

UNIVERSITY OF CALIFORNIA

Santa Barbara

Riparian Revolt: Water Policy and Ecological Change in Early Nevada, 1850-1900

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy

in History

by

Christopher M. MacMahon

Committee in charge:

Professor James F. Brooks, Chair

Professor Giuliana Perrone

Professor Peter S. Alagona

Professor Casey Walsh

June 2021

The dissertation of Christopher M. MacMahon is approved.

Peter S. Alagona

Giuliana Perrone

Casey Walsh

James F. Brooks, Committee Chair

May 2021

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by

Christopher M. MacMahon

ACKNOWLEDGEMENTS

I want to begin by thanking the Charles Redd Center for Western Studies at Brigham Young University and the University of California Santa Barbara History Associates for their generous grants and funding that made this project possible. I also want to thank Tom Crawford and Kevin and Breanne Owens who kindly offered spare rooms during my travels that allowed me to spend greater time conducting archival research than otherwise would have been possible.

I also want to offer my gratitude to each of my committee members who have made this process as stress-free as one could possibly hope for. Your support and understanding as this project evolved amid the Covid-19 pandemic and its accompanying hardships and restrictions has made a world of difference.

Professors Miroslava Chavez-Garcia and Lisa Jacobsen helped guide the writing process in early papers from which this project was based. Additionally, Dana Hughes, Sasha Coles, Neil Johnson, Sarah Gerenday, and Todd Moore have all kindly read and offered feedback on different elements of this project.

Finally, to my friends and family who have offered their support and encouragement as I returned to Ph.D. study later in life and completed this dissertation, a simple thank you does not seem nearly enough to convey my gratitude. To all of you, my heartfelt gratitude.

VITA OF CHRISTOPHER M. MACMAHON

May 2021

EDUCATION

Associates of Arts in Criminal Justice, Western Nevada College, May 2013

Bachelor of Arts in History, California State University Channel Islands, December 2015
(Magna Cum Laude)

Master of Arts in History, University of California, Santa Barbara, June 2018

Doctor of Philosophy in History with an Interdisciplinary Emphasis on the Environment and Society, University of California, Santa Barbara, June 2021 (expected)

PROFESSIONAL EMPLOYMENT

2016-Present: Graduate Teaching Assistant, Department History, University of California, Santa Barbara

2019-Present: Adjunct Professor of History, Santa Barbara City College

2020-Present: History Lecturer, California State University Channel Islands

PUBLICATIONS

“Mystery on the Mainline: What Wrecked the ‘City of San Francisco?’” *Nevada Historical Quarterly* (Winter 2016).

“Age of Sail,” “Bikini Atoll (Nuclear Pacific),” and “Zheng He” in *The World’s Oceans and Geography, History, and Environment* (ABC CLIO, 2018).

AWARDS

Donald Ven Gelderen Memorial Award (2020)

UCSB History Department Dissertation Fellowship (2020)

Wilbur R. Jacobs Prize (2019)

Charles Redd Fellowship Award in Western American History (2019)

UCSB Graduate Student Association Excellence in Teaching Award: Honorable Mention (2019)

History Program Honors (2016)

Interdisciplinary Research Community Grant (2015)

President of the United States’ Call to Service Award (2011)

FIELDS OF STUDY

Major Field: History of the American West with Professor James F. Brooks

Studies in History of the United States with Professor Giuliana Perrone

Studies in Environmental History with Professor Peter S. Alagona

Studies in Anthropology of Water with Casey Walsh

ABSTRACT

Riparian Revolt: Water Policy and Ecological Change in Early Nevada, 1850-1900.

by

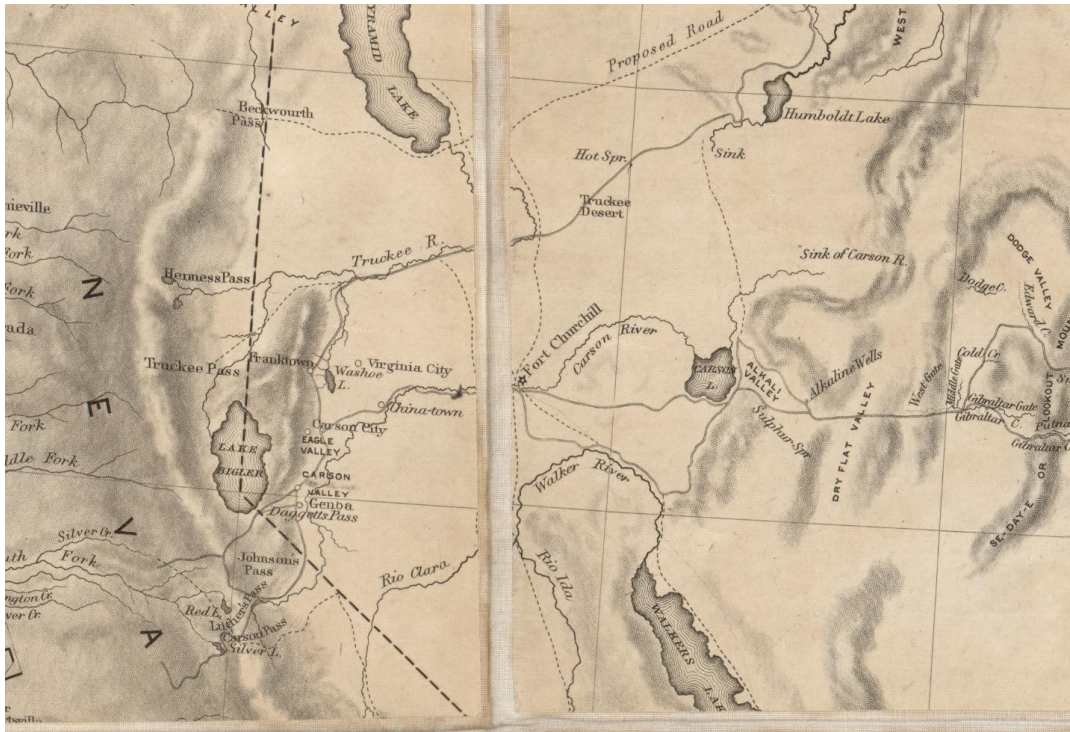
Christopher M. MacMahon

This dissertation explores environmental settler colonialism and the creation of water policy in early Nevada. Much of the history of the Comstock Lode is centered in Virginia City with a focus upon silver mining and the engineering that made it all possible. Yet without water, none of it would have been possible. Water is present in nearly every aspect of life on the Comstock. Examining water and its role in early Nevada expands previous understandings of the Comstock's hinterlands to include Pyramid and Walker Lakes along with the Truckee and Walker Rivers that flow into them, demonstrating that dependency on resources was not simply limited to mining and commercial enterprise, but to the necessities of life itself within the region. Because Nevadans themselves recognized the significance of water due to its scarcity, determining an individual's legal claim to water became a question of the highest priority. Had the territory, and later the state, always recognized an individual's right to appropriate water on a first come, first served basis, or did settlers recognize mutually beneficial riparian rights were necessary for the successful development of their arid environment? As water rights became codified, to what extent were Indigenous communities' claims to water rights legally recognized?

These questions are not easily answered, for individuals, governing bodies, and multiple courts could not agree. As Nevadans searched for a clearly articulated water policy, the result was myriad rulings addressing individual disputes and a hodgepodge of policies that could, and often did, differ between watersheds, counties, and communities. In sum, the water rights were a mess. This dissertation embraces that mess. Conflict and disputes were necessary steps in creating a thorough water policy. Rather than seeing the patchwork policies as chaos, I argue that Nevadans sought an equitable middle ground between the riparian and appropriation doctrines that recognized water scarcity without fully depriving one party's access to water over another's. Though the state would ultimately adopt a policy of prior appropriation like much of the American West, this early period demonstrates it was not inevitable; another path was possible, and for a short period of time, pursued.

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“Territory and Military Department of Utah,” U.S. Army Corps of Topographical Engineers, 1860
Library of Congress

Chapter 1

In the early winter dawn, the sun peeks over the grey mountain peaks that rise above the valleys of Northwestern Nevada. As it makes its trek across the rugged landscape it casts down at the world below, on the various lifeforms that call Nevada home. Here, in the midst of winter, the dawn breaks cool and crisp. A light dusting of snow covers the valley floor and blankets the mountains above. At the edge of the dense pogonip, a quick movement attracts attention.¹ A cottontail rabbit hops along searching for its morning meal. It pauses briefly, ears erect, and then quickly darts back to the sagebrush whence it originated; its grey and white fur blending seamlessly with the sage and snow. A nearby coyote bounds in pursuit, but his prey is too quick this morning, and he resumes his patrol of the brush in search of an easier meal.

The snows of winter eventually give way to spring where the rivers and streams swell with the annual run-off, and the cutthroat trout and Cui-ui² begin their arduous journey upstream to reach their spawning grounds. Life blooms from the abundant flowering sagebrush to the newborn pronghorn fawns that leap playfully throughout the valleys. Nearby, a mule deer has fallen victim to one of the mountain lions that prowl these lands; she too has young mouths to feed. Mormon crickets emerge from the ground, and the mountain bluebird is joyful for the bountiful feast. Here, as elsewhere, death supports life.

At the peak of summer temperatures in the high desert soar above one hundred degrees. A rattlesnake slithers along the hot ground seeking the dens of the kangaroo rat and

¹ Pogonip is a type of freezing fog that is common throughout the valleys of Western Nevada in the winter months.

² A freshwater, bottom-feeding fish. The Numa name for the fish was adopted with no English equivalent.

other rodents which scurry about at night and make their homes underground to avoid the scorching heat of the summer day. An eagle soars effortlessly above the valley riding thermals created by the mixing of cool mountain air from the Sierra Nevada and warm desert air from the Great Basin. Among the few lakes dotting this landscape, the Washoe and Numa (Northern Paiutes) have set their summer camps to utilize the abundant fish and wild fruits for their survival.

