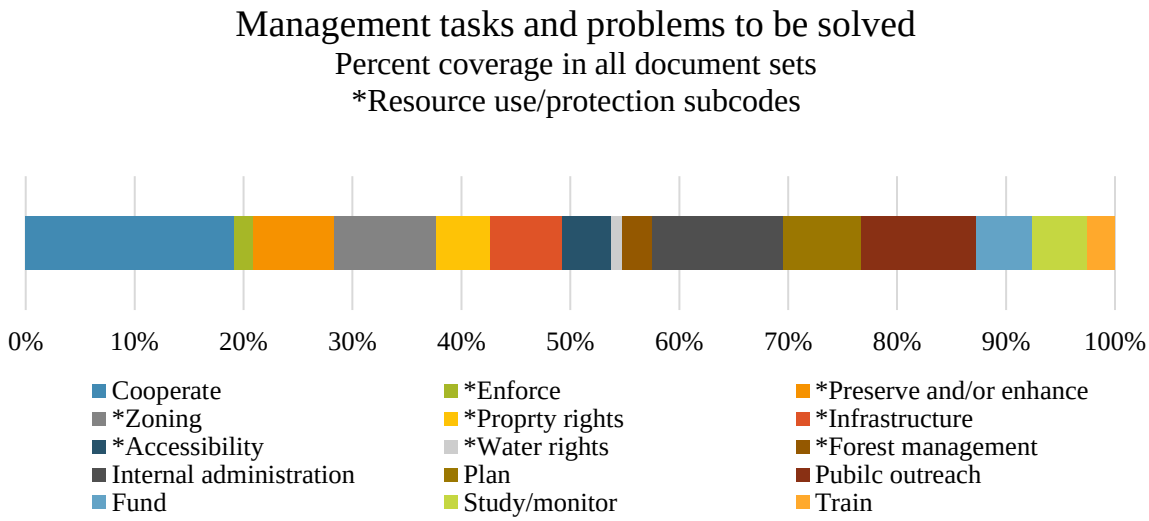

Figure 12. Distribution of codes in all datasets related to management tasks, including the resource use/protection subcodes (*).

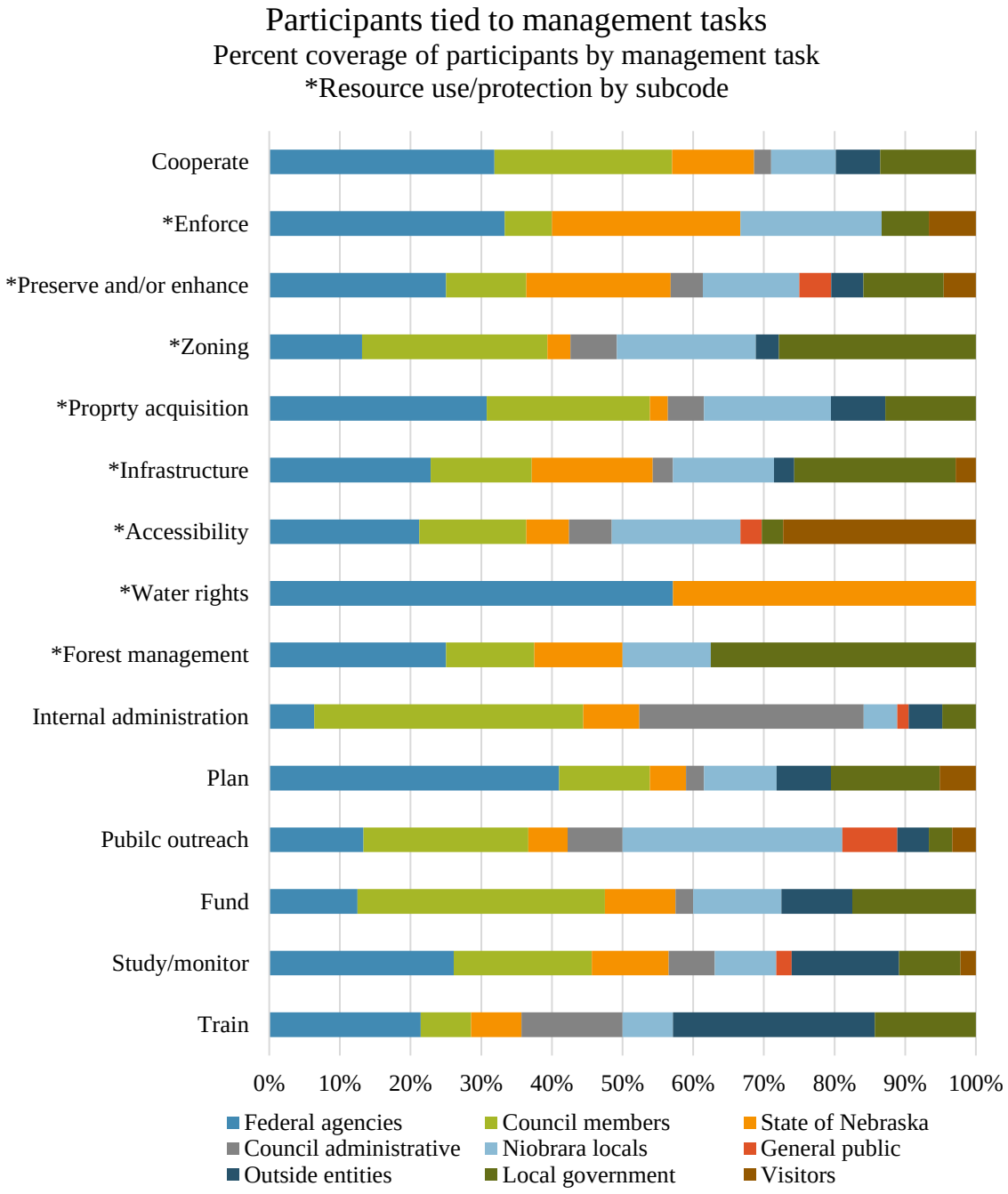

Figure 13. Distribution of participant codes in all datasets for each management task or problem to be solved, including the resource use/protection subcodes (*).

PARTICIPANTS AND COOPERATE

A notable finding in the participants tied to the **cooperate** subcode is that federal agencies and Council members are associated to a similar extent, and taken together, their

association comprised a majority of the content related to cooperation. This finding suggests that the NPS and the Niobrara Council are considered to be the primary actors *"…encouraged to cooperate in the planning and administration of components of the system."* It must be remembered that when the data shows an association between a party and a management task, it does not necessarily imply a well-functioning relationship. In this case, there were examples in the data that showed a beneficial relationship between the Council and the NPS in regard to **cooperate** (*"That purpose being to maintain the integrity of the river and to support one another in the preservation of the river"*), and others that showed a detrimental relationship (*"…probably [the Council's] top priority is to somehow control the National Park Service and its management of the National Scenic River"*). Other participants associated with **cooperate** were the State of Nebraska and local government: *"…the federal government have mandates for these specific designations and the states have regulations and laws put in place by the people of the state for land use, and so the two need to meet where they complement each other;"* and Niobrara locals, *"A successful effort will require the involvement of private landowners."*

PARTICIPANTS AND ENFORCE

The participants most frequently mentioned in relation to **enforce** in the datasets were federal agencies, the State of Nebraska, and Niobrara locals. An example of an enforcement issued captured in the dataset used for this analysis involving the NPS as a federal agency, and outfitters along the NNSR as Niobrara locals, was the NPS's proposed *"…mandatory Commercial Use Authorizations (CUA) for 2016."* According to the Minutes 2015-2016, there was local opposition to the CUA proposal and the NPS decided to *"…not implement mandatory CUA's at this time. They are still going to offer*

voluntary CUA's. There will be incentives to those outfitters willing to participate." The State of Nebraska was often represented in the data as a participant in management actions related to enforce through discussions of the authority held by the NGPC: *"The Niobrara Council and the [NGPC] had signed an agreement for law enforcement/visitor safety services."*

Participants and preserve and/or enhance

In general, the NNSR is to *"…be administered in a manner that protects and enhances the values which caused the segment to be included in"* the Wild and Scenic Rivers System, and a number of the participant groups considered in this analysis play a role in that overall goal. The work of the NPS has been highlighted a number of times, but the USFWS was also captured in the data as a party associated with **preserve and/or enhance**. *"The highest priority of the [USFWS] in the refuge is the management of endangered species"* and the data showed that the USFWS implemented a number of habitat enhancement projects to that end, including *"…prescribed fire projects"* within the Fort Niobrara National Wildlife Refuge. The State of Nebraska was mentioned as a participant or potential participant in a variety of activities related to **preserve and/or enhance**, a few examples are the *"…controlled burns on their wildlife management areas"* and the proposal that *"…state aid would be needed to help with [purple] loosestrife control."*

Participants and zoning

As would be expected, the participants most frequently mentioned in relation to **zoning** were the two parties responsible for zoning along the NNSR, the Niobrara Council (Council members) and the county Boards of Commissioners (local

government); and the party most often impacted by zoning, the Niobrara locals. The State of Nebraska *"...endowed the Council with binding override authority on decisions made by respective county zoning boards affecting the [NNSR]."* Despite the addition of an extra check on decisions that could potentially *"...derogate a Scenic River resource,"* there were still discussions of noncooperation on the part of some Niobrara locals, and even an example where an *"...entire development occurred without any attempt to go through the proper zoning channels."* However, the data also included examples of Niobrara locals that were *"...willing to do anything to comply"* and the Niobrara Council and Council administrative staff working closely with landowners in order to reach the point where proposed developments were *"...consistent with the desired future conditions for the [NNSR]."*

Participants and property acquisition

Again, the findings revealed in the association of participants with **property acquisition** were expected, as the entities endowed with the authority to hold conservation easements along the NNSR, and those with whom they would enter into such agreements, were most frequently mentioned in the analysis. As was seen a number of times in the data, although *"...federal acquisition could be used to protect the land"* along the NNSR, the NPS *"...would specifically seek to empower the Niobrara Council with this land protection objective."* More explicitly stated, *"The NPS doesn't want to be the holders of the easements. It should be the council's business."* In regard to the tasks involved in the implementation of a conservation easement program, it was *"...proposed that the Niobrara Council be the leader in finding the landowners that are interested in using this tool in their conservation objectives,"* and it was seen in the Minutes datasets

that the Council administrative staff were most involved in *"…the specifics of conservation easements and their contracts."*

PARTICIPANTS AND INFRASTRUCTURE

The analysis of participants tied to management tasks involving **infrastructure** revealed the variety of entities holding real or potential responsibility for maintenance of the infrastructure around the NNSR, as well as the number of entities who utilize that infrastructure. **Infrastructure** issues presented in the data did not only refer to roads, but other components such as river access sites, visitor facilities, and river crossings for which:

> *…the National Park Service would seek to partner with the Niobrara Council, counties, or natural resources districts to administer an array of grants, subsidies, and contracts for improved or more timely provided maintenance services beyond those already rendered by current management entities.*

These type of projects did not only require the financial support of different entities, but at times would *"…require site-specific environmental evaluations and approval from applicable local, state, and federal agencies."* Possibly due to the amount of administrative and institutional overlap inherent to infrastructure issues, they also provided the various entities involved in different aspects of managing the NNSR with opportunities to *"…come to the table"* and effect partnerships through projects that resulted in tangible benefits.