As summer slowly gives way to autumn, rivers and streams slow to a trickle or dry up entirely. The leaves on the aspen trees that cling to their banks change a vivid yellow before falling lazily to the ground. The black bear wanders through the coniferous forest of junipers, cedar, and ponderosa pines that blanket the Sierras, gorging on whatever meals she can find in preparation for the long winter ahead. Like the bear, the Washoe and Numa prepare for the scarcity of food that comes with winter. The Washoe who summered at Lake Tahoe return to the valleys, and both communities busy themselves collecting and preparing pine nuts from the piñon pines that spread out along the Carson and Virginia Ranges. As the sun dips behind the Sierra, the storms of winter move in once more. Washoe Zephyrs—strong, hurricane force winds—buffet the area as the storms approach. The cold and snow return.

In the high desert, life abounds. Even in this harsh, unforgiving environment where water is scarce, the Washoe and Numa crafted a seasonal hunting, fishing, and gathering economy that sustained them for millennia.

Though the land would change many times in its geologic history, this scene offers a portrait of the region at the moment Euro-Americans intruded on this world. With the arrival of Euro-Americans and their ideas of civilization, it would take just a scant fifty years for the landscape to be transformed into another example of American modernity. From expansive

livestock grazing to irrigation agriculture and mechanized industry, Euro-American settlement triggered a wide array of ecological modifications that shape the region to this day.

This dissertation explores these changes. Examining the interaction between human culture and environment requires an understanding of how historical actors have viewed and interacted with their environment. Though predominately concerned with the preservation movement at the turn of the century, Roderick Frazier Nash's *Wilderness in the American Mind* remains one of the region's foundational pieces of environmental history, as well as providing an excellent lens through which to track the development and progression of ideas concerning wilderness as Americans interpreted it.³ This latter context is important to this work. As Nash demonstrates, it was common in the mid-nineteenth century for the average American to view development of the land and the exploitation of its resources not only as a good deed but also their duty as Americans setting out into the new lands of the West. Wilderness was wild and untamed—the antithesis of the civilization they sought to establish. In their minds, a “pristine” landscape benefited no one. The mark of a strong, vibrant American community was to establish commerce and industry, and during settlement, this meant taming and exploiting the territory in which they had arrived.⁴ Though he lamented the perceived loss of wilderness, Fredrick Jackson Turner encapsulated the civilizing sentiment when he described Americans pushing across the continent “winning [the] wilderness” by developing “the primitive economic and political conditions of the frontier into the

³ Roderick Frazier Nash, *Wilderness in the American Mind* (New Haven: Yale University Press, 1967).

⁴ Similar views can also be found in Fredrick Jackson Turner's essay “The Significance of the Frontier in American History.”

complexity of city life.”⁵ Early Nevadans were no different—lush valleys and bountiful forests, yet untamed, were viewed as God’s bountiful gift for their use and future development—a view which inexorably ignored Indigenous rights to their lands and failed to recognize their varied uses of the land as “civilized.”

The settlers came late to an understanding of life in an arid region, however. As historians Virginia Anderson, William Cronon, and Carolyn Merchant have demonstrated, the interactions between settlers and their environments often had ramifications that played out quickly within local Indigenous populations.⁶ The bucolic endeavors pursued by settler populations would inevitably lead to ecological consequences that challenged indigenous modes of survival. To understand this change, Cronon tells us, we must “determine what it was about Indians and colonists—in their relations both to nature and to each other—that brought these changes about.”⁷ It is easy for historians to focus on the settlement process through documentary evidence, but as Ned Blackhawk has noted, “the Great Basin Indians are rarely seen as agents in the region.”⁸ This paper addresses this absence by fore-fronting the Washoe and Numa as actors in the story of early Nevada settlement and contests over water.

Settlement colonial history, then, is the story of expansion and development at the expense of Indigenous communities and the environment both groups now shared. When

⁵ Fredrick Jackson Turner, “The Significance of the Frontier in American History,” 1893.

⁶ Virginia deJohn Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America* (Oxford: Oxford University Press, 2016); William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983); Carolyn Merchant, *Ecological Revolutions: Nature, Gender, and Science in New England* (Chapel Hill, University of North Carolina Press, 1989).

⁷ Cronon, 15.

⁸ Ned Blackhawk, *Violence Over the Land: Indians and Empire in the Early American West* (Harvard University Press, 2006), 3.

William Cronon first published *Nature's Metropolis*, he addressed a failing on the part of historians to incorporate the hinterlands of a city into their understanding of how cities developed.⁹ Employing systems and network concepts, Cronon argued that major cities—in his study, Chicago—acted as a central place, a hub on a wheel from which concentric rings radiated out from the city into its various hinterlands drawing people, resources, and capital back to the city allowing it to prosper. As Chicago flourished, its influence expanded ever outward to draw upon more distant lands to fuel its needs and growth.

Yet as Eugene Moehring notes, one cannot place cities in a vacuum. To understand the urbanization taking place in the American West, the historian must also examine the role of cities, counties, and other rural areas that comprised the support network for the major metropolitan centers. We find that these areas often mirror their urban patrons with support networks of their own. Though Moehring seeks to fill a gap in the work of Cronon, his focus upon economics and modes of production in and around the Comstock fail to engage with the consequences of that activity. Or, as Robert Neil Chester states, “this is far more than a tale of how technology and the challenges of hard-rock mining made the West’s economy a colony for industrial extraction.”¹⁰ As Thomas Andrews has demonstrated in *Killing for Coal*, environmental factors can play an equally important role in shaping the West and are frequently intertwined with the social and economic issues that consume much of the historiography.¹¹

⁹ William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York: W.W. Norton and Company, 1991).

¹⁰ Robert Neil Chester, “Comstock Creations: An Environmental History of an Industrial Watershed” (Ph.D. Dissertation, University of California Davis, 2009), 10.

¹¹ Thomas G. Andrews, *Killing for Coal: America's Deadliest Labor War* (Cambridge: Harvard University Press, 2008).

Even though both Andrews and Chester answered Cronon's call for environmental historians to move beyond the wilderness and take into consideration urban environments when constructing one's narrative, both fall short of fully incorporating the environment into their narratives. Though Chester examines the changing environment and ecology, his periodization fails to account for the many industries outside of industrialized mining and timber. Like Moehring, Chester focuses on the boom of the Comstock and the rapid industrialization that accompanied that period. He neglects, however, the ecological transformations already underway when the Rush to Washoe began. By examining this early history and detailing which aspects of the environment suffered harm because of early settlement, I argue that the timeline must include early settlement practices as well as the industrial boom of Comstock mining. Altering the timeline shifts the focus forty miles southwest of Virginia City to the town of Genoa and the Carson Valley. This reorientation requires us to include the perspective of the Washoe who are too frequently missing from narratives of early Nevada.¹² Including Washoe perspectives will further demonstrate how ecological transformation often aided settlers in their conquest, for this is also a story of subjugation.

Though historians were increasingly examining the American West through environmental frameworks in the late-twentieth and early-twenty-first centuries, such approaches have minimally been utilized to explore Nevada's Comstock mining region. Much of the historiography examining Nevada's settlement focuses on the mining in and around Virginia City, feats of engineering associated with the mining industry, the

¹² When Washoe are included, too frequently they serve only as antagonists to settlement rather than people actively contributing to the narrative.

development of the city and the region, and the men who made it possible.¹³ By examining consequences of the mining boom, historians have incorporated hinterlands into our understanding of the Comstock. Further work is needed, however, to fully understand the interconnectivity of the region and the long-term environmental impacts that resulted because of the silver mining bonanza.¹⁴

The eastern slope of the Sierra, where early Nevada settlement began, is located within an arid climate that receives an average of seven inches of precipitation annually. In the nineteenth-century, John Wesley Powell recognized the significance of water in developing the American West and historians recognize the wisdom in his belief that water was the key resource in the West. Norris Hundley, Jr, Donald Worster, and Donald Pisani have explored the importance of water and water policy in the development, economy, and politics of the American West, and have contributed examples of water shaping the unique character of its inhabitants. In early Nevada, as elsewhere in the West, water would prove to be a key element; water is central to understanding how settlers to Nevada interacted with their environment and why fights over water became so prominent.¹⁵

¹³ Dan DeQuille, *History of the Big Bonanza: An Authentic Account of the Discovery, History, and Working of the World Renowned Comstock Silver Lode of Virginia City, Nevada (1876)*; Eliot Lord, *Comstock Mining and Miners* (Washington, D.C.: United States Government Printing Office, 1883); Hubert Howe Bancroft, *A History of Nevada, Colorado, and Wyoming, 1540-1888* (San Francisco: The History Company Publishers, 1890); Grant R. Smith, *The History of the Comstock Lode* (Reno: University of Nevada Press, 1943); James W. Hulse, *The Silver State: Nevada's Heritage Reprinted*, 3ed (Reno: University of Nevada Press, 1991); Ronald James, *The Roar and the Silence: A History of Virginia City and the Comstock Lode* (Reno: University of Nevada Press, 1998); Dennis Drabelle, *Mile-High Fever: Silver Mines, Boom Towns, and High Living on the Comstock Lode* (New York: St. Martin's Press, 2009).

¹⁴ Robert Neil Chester, III, "Comstock Creations," Dissertation; Grace Dangberg, *Conflict on the Carson* (Minden, NV: Carson Valley Historical Society, 1975).