PARTICIPANTS AND ACCESSIBILITY

Issues related to **accessibility** of the NNSR in this analysis were shown in the data to often involve federal agencies (NPS & USFWS) and the Council members as parties holding much, but not exclusive, influence over the ability of the Niobrara locals (outfitters) and visitors to access the River. Often, the issue of **accessibility** required managers to consider and respond to imbalances in management priorities, as seen in the directive of the NPS to *"…avoid, restore, or mitigate recreation-caused impacts."* Considerations of the sufficiency of access sites along the NNSR were also debated, an example being the NPS's directive to *"…seek to develop additional public access sites on the river"* and the view of outfitters at one point in time being that *"…access isn't a problem right now for them, and they are able to work that all out amongst themselves."* This example shows the flexibility required by participants involved in the management of the NNSR as conditions change within the Basin and as reprioritization is required in order to effectively respond.

PARTICIPANTS AND WATER RIGHTS

The only participants associated with **water rights** in this analysis were the federal agencies and the State of Nebraska, which was expected as these are the primary entities with authority over water rights along the NNSR. As discussed earlier, the NPS has not actively sought a federal reserved water right on the NNSR, and *"Unless future diversions by owners with valid water rights alter this situation, there would be no need for the National Park Service to seek enforcement of its water rights."* The enabling documents for the NNSR state that *"The jurisdiction of the States and the United States over waters of any stream included in the national wild, scenic or recreational river area*

shall be determined by established principles of law" and that *"Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to exemption from State water laws."* Currently, issues related to **water rights** on the NNSR have not required active involvement of the NPS, aside from monitoring streamflow and the administrative actions of the State of Nebraska.

PARTICIPANTS AND FOREST MANAGEMENT

As seen in the findings related to participants associated with **forest management**, local governmental entities are the primary parties responsible for managing forest resources. Management actions captured in the data for this analysis predominantly involved planning for and responding to forest fires. According to the enabling documentation, *"The National Park Service would maintain a resource management and ranger staff with collateral fire duties and would rely primarily on regional expertise and leadership in matters of planning and funding."* Especially in the Minutes 2015-2016 dataset, it was seen that forest management was a natural resource management goal within the corridor that included a significant amount of institutional overlap, and therefore, frequent opportunities for partnership.

PARTICIPANTS AND INTERNAL ADMINISTRATION

The two primary entities associated with **internal administration** were the Niobrara Council members and the Council administrative staff, as was expected. It was seen in the analysis, especially in the subsets of meeting minutes, that there were a number of administrative tasks to be performed in order to ensure that the Council operated efficiently. For example, the Council's administrative staff would work with the State of Nebraska to *"get clarifications on some key issues including council authority,*

financial matters, employee issues, and contractual questions," or simplify the Council's zoning considerations through development of an *"Informational Request Form"* that would *"…eliminate some of the past problems with inadequate and incomplete applications. These problems often led to delayed decisions on applications."* Another point to remember when considering participants associated with **internal administration** was that *"A quorum shall be present at a meeting before any action may be taken by the council. A quorum shall be a majority of the members who are selected and serving and who vote on issues before the council,"* but federal representatives were non-voting members of the Council.

PARTICIPANTS AND PLAN

All entities included in this analysis were mentioned in the data corresponding to **plan**, but federal agencies by far made-up the largest proportion. Many of the management tasks related to **plan** in the dataset used for this analysis were initiated by the NPS in their efforts to revise the NNSR GMP/EIS. In the process of *"…re-imagining boundaries along the river,"* the impacts of the NPS's planning activities on other entities were also considered, such as *"…how this change in boundary would affect county zoning."* Another example further highlighting the cooperative implications of NNSR planning efforts, was how the NPS's:

> *…resource stewardship plan would also provide general technical guidance to partners sharing common ideals and goals. Partners, in turn, could prove critical to implementing management actions on private lands and could more readily access an array of additional funding from local and state sources not conventionally available to the National Park Service.*

The USFWS also led planning processes that included partners, as seen here:

> *There is an opportunity to organize and create the necessary fire plans for the corridor during the non-fire season. Huber stated that the [USFWS] is working on getting proper agreements in place and ironing out the proper details.*

PARTICIPANTS AND PUBLIC OUTREACH

The two entities most commonly associated with the theme of **public outreach** in the data of this analysis were the Niobrara Council members and the Niobrara locals. The Niobrara Council's outreach efforts targeted landowners and outfitters along the NNSR, but one of their most significant effort was the *"Niobrara Class,"* which was cooperatively developed first with the Valentine Rural High School (VRHS). The Niobrara Class was:

> *...designed to give students a hands-on experience and offer opportunities outside the traditional classroom. The intention was to expand the class to the other three schools in the Scenic River area and possibly offer it as a college class or adult education via the distance learning system.*

The commitment to education regarding the NNSR was also seen in the administrative priorities of the Council in their meeting minutes, in which it was stated that *"...there needs to be somebody leading the effort to bring these education programs together… The council decided to establish an Ad Hoc Committee for Education."*

PARTICIPANTS AND FUND

By far, the participants most commonly associated with the theme **fund** in the data were the Niobrara Council members. Despite the fact that the Niobrara Council was

not consistently the primary entity providing funding for projects related to management of the NNSR, and that *"…the Council has always been challenged in terms of finding other sources of funding"*, the Council and its meetings provided a venue for project proponents to share their proposals and announce that *"…they are looking for funding partners"* to commit to their projects. The Council also made significant efforts in *"…requesting funding for river management needs, such as signing, toilet facilities, etc."*

PARTICIPANTS AND STUDY/MONITOR

The participants most often associated with the **study/monitor** management activities were the federal agencies and the Niobrara Council members, both of whom frequently initiated studies; although other parties were included in the findings because they were often involved in the implementation of the studies or monitoring activities. Examples of calls for cooperation between participants for studies along the NNSR include: *"He also mentioned the need for some volunteer help from landowners regarding an ecosystem health survey;" "…joint efforts with NGPC regarding mountain lion studies and elk studies;" "…[NGPC] would be willing to help with the study at Smith Falls State Park;"* and "*She invited the Niobrara Council to submit any questions or comments regarding this upcoming study."*

PARTICIPANTS AND TRAIN

The two participant groups most often mentioned in the data related to **train** were federal agencies and outside entities, who were the two parties most likely to offer training to the other participants working along the NNSR. In the time periods captured by this dataset, the USFWS was the federal agency that most frequently offered training and the training was usually related to fire response: *"the [USFWS] would be able to put*

together such a training and bring in some qualified instructors," and *"the [USFWS] is co-hosting the fire fighter training."* The Niobrara Council also served as a hub through which opportunities for training were announced and occasions to connect with other agencies were sought. The Council would frequently pursue training opportunities for its staff and members, such as the *"Environmental Summit 2000 coming up being sponsored by the Nebraska Department of Roads… There will be folks there from the Army Corps of Engineers, [USFWS], NPS, Nebraska Historical Society, [NGPC],"* or *"…a Great Plains Gateway Community Workshop which will cover resource management issues for organizations and communities in or near National Park Units"* that was sponsored by the National Parks and Conservation Association.

Analyze linkages coding summary

As suggested by Carlsson and Berkes (2005), a clearer picture of the management framework of the Niobrara Council and how it operates was provided by starting with the management tasks and systematically exploring how various participants were linked to those individual tasks. In regard to **cooperate**, it was expected but still significant that federal agencies and Council members were the most commonly associated parties with that code. The participants most commonly associated with **enforce** were federal agencies, the State of Nebraska, and Niobrara locals, likely illustrating interactions in which the actions of the agencies impacted Niobrara locals. The frequency of associations by different participants with **preserve and/or enhance** was widely distributed, indicating that responsibility for this task was shared among managing partners and that the impacts of this management task were also widely distributed. The Council members and local government, represented by the county Boards of

Commissioners, were the two parties entrusted with zoning authority and were therefore most frequently associated with the **zoning** management task; along with the Niobrara locals, who were most frequently impacted by those zoning decisions. Participants most often linked with **property acquisition** were the federal agencies, who maintained the authority to acquire property along the NNSR; and the Council members, who were most often promoted as the proper entity to enter into conservation easements along the NNSR.

Management tasks related to **infrastructure** were distributed proportionately among the federal agencies, the Council members, the State of Nebraska, Niobrara locals, and local government, illustrating the far reaching extent of cooperation needed to plan for and complete infrastructure projects. The participant data linked to **accessibility** clarified the responsibility and intent of the federal agencies and the Council members to accommodate and mitigate, if needed, the ability of the Niobrara locals (here, mostly represented by outfitters) and visitors to access the NNSR. Although concerns have been expressed in regard to a potential federal reserved water right claim on the NNSR, this issue was not discussed in the datasets used in this analysis. Therefore, only those parties identified in the Enabling Laws/Documents, the federal agencies and the State of Nebraska, were mentioned in relation to the subcode **water rights**. Data coded under **forest management** revealed that the local government and federal agencies were the primary actors in tasks related to planning for and responding to forest fires, but in strong cooperation with other impacted entities. The Council members and the Council administrative staff were the two parties most often associated with **internal administration**, affirming their significant responsibility in managing the internal workings of the Council.

In relation to the management task **plan**, federal agencies were most often cited, but all other parties were also represented in the data for this subcode, clearly indicating that planning activities included participation from a broad set of stakeholders. Both the Council members and the Council administrative staff were frequently associated with **public outreach**, but an interesting finding was the large role played by the administrative staff in this undertaking. The relatively wide-ranging distribution of coding related to **fund** brought to light the role that the Council played in prioritizing and distributing funding for activities along the NNSR. The coding related to **study/monitor** most frequently referenced federal agencies and Council members as the parties initiating or approving studies along the NNSR, and the remaining parties as their partners implementing those studies. Similar in distribution, federal agencies and outside entities were frequently mentioned under the **train** subcode, but most of the remaining parties were also noted as partners or beneficiaries of those training opportunities.

STEP 5) EVALUATE CAPACITY-BUILDING NEEDS

The fifth step of the Carlsson & Berkes analysis is to "evaluate capacity-building needs" (2005, p.73-74). Here the purpose of the analysis is to identify what features of the co-management approach set in place within the Niobrara Council limit or enhance the members' abilities to engage in the process of iterative problem-solving that Carlsson and Berkes stress as the principal feature of an effective approach to natural resource co-management. Through a consideration of discussions that occurred in the Minutes 1999-2000 and 2015-2016 datasets, as well as the thoughts and opinions offered by the Council participants during interviews, this step in the analysis should lend to a more discernible evaluation of what institutional features could be reorganized in order to encourage

capacity-building development, and what socio-political features could be enhanced in order to promote empowerment among participants. The purpose of the analysis undertaken in this step is not to "fix" specific natural resource related or management problems, but to provide the participants engaged in the process of co-management with a clearer picture of the strengths and weaknesses within their organization and how bringing this information to light can facilitate capacity-building.

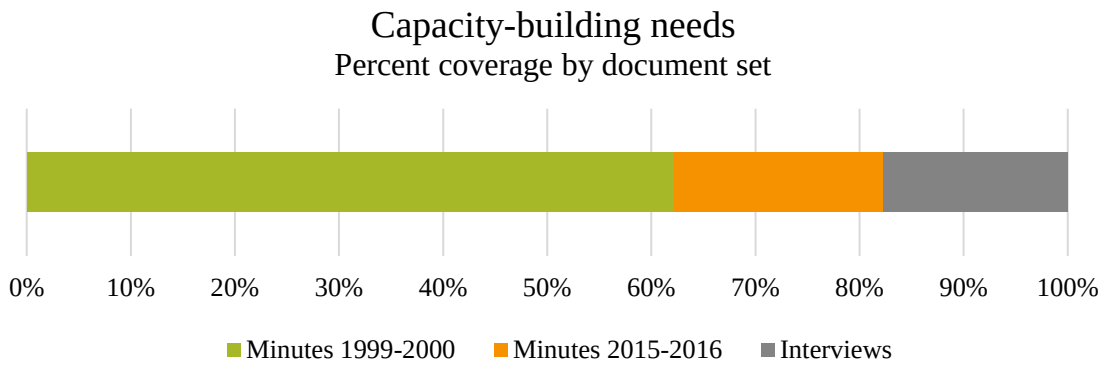

Figure 14. All coding related to capacity-building needs, showing the percentage of codes attributed to each document set.