¹⁵ Karl Wittfogel, *Oriental Despotism: A comparative Study of Total Power* (1957); Julian Steward, *Irrigation Civilizations: A Comparative Study* (Pan-American Union, 1955); Norris Hundley, Jr., *Water and the West: The Colorado River Compact and the Politics of Water in the American West* (Berkeley: University of California Press, 1975); Donald Worster, *Dust Bowl: the Southern Plains in the 1930s* (Oxford: Oxford University Press, 1979) and *Rivers of Empire: Water, Aridity, and the Growth of the American West* (Oxford: Oxford University

John Townley, Grace Dangberg, and John Bird have each previously explored water rights and their evolution in Northwestern Nevada, but each through a limited scope that does not present a complete picture. Townley and Dangberg are largely concerned with agrarian use and how the politics of early Nevada helped shape water policy. Dangberg's focus is on the Carson River watershed and the battles between ranchers in the Carson Valley first with mining and milling interests downstream resulting from the Comstock boom and the slow decline following the boom as the mines played out, and then with the creation of the Newlands irrigation project in Churchill County. Townley also addresses agriculture, focusing largely on the small irrigation farmers and ranchers primarily raising alfalfa and who would ultimately benefit from reclamation projects in Nevada's desert. Though both these works provide insight into the conflicts over water use in the late-19th and early-20th centuries, they are limited in scope failing to address wider uses of water—particularly water infrastructure for urban drinking water supplies as well as broader industrial uses. Though Bird does acknowledge industrial infrastructural use, particularly use in lumber flumes, his legal analysis is limited, failing to address the broader implications concerning how Nevadans were reacting to water shortages resulting both from climate and over allotment. This dissertation addresses the gaps or absences in these works by recognizing the overlapping importance of agriculture, industry, infrastructure, and legal disputes while also considering how Nevadans were responding to change over time. Furthermore, this

Press, 1985); Donald Pisani, *To Reclaim a Divided West: Water, Law, and Public Policy, 1848-1902* (Albuquerque: University of New Mexico Press, 1992) and *Water, Law, and Land in the West: The Limits of Public Policy, 1850-1920* (Lawrence: University Press of Kansas, 1996); Richard White, *The Organic Machine* (New York: Hill and Wang, 1995).

dissertation also incorporates Indigenous actors who also had competing claims to water in the region that are missing from previous scholarly works.¹⁶

This dissertation explores early Nevada through the all-important lens of water. Given water's central role in the local economy, its scarcity ultimately created conflict. Questions from early settlers about how to tap into the local water source for their own benefit quickly dissolved into a single all-encompassing question: to whom does water belong? By raising this question, settlers were ultimately querying about access to the commons and how they were to be governed.¹⁷ While the problems of aridity were abundantly clear to Nevada's legislators, they consistently neglected to act on water policy creating an instance where legal rather than political processes affected change concerning water rights. By failing to enact laws defining or guiding water rights, the legislature shaped a process through which individual regions followed their own water customs, individuals battled with one another and corporations over competing claims, and the judiciary became inundated with myriad demands for resolution. Arriving at water policy piecemeal stands in stark contrast to much of the historiography where state and private actors were quick to consolidate power and build empires around water supplies: the control of liquid resources described by historians from Wittfogel to Worster in a clear, deliberate manner fails to materialize in the same

¹⁶ John M. Townley, *Alfalfa Country: Nevada Land, Water, and Politics in the 19th Century* (Reno: University of Nevada Press, 1980); Grace Dangberg, *Conflict on the Carson* (Minden: Carson Valley Historical Society 1975); John W. Bird, "The End of the 'Monster' Riparianism in Nevada," *Nevada Historical Quarterly* 22, no. 4 (Winter 1979), 271-277.

¹⁷ Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3859 (December 13, 1968), 1243-1248; Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge University Press, 1990).

concise way in northwestern Nevada. After half a century of fighting, the winners were left with polluted, poisoned, and depleted waters, whilst some lost their water rights entirely.

While this is a study of how Nevada developed its water rights and the ecological change accompanying Euro-American settlement, the focus of this dissertation is upon Northwestern Nevada and the area surrounding Virginia City and the Comstock mining boom. This is not to diminish the importance or relevancy of other areas as similar comparisons can be made about water scarcity and settlement in mining boomtowns such as Aurora, Austin, or Eureka like those taking place in Virginia City and Gold Hill. Yet, much of the extant archival materials document the Comstock mining booms making a thorough analysis of the development of northwestern Nevada and its inhabitants' reactions to change more readily available to historians compared with sparse and often intermittent or incomplete documentation from other regions. Furthermore, many of the legal cases and infrastructure plans that shaped and changed Nevada's early water policy originate from this region inevitably directing scholarly inquiry toward it.

This dissertation also includes examination of the Washoe and Numa communities' relationships to changing water regimes. Throughout this dissertation I use the name Numa rather than Northern Paiute referencing this group because that is how this community traditionally referred to themselves rather than the anglicized Paiute. Although the contemporary tribes refer to themselves as the Pyramid Lake Paiute Tribe and the Walker River Paiute Tribe respective to their individual reservations, I have chosen to use the traditional Numa out of recognition that language remains another form of colonization. I endeavor to show respect for both Washoe and Numa beliefs and culture while

demonstrating the efforts taken by both communities to secure rights to land and water while also illustrating the ways that environmental alterations by Euro-Americans facilitated displacement and colonization. However, because scant records from Indigenous sources exist, I am forced to largely rely on Anglo perceptions to compose this narrative.

The remainder of this chapter explores Washoe and Numa connections to water. These ties are both spiritual and temporal drawing connections between water scarcity and its importance within the two communities. Because Euro-Americans who later arrived and colonized the western Great Basin sought to restrict claims to water based on what they termed beneficial use thereby removing Indigenous access, the chapter explores the various ways both the Washoe and Numa communities used water in the region to their benefit prior to Euro-American settlement. Recognizing Indigenous use also demonstrates how humans began modifying their environment to meet community needs prior to the arrival of the first American emigrants.

Chapter Two continues this analysis by exploring the changes that took place once Euro-Americans began settling the region that would eventually become Northwestern Nevada. Like both the Washoe and Numa before them, Euro-Americans perceived water scarcity as a hinderance. For settlers seeking the quintessential American lifestyle they sought to establish in the valleys abutting the eastern slope of the Sierra Nevada range, accessing, and exploiting the region's natural resources were key to their endeavors. In settling and altering the environment to meet their needs, the settlers began the process of displacing the Washoe from their ancestral lands. Settlement also brought the first questions of securing and governing access to water that would continue as more emigrants arrived.

The discovery of silver and what would ultimately become the Comstock Lode inexorably changed the region. Chapter Three explores the need for water among early miners, and how this need grew as mining the quartz deposits became increasingly industrialized. As the region's population grew, so too did its need for food and water. Farmers and ranchers supplying the growing cities with food required water for their crops and livestock, but they were not the only ones utilizing water for commercial benefit. The Numa found they could furnish fish from the waters of Pyramid and Walker Lakes for consumption in the mining boomtowns. Simultaneously, citizens of these communities recognized the need for water infrastructure to provide long-term potable water delivery to meet growing demands. Securing access to this water, however, proved problematic.

The development of infrastructure in Northwestern Nevada is the focus of the fourth chapter. As mines dug deeper, they required timber to support the tunnels allowing the search for minerals to progress. To meet this need, industrial entrepreneurs felled the forests of the nearby Sierra Nevada—particularly within the Lake Tahoe Basin. An operation facilitated by water. At the same time, use of water for the transport of timber, in agriculture, and in the reduction and refining of ore all increased demands on a limited water supply creating contention over competing water claims. Irrigation and proposed water infrastructure projects slowly turned Nevadans away from riparianism and toward views favoring appropriative rights.

The fifth chapter explores the legal battles resulting from these contests. Early in the region's settlement, the Nevada Supreme Court held to the riparian doctrine as being part of Common Law that governed the state. As industrial and irrigation use grew more common,

the judiciary became increasingly consumed with water cases, and the courts took incremental steps toward appropriation. By the end of the 19th century, riparianism, which had been absolute at the beginning of Euro-American settlement had been discarded for appropriation as a form of water policy better suited to the arid environment and variable water sources found within the state's borders.

Though water is the heart of this study, each chapter addresses alterations to the surrounding environment. Some of these changes are subtle: the way nitrogen runoff from agricultural lands affects aquatic habitats, or how fencing can alter wildlife foraging patterns. Others occur on a scale hard to imagine: the deforestation of the Lake Tahoe Basin or the dumping of mercury from early mineral refinement into local watersheds in quantities so large it is nigh impossible to measure. The results of these environmental alterations linger today, but they also form an important and frequently overlooked aspect in the dispossession of Indigenous communities from their lands. Though American colonialism manifested its violence in Nevada as it did elsewhere in the United States, violent confrontations were sparse compared to other regions of American settlement, for the environmental modifications undertaken by early Nevadans challenged traditional subsistence practices serving to displace Indigenous communities without many of the violent altercations found elsewhere, yet with the same lethal consequences to their victims. Euro-American access to water frequently diminished Indigenous access, and as resource exploitation in the region ballooned, the Washoe and Numa found their adaptations to the land no longer practical. Acquisition of water by Nevadans and the environmental alterations they undertook left Indigenous communities with the harsh choice between attempting to continue their way

traditional ways of life and risk losing all or submit to acculturation with the distinct possibility of cultural eradication.

The Numa and the Washoe

In Numa mythology, their people began as one large band in the area of Northern Nevada that presently constitutes the drainage of the Truckee River. Though happy for many years, a quarrelsome brother began speaking ill. These words poisoned some of his family, and his brothers and sisters began dividing themselves among those who supported the troublesome brother and those who did not. Disagreements and bickering became common, and soon even the most minor of quarrels turned to violence. The family's mother and father tried to intervene advocating peace and understanding, but their counsel went unheeded.