As stated earlier, the Enabling Laws/Documents dataset was not used in this portion of the analysis due to the lack of data contained therein that was applicable to capacity-building (see Figure 14). The consideration of capacity-building needs may refer indirectly to, or have implications for enabling laws, statutes, or plans, but the focus is on the co-management relationship itself and how those participating in it may contribute to capacity-building. The analysis summarized below consisted of thematic coding of data that appeared to the researcher, or was stated by participants in the analysis, as either opportunities or obstacles to building capacity in the management setting along the NNSR. Through the coding process, six main themes related to capacity-building were found**: access to resources, clear objectives and setting, conflict management,**

institutional arrangements, appropriate government policies and planning, and **stakeholder participation** (Figure 15).

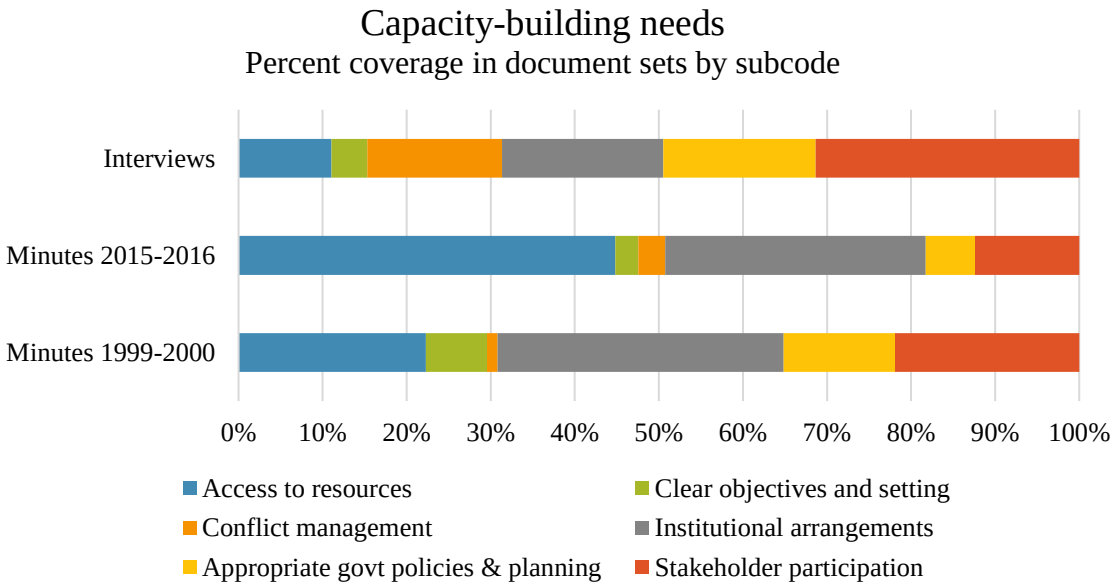

Figure 15. Contribution of subcodes to all coding related to capacity-building for each document set.

Access to resources

Management of natural resources through any framework requires a significant amount of financial, informational, technical, and social resources in order to be successful. One of the benefits often attributed to co-management is the enhanced capability it provides to managers in accessing resources that one party could not easily obtain on their own. The two types of resources most commonly discussed in the data of this analysis were financial and informational, and the document set for which **access to resources** contributed most significantly in discussions of capacity-building was the Minutes 2015-2016. It was clear from the data that the need to access more resources had become more important to the Niobrara Council in the time between the initiation of the Council and the timeframe represented by the Minutes 2015-2016 dataset. Due to cuts to

the Niobrara Council's budget from both federal and state sources during this period in time, the Minutes 2015-2016 included numerous examples of:

> *…discussion about the reduction in funding from the National Park Service, the reduction in funding from the State of Nebraska, and increased economic factors in general with simply maintaining the mission of the Niobrara Council through its programs and public outreach services.*

In their pursuit of additional funding, the Council took opportunities to *"…testify at an Appropriations Committee hearing"* for the State of Nebraska; seek assistance from state senators, for example, *"Senator Davis is willing to entertain the idea of requesting an appropriation on behalf of the Niobrara Council;"* or take advantage of connections already secured by their partners that could lead to additional funding options, as seen in the *"…suggestion to contact NGPC and see if they in fact sponsor a Senator reception, and there might be a possibility that the Council could host a table at such an event."*

The content associated with **access to resources** found in the Interviews dataset focused primarily on financial resources, as the Council's budget struggles continued through the time period that the interviews took place. In regard to the status of state funding, one interviewee commented, *"…right now I see that as maybe our biggest weakness…it would provide for stability if we knew with certainty that the state was going to support us financially for administrative costs, you know, on an annual basis."* Other interviewees discussed the need for the Council to be flexible and work at *"…adjusting our desires and plans down, rather than expanding them because of money,"* or seek other revenue streams by, as one Council member put it, *"…beg for some help from some other organizations."*

In the Minutes 1999-2000 dataset, access to both funding and informational resources were frequently discussed in concert, as the need to promote and support training opportunities for the Council members and partners was prioritized. In a proposal to the Council for training funds, a county commissioner *"...stated that Keya Paha County is very limited on funds. She has very little education in zoning matters and would like to further her education."* This training request was supported by the Council's executive director who stated that *"It is very important that the zoning administrators are properly trained since they are the people who implement zoning regulations,"* and that if not funded directly by the Council, the Council could assist in finding *"...a grant or scholarship program [that] would allow county zoning administrators to attend the proper training."* Another informational resource that benefited the Council's co-management framework was the *"...'Informational Request Form' [the executive director] had developed for county zoning administrators"* in order to make zoning procedures more clear to both applicants and administrators. A lack of informational resources was clear in the early implementation of the Council's zoning duties, where in one example, it was acknowledged that it:

> *...does not look good for the council to have two members, one a county commissioner and the other the builder of the project, completely unaware that the project had not been before the Niobrara Council for review before the building began.*

Clear objectives and setting

Although it might be overlooked by some, the efforts made by managers to establish **clear objectives and setting** for their work is essential to successful natural

resource management. Confusion over the jurisdictional extent held by a management entity, or the ultimate goal or purpose of their work, can lead to negative outcomes for both the resource and the resource users if not addressed. Although **clear objectives and setting** was not a major component of the capacity-building theme in any dataset, the management implications of this subcode seemed to be emphasized when it came up. In regard to the objectives of the Niobrara Council, interviewees responded that *"I don't recall we've ever laid out 'these are our priorities for the year'"* and *"I think they really fail miserably in having a unified or cohesive goal or purpose in their mind."*

Although it may not be consistently stated, the Council's directive to manage for the preservation and enhancement of the outstandingly remarkable values found along the NNSR was a common theme and was included in numerous discussions found in the Minutes 1999-2000 dataset in relation to the NPS's efforts to re-delineate the NNSR boundary. In an ardent effort to ensure that *"This time around, the boundary will be based on hard science,"* the NPS's *"...work at defining the outstandingly remarkable values in regard to geology, recreation, scenery, etc. and map accordingly*" was extensive and their *"...approach [to] the re-analysis by canoe, land, and air"* seemed dedicated. However, the resulting inconsistency between the new NPS boundary for the NNSR and the boundary used in Nebraska state statute appeared to have a few repercussions, as an interviewee mentioned*, "...that could be a better strength in their zoning,"* and in a discussion at a Council meeting, *"It was mentioned that the Legislature should have dealt with the boundary issue."* As expected, discussions related to **clear objectives and setting** were more numerous in the earlier time period of the Council, represented in the Minutes 1999-2000 dataset, as this was the stage at which the

managing partners were working to frame their management goals and objectives, and determining to what geographic area their authority could be appropriately applied.

CONFLICT MANAGEMENT

It was interesting that **conflict management** as a theme, was not found more often in the dataset, given that one of the main goals in the creation of the Niobrara Council was to reduce conflict between federal representatives and people living along or near to NNSR. The majority of the data associated with **conflict management** was found in the Interviews dataset and addressed **conflict management** as it impacted relations between the Council and outside entities, and also within the Council itself. Interestingly, it was found that the interviewees often disagreed on the effectiveness of the Council in reducing conflict. For example, one respondent stated that *"I think the Council has acted as a buffer, perhaps, between angry landowners or citizens or residents…and you know, diffused some situations. So yeah, I think they're a good body to reduce conflict,"* but another claimed that *"…the Council has completely divided this community."*

One emerging issue that may have been able to account for the small increase in the occurrence of the **conflict management** subcode in the Minutes 2015-2016 dataset compared to the Minutes 1999-2000 dataset, was whether the Rocky Ford property should be purchased by the NPS, the Niobrara Council, or potentially, a private buyer. Because the deliberations over the fate of the Rocky Ford property were still taking place during the time of the interviews, the impact of that controversy on the Council's management relationship was frequently addressed. Some interviewees felt that in the negotiations over the potential purchase of Rocky Ford by the NPS, the NPS staff *"…were not forthcoming with the Council, and you know, really were working behind*

our back," and one respondent stated that, *"…transparency in communication with the National Park Service"* was an issue that the Council needed to address. Overall, it was generally agreed that the Rocky Ford dispute *"…was a huge step back for the trust, the level of trust between the Council and the Park Service,"* but some Council members believed that in the continuation of their shared management efforts and by *"…sitting down at the table together… hopefully they can, you know as time goes by, they can work out their differences and make them understand they're all working for the same thing."*

Institutional arrangements

Institutional arrangements are vital to any natural resource management framework, as they provide the structure and legitimacy managers require in order to carry out required tasks and affect management goals. The theme of **institutional arrangements** as related to capacity-building was most frequently mentioned in the discussions recorded in both sets of Minutes and it is interesting to note that the occurrence of this code did not shift between the earlier and later Minutes datasets. In the Minutes 1999-2000 dataset, content related to **institutional arrangements** represented the highest proportion of the capacity-building subcodes, which was likely a result of the fact that the legislation recognizing the Niobrara Council was being negotiated and approved by the Nebraska Legislature at that time. This legislation (LB1234) was *"…designed to give the Niobrara Council credibility under state statute"* and was brought to the Council by a state senator wanting to *"…know what the council wants for improvements to LB1234."* In consideration of LB1234, it was noted that *"…the council needs to do some investigating on LB1234 and how it affects the operation of the council. The Chairman noted that the council will have to be reconstructed,"* acknowledging the

fact that legislative changes to existing institutional arrangements can have broad implications on how a management framework operates.