To avoid further violence and potential death, the mother and father decided to divide their children among the lands telling them it was time to leave the parental home. The children were sent east, west, north, and south creating the different bands now associated with the Numa. Yet dispersing their family throughout the region caused great hardship for the mother and father, and both grieved for their now distant children.

When the father passed into the great Milky Way, the mother could endure no more despair. She knelt on the ground and began to weep. She cried and cried so very alone. No Numa noticed until one of her nearby children found a vast alkali lake had formed, and when the child continued up the path to where her home should be, the mother was discovered

turned to stone along the shore of the lake kneeling and weeping with her bundling basket still on her back.¹⁸

This is not the only story from Numa mythology to discuss how the region's water sources came to be. Another tells of a band of Numa who ventured over the Sierra Nevada to trade. A member of this group—a young man—failed to return on the appointed date. After waiting several days, the group decided to return home without him. The leader of the trading party took his time hoping the young man might catch up to the party. This he did as the party passed over the crest of the mountains.

The young man approached the leader and informed him he had met a woman by the sea whom he wished to bring home. Suspecting romance might be at the heart of the young man's absence, the leader heartily agreed that his soon-to-be wife join the party. When he brought her forward, the party was shocked to see not a person like them, but a true woman of the sea!¹⁹ They knew the woman would be unwelcome among the Numa and shunned upon their arrival. The leader refused to return to their people trying to impart his wisdom on the young man about the troubled future that would await him if he continued to pursue this marriage.

The young man would not listen, however. Some members of the group felt sorry for the young man and agreed to take them the final leg of the journey home. As they walked, a trail of water flowed behind the woman of the sea and began to pool beneath her upon their

¹⁸ This mythology is referred to as the Stone Mother story and tells the story of the creation of Pyramid Lake. The stone mother is a tufa feature that can still be seen on the lake's eastern shore. The story has been summarized from different renditions, but largely follows the account in Nellie Shaw Harner, *Indians of Coo-yu-ee Pah (Pyramid Lake): The History of the Pyramid Lake Indians in Nevada* (Sparks, NV: Western Printing and Publishing, 1974), 17-18.

¹⁹ Some sources have used the western word "mermaid" to describe the bride.

arrival. As the party's leader had forewarned the woman of the sea was not accepted among the Numa, and the couple was banished from their territory.

The couple forever remained angry with the Numa for casting them out and refusing to accept their love. Their children came to be known as Water Babies each of which carried a spell from their mother that caused any Numa who saw or encountered one of her children to suffer ill health and even death.²⁰

Both these stories tell of the creation of the bodies of water that were important to local Indigenous communities. The first tells of the creation of Pyramid Lake, the latter—which bears similarity to mythology also told by the Washoe—recounts the creation of Lake Tahoe, the Truckee River, and Pyramid Lake. This latter story also incorporates Water Baby spirits which remain a central part of both Numa and Washoe mythology.²¹ What is immediately evident from both stories is the centrality of water in both Numa and Washoe culture. Here, where the arid lands of the Great Basin abutted the Sierra Nevada and its rain shadow, access to the region's limited water supplies held direct correlation to the success of their respective communities.

The first Euro-Americans who traveled through the Western Great Basin wrote of an arid landscape with sporadic freshwater lakes and rivers that drained into valleys surrounded by steep mountains. When John C. Frémont and his survey party arrived in the area in January of 1844, they were not the first Euro-Americans to venture into this region, but his journal provides one of the first recorded observations one can investigate. He described the towering Sierras to the west with the dark, ominous storm clouds of winter. To the east were

²⁰ Harner, 18-20

²¹ Water babies are said to be mischievous spirits that torment or cause illnesses in those who encounter them without proper spiritual protections.

the rugged mountains of the Great Basin, covered in piñon pines whose nuts he described “of very agreeable flavor” and speculated that they “must be very nutritious, as it constitutes the principal subsistence of the tribes among which we are now traveling.”²²

Indeed, the piñon nuts were quite agreeable to both the Washoe and Numa. Both communities relied heavily upon these pine nuts which made up a large percentage of their annual sustenance. Easily harvested and stored, the Washoe and Numa took great effort each autumn to disperse among the piñon pines that blanketed the valleys beyond the eastern slope collecting great quantities of the nuts that would see them through the cold, harsh winter months.

Frémont noted that he found the valley floors flat and pleasant, with sage and grasses on which he grazed his pack animals, and fresh mountain streams lined with cottonwoods from which the expedition and their Washoe and Numa hosts drew a great many “salmon trout” whose flavor he found “superior... to that of any fish I have ever known.” Frémont described the fish as being two to four feet in length, and once cleaned would provide filets of six pounds or more.²³ These observations of the Nevada wilderness would be published along with Frémont’s other explorations of the Far West to great fanfare throughout the nation. Frémont’s journal would serve as the basis for which many Americans would come to learn about Western lands.

Frémont’s accounts also provide an important observation into the lives of the Indigenous communities residing in the area. By commenting on the diet of fish and pine

²² John C. Frémont, *Frémont’s First Impressions: The Original Report of His Exploring Expeditions of 1842-1844* (Lincoln: University of Nebraska Press, 2012), 266.

²³ *Ibid.*, 262.

nuts, Frémont was unwittingly linking the people to the land. The Washoe have long held that to understand their people, one must also understand the land. The people, their language, and their spiritual beliefs are in symbiosis with the land. Remove any of these elements of Washoe culture from consideration, and one could never begin to develop an understanding of life for the Washoe.²⁴

Like many other native peoples, the Washoe were acutely tuned to the changes of the seasons and the bounty offered by each. Of utmost importance was spring when the cutthroat trout and other fish began their spawning runs, and the autumn harvest when a variety of plants were collected and stored for winter, culminating with the piñon pine nut harvest.²⁵ Fish and pine nuts comprised the staple foods of the Numa and Washoe's diets, for they could easily be stored in various caves and caches for consumption during winter—the very season when Frémont and his company arrived.

These were not the only items these communities consumed. Wild fruits, herbs, and seeds were procured when ripe, and game such as mule deer, pronghorn, rabbit, duck, and big horn sheep were hunted, supplementing both the Washoe and Numa diets, and provided furs and skins for clothing. The taking of plants and animals was a spiritual act—everything consumed by the Washoe was another living entity. Therefore, before the annual fish runs, harvests, and each hunt, a prayer would be offered asking forgiveness for extinguishing the

²⁴ Oral Interview with Darrel Cruz, Tribal Historian, Washoe Tribe of Nevada and California, December 2016; “Wa She Shu: ‘The Washoe People Past and Present,’” Washoe Cultural Resource Department, Washoe Tribe of California and Nevada, (2009), 6.

²⁵ Ibid, 16-21.

life of another living being. The Washoe also prayed to give thanks to the Maker prior to every meal and would leave food for the Maker to show their gratitude.²⁶

Similar thanks and offerings were also made by the Numa who viewed natural objects—including both plants and animals—as being imbued with sacred power. Taking a life meant taking its power, and one needed to take care, for this accumulated life force could be both good and bad. When a life had to be sacrificed to provide food for their people, when a hunt or rabbit drive undertaken, the appropriate spiritual measures were taken in advance to protect the hunters, bring blessings to their community, and to give thanks.²⁷

Despite such harmonious practices, the Washoe were also the first in this area to make changes to their environment as a means of survival. The most prominent change was a fishing adaptation. The Washoe constructed dams along the various waterways around *Daw Ow Aga* (Lake Tahoe).²⁸ Often mirroring beaver dams, these obstructions would be built from an assortment of fallen trees, branches, rocks, and mud and were carefully attended. Though the Washoe state that these structures were temporary, it is more accurate to say they were semi-permanent. Dams would be unattended throughout the winter months when the Washoe resided on the valley floors abutting the Eastern Sierra. During the spring melt and subsequent run-off, it was not uncommon for dam sites to be damaged or destroyed.

²⁶ *Ibid.*, 9.

²⁷ Catherine S. Fowler and Sven Liljeblad, “Northern Paiute” in William Sturtevant and Warren L. D’Azevada, eds., *Handbook of North American Indians* vol. 11 Great Basin (Washington: Smithsonian Institution, 1986), 451.

²⁸ The name Tahoe is believed to be a mispronunciation of the Washoe name for the lake.

However, the dams in key fishing areas would be repaired or reconstructed to ensure a productive fishing season.²⁹

The dams aided fishing by creating a barrier that the fish would need to surmount to progress on their journey to or from the lake. Traveling upstream, the fish would need to “leap” over the dam to continue to their spawning ground. It often took fish multiple attempts to clear the dam, and as a result a backlog was created from which the Washoe could easily pluck the waiting fish. The dam also served the same purpose for the downstream journey whilst also creating a small pond behind the dam.³⁰ These ponds could entice fish to pause in the calmer, deeper waters, yet also served as a mechanism to corral fish into a spot where they were easily, yet selectively, harvested. Here the Washoe intentionally altered their environment for the survival of their people.

Given that both communities inhabited the same geographic region of the western Great Basin, the Washoe and Numa traditional subsistence practices were quite similar. Their languages were different—the Numa language from the Uto-Aztecan family while the Washoe had a distinct language most similar to the Miwok and Chumash languages—yet both had seminomadic bands whose language, culture, and social practices formed their distinctive identities.³¹

²⁹ Oral Interview with Darrel Cruz, Tribal Historian, Washoe Tribe of Nevada and California, December 2016; “Wa She Shu,” 16.

³⁰ Unlike other spawning species of fish, the cutthroat trout does not die after spawning, and makes multiple spawning runs throughout its lifetime. In the Eastern Sierra, this resulted in annual migrations of fish.

³¹ See William C. Sturtevant and Warren L. D’Azevedo, eds. *Handbook of North American Indians*, volume 11 Great Basin, “Washoe Language,” p. 107, “Northern Paiute,” p. 435, and “Washoe,” p. 466.

The bands of the Numa that are the focus of this dissertation were those who had made their homes in around Pyramid and Walker Lakes and the Truckee and Walker rivers that respectively flowed into each. This created three distinctive ecological zones that the Numa utilized for subsistence: the aquatic zones of the rivers and lakes, the marshes that abutted these aquatic features, and the high desert sage lands and piñon pine forests of the western Great Basin that covered much of the land away from the water.

Like the Washoe, the Numa also relied heavily on their fisheries in addition to pine nuts. Unlike the Washoe adaptations for the small streams flowing into Lake Tahoe, the Numa's fishing practices utilized weirs, traps, spears, and platforms that were adapted to rivers during the spring and autumn spawning runs, and to lakeside fishing the remainder of the year. In addition to the gathering of many similar seeds and wild fruits and vegetables, the Numa also took advantage of the waterfowl that took refuge on Pyramid and Walker Lakes during their migrations, or that made their homes in the tule reeds and cattails of the marshes. The tule and cattails were utilized by the Numa to make decoys for hunting, as well as for the construction of boats that could be used in waterfowl hunting or fishing.³²

Season after season the Numa and Washoe lived in fragile balance with nature where the subtlest of changes could make the difference between subsistence and starvation. Water was at the heart of their societies. Whether through their spiritual beliefs, the water they consumed, or the water the fish, game, and plants they relied upon needed to survive, everything depended on water. Years of drought were years of hardship. The Washoe held an understanding that “the health of land and the health of the people [were] tied together, and

³² Ibid., 439-441.

what happens to the land, also happens to the people. When the land suffers, so too [do] the people.”³³

This was the environment into which John C. Frémont ventured in 1844. Only a few small expeditions or curious mountain men had ventured into the lands of the Numa and Washoe previously. Following Frémont’s expedition Euro-Americans crossed the land with ever increasing frequency, and as they did so, they too took note of the land and what it could offer.

³³ A. Brian Wallace, former chairman of the Washoe Tribe of Nevada and California, quoted in “Wa She Shu,” 3.

Chapter Two

The first Euro-Americans who traveled through the Western Great Basin found an arid landscape with sporadic freshwater lakes and rivers that drained into valleys surrounded by steep mountains. John C. Frémont, leading one such party of exploration, arrived in the area in January 1844 to find the towering Sierras to the west covered with the dark, ominous storm clouds of winter. To the east were the rugged mountains of the Great Basin, covered in piñon pines whose nuts he described “of very agreeable flavor” and speculated that they “must be very nutritious, as it constitutes the principal subsistence of the tribes among which we are now traveling.”³⁴ Frémont’s notes on the bounty offered by the lands his party ventured through helped fuel American desires to “settle” western lands.

Following the Frémont expedition, few whites ventured into the Nevada wilderness, but beginning in 1846 westward migration brought ever increasing numbers of Euro-Americans to the eastern slope of the Sierra Nevada range. Like the expeditions that had preceded them, most merely passed through the Great Basin to destinations beyond. Like many overland emigrants, hardships along the route would shape their perceptions of the land and their willingness to continue. It would be the sacrifices of the trail and the tantalizing promise of a bright future offered by the verdant river valleys at the end of the desert that enticed white settlers to stay.

In 1848, the United States annexed the region as part of the Mexican cessions following the Mexican-American War. This chapter explores the early settlement of present-

³⁴ John C. Frémont, *Frémont’s First Impressions: The Original Report of His Exploring Expeditions of 1842-1844* (Lincoln: University of Nebraska Press, 2012), 266.

day Western Nevada between 1850 and 1859. By focusing on the Carson Valley, I explore how Euro-Americans engaged with the land and its abundance whilst altering it to meet American agrarian ideals. By utilizing the water, harvesting timber, and introducing livestock, these early settlers laid the groundwork for thinking about how to govern the commons and claim the resources the Earth offered. In doing so, they came to dominate the landscape, transforming endemic ecosystems and beginning the process of environmental degradation so frequently associated with mining and its supportive industries. Yet these white settlers were late arrivals on the land, and the agrarian transformations unsettled the Washoe, who now faced an ecosystem in flux as well as growing competition with the white settlers who were all too keen to force them from their land.

Desert, Grass, and Water

The Forty Mile Desert between the Humboldt Sink and the Carson and Truckee Rivers was one the most dreaded legs of the California Trail. With no water and sparse vegetation, emigrants pushed themselves and their animals through an environment which George Stewart called “a diabolical place, a very outpost of hell.”³⁵ Nearly all those who passed through remarked on the hardships they faced. “It was very near fifty miles without earthen [sic] grass or water,” wrote Mary Jane Phippen, an emigrant who traveled the trail from Salt Lake City to the Carson Valley with her husband Sylvester. “I assure you that it was a long tedious job to travel all night and then when morning comes look around you and discover nothing but sand and all along the rode [sic] the bleached [sic] bones of cattle and

³⁵ George R. Stewart, *Ordeal by Hunger: The Story of the Donner Party* (Boston: Houghton Mifflin Company, 1936, reprint 1988), 73.

your own team weak and exhausted for want of feed and your own self faint and feverish for want of sleep and rest, but there is no rest...there is no help, for that grass and water lies miles beyond.”³⁶

Like so many other emigrants crossing the desert, Mary and her family brought livestock on their journey to provide for them in their new homes. The desert tested the endurance of the animals and the resolve of their owners. “The sun was an hour high when we overtook the cattle. They were nearly given out, some of them had their tongues hanging out. Some were given clear out. I did not know where there was any water,” recalled Peter Conover.³⁷ “Poor little cow, she is so tired it takes many licks to make her go” wrote Mary of a calf she had named Little Whiteface. Eventually the calf could go on no more, collapsing to the ground.³⁸ Weary and malnourished from an already arduous journey, the Forty Mile Desert would become the final resting place for many settlers and their livestock. But for those who made it through the desert, the rivers and streams flowing down from the Sierras afforded welcome relief.

Emerging from the desert, migrants found themselves in a “large extent of well watered [sic] and fertile land covered with fine grass.”³⁹ The cool, clear alpine waters stood in stark contrast to the muddy and silty waterways found back east; their fresh taste further enhanced by being the first drink of water many travelers had taken in days. “In every one of

³⁶ Mary Jane Phippen to Alexander and Ann M. Brim, July 13, 1856, Utah Division of State History, Microfilm, MIC A 255.

³⁷ Peter Wilson Conover Papers, A Journey to Carson Valley, 1856-1857, Utah Division of State History, MSS A 240.

³⁸ Mary Jane Phippen to Alexander and Ann M. Brim, July 13, 1856.

³⁹ Joseph Waring Berrien, *Overland from St. Louis to the California Gold Field: the Diary of Joseph Waring Berrien* (Indiana University Press, 1960), 343. Entry for August 1, 1849.

these small streams,” Lemuel McKeeby observed, “each traveler lays himself down on his stomach full length and drinks and drinks of this life-giving nectar. There would be some twenty men lying in this position at one time, and when they would rise up to go forward, others would immediately take their places.”⁴⁰ As future California Supreme Court Justice Lorenzo Sawyer simply stated, “I never drank finer water.”⁴¹

The valleys and meadows adjoining these waters provided rich grasses and wild game such as deer, pronghorn, and big horn sheep. Many travelers paused in these lands to rejuvenate their party before tackling the final obstacle: the mountain passes of the Sierra Nevada. The summer valleys “presented a sea of the finest feed I had ever seen, untrod by domestic animals” recalled Jasper Morris Hixson, an emigrant on the trail to California.⁴² “Almost as far as the eye could see, was a meadow of the most luxuriant and nutritious grasses.”⁴³ Another emigrant, David Cosad, noted the “first rate grasses” and “the handsomest yellow timber pine” that he had ever seen.⁴⁴ Edmund Green called it “beautiful grazing country,” and Hixson declared “if ever there was a spot designated by nature for a stock ranch, it was this.”⁴⁵

⁴⁰ *The Memoirs of Lemuel Clarke McKeeby* (San Francisco: California State Historical Society, 1924), 27. Accessed via Hathi Trust, <https://hdl.handle.net/2027/nnc1.cu01627198>.

⁴¹ Lorenzo Sawyer, *Way Sketches: Containing Incidents of Travel Across the Plains from St. Joseph to California in 1850* (New York: 1924), 94. Accessed via Hathi Trust, <https://hdl.handle.net/2027/mdp.39015021556702>.

⁴² Diary of Jasper Morris Hixson, July 27, 1849, University of California, Berkeley Bancroft Library, Microfilm, BANC MSS C-F 118-120 FILM.

⁴³ *Ibid.*, July 28, 1849.

⁴⁴ David Cosad, “Journal of a Trip to California by the Overland Route and Life in the Gold Diggings During 1849-1850,” entry for July 19, 1849, University of California, Berkeley Bancroft Library, Microfilm, BANC MSS C-F 50 FILM.

⁴⁵ Edmund Green, “Reminiscence of a Pioneer,” *Shiawasse Gazette*, vol. XXVI, p. 29 as appeared in Robert W. Ellison, *First Impressions: The Trail Through the Carson Valley, 1848-1852* (Minden, NV: Hot Springs Mountain Press, 2001), 17; Diary of Jasper Morris Hixson, July 28, 1849.

The sight of such a welcoming country left an indelible imprint upon those viewing it for the first time. “It was a noble and astonishing spectacle, [e]specially calculated to arrest and fix the gaze of those only accustomed to behold our little insular tumuli” wrote William Kelly having trekked all the way from New York. “I got in an ecstatic mood entering it, feeling as though I stood in fairy-land; and in the blissful serenity that reigned around, feared almost to breathe, lest the moral contamination should dissolve the delicious spell by which I was entranced. It looked peacefully hallowed in its Elysian loveliness; too happy, too divine a spot for the dwelling-place of other than pure un sinful [sic] essences, where the cankers of worldly ambition could never take root, or spread their baleful influences.”⁴⁶ It would not take long, however, for those “baleful influences” to take root.