In both subset of Minutes, **institutional arrangements** were often discussed in relation to their impact on the Niobrara Council's ability to request and receive funding. Once LB1234 was passed by the Nebraska Legislature, there was a period of time in which both a Four County Inter-local Niobrara Council and a State-Recognized Niobrara Council existed, which resulted in a *"…certain amount of confusion being perpetuated with the two council situation."* This period of institutional uncertainty also had implications for the Council's budget due to, *"…the NPCA lawsuit and the fact that it prohibits the NPS from associating with and funding the old council…the two council issue needs to be resolved so the NPS can fund the new council."* In the 2015-2016 Minutes, the Council continued to work with Nebraska state senators in efforts to improve institutional operations. In one discussion, for example, *"A representative from NGPC suggested that the Council consider working with their Senator to change or clarify language within their statute regarding funding,"* and in another, it was *"…motioned the Council support LB1019 and request a possible amendment to alleviate quorum issues."*

Appropriate government policies and planning

The theme, **appropriate government policies and planning**, was conceptualized in this analysis as "what <u>can</u> the Niobrara Council do," and "what <u>will</u> the Niobrara Council do" in its efforts to manage the NNSR and enhance capacity-building among resource managers and users. **Appropriate government policies and planning** was not a major theme in the capacity-building content for any of the datasets, and it occurred more

frequently in the Minutes 1999-2000 dataset than in the Minutes 2015-2016 dataset, indicating its importance at the outset when building a co-management framework. This subcode was addressed most frequently in the Interviews data where respondents mentioned it in reference to the flexibility of the Niobrara Council's management role. For example, one respondent stated that *"…we do have flexibility from the standpoint that we can respond… more quickly to new information or to scientific data than the National Park Service as a whole, simply because we're smaller,"* and another mentioned that *"…some management decisions that can be interpreted, you know, that are left up for interpretation"* by the Council.

The appropriateness of policy related to the authority given to the Council was also mentioned under this theme in the Minutes 1999-2000 dataset, including discussions of LB1234 as *"…a mechanism to empower the Niobrara Council. This is what local folks have been wanting since the river was designated a scenic river."* In regard to the zoning authority held by the Council, it was stated during a Council meeting that *"The council will act in the best interest of those concerned. If the county or the county zoning board fails, it creates an opportunity for the council to intervene because right now the only alternative is condemnation by the NPS."* Finally, strategic planning emerged in this dataset as well, with emphasis on how the Council's planning efforts *"…allows us to evaluate our effectiveness, plan for the future and develop future programs."*

STAKEHOLDER PARTICIPATION

The final theme that emerged in the analysis from content related to capacity-building was **stakeholder participation**, which was proportionally most frequently mentioned in the Interviews dataset, followed by the Minutes 1999-2000 dataset. A

notable trend in the Interviews content related to **stakeholder participation** was mention of the mutual influence between the stakeholders and the Niobrara Council, for example: *"…the people that are on the Council have an immediate tie to the communities that the river flows through,"* and *"People know them [Council members]. They're listening to what they have to say and what they do. So, I think their influence up there in that community is pretty large."* Further, although it was claimed that *"People feel that the Council…provides a format to come and be heard,"* which is an important aspect of capacity-building in a co-management system; another Council member still felt that they *"…would welcome more public participation as one thing that I think would solve some issues."*

It was seen from the two subsets of Minutes that the Council made frequent efforts to proactively engage with community members and other stakeholders though such events as the river clean-up days, a landowner BBQ focusing on conservation easements, and even a *"…canoe trip with a group of Nebraska senators."* The canoe trip with state senators was just one example highlighting the fact that the "stakeholders" within the Council's sphere of influence was rather wide, as one member noted, *"we have the ear of both state and federal, as far as elected representatives, as well as non-governmental organizations."* This type of stakeholder engagement may have been more important in the earlier stages of the Council's formation, as relationship-building efforts were more often mentioned in the Minutes 1999-2000 datasets than in the Minutes 2015-2016 datasets.

CAPACITY-BUILDING NEEDS CODING SUMMARY

The coding that emerged from the capacity-building needs step in the Carlsson and Berkes (2005) methodology was a useful element of the analysis as it provided distinct concepts that could be considered by the researcher and the Niobrara Council members in reflecting on the current co-management setting along the NNSR, and how the framework may be improved going forward. The data most frequently associated with **access to resources** referenced funding resources and was revealed to be a larger concern in the Minutes 2015-2016 dataset, as the Niobrara Council's diminishing budget was a more acute concern at that time. Although access to funding resources was not mentioned frequently in the Interviews dataset, it was clear from the responses of the Council members that the lack of available funding was a deeply held concern. Data coded under **clear objectives and setting** was not a major portion of the capacity-building needs theme in any dataset, but again, was strongly stated in the Interviews dataset when some Council members expressed their concern that the lack of shared goals and an indistinct conception of the management setting created barriers to effective management of the NNSR. Data associated with **conflict management** was most frequently mentioned in the Interviews dataset, which was a noteworthy finding that may have been attributed to the contemporaneous conflicts over the potential purchase of the Rocky Ford property by the NPS.

Although it was most frequently mentioned in the two Minutes datasets, **institutional arrangements** did represent a significant portion of the capacity-building needs revealed in the Interviews dataset, indicating that this is an aspect of the co-management framework that, once set in place, still requires attention and consideration

as the Council adapts and progresses. Coding under **appropriate government policies and planning** generally indicated that many of the involved parties considered the authority provided to the Council as appropriate and that the unique management framework set in place along the NNSR was beneficial. Finally, it was noted that a large amount of the capacity-building needs data in the Interview dataset was coded under **stakeholder participation**. The content under this code revealed that the Council had a strong influence over the local community and a potentially significant influence on local and state representatives, both of which could be leveraged to enhance the Council's capacity as a co-managing entity.

STEP 6) PRESCRIBE REMEDIES

The last step in the analysis is to **prescribe remedies**. Although the data collection and analysis used to carryout this project did not follow the Carlsson and Berkes (2005) method precisely, the role of the researcher in this step is to present the findings of the analysis that was performed and describe the general conclusions to the Niobrara Council members. The qualitative findings gathered through this analysis may provide the members of the Niobrara Council with an opportunity reflect on their co-management framework more insightfully, as they view the perceptions of their partners, their socio-political relationships, and themselves within the framework of an adaptive co-management process. By providing a broad and objective view of the social, political, and institutional frameworks that comprise the natural resource co-management approach employed by the Niobrara Council, the participants are presented with a more clear frame of reference from which they can propose their own solutions.

Findings uncovered in the previous steps in the analysis should naturally lead one to the consideration of possible remedies that could solve for potential inefficiencies in, or obstacles to, the co-management approach employed by the members of the Niobrara Council. Looking particularly at the data that was uncovered in the capacity-building needs step, one can find six general themes to which future consideration could be directed (access to resources, clear objectives and setting, conflict management, institutional arrangements, appropriate government policies and planning, and stakeholder participation). Although the limitations on the Council's current capacity to address needs or remedies must be kept in mind, the information provided here may assist future conversations about prioritization and planning. For example, the Council may not have the ability to significantly increase their access to resources at this time, but could consider how to further develop or utilize stakeholder participation in the current socio-political setting.

Throughout the coding process, emphasis was placed on the content in the Interviews dataset when considering data to be included under the **prescribe remedies** theme. This purposeful coding was carried out with the hope that by reflecting the comments made by the interviewees themselves, the Niobrara Council members would be provided the self-determination to assess the co-management relationship and their engagement with it. It was interesting to note that the overall views held by some Council members in regard to the general state of the Council's management framework differed widely. One Council member stated, *"I don't think that there's any big glaring problems right now, but certainly nothing's ever perfect, so should always be looking at ways to*

improve" and another claimed that in the past *"…we had a Council that would do things and could get things done. Now we do not."*

As would be expected, given the state of the budgets for the Council, the State of Nebraska, and the Federal Government when the interviews took place, most of the respondents claimed something similar to *"…lack of money is definitely a weakness."* Although the parties have limited control over available funding, their efforts to find alternative sources of revenue would be assumed to continue. Some of the respondents were also looking to increase the authority held by the Council. When asked what could make the Council a better tool for problem-solving, one respondent replied, *"Maybe legislation authorizing more powers… Over top the Park Service, so the state…had more control than the federal part of it."* Another Council member commented on the *"…strong sentiment…that someday the National Park Service will pack up and leave…as long as they think that, they're not gonna try to work together with it very much."*

A similar sentiment was heard in discussions of communication or miscommunications that occur with regard to the respective roles of the Niobrara Council and the NPS: *"I think there's still some conflict and there's particularly a lot of misunderstanding of the role of the National Park Service."* A lack of communication, or perhaps, effective planning was reported within the Council itself, revealed in statements such as *"I don't really think that they have a cohesive goal or purpose. Amongst the members, I don't think that they really agree on what they are supposed to be doing. And, they don't really have a good vision."* Finally, a number of Council members reflected on proper representation among their members and the possibility that *"…people have a tendency to not think about who they're representing when they're on a board"* and

"…instead they have a tendency to interject their personal viewpoints." It was not clear from the data used in this analysis if this was a long-standing sentiment held by the Council members, or if it was an emerging issue applicable to the more recent Council membership.

CHAPTER 9. CONCLUSION

SUMMARY AND SUGGESTIONS FOR FUTURE RESEARCH

Ultimately, the final determination as to whether or not a cooperative natural resource partnership has been successful or not depends on both the partnership's ability to affect ecologically sustainable policy, as well as its ability to foster increased communication, trust, social capital, and the building of consensus among stakeholders (Leach & Pelkey, 2001). It is clear from the data in this analysis, especially the content found in the Interviews dataset, that the Niobrara Council and the National Park Service (NPS) are not currently at a point in their cooperative relationship at which all of these benefits are realized. However, one must remember that a static state of mutually beneficial cooperation is an unrealistic goal and that the assessment of this theoretical condition was not the purpose of this analysis. What was accomplished instead, was the collection and consideration of content gathered from the participants in the co-management system set in place along the Niobrara National Scenic River (NNSR), which provided rich insight into how the Niobrara Council functions and features of the system that could be enhanced in order to improve the functioning of the system in the future.

The findings from this project provided a clearer picture of how the various partners involved in the co-management framework of the Niobrara Council manage the NNSR. A better understanding of the roles of various partners and the specific management tasks that they were responsible for was uncovered; illustrating where various actors play key roles, how responsibility for some tasks is shared, where collaboration is most prevalent and where it is intermittent, and at which junctures

entities outside of the Council play a significant part. Primary management tasks implemented along the NNSR were found to be: cooperate, preserve and/or enhance, zoning, internal administration, and public outreach. The primary actors responsible for carrying out these activities were the federal agencies and the Council members, but the State of Nebraska, Niobrara locals, and local government were also involved.

Further analysis of each management task and the parties that either carried out the task or were impacted by it, provided more depth to the analysis of the comanagement framework utilized by the Niobrara Council. For example, it was found that the federal agencies and the Council members were the primary actors in the task of cooperate, the federal agencies and the State of Nebraska were the only actors engaged in issues or activities related to water rights, and that the Council members, Niobrara locals, and local government were the major actors in tasks related to zoning. Other management responsibilities, such as those related to infrastructure or study/monitor were more widely distributed among the many entities with interests or obligations along the NNSR.

Additionally, data was analyzed in order to define what aspects of the co-management framework could be enhanced for capacity building, the most prevalent needs being: increased access to resources, enhancing institutional arrangements, supporting appropriate government policies and planning, and enhancing stakeholder participation. Similar themes were found in the Interviews dataset in regard to remedies, with the Council members mentioning that funding, increased authority, more transparency, and appropriate representation as aspects of the co-management framework that require further attention or correction. Whether expected or unexpected, the themes that emerged from the findings in this analysis provide a frame of reference for the

Council in reflecting upon potential enhancements to their management framework and planning for future endeavors.

An unexpected topic that emerged from this analysis was the prevalence of the conflict over the potential purchase of Rocky Ford by the NPS, and the subsequent reactions of the Council members to this prospect. It appeared from the content of the Interview dataset that several Council members considered this controversy to be a low point in the relationship between the local citizens and the NPS, and one that severely degraded the trust that had been built between the NPS and its partners on the Council. Clearly, the priority that the NPS holds for increasing public access along the NNSR has not found concurrence with the local landowners and many of their representatives on the Council. It is possible that this issue will arise again in the future, and if it does, it is likely to be met with local opposition. It appears that increased transparency in potential acquisitions of land along the NNSR may decrease hostility among local landowners to some extent, and the Council may provide the most appropriate venue for sharing those proposals.

Other topics that were notable in the Interviews dataset, but not expected or well represented in the findings following the thematic coding process, was that of proper representation by the Niobrara Council members and internal conflict. Concern was expressed in the interviews that not all Council members were properly representing their constituents, whether that was due to the procedure through which they were appointed to the Council, or a flaw in how representation was statutorily defined. In addition, multiple respondents mentioned that internal conflicts and disparities in contributions from individual Council members was a weakness of the Council. These issues could have

implications for proper representation of constituents due to some Council members having a disproportionate voice in Council deliberations and decision-making.

As the analysis of this project progressed, a number of limitations in the process were noted. The first being that in this study, the exact step-by-step methodology proposed by Carlsson and Berkes (2005) was not employed due to a lack of necessary data and resources. The primary missing data that would be required in order to perform the Carlsson and Berkes analysis as they recommended, were those that could support a network analysis of the Niobrara Council. Although some data related to the connections between the actors engaged in the co-management process employed by the Niobrara Council exist, the quantity and quality of this data was not robust enough to properly perform a network analysis. In a future analysis, it would be beneficial to supplement qualitative data gathered from the participants with a network analysis that could assist in more fully envisioning and examining the co-management framework.

A further improvement of the current study would be to gather a wider view of the values and priorities of the Niobrara Council members, as well as other entities impacted by the Council's management decisions. Given the generous amount of information concerning the roles of the various entities involved in management along the NNSR that was provided by the Council members who agreed to take part in the study, additional information from the remaining members would provide an even more comprehensive assessment. Further, the administrative staff employed by the Niobrara Council, and whose efforts are vital to its continued operation, are likely to hold important insights into the day-to-day activities of the Council.

In order to gain a better understanding of the management role of the Niobrara Council, the views of the landowners for whom local ethics are theoretically represented by the Council, could also be included in the analysis. Because the primary directive of the Niobrara Council is to work with the NPS in order to ensure that the values of local citizens and resources are taken into account when final management decisions along the NNSR are made, a better understanding of the Council's effectiveness in carrying out this directive is necessary. The perspective of local landowners is required, not only to ensure that the Niobrara Council is fulfilling its statutory obligations, but also to ascertain whether or not the Council is providing the representation that is expected by its constituents.

Further research on co-management along the NNSR should include a broader representation of the views of stakeholders with an interest in the River and corridor. Without a comprehensive view of how the current framework of co-management between the Niobrara Council and the NPS impacts citizens and resource users, it will be difficult to appreciate how future changes in the institutional or ecological landscape surrounding the NNSR corridor will be satisfactorily addressed. As natural resource management evolves to address a larger social, geographic, and temporal scale, researchers in natural resource management must follow suit.

In the Niobrara River Basin, as is the case in many other areas, the livelihoods of the people living in the region are closely tied to the availability, timeliness, and quality of water running through nearby streams and creeks, as well as the water stored underground. The people in this area are not only highly dependent on the availability of water for agriculture, but also on its availability for the maintenance of the recreation-

based economy that has been built over the last few decades. As economic, climatic, and social features along the NNSR change and evolve in the coming decades, an adaptive perspective is required on the part of both the resource users and managers. Threats to the Niobrara River's resources are tangible threats to those working and living in the Basin, which poses a very real challenge to resource users - but also an opportunity if they are provided the space and capacity to join in the problem-solving and decision-making activities that impact those resources.

The level of local opposition at the time of Scenic designation required that federal representatives establish a means of ensuring that local citizens share in the management decisions along the Niobrara River corridor (Roeder, 2004). Without a provision requiring that the citizens living in the Niobrara region have the authority to contribute to and review river management policies before and after Scenic designation, Congress and the NPS would have likely encountered an even greater level of resistance. Citizen acceptance of designation and participation on the Niobrara Council, however, does not necessarily result in an effective co-management arrangement (Agrawal & Gibson, 1999). Rather than simply assuming that citizen participation occurs through the forum of the Niobrara Council, one might inquire as to whether or not the management relationship that exists between the Council's citizen and agency representatives has allowed the participants to meet their respective goals, while supporting the values that they hold for the NNSR.

Following the passage of LB1038 in 2016 and the potential implications of the new instream basin management water right on the Niobrara River upstream from NPPD's Spencer hydropower facility, the future of the NNSR appears to be stable, but

still difficult to foretell. According to statute, the impacts of the instream basin management water right will not be fully realized until the integrated management plans (IMPs), jointly developed by the Basin's natural resources districts (NRDs), the Nebraska Department of Natural Resources (NeDNR), and the Basin's stakeholders, have been agreed upon. If the considerations held by the partners on the Niobrara Council are to be included in the forthcoming IMPs, they must play an active role in the current and upcoming stakeholder processes, through which those considerations can be documented, and eventually, implemented.

Natural resources management is essentially about protecting and enhancing human value in natural settings. Watersheds, more than most natural systems, provide an excellent example of how human culture and value can influence ecological integrity and function through the instrument of governance (Imperial, 2005). Due to the fact that watersheds are embedded within larger geographic settings dissected by human-imposed political sub-boundaries, they challenge managers to develop ecologically holistic and administratively collaborative management frameworks (Agrawal & Gibson, 1999). Natural resource co-management is only one option available to resource users and policy makers, and although it remains politically popular, the systematic data needed to determine the comparative success of co-management has yet to be compiled (Berkes, 2002). Of specific interest, is the ability of co-management frameworks to provide an adequate level of social adaptive capacity in order to withstand cultural, political, legal, or ecological perturbations (Armitage, 2005).

Although certainly not comprehensive, it is hoped that this study provides insight regarding the co-management relationship within the Niobrara Council, and also between

the Council and its management partners, that may not have been clearly recognized. Given the considerations and findings provided by this study, future research can be better directed into the investigation of what aspects of this relationship contribute to or diminish the eventual success of co-management along the NNSR. As an admirer of the Niobrara River and the natural values encompassed within the Scenic corridor, as well as a proponent of engaging local people in natural resources decision-making, I hope that the local stewardship ethic that has been established throughout the past few decades continues to play a significant role in the management of the Niobrara River well into the future.

REFERENCES

Agrawal, A., & Gibson, C.C. (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Development, 27*(4), 629-649.

Aiken, D.J. (1987). New directions in Nebraska water policy. *Nebraska Law Review, 66*(8), 8-75. Retrieved from http://digitalcommons.unl.edu/ageconfacpub/29

Aiken, D.J. (2007). Priority, preferences and irrigator-power disputes on the Niobrara River. *Cornhusker Economics, 337*. Retrieved from https://digitalcommons.unl.edu/agecon_cornhusker/337/

American Rivers. (2008). *America's most endangered rivers of 2008*. Washington, D.C: Retrieved from https://s3.amazonaws.com/american-rivers-website/wp-content/uploads/2016/02/24220915/2008-mer-report.pdf

Amos, A.L. (2006). The use of state instream flow laws for federal lands: Respecting state control while meeting federal purposes. *Environmental Law, 16*, 1237-1281.

Armitage, D. (2005). Adaptive capacity and community-based natural resource management. *Environmental Management, 35*(6), 703-715

Axtell, J. (2018, September 25). Sale agreement signed for dam on Niobrara River. *Chadrad.com.*, [Chadron, NE]. Retrieved from https://www.chadrad.com/newsstory.cfm?story=43849

Becker, L.A. (2001). *Sokol v. Kennedy*, the boundaries of administrative agency discretion: Statutory interpretation under the Wild and Scenic Rivers Act. *Great Plains Natural Resources Journal, 5*, 195-209.

Bell, D.C., & Johnson, N.K. (1991). State water laws and federal water uses: The history of conflict, the prospects for accommodation. *Environmental Law*, *21*(1).

Bentall, R. (1998). Streams. In A.S. Bleed & C.A. Flowerday (Eds.). *An atlas of the Sand Hills* (3rd ed.) (pp.93-114). Lincoln, NE: University of Nebraska, Conservation and Survey Division.

Berg, D. (2004). Railroads, United States. In D.J. Wishart (Ed.). *Encyclopedia of the Great Plains* (pp.807-808). Lincoln, NE: University of Nebraska Press.

Bergin, N. (2015, September 10). NRDs to acquire water rights on the Niobrara. *Lincoln Journal Star*. Retrieved from https://journalstar.com/news/state-and-regional/nebraska/nrds-to-acquire-water-rights-on-theniobrara/article_3452e5a2-de9f-51c0-a20e-a7aec1d97432.html

Berkes, F. (2007). Adaptive co-management and complexity: Exploring the many faces of co-management. In F. Berkes, D.R. Armitage & N. Doubleday (Eds.). *Adaptive co-management: Collaboration, learning, and multi-level governance* (pp.19-37). Vancouver, BC: UBC Press.

Berkes, F. (2009). Evolution of co-management: role of knowledge generation, bridging organizations and social learning. *Journal of Environmental Management, 90(*5), 1692-1702.

Bjerke, R.M. (2009). *Stakeholder perceptions of water supply management and sustainability in the Republican River Basin in Nebraska* (Master's thesis). University of Nebraska, Lincoln, NE.

Blankenau, D. (2015). War and peace over the Niobrara River. *The Water Report*, *142*, 1-6.

Blauwkamp, J.M., & Longo, P.J. (2002). Watering the plains: Political dynamics of river preservation in Canada and the United States. *Great Plains Research, 12*(2), 352-368.

Bleed, A., & Babbitt, C.H. (2015). *Nebraska's Natural Resources Districts: An assessment of a large-scale locally controlled water governance framework*. Lincoln, NE: University of Nebraska, Robert B. Daugherty Water for Food Institute.

Bleed A.S., & Flowerday, C.A. (1998). Introduction. In A.S. Bleed & C.A. Flowerday (Eds.). *An atlas of the Sand Hills* (3rd ed.) (pp.1-16). Lincoln, NE: University of Nebraska, Conservation and Survey Division.

Brosius, J.P., Tsing, A.L., & Zerner, C. (1998). Representing communities: Histories and politics of community-based natural resource management. *Society & Natural Resources, 11*(2).

Brougher, C. (2011). *Indian reserved water rights under the* Winters *doctrine: An overview*. Congressional Research Service Report No. RL 32198. Retrieved from http://www.nationalaglawcenter.org/wp-content/uploads/assets/crs/RL32198.pdf

Burce, S.B. (2008). Wild rivers and the boundaries of cooperative federalism: The Wild and Scenic Rivers Act and the Allagash Wilderness Waterway. *Boston College Environmental Affairs Law Review, 35*(1), 77-110. Retrieved from https://lawdigitalcommons.bc.edu/ealr/vol35/iss1/4/

Carlsson, L., & Berkes, F. (2005). Co-management: concepts and methodological implications. *Journal of Environmental Management, 75*(1), 65-76.