Settlement Begins

Between 1849 and 1860, approximately 250,000 emigrants would travel west along the California Trail.⁴⁷ For those who elected to take the Carson Trail, these long, flat valleys that emigrants had used to graze their animals and hunt game also attracted settlers looking for new opportunities. At the edge of the Carson Valley near the Georgetown cutoff along the Carson Trail into the Johnson Pass, Abner Blackburn, Hampton Beatie, and a small group of fellow Mormons would construct a ramshackle trading and supply post to take advantage of the increasing emigration to California. As emigrants arrived following their arduous cross-

⁴⁶ William Kelly, *Across the Rocky Mountains from New York to California: With A Visit to the Celebrated Mormon Colony, at the Great Salt Lake* (London: Simms & M’Intyre, 1852), 223. Accessed via Google Books, April 2018.

⁴⁷ John David Unruh, *The Plains Across: The Overland Emigrants and the Trans-Mississippi West 1840-60* (Champaign: University of Illinois Press, 1993)

country journey and torment across the Forty Mile Desert, their livestock were often weak and malnourished. At the trading post, emigrant parties could purchase select goods and arrange to acquire fresh animals from Blackburn & Company, leaving their own livestock behind. These animals would be set out to graze, fattening them up and recuperating their strength until they were ready to be sold off to the next desperate band of westward migrants.⁴⁸

In just a few short years, this temporary trading post would become a permanent settlement. During one of his journeys back to Salt Lake City, Beatie had mentioned the valley and his temporary trading post to his employer John Reese. Beatie and Blackburn were prospectors, and their efforts had largely been devoted to the pursuit of gold with several trips back and forth over the Sierra. The trading post was never a primary concern to the men, and they had sold it after only one season. By contrast, John Reese and his brother Enoch were both successful merchants, and when Beatie informed the men of the business potential of the Carson Valley, Reese decided to reconnoiter the prospects for himself in the late summer of 1849. After spending 40 days in Carson Valley, Reese determined the spot had potential, so he traveled back to Salt Lake City to obtain the supplies necessary to begin offering seasonal goods to the nascent settlement and a start in agriculture for himself.

Reese moved to the Carson Valley in 1850. “The first thing I did when I got there,” he recalled, “was to get a ranch just where I thought the best place and built a house.” The home he constructed would come to be known as Mormon Station, and it was a crude

⁴⁸ H. S. Beatie, “The First in Nevada,” *Nevada Historical Society Papers, 1913-1916* (Carson City: Nevada State Printing Office, 1917), 169. Accessed via Google Books; Sally Zanjani, *Devils Will Reign: How Nevada Began* (Reno: University of Nevada Press, 2007), 8-10.

structure.⁴⁹ A simple log cabin, it originally possessed no roof and no floors—the remnants of the old trading post. “That year I fenced a field of some 30 acres and plowed it up ready for the next year. I put in wheat, barely, corn and water melon [sic] in on one side, and mixed things all around.”⁵⁰ Along with his garden crops, Reese planted the roots of American transformation in early Nevada. Others soon followed.⁵¹

Hampton Beatie returned to the valley in 1852 and found it completely transformed. Here he discovered “houses built extending through the whole length of the Carson Valley—frame houses, blacksmith shop and a mill had gone up.”⁵² John Reese had tapped the potential of the valley. Timber was bountiful in the mountains above Mormon Station and would provide all the material a new settlement might need. “I had some 17 men with me and all in my employ. A good many of them worked for me quite a while chopping timber and building log houses.” Following John Reese were John and Rufus Thomas who “had no merchandise neither any seed to plant,” but had staked a claim and built themselves a log cabin all the same. William Thorington started a cattle ranch, Henry Vansickle a blacksmith. More and more men set down roots, and “in 1852 there were a great many ranches took up.”⁵³ Mary J. Phippen was less impressed. “Here we are in Carson the place thats [sic] praised and talked about so much... Imagine a city with only three houses in it, no streets, tall pine trees and a great high mountain to look right straight up to...Father, talk no more of coming to this place. I would rather have one acre of land in Salt Lake City than the hole [sic] of

⁴⁹ Because many early settlers were LDS members, travelers patronizing the trade station simply referred to it as the Mormon Station.

⁵⁰ John Reese, “Mormon Station,” (1884), Church of Jesus Christ of Latter Day Saints Church Library Archives, MS 2386.

⁵¹ Zanjani, 12-13.

⁵² *Nevada Historical Society Papers*, 171.

⁵³ Reese, “Mormon Station.”

Carson Valley.”⁵⁴ Mary’s view was less a criticism of the land itself, but rather reflective of the deep loneliness she found in her new home. Mary’s letters are filled with longing for friends, family, and the life she left behind in Salt Lake City. Mary’s husband, Sylvester, was one of the many men who made their way to the Carson Valley seeking opportunity in a land perceived to offer plentiful bounty for those willing to work for it.

In addition to having “good water, and grass and timber,” white settlers were also quick to note the wide variety of potential nourishment the valleys offered.⁵⁵ “Game such as rabbits, ducks, geese, sage-hens, antelope, etc. is abundant, and the river is crowded with fish of excellent varieties.”⁵⁶ Among those fish were “trout about a foot in length.”⁵⁷ As evidenced in the first chapter, fish had long comprised one of the main facets of the Washoe people’s diet, and it was no coincidence that Euro-American explorers and settlers often remarked on the numbers or size of fish pulled from the rivers, streams, and lakes.

These accounts, however dramatized, yield important observations about the habitat and ecosystem can be made. The Lahontan Cutthroat Trout, one of the predominant species endemic to Western Nevada waterways, could achieve a lifespan of 5-14 years in which the fish grew to over four feet in length and could weigh as much as 40 pounds.⁵⁸ To reach such a size, the trout would need an ideal environment to thrive—especially healthy waterways.

Given that multiple sources document trout of one, two, and even four feet in length, the

⁵⁴ Mary Jane Phippen to Alexander and Ann M. Brim, July 13, 1856, Utah Division of State History, Microfilm, MIC A 255.

⁵⁵ Orson Hyde to Brigham Young, July 15, 1855, Church of Jesus Christ of Latter-Day Saints Church History Library, CR 1234 Box 39 Folder 22.

⁵⁶ Richard “Tennessee” Allen, October 9, 1857, letter published in the *San Francisco Herald*, October 14, 1857.

⁵⁷ Richard “Tennessee” Allen, March 10, 1858, letter published in the *San Francisco Herald*, March 14, 1858.

⁵⁸ Lahontan Cutthroat Trout (*Oncorhynchus clarkii henshawi*). See Robert J. Behnke, *Native Trout of Western North America* (Bethesda, MD: American Fisheries Society Press, 1992), 112; United States Fish and Wildlife Service, Nevada Fish and Wildlife Office, webpage, accessed April 2018, https://www.fws.gov/nevada/protected_species/fish/species/lct.html.

trout population was quite healthy at the time of settlement. Fisheries provided one of the main food sources for Indigenous populations, and because the small population of the Washoe required fewer fish to feed, the fish population was rarely stressed. Following the establishment of permanent Euro-American settlements along the Eastern Sierra, the local ecosystem experienced gradual yet inexorable alterations with consequences that would reverberate throughout the ecosystem.

The Necessity of Water

Throughout the 1850s, the settlement at Mormon Station, renamed Genoa in 1856, continued to grow, and with it, agriculture expanded throughout the Carson and surrounding Valleys. Whether Euro-American settlers planted crops or put herds of cattle or sheep out to graze their endeavors depended on access to water. Without it, settlers' crops would not grow, livestock would go thirsty, and the settlers themselves would be unable to survive. Given the necessity of the water, it comes as no surprise that those settling in the Carson and surrounding valleys chose locations that allowed them to access water sources. Fed by snow melt, several streams and small waterways like Daggett, Galena, and Clear Creeks flowed down from the Sierra Nevada before joining the Carson and Truckee Rivers, or emptying into one of the small lakes that dot the region. Because water was of primary concern, it became the first natural resource regulated in the area.

Settlers turned to the Carson River and the various mountain streams that fed it to irrigate their crops.⁵⁹ Casper Tuck irrigated a third of his property from the snow-fed creeks

⁵⁹ Ibid., 683.

flowing down from the mountains with “the rest from a shared ditch.”⁶⁰ For most ranchers, getting water to their field(s) required hydraulic engineering with varying degrees of complexity. Most began by approaching their neighbors and agreeing to construct an irrigation ditch with water shares correlated to capital fronted or work done toward the construction of the ditch. Once completed, a diversion dam composed of brush, hay, and loose gravel would be placed in the river and water allowed to flow into the ditch. Along the abutments, ranchers in the Carson Valley placed what they called open dams. “You can take and shut it up and raise the water,” Charles Henningsen explained, and then “take some of the planks out and let the water flow... I run the water from the distributing ditches through small furrows or run it through from the main ditch through small furrows, and let the water soak through the ground.” At the lower end of this piece of land, another ditch was dug square to catch the wastewater from the first piece of land. The wastewater was then “run that through small furrows like the first piece I irrigated, and the second piece of land is irrigated in the same way.” This process was repeated until the water or arable land was exhausted.⁶¹

With each root established by Euro-Americans in the Carson Valley, the Washoe were expelled from their lands. The locations chosen for homesteads were often the most productive lands the settlers could acquire when they arrived. All too frequently, however, these lands corresponded to Washoe sites used as their winter homes for generations. Washoe crafted their culture through extended family lineages that long held their own winter

⁶⁰ Testimony of Casper Tuck, *Union Mill and Mining Company v. Dangberg et. al.*, p. 1867. Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 5.