Carlsson, L., & Sandstrom, A. (2007). Network governance of the commons. *International Journal of the Commons, 2*(1), 33-54.

Cho, J.Y., & Lee, E.H. (2014). Reducing confusion about grounded theory and qualitative content analysis: Similarities and differences. *Qualitative Report, 19*(32), 1-20. Retrieved from https://nsuworks.nova.edu/tqr/vol19/iss32/2/

Clark, K.M. (1997). *An environmental history of the Niobrara River Basin* (Master's thesis). University of Nebraska, Lincoln, NE.

Creswell, J.W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: SAGE Publishing.

Davenport, M.A. (2003). *Mixing metaphors: A community-based vision for the Niobrara National Scenic River* (Master's thesis). University of Minnesota, St. Paul, MN.

Decker, D.J., Brown, T.I, & Knuth, B.A. (1996). Human dimensions research: Its importance in natural resource management. In A.W. Ewert, (Ed.). *Natural resource management: The human dimension* (pp.29-45). Boulder, CO: Westview Press.

Duggan, J. (2009, December 26). Who do you want protecting the Niobrara? State or feds? *Lincoln Journal Star*. Retrieved from http://journalstar.com/news/state-and-regional/article_20ed43fc-f261-11de-ab40-001cc4c03286.html

Ewert, A.W. (1996). Human dimensions research: An overview and introduction. In A.W. Ewert, (Ed.). *Natural resource management: The human dimension* (pp.5-12). Boulder, CO: Westview Press.

Feldman, M., McLaughlin, W., & Hill, J. (2005). Learning to manage our Wild and Scenic River System. *Natural Resources & Environment, 20*(2), 10-16.

Flitcroft, R.L., Dedrick, D.C., Smith, C.L., Thieman, C.A., & Bolte, J.P. (2009). Social infrastructure to integrate science and practice: The experience of the Long Tom Watershed Council. *Ecology and Society, 14*(2), 36.

Flowerday, C.A., & Diffendal Jr., R.F. (Eds.). (1997). *Geology of Niobrara State Park, Knox County, Nebraska, and adjacent areas, with a brief history of the Park, Gavins Point Dam, and Lewis and Clark Lake*. University of Nebraska, Conservation and Survey Division, Institute of Agriculture and Natural Resources, Lincoln, NE. Retrieved from https://digitalcommons.unl.edu/conservationsurvey/417/

Genskow, K.D., & Born, S.M. (2006). Organizational Dynamics of Watershed Partnerships: A Key to Integrated Water Resources Management. *Journal of Contemporary Water Research & Education, 135*(1), 56-64.

Gerlach, R. (2013). The undefeatable opponent: How the effective administration of water is an exception to predeprivation hearings ordinarily required by due process in *Keating v. Neb. Pub. Power District*, 660F.3rd 1014 (8th Cir. 2011). *Nebraska Law Review*, *91*(3:6), 737-766.

Gerlak, A.K. (2006). Federalism and U.S. water policy: Lessons for the Twenty-First Century. *Publius*, *36*(2), 231-257.

Gray, B.E. (1988). No holier temples: Protecting the National Parks through Wild and Scenic River designation. *University of Colorado Law Review, 58*, 551-598.

Hendee, D. (2017, November 3). Water flows now protected in stretch of lower Niobrara River; move part of larger deal that shuts down Spencer Dam hydropower plant. Omaha World Herald. Retrieved from https://www.omaha.com/outdoors/water-flows-now-protected-in-stretch-of-lower-niobrara-river/article_e4547aac-c0d2-11e7-a407-4bf342687dc4.html

Hicks, N. (2009, February 26). Niobrara bill would end council's power. *Lincoln Journal Star*. Retrieved from https://journalstar.com/news/local/govt-and-politics/niobrara-bill-would-end-council-s-power/article_93e9f5b2-087b-5ee4-856a-379874bf2ebb.html

Hiser, E.L. (1988). Piloting the preservation/development balance on the Wild and Scenic Rivers. *Duke Law Journal, 5*, 1044-1079.

Hoffman, C., & Zellmer, S. (2013). Assessing institutional ability to support adaptive, integrated water resources management. *Nebraska Law Review, 91*, 805-865. Retrieved from http://digitalcommons.unl.edu/lawfacpub/174/

Holen, S. (1998). Anthropology. In A.S. Bleed & C.A. Flowerday (Eds.). *An atlas of the Sand Hills* (3rd ed.) (pp.201-218). Lincoln, NE: University of Nebraska, Conservation and Survey Division.

Hovey, A. (2007, July 31). Plan to shut off about 400 Niobrara irrigation operations announced. *Lincoln Journal Star*. Retrieved from https://journalstar.com/news/state-and-regional/govt-and-politics/plan-to-shut-off-about-niobrara-irrigation-operations-announced/article_684a59d8-2e17-5cf1-be86-11ebfc5da553.html

Hoyt, L. (2016). Standing on thin ice: How Nebraska's standing doctrine prevents the majority of surface water users from obtaining judicial relief against groundwater users interfering with their appropriations. *Nebraska Law Review*, *94*(4), 1054. Retrieved from http://digitalcommons.unl.edu/nlr/vol94/iss4/7/

Huber, J., & Zellmer, S. (2013). The shallows where federal reserved water rights founder: State court derogation of the Winters doctrine. *Denver Water Law Review, 16*, 261-294. Retrieved from http://digitalcommons.unl.edu/lawfacpub/172/

Imperial, M.T. (2005). Using collaboration as a governance strategy: Lessons from six watershed management programs. *Administration & Society*, *37*(3), 281-320.

In re 2007 Administration of Appropriations of the Waters of the Niobrara River, 278 Neb. 137, 768 N.W.2d 420 (2009) Retrieved from https://www.nebraska.gov/apps-courts-epub/public/supreme#volumeOpinionsHeading_13

In re 2007 Administration of Appropriations of the Waters of the Niobrara River, 283 Neb. 629, 820 N.W.2d 44 (2012) Retrieved from https://www.nebraska.gov/apps-courts-epub/public/supreme#volumeOpinionsHeading_13

In re 2007 Administration of Appropriations of the Waters of the Niobrara River, 288 Neb. 497, 851 N.W.2d 640 (2014) Retrieved from https://www.nebraska.gov/apps-courts-epub/public/supreme#volumeOpinionsHeading_13

In re Application A-16642, 236 Neb. 671, 463 N.W.2d 591 (1990) Retrieved from https://law.justia.com/cases/nebraska/supreme-court/1990/1256-3.html

Interagency Wild and Scenic Rivers Coordinating Council. (1998). *Wild & Scenic Rivers and the Use of Eminent Domain.* Author. Retrieved from https://www.rivers.gov/documents/eminent-domain.pdf

Interagency Wild and Scenic Rivers Coordinating Council. (2002). *Wild & Scenic River Management Responsibilities.* Retrieved from https://www.rivers.gov/documents/management.pdf

Interagency Wild and Scenic Rivers Coordinating Council. (2004). *The river partnership paradigm: Legal authorities and case studies.* Retrieved from https://www.rivers.gov/documents/partnerships.pdf

Interagency Wild and Scenic Rivers Coordinating Council. (2014). *Evolution of the Wild and Scenic Rivers Act: A History of Substantive Amendments 1968-2013.* Retrieved from https://www.rivers.gov/documents/wsr-act-evolution.pdf

Johnsgard, P.A.. (2007). *The Niobrara: A river running through time*. Lincoln, NE: University of Nebraska Press.

Keating v. Nebraska Public Power District, 713 F. Supp. 2d 849 (D. Neb. 2010) Retrieved from https://www.courtlistener.com/opinion/2541586/keating-v-nebraska-public-power-dist/

Kenny, J.F., Barber, N. L., Hutson, S.S., Linsey, K.S., Lovelace, J.K., & Maupin, M.A. (2009). *Estimated use of water in the United States in 2005.* Reston, VA: United States Geological Survey, Circular 1344. Retrieved from https://pubs.usgs.gov/circ/1344/pdf/c1344.pdf

Kuzelka, R.D., Flowerday, C.A., Manley, R.N., Rundquist, B.C., & Herrin, S.J. (1993). *Flatwater: A history of Nebraska and its water*. University of Nebraska, Conservation and Survey Division, Lincoln, NE: Author. Retrieved from https://digitalcommons.unl.edu/conservationsurvey/434/

LB1038 and gubernatorial appointments: Hearing before the Natural Resources Committee, State of Nebraska Legislature, 104th Leg. (2016)

LR272 Interim study to examine the Niobrara Council and its current statutory authority outlined in the Niobrara Scenic River Act: Hearing before the Natural Resources Committee, State of Nebraska Legislature, 104th Leg. (2015)

Leach, W.D., & Pelkey, N.W. (2001). Making watershed partnerships work: A review of the empirical literature. *Journal of Water Resources Planning and Management, 127*(6), 378-385.

Leib-Milburn, L. (2016). *Towards First Nations Watershed Co-Management in Metro Vancouver: A Case of Kwikwetlem First Nation and the Coquitlam River Watershed* (Master's thesis). University of British Columbia, Vancouver, BC. Retrieved from https://open.library.ubc.ca/cIRcle/collections/graduateresearch/310/items/1.0300038

Li, R., Pun, M., Bradley, J., Ou, G., Schneider, J., Flyr, B., Winter, J., Chinta, S. (2016). Evaluating hydrologically connected surface water and groundwater using a groundwater model. *Journal of the American Water Resources Association, 52*(3), 799-805.

Longo, P.J., & Elder, B. (1994). Judicial recognition of the public interest in water recreation: Nebraska and United States Supreme Court realities. *Public Land Law Review, 15,* 199-218.

Lower Niobrara Natural Resources District & Nebraska Department of Natural Resources. (2014). *Integrated Management Plan Jointly Developed by the Lower Niobrara Natural Resources District and the Department of Natural Resources*. Retrieved from https://dnr.nebraska.gov/water-planning/lower-niobrara-nrd

Lower Niobrara Natural Resources District. (2018). *Niobrara River Basin Alliance*. Retrieved from http://www.lnnrd.org/niobrara-river-basin-alliance.html

Meek, C.L. (2013). Forms of collaboration and social fit in wildlife management: A comparison of policy networks in Alaska. *Global Environmental Change, 23*,(1), 217-228.

Middle Niobrara Natural Resources District. (1975*). Middle Niobrara Natural Resources District, One and Six Year Plan*. Valentine, NE: Author.

Middle Niobrara Natural Resources District et al., v. Department of Natural Resources, 281 Neb. 634, 799 N.W.2d 305 (2011) Retrieved from https://www.nebraska.gov/apps-courts-epub/public/supreme#volumeOpinionsHeading_20

National Park and Conservation Ass'n v. Stanton, 54 F. Supp. 2d 7 (D.D.C. 1999)

National Park Service. (2014). *Navigating Nebraska's water administrative process* [PowerPoint slides]. Retrieved from https://www.slideshare.net/rshimoda2014/navigating-nebraskas-water-administrative-process-jennifer-back-national-park-service

National Park Service. (2007). *Record of Decision and Final General Management Plan and Environmental Impact Statement*. *Niobrara National Scenic River, Nebraska.* Washington, DC.