⁶¹ Testimony of Charles C. Henningsen, *Union Mill and Mining Company v. Dangberg et. al.*, p. 1886-1887. Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 5.

dwelling places in the valleys. After 1850, each passing year saw fewer locations available to the Washoe forcing them to reside farther east, where water gradually dwindled in the desert basin. Ultimately, American development forced the Washoe out of their valleys entirely and toward havens within the mountains of the Pine Nut and Virginia Ranges.

This dispersal from their ancestral lands triggered hardships for the Washoe people, but realizing the consequences took time. Because the Euro-American settlers were aware from the outset of the necessity of water to their success, many of the ranches and farms they established were founded to access water sources. Initially, the Washoe found these irrigated farmlands beneficial—the seeds from their crops spread beyond the fenced and furrowed lands to enrich the surrounding environments on which the Washoe foraged. The irrigation ditches created a habitat for rabbit and waterfowl and supported cattails and willows from which the Washoe obtained reeds for basket weaving.⁶² These benefits would be short lived, however, as the arriving settler population brought with them ideologies which perceived all indigenous populations to be hostile. “They are a warlike and dangerous tribe, numbering some eight thousand,” wrote Richard Allen in his first observations from the Carson Valley. “They cherish an antipathy to the white man, and lose no opportunity to do him injury when there is but little danger of discovery.”⁶³ Contemporary scholarship and tribal memory agree that the Washoe population was comparatively quite small, and spread out over the entire range of the Washoe people. Rather than the 8,000 hostile tribe members that haunted settlers’ dreams, it is doubtful that the entire tribal population ever exceeded 3,000 individuals, only a percentage of which would likely have been present in and around the

⁶² James F. Downs, *The Two Worlds of the Washo: An Indian Tribe of California and Nevada* (New York: Holt, Rinehart, and Winston, 1966), 76.

⁶³ Richard “Tennessee” Allen, October 9, 1857, letter published in the *San Francisco Herald*, October 14, 1857.

Carson Valley.⁶⁴ Yet to the settlers, every Washoe harbored threat, and believed it to be in the community's best interest to keep them as far from their settlement as possible. With much of the Anglo settlement established to control sources of water, this meant that the Washoe were being pushed away from a vital necessity to their lives.

Water Rights

Nearly as soon as settlement began, the settlers of the Carson Valley met to form what later critics would term a “squatter’s government” in order “to consider the necessity of providing for the survey of claims and the subdivision of the valley so as to secure each individual in their rights to land taken up and improved by them,” as well as for “the creation of publick [sic] officers for the valley and the adoption of by-laws and fixed regulations to govern the community.”⁶⁵ The primary concern of the settlers lay in establishing law and order—or at least a semblance of it. Through the squatter’s government, land claims could be filed and recorded in the official record, and the pages of this record book are largely filled with these claims.

In addition to recording land claims, the settlers would occasionally meet to consider public resolutions. One such assembly was called for the afternoon of Sunday August 27, 1854. Meeting in the town of Genoa, the Euro-American inhabitants gathered to consider whether a law should be adopted to regulate the use of water. Ultimately, the settlers agreed it was in the best interests of the community to do so, and adopted the following resolution:

⁶⁴ Downs, 4-5; “Wa She Shu,” 6; Oral Interview with Darrel Cruz, Tribal Historian, Washoe Tribe of Nevada and California, December 2016.

⁶⁵ First Records of Carson Valley, Utah Territory, 1851, p. 1, Nevada State Library and Archives.

Resolved that in the use of water in carson [sic] River and its Tributaries no man shall be deprived of as much as is necessary for household purposes and where two or more are settled upon the same stream the use of the water for irrigating purposes shall be as equally divided as practicable - and where the stream is small and will not supply all at the same time an equal number of days shall be allotted to each in proportion to the amount of cultivation and in no case shall the water be used so as to divert it altogether from the original channel.⁶⁶

By adopting the resolution, the settlers of the Carson Valley made a definitive statement on water rights within the valley. They recognized the constraints aridity placed on agricultural development, and rather than continually fighting over finite resources, they agreed to a riparian system in which the water was shared and distributed proportionately among all parties. Here, the settlers were taking the first steps in managing the commons—the division of land and access to water.

The settlers had outright rejected the principle of prior appropriation—a legal doctrine that held the first person to lay claim to a stream, river, or other body of water acquired preeminent right to utilize that water. Instead, the settlers advocated for a form of riparianism. Traditional riparian rights had held that those who settled along a body of water had the right to use that water for any natural purpose, but not to obstruct, divert, or otherwise inhibit the flow of the water. The settlers of Carson Valley retained the traditional riparian concept that water was held in common trust, however, like many of their brethren throughout the West, they rejected the notion that water could only be utilized for natural purposes (such as for drinking, bathing, or consumption by livestock directly at the source).⁶⁷ Alternatively, the settlers determined that since the water was held in public trust, the

⁶⁶ Ibid., 36.

⁶⁷ Worster, 88-90.

distribution of water should be done in an equitable manner so that all could benefit from its use.

The importance of identifying this resolution as the product of a squatter's government cannot be overlooked. Though residents within the region recognized the need for some form of government to maintain an appearance of law and order, they did so secure in the knowledge they had no legal authority to create such an entity. The system functioned only because of the residents' mutual self-interests in the endeavor. Condemnation and alienation from one's neighbors in a remote land where members of the community depended on one another for their mutual survival provided the impetus for compliance. Inevitably, disputes arose, and the squatter's government served as an arbiter to mediate conflict and rule on points of contention. Whether recording land claims, advocating riparian water rights, or interceding in quarrels, the system functioned only because the settlers' faith lent it legitimacy.

While the terminology of a squatter's government would be utilized largely because the territorial government in Salt Lake City failed to recognize the legal standing of these early settlers to form such a government, its use is loaded with meaning. One must note the irony that these early settlers would be referred to as squatters, for the Washoe who were slowly being displaced by these white settlers most certainly also viewed them as squatters with no claim to the land they occupied. Furthermore, one cannot help but note the ironic logic required to justify establishing law and order through the formation of an illegitimate government.

In the eyes of the law, their actions were, at best, legally nebulous. Without patent from the government, the settlers of the Carson Valley remained squatters upon the land.

That land was a part of Utah Territory in the view of officials in Salt Lake City, and the squatter's government an illegal body not recognized by the territorial government. It was, in their eyes, a body whose rulings were extra-judicial lacking force of law. To remedy this, the territorial legislature created Carson County in 1854, and Governor Brigham Young appointed church elder Orson Hyde to serve as probate judge for the county. It would be Hyde's responsibility to establish the county government.⁶⁸

When Hyde arrived the following Spring, he impressed upon Young the urgency of creating stable government within the country, in part to protect members of the Church of Jesus Christ of Latter-Day Saints.⁶⁹ Though several of the early settlers were members of the church, and the church had encouraged and promoted settlement along the eastern slope of the Sierra, the initial wave of settlement included a number of individuals who were—in the view of the LDS community—gentiles. The squatter's government was largely comprised of these non-adherents.

Hyde's desire to form a government did not rest solely upon his faith, however. "The people in this valley are anxious for an organization of some kind" he noted to Young. "This country has been neglected quite long enough if Utah wishes to hold it."⁷⁰ Hyde set to work to establish the county government at Mormon Station (renamed Genoa the following year). On September 20, 1855 Hyde called an election to fill the open county offices. On October 2, Hyde appointed Henry W. Niles as clerk of the probate court and *ex officio* of the county

⁶⁸ Carson County (Utah) Records, Utah Division of Archives and Records Service, Salt Lake City, Series 19802; Thompson and West, *History of the State of Nevada*, Chapter VI "Carson County Organized" (Berkeley: Howell North, 1881), 38, accessed via Church of Jesus Christ of Latter-Day Saints Church History Library, MS277.93.

⁶⁹ Orson Hyde to Brigham Young, January 17, 1855, Church of Jesus Christ of Latter-Day Saints Church History Library, CR 1234-1 box 39 folder 22.

⁷⁰ *Ibid.*, June 19, 1855.

court, thus ushering in the demise of the squatters' government and the beginning of formal governance by Utah Territory.⁷¹

Less than a month would pass from the establishment of government before the first claim on water would be made. A special term of the county court met on October 27 where it awarded J. C. Fain, John Reese, Stephen A. Kinsey, John and James McMarlin, Christopher Merkley, Morris Fitzibbon, and Orson Hyde “the sole and exclusive right to take out any portion of the waters of Carson River which they may desire, in a ditch or canal, for mining and other purposes, in the vicinity of Gold Cañon.”⁷² The arrival of Utah's jurisprudence put an end to the informal riparian policy that had been agreed to by the early settlers. In its place, the doctrine of prior appropriation that had become common throughout the arid American West became the means of managing claims upon the water.

The basic principle of the doctrine is simple: *Qui prior est in tempore, potior est in jure*—he who is first in time is first in right. Put simply, the first person to claim a river, stream, or other waterway and claimed its water or any portion of the water flowing through said waterway had the priority claim to the water thereafter. Through prior appropriation, the claimant was given a vested interest in the water and free to use the water in whatever manner he saw fit. Use was key. It was not enough to simply make a claim upon the water, one had to demonstrate beneficial use—that is, an individual was actively using the water in a productive manner such as for agriculture, mining, or other forms of commercial use. What was considered beneficial was regularly contested and frequently led to disputes. Unlike riparianism which required the claimant to hold property that abutted the waterway, prior

⁷¹ Thompson and West, 38.