Nebraska Department of Natural Resources. (2004). Order of final determination of river basins, subbasins, or reaches as fully appropriated, and describing hydrologically connected geographic area. Lincoln, NE. Retrieved from https://dnr.nebraska.gov/sites/dnr.nebraska.gov/files/doc/water-planning/niobrara/upper-niobrara-nrd/UNWNRD_Fully_Appro_Order.pdf

Nebraska Department of Natural Resources. (2005). *2006 Annual Evaluation of Availability of Hydrologically Connected Water Supplies*. Lincoln, NE. Retrieved from http://govdocs.nebraska.gov/epubs/N1500/A005.html

Nebraska Department of Natural Resources. (2006). *2007 Annual Evaluation of Availability of Hydrologically Connected Water Supplies*. Lincoln, NE. Retrieved from http://govdocs.nebraska.gov/epubs/N1500/A005.html

Nebraska Department of Natural Resources. (2007). *2008 Annual Evaluation of Availability of Hydrologically Connected Water Supplies*. Lincoln, NE. Retrieved from http://govdocs.nebraska.gov/epubs/N1500/A005.html

Nebraska Department of Natural Resources. (2008). *Order of final determination that a portion of the Lower Niobrara River Basin is fully appropriated, that the stays on new surface water uses and on increases in the number of surface water irrigated acres shall continue, and designating the geographic area within which the surface water and ground water are hydrologically connected*. Lincoln, NE. Retrieved from

https://dnr.nebraska.gov/sites/dnr.nebraska.gov/files/doc/water-planning/niobrara/Niobrara_OrderFinal_012508.pdf

Nebraska Department of Natural Resources. (2011). *Revised order of final determination that the Lower Niobrara River Basin is not fully appropriated*. Lincoln, NE. Retrieved from https://dnr.nebraska.gov/water-planning/niobrara-river-basin.

Nebraska Department of Natural Resources. (2018a). INSIGHT: An integrated network of scientific information and geohydrologic tools. Retrieved from https://nednr.nebraska.gov/INSIGHT/

Nebraska Department of Natural Resources. (2018b). *Natural flow permits overview*. Retrieved from https://dnr.nebraska.gov/surface-water/natural-flow-permits-overview

Nebraska Department of Natural Resource. (2018c). Water administration. Retrieved from https://dnr.nebraska.gov/water-administration

Nebraska Department of Natural Resource. (2018d). Water Planning: Research. Retrieved from https://dnr.nebraska.gov/water-planning/research

Nebraska Department of Natural Resources. (2018e). *Statewide water planning*. Retrieved from https://dnr.nebraska.gov/water-planning/statewide-water-planning

Nebraska Department of Natural Resources. (2018f). *History of water management in Nebraska.* Retrieved from https://dnr.nebraska.gov/water-planning/history-water-management-nebraska

Nebraska Department of Natural Resources. (2018g). *What is statewide water planning?* Retrieved from https://dnr.nebraska.gov/water-planning/what-statewide-water-planning

Nebraska Department of Natural Resources. (2018h). *Amended order for temporary stay on surface water appropriations in the Middle Niobrara Natural Resources District*. Lincoln, NE. Retrieved from https://dnr.nebraska.gov/water-planning/middle-niobrara-nrd

Nebraska Department of Natural Resources. (2019). *Approved water management plans*. Lincoln, NE. Retrieved from https://dnr.nebraska.gov/water-planning/approved-water-management-plans#plan-areas

Nebraska Department of Natural Resources. (2017). *Approval of application A-19406, Water Division 2-C*. Lincoln, NE. Retrieved from https://dnr.nebraska.gov/sites/dnr.nebraska.gov/files/doc/surface-water/orders/2017/October/A-19406%20Application%20Approval.pdf

Nebraska Game and Parks Commission. (2014). *Niobrara instream flows public informational meetings*. Retrieved from http://outdoornebraska.gov/wp-content/uploads/2015/11/Findings_PowerPoint_Notes_2014.pdf

Nebraska Game and Parks Commission. (2018). *Nebraska rivers and streams*. Lincoln, NE: Author. Retrieved from http://outdoornebraska.gov/nebraskarivers/

Nebraska Legislature. (2018). *LB1038 - Change provisions relating to vegetation and natural resources.* Retrieved from https://nebraskalegislature.gov/bills/view_bill.php?DocumentID=28892

Nebraska Public Power District. (2018). *Hydroelectric*. Retrieved from https://www.nppd.com/about-us/power-plants-facilities/hydroelectric/

Nebraska. Revised. Statute. § 46-203. First appropriators; declared first in right. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-203

Nebraska. Revised. Statute. § 46-204. Natural streams; priority of appropriations; first in time, first in right; preference from nature of use. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-204

Nebraska. Revised. Statute. § 46-229. Appropriations; beneficial or useful purpose required; termination; procedure. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-229

Nebraska. Revised. Statute. § 46-290. Appropriation; application to transfer or change; contents; approval. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-290

Nebraska. Revised. Statute. § 46-702. Declaration of intent and purpose; legislative findings. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-702

Nebraska. Revised. Statute. § 46-709. Ground water management plan; required; contents. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-709

Nebraska. Revised. Statute. § 46-713. Department of Natural Resources; hydrologically connected water supplies; evaluation; report; determinations; revaluation; hearing; notice. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-713

Nebraska. Revised. Statute. § 46-714. River basin, subbasin, or reach; stay on new appropriations; notifications required; hearing; natural resources district; duties; status

change; department; natural resources district; duties. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-714

Nebraska. Revised. Statute. § 46-715. River basin, subbasin, or reach; integrated management plan; considerations; contents; amendment; technical analysis; forecast of water available from streamflow. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-715

Nebraska. Revised. Statute. § 46-716. Integrated management plan; surface water controls. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-716

Nebraska. Revised. Statute. § 46-229.02. Appropriations; preliminary determination of nonuse; notice; order of cancellation; procedure. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-229.02

Nebraska. Revised. Statute. § 46-2,108. Appropriation of water for instream flows; terms, defined. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-2,108

Nebraska. Revised. Statute. § 46-2,112. Permit to appropriate water for instream flows; hearing; when; notice; director; powers. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-2,112

Nebraska. Revised. Statute. § 46-2,116, Application for instream appropriation; public interest determination; factors. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=46-2,116

Nebraska. Revised. Statute. § 61-206. Department of Natural Resources; jurisdiction; rules; hearings; orders; powers and duties. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=61-206

Nebraska. Revised. Statute. § 70-669. Streams; inferior rights; acquired by superior right; how compensated. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=70-669

Nebraska. Revised. Statutes. §§ 72-2004.01 - 72-2012. Act, how cited. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=72-2004.01

Nebraska. Revised. Statute. § 72-2006. Niobrara scenic river corridor, defined. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=72-2006

Nebraska. Revised. Statute. § 72-2007. Niobrara Council; created; members; terms; meetings; expenses. https://nebraskalegislature.gov/laws/statutes.php?statute=72-2007

Nebraska. Revised. Statute. § 72-2008. Niobrara Council; powers and duties; report. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=72-2008

Nebraska. Revised. Statute. § 72-2010. Niobrara Council; zoning duties. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=72-2010

Nebraska. Revised. Statute. § 72-2011. Activities within corridor; limitations. Retrieved from https://nebraskalegislature.gov/laws/statutes.php?statute=72-2011

Nebraska State Constitution. Article XV-6. *Right to divert unappropriated waters*. Retrieved from https://nebraskalegislature.gov/laws/articles.php?article=XV-6

Nebraska Water Policy Task Force. (2003). *Report of the Nebraska Water Policy Task Force to the 2003 Nebraska Legislature*. Lincoln, NE.

Niobrara Council. (2018). Niobrara Council. Retrieved from http://www.niobraracouncil.org/home.html

Niobrara Scenic River Designation Act of 1990: Hearings before the Subcommittee on National Parks and Public Lands of the Committee on Interior and Insular Affairs, House of Representatives, One Hundred First Congress, second session, on H.R. 761 ... H.R. 1673 ... H.R. 3823 ... S. 280 ... hearings held March 16, 1990: Ainsworth, NE, March 29, 1990: Washington, DC. (1991). United States. Congress. House. Committee on Interior and Insular Affairs. Subcommittee on National Parks and Public Lands. Washington, D.C: U.S. G.P.O. Retrieved from https://babel.hathitrust.org/cgi/pt?id=pst.000018273250;view=2up;seq=1

Niobrara Scenic River Designation Act of 1991, Pub. L. No. 102-50, 105 Stat. 254, 16 U.S.C. § 1274 (1991)

Niobrara River Basin Alliance, Nebraska Game and Parks Commission, & Nebraska Public Power District. (2015). *Memorandum of Understanding*. Authors. Retrieved from https://www.lnnrd.org/uploads/3/4/1/8/34181013/niobrara_mou_ngpc_nppd_nrba-final_with_agreement.pdf

Niobrara Wild and Scenic River: Hearing before the Subcommittee on National Parks and Public Lands of the Committee on Interior and Insular Affairs, House of Representatives, One Hundred Second Congress, first session, on H.R. 614, Niobrara Scenic River Designation Act of 1991, hearing held in Washington, DC, March 21, 1991.

(1992). United States. Congress. House. Committee on Interior and Insular Affairs. Subcommittee on National Parks and Public Lands. Washington, D.C: U.S. G.P.O. Retrieved from https://babel.hathitrust.org/cgi/pt?id=pst.000019985022

Olsson, P., Folke, C., & Berkes, F. (2004). Adaptive comanagement for building resilience in social-ecological systems. *Environmental Management, 34*(1), 75-90.

Ostrom, E. (2011). Background on the institutional analysis and development framework. *Policy Studies Journal, 39*(1), 7-27.

Palmer, T. (1993). *The wild and scenic rivers of America*. Washington, D.C: Island Press.

Perkin, J.S., Gido, K.B., Falke, J.A., Fausch, K.D., Crockett, H., Johnson, E.R., & Sanderson, J. (2017). Groundwater declines are linked to changes in Great Plains stream fish assemblages. *PNAS: Proceedings of the National Academy of Sciences of the United States of America, 114*(28), 7373-7378. Retrieved from https://www.pnas.org/content/114/28/7373

Plummer, R. (2006). Sharing the management of a river corridor: A case study of the comanagement process. *Society & Natural Resources, 19*(8), 709-721.

Plummer, R., & Armitage, D.R. (2007a). Crossing boundaries, crossing scales: The evolution of environment and resource co-management. *Geography Compass, 1*(4), 834-849.

Plummer, R., & Armitage, D.R. (2007b). A resilience-based framework for evaluating adaptive co-management: Linking ecology, economics and society in a complex world. *Ecological Economics, 61*, 62-74.

Plummer, R., & Fitzgibbon, J. (2004). Co-management of natural resources: A proposed framework. *Environmental Management, 33*(6), 876-885.

Ritchie, J., & Spencer, L. (1994) Qualitative data analysis for applied policy research. In A. Bryman & R.G. Burgess (Eds.). *Analyzing qualitative data*. London, UK: Routledge.

Roeder, J.A. (2002). *Niobrara National Scenic River, 1985-2000: Old arguments, new compromises* (Master's thesis). University of Nebraska, Omaha, NE. Retrieved from https://digitalcommons.unomaha.edu/cgi/viewcontent.cgi?article=1582&context=studentwork

Roeder, J.A. (2004). The One Hundred and Second Congress and the Niobrara Scenic River: Old arguments, new compromises. *Nebraska History, 85*, 116-125. Retrieved from https://history.nebraska.gov/sites/history.nebraska.gov/files/doc/publications/NH2004NiobraraRiver.pdf

Rogers, J. (2001). *National Park and Conservation Ass'n v. Stanton*: The Niobrara River's Wild and Scenic River Designation Environmental Impact Statement and General Management Plan. *Great Plains Natural Resources Journal, 5*, 177-194.

Saldaña, J. (2009). *The coding manual for qualitative researchers*. Los Angeles, CA: Sage.

Sandström, A., Crona, B., & Bodin, O. (2014). Legitimacy in co-management: The impact of preexisting structures, social networks and governance strategies. *Environmental Policy and Governance, 24*(1), 60-76.

Sandstrom, C. (2009). Institutional dimensions of comanagement: Participation, power, and process. *Society & Natural Resources, 22*(3), 230-244.

Shank, N. (2015). *Public Niobrara basin-wide planning survey summary. Report for the Nebraska Department of Natural Resources*. University of Nebraska Public Policy Center, Lincoln, NE: Author. Retrieved from https://dnr.nebraska.gov/water-planning/niobrara-basin-wide-plan

Sherow J.E. (2004). Water. In J.D. Wishart (Ed.). *Encyclopedia of the Great Plains* (pp.845-850). Lincoln, NE: University of Nebraska Press.

Shultz, S. (2010). *The extent and value of agriculture, municipal, and industrial water use in the Niobrara Basin*. University of Nebraska, College of Business Administration, Economics Department, Omaha, NE: Author. Retrieved from https://outdoornebraska.gov/wp-content/uploads/2015/11/Niobrara_Econ_Agricultural_Study_Phase_Report_2010.pdf

Simmons v. Smith, No. 16-3899 (8th Cir. 2018)

Soenksen, P.J., Flyr, B.B., Alexander, J.S., & Schaepe, N.J. (2010). Streamflow gains and losses in the Niobrara River Basin, Nebraska, 1980 and 2009. *Journal of Environmental Hydrology, 18*(11), 1-30. Retrieved from http://www.hydroweb.com/protect/pubs/jeh/jeh2010/soenksen.pdf

Sokol v. Kennedy, 210 F.3d 876 (8th Cir. 2000)

Swinehart, J.B., & Diffendal Jr., R.F. (1998). Geology. In A.S. Bleed & C.A. Flowerday (Eds.). *An atlas of the Sand Hills* (3rd ed.) (pp.29-56). Lincoln, NE: University of Nebraska, Conservation and Survey Division.

Tarlock, D. (2000). Putting rivers back in the landscape: The revival of watershed management in the United States. *Hastings West Northwest Journal of Environmental Law and Policy*, *6*, 167-195.

Trimble, M., Berkes, F., Johnson, D., Lazaro, M., Medeiros, R., & Plummer, R. (2015, May 25-29). An evaluation framework for adaptive co-management: Towards commons governance in an uncertain world (Conference Paper). *Commons Amidst Complexity and Change, the Fifteenth Biennial Conference of the International Association for the Study of the Commons*, Edmonton, Alberta. Retrieved from https://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/9865/Trimble_Micaela_Evaluation%20framework%20for%20adaptive%20co-management_May%201.pdf?sequence=1&isAllowed=y

United States Department of Agriculture. National Statistics Survey. (2014). *2012 Census of Agriculture. Irrigation: Results from the 2013 Farm and Ranch Irrigation Survey*. Retrieved from https://www.nass.usda.gov/Publications/Highlights/index.php

United State Geological Survey. (2019). USGS surface-water annual statistics for the Nation: USGS 06461500 Niobrara River near Sparks, Ne. Retrieved from https://waterdata.usgs.gov/nwis/annual?referred_module=sw&search_site_no=06461500&format=sites_selection_links

Upper Elkhorn Natural Resources District & Nebraska Department of Natural Resources. (2018). *Voluntary Integrated Management Plan - Draft*. Authors. Retrieved from https://dnr.nebraska.gov/water-planning/upper-elkhorn-nrd

Upper Loup Natural Resources District & Nebraska Department of Natural Resources. (2016). *Upper Loup Natural Resources District Voluntary Integrated Management Plan*. Authors. Retrieved from https://dnr.nebraska.gov/water-planning/upper-loup-nrd

Upper Niobrara White Natural Resources District & Nebraska Department of Natural Resources. (2011). *Integrated Management Plan jointly developed by the Upper Niobrara White Natural Resources District and the Department of Natural Resources*. Authors. Retrieved from https://dnr.nebraska.gov/water-planning/upper-niobrara-white-nrd

Waters, T.F. (2000). *Wildstream: A natural history of the free-flowing river*. St. Paul, MN: Riparian Press.

Whaley, L., & Weatherhead, E.K. (2014). An integrated approach to analyzing (adaptive) comanagement using the politicized IAD framework. *Ecology and Society, 19*(1), 10.

Wiese, C. (2018). *Voluntary integrated management planning process* [PowerPoint slides]. Retrieved from https://dnr.nebraska.gov/sites/dnr.nebraska.gov/files/doc/water-planning/presentations/2018/20180510_Wiese_UNWNRD_VIMPprocess_KickOff.pdf

Winters v. United States, 207 U.S. 564 (1908)

Wild and Scenic Rivers Act of 1968, Pub. L. No. 90-542, 82 Stat. 906, codified as amended at 16 U.S.C. §§ 1271-1287.

Zachrisson, A. (2006, November 16). Commons protected for or from the people: Analysis of strategies to establish protected areas in the Swedish Mountain Region? (Conference paper). *Workshop in Political Theory and Policy Analysis*, Indiana University, Bloomington, IN. Retrieved from https://pdfs.semanticscholar.org/1b50/826163d15189a7880fc1209718cb9abf4d53.pdf

Zellmer, S. (2006). Instream flow legislation. *Faculty Publications from The Water Center*, *5*. Retrieved from https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1004&context=watercenterpubs.

APPENDICES

APPENDIX A

University of Nebraska Lincoln

Official Approval Letter for IRB project #13495 - New Project Form

July 28, 2016

Melissa Mosier
School of Natural Resources
1126 S 40th St Lincoln, NE 68510-4611

Cody Knutson
School of Natural Resources
HARH 821, UNL, 68583-0988

IRB Number: 20160713495 EX
Project ID: 13495
Project Title: Exploring Natural Resources Co-management: A Case Study along Niobrara National Scenic River

Dear Melissa:

This letter is to officially notify you of the certification of exemption of your project. Your proposal is in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46) and has been classified as exempt.

You are authorized to implement this study as of the Date of Final Exemption: 07/28/2016.

1. Your stamped and approved informed consent forms have been uploaded to NUgrant. Please use these documents to distribute to participants. If you need to make changes to the documents, please submit the revised documents to the IRB for review and approval prior to using them.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This project should be conducted in full accordance with all applicable sections of the IRB Guidelines and you should notify the IRB immediately of any proposed changes that may affect the exempt status of your research project. You should report any unanticipated problems involving risks to the participants or others to the Board.

If you have any questions, please contact the IRB office at 402-472-6965.

Sincerely,

Becky R. Freeman

Becky R. Freeman, CIP
for the IRB

Full Accreditation

APPENDIX B

University of Nebraska Lincoln

IRB# 20160713495 EX
Date Approved: 07/28/2016
Valid Until: 07/28/2021

SCHOOL OF NATURAL RESOURCES

PARTICIPANT INFORMED CONSENT FORM
IRB #13495

Title:
Exploring Natural Resources Co-management: A Case Study along Niobrara National Scenic River

Purpose:
The purpose of this research project is to explore the management framework that exists within the Niobrara Council as it relates to the management of the Niobrara National Scenic River. You must be 19 years of age or older to participate. You are invited to participate in this study because you are representative currently serving on the Niobrara Council.

Procedures:
You will be asked to respond to prepared questions relating to the management framework of the Niobrara Council. The interview will last thirty minutes or less, will be conducted over the phone, and will be audio recorded.

Benefits:
There are no direct benefits to you as a research participant.

Risks and/or Discomforts:
There are no known risks or discomforts associated with this research.

Confidentiality:
Any information obtained during this study which could identify you will be kept strictly confidential. The data will be stored in digital format on a password protected computer which is accessed only by the principal investigator during the study. All digital recordings of the interviews will be destroyed at the conclusion of the study. Transcripts of the interviews and interview notes will be destroyed three to five years after the conclusion of the study. All participants will be assigned a participant number and the key linking this information will be stored separately in a file that only the principal investigator will have access to. Complete confidentiality may not be possible due to the public positions that the participants hold, but names will not be linked to quotes in the results of this study or any other published material. The information obtained in this study may be published in scientific journals or presented at scientific meetings but the data will be reported as aggregated data.

Compensation:
You will receive no compensation for participating in this project.

Opportunity to Ask Questions:
You may ask any questions concerning this research and have those questions answered before agreeing to participate in the study, or at any time after agreeing to participate in the study. Or you may contact the investigator(s) at the phone numbers below. Please contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965 to voice concerns about the research or if you have any questions about your rights as a research participant.

244 Hardin Hall Section 42 / P.O. 830962 / Lincoln, NE 68583-0962 / (402) 472-9656 / FAX (402) 472-2946 / http://snr.unl.edu

Freedom to Withdraw:
Participation in this study is voluntary. You can refuse to participate or withdraw at any time without harming your relationship with the researchers or the University of Nebraska -Lincoln, or in any other way receive a penalty or loss of benefits to which you are otherwise entitled.

Consent, Right to Receive a Copy:
You are voluntarily making a decision whether or not to participate in this research study. By scheduling and participating in the interview, your consent to participate is implied. You should keep this document for your records.

Name and Phone number of investigator(s)

Melissa M. Mosier, Principal Investigator Phone: (402) 570-9827
Cody L. Knutson, Ph.D., Secondary Investigator Phone: (402) 472-6718

APPENDIX C

University of Nebraska Lincoln

Official Approval Letter for IRB project #13495 - Change Request Form

December 13, 2016 - official approval letter

Melissa Mosier
School of Natural Resources
1126 S 40th St Lincoln, NE 68510-4611

Cody Knutson
School of Natural Resources
HARH 821, UNL, 68583-0988

IRB Number: 20160713495 EX
Project ID: 13495
Project Title: Exploring Natural Resources Co-management: A Case Study along Niobrara National Scenic River

Dear Melissa:

The Institutional Review Board for the Protection of Human Subjects has completed its review of the Request for Change in Protocol submitted to the IRB.

1. It has been approved to send a second contact/email requesting participation.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This letter constitutes official notification of the approval of the protocol change. You are therefore authorized to implement this change accordingly.

If you have any questions, please contact the IRB office at 402-472-6965.

Sincerely,

Becky R. Freeman

Becky R. Freeman, CIP
for the IRB

Full Accreditation

APPENDIX D

University of Nebraska Lincoln

Official Approval Letter for IRB project #13495 - Change Request Form

March 7, 2017

Melissa Mosier
School of Natural Resources
1126 S 40th St Lincoln, NE 68510-4611

Cody Knutson
School of Natural Resources
HARH 821, UNL, 68583-0988

IRB Number: 20160713495 EX
Project ID: 13495
Project Title: Exploring Natural Resources Co-management: A Case Study along Niobrara National Scenic River

Dear Melissa:

The Institutional Review Board for the Protection of Human Subjects has completed its review of the Request for Change in Protocol submitted to the IRB.

1. It has been approved to add a third contact requesting more participants. A sign-up sheet will be made available a regular meeting.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:
* Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
* Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
* Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
* Any breach in confidentiality or compromise in data privacy related to the subject or others; or
* Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

This letter constitutes official notification of the approval of the protocol change. You are therefore authorized to implement this change accordingly.

If you have any questions, please contact the IRB office at 402-472-6965.

Sincerely,

Becky R. Freeman

Becky R. Freeman, CIP
for the IRB

Full Accreditation