⁷² *Ibid.*, 38-39.

appropriation required only the claim upon the water and a demonstration that it was being put to beneficial use. This meant that a claimant, like John Reese and his fellow partners, could transport the water from their claim via ditches and canals any amount of distance required for its use. So long as the water was claimed and put to beneficial use, the physical location of the claimant's property mattered not.⁷³

Nascent ideas of appropriation had been introduced the American West during Spanish colonial occupation. These practices found their way into the agrarian communities of the Latter-Day Saints in the Great Salt Lake Basin who, like the Spaniards, quickly recognized the limitations of aridity. Similarly, ideas concerning appropriation were beginning to circulate through the mining districts of California where a consistent water supply was necessary for placer mining. Given the strong connections the Carson Valley shared with both regions, it is only logical that dialogue concerning water as a usufruct would emerge in early Nevada.

Transforming the Land

A key use identified by the appropriation doctrine was use of water for the purpose of irrigation. Both crops and cattle needed water, and with settlers claiming 320 acres each, it was inevitable that later settlers would not have direct access to water—the water would need to be brought to them.⁷⁴ Settlers accomplished this through the construction of small

⁷³ Donald Worster, *Rivers of Empire: Water, Aridity, and Growth of the American West* (Oxford University Press, 1985), 88.

⁷⁴ The size of ranches is indicated in Orson Hyde to Brigham Young, October 2, 1855, Church of Jesus Christ of Latter-Day Saints Church History Library, CR 1234 box 39 folder 22. Settlers did not arrive at the size arbitrarily; 320 acres is the size of a half-section as established under the Land Ordinance Act of 1785. The

irrigation ditches. Although the resolution prohibited the full diversion of a water source, it did not forbid drawing heavily from the source, so long as those downstream still had water to draw from. While such requisitions might not be noticeable when run off from the spring and summer melt was high, in the latter portions of the year and during times of drought, these draws became much more apparent.

Both agriculture and cattle grazing had several major effects on the fish habitats of early Nevada. First, the increased use of water appropriation led to small but incremental declines in water levels. For local fish populations, the smallest of decreases had a domino effect. The many flies which Mary Phippen found troubling her home provided the perfect meals for many of the area's fish.⁷⁵ Lower water levels led to a diminution of wetland habitats that supported the insect populations on which fish fed. Of larger concern, however, was an inability to breed. Various fish species spawned at different times throughout the year. With diminished water levels, fewer fish were able to make the upstream journey to spawn.

The devastation of fisheries was further abetted by livestock that trampled the vegetation along streambanks. Not only did riverside plants act as a natural filter for the water, but they also provided ideal fish habitats. Plants and grasses provided nurseries for young fry upstream, and ideal shelter for fish living along the waterway. The root system of grasses and plants also enabled overhangs along the rivers. Cattle grazing would destroy each of these. By consuming, foraging, and trampling shoreline vegetation, cattle removed this

subdivision established by the act would form the basis of American land survey throughout the country as the nation expanded. It seemed the settlers in the Carson Valley followed long-standing practices.

⁷⁵ Mary Jane Phippen to Alexander and Ann M. Brim, August 26, 1856, Utah Division of State History, Microfilm, MIC A 255.

vital component of waterway ecology. Once the vegetation was removed, the water system lost a vital filter of impurities—an impediment that would become further exacerbated by increasing levels of sulfates and nitrates entering the water because of cattle excretions and manure used as fertilizer. With vegetation removed and river and streambank overhangs lensed, soils along the banks began to erode at a quicker pace than in the past further changing the chemical composition of the waterways. The cattle, still needing access to the water, would then trample and compact the exposed ground along the waterway. Compacted soils retain heat, and subsequently warm their surrounding areas. This can lead to increased evaporation rates, but also affect nearby water temperature. The smallest change in water temperature often prove deadly to fish populations who are uniquely adapted to their environment and proved especially problematic to the region's fish that had evolved in the cool, snowmelt fed waters. Dramatic changes in water temperature and chemistry ultimately supplanted the native waterway habitat with an entirely new aquatic ecosystem.⁷⁶

The health of the streams and rivers would not be the only habitats impacted by cattle ranching. When Orson Hyde wrote to Brigham Young of the necessity to acquire “all the good land,” he was advocating to establish a Mormon controlling interest in the ranches of Carson, Eagle, Jacks, and Washoe Valleys.⁷⁷ Since his arrival in the Carson Valley, Hyde had touted it as “a great stock razing [sic] country” in his reports to Salt Lake City.⁷⁸ Yet, as emigrants continued to settle the valley, the opportunity to acquire adequate ranching land

⁷⁶ Thomas L. Fleischner, “Ecological Costs of Grazing Cattle in Western North America,” *Conservation Ecology* 8, no. 3 (September 1994), 635-636.

⁷⁷ Orson Hyde to Brigham Young, May 11, 1856, Church of Jesus Christ of Latter-Day Saints Church History Library, CR 1234 box 39 folder 23.

⁷⁸ Orson Hyde to Brigham Young, July 15, 1855, Church of Jesus Christ of Latter-Day Saints Church History Library, CR 1234 box 39 folder 22.

quickly disappeared. “The best land in this valley is claimed, and mostly occupied,” he warned, “yet the occupation of a few ranches would give us power and control over any amount of the richest and most luxurious grass land that I ever saw in any Country.”⁷⁹ That Hyde pressed Young to act as early as 1855-56 demonstrates how much the early settlers had laid claim to the land within the Carson Valley and its watershed. Though Hyde’s dire picture might be interpreted as hyperbole aimed to spur Young to action, similar observations in other correspondence from the valley suggest suitable grazing lands were becoming sparse.

Ranching activity was not confined to the Carson Valley alone, however. Land claims chronicled in the settler’s record book document the establishment of ranches in the surrounding valleys.⁸⁰ Mary Phippen wrote in 1856 that when settlers arrived, “they are counsiled [sic] to go to different valies [sic].”⁸¹ Given the extent to which sources document the spread of ranching throughout the valleys of Western Nevada, one can surmise that practice of grazing cattle had become common.

Degradation from grazing animals thus spread out from the rivers and streams from which they had begun. The same behaviors of browsing for food, rubbing against vegetation, and trampling and compacting the land led to similar hardships that were experienced on and had altered the riparian domains.⁸² Away from the water, the widespread disposition toward cattle would have immediate and lasting effects on myriad wildlife which shared the land. Soil compaction prevented natural aeration brought by burrowing animals, and scrubland

⁷⁹ Orson Hyde to Brigham Young, October 2, 1855, Church of Jesus Christ of Latter-Day Saints Church History Library, CR 1234 box 39 folder 22

⁸⁰ First Records of Carson Valley, Utah Territory, 1851, Nevada State Library and Archives. These claims are found on pages 25, 28, 41, 43, 47, 48, 62, and 67.

⁸¹ Mary Jane Phippen to Alexander and Ann M. Brim, July 13, 1856, Utah Division of State History, Microfilm, MIC A 255.

⁸² Fleischner, 631.

removal destroyed the habitat of rabbit, quail, and sage hens. Large game like deer and pronghorn depended upon the same grasslands and water sources as livestock for their survival. The introduction of grazing animals, therefore, created immediate competition over limited resources.

The settler population furthered the crisis of competition. Ranchers and farmers viewed the grasslands as private property and intended their property to sustain their livestock. Any game grazing this land competed to consume valuable resources. As a result, the ubiquitous presence of early modernization throughout the region came in the form of fencing. When John Reese first established his home at Mormon Station in 1852, he “fenced a field of some 30 acres.” Eventually, he would enclose all his land. “The fence I put round my land there was a pole fence and I afterwards made some log fences in order to tell it from others.”⁸³ Less than a decade later, Richard “Tennessee” Allen would note that “the old inhabitants of the Valley seem to be fully aware of the value of the soil, for they are every year inclosing more of it.” Allen reported that much of the demand for lumber in the Valley was required “principally for fencing.”⁸⁴ Fencing not only delineated property lines but created a mechanism through which settlers could defend property (livestock, crops, gardens), and threats to that property (game and varmint) were regulated and excluded.

Threats to wildlife did not end with fencing. Settlers viewed predators as a threat to livestock. Wolves and coyotes dominated the anxieties of early Nevada settlers, although bears and mountain lions, less numerous, provoked concern as well. These species were often shot on sight, and further measures to eradicate them soon followed. Allen noted how “The

⁸³ Reese, “Mormon Station.”

⁸⁴ Richard “Tennessee” Allen, August 25, 1859, letter published in the *San Francisco Herald*, September 24, 1859.

settlers of the Truckee Meadows, about three weeks since, attempted the destruction of some wolves by means of strychnine baited with beef.”⁸⁵ Such approaches affected not only the predators, but poisoned the entire food chain. Whether by bullet or by poison, Allen’s observations make the settlers’ aims clear: the eradication of predators within the local habitat.

Cattle ranching altered Western Nevada’s environment on multiple fronts. Through the destruction of vegetation, livestock grazing eliminated the wild fauna and flora that encompassed the ecosystem to one that favored invasive, non-native species. The disappearance of these food sources and vital habitats led to declines in animal populations that reverberated throughout the biome. In addition to threats posed by hunters, predatory animals had to cope with declining populations of prey. It took less than a decade from the establishment of the first Euro-American settlement under John Reese for these transformations to likewise erode the lives of the Washoe and Numa.

Adjusting to a Changing Land

Pushed aside from their traditional homes, the Washoe faced multiple hardships from settler transformations. The fences surrounding settler lands and the log cabins and homes they constructed for themselves all required wood—not only for construction but for fuel as well. Because timber was viewed as a necessity to the settlers’ society and the future development of their community, the settlers proclaimed the woodlands common property in 1851. The citizens of the Carson Valley were free to utilize the forest “as they deem proper,”

⁸⁵ Richard “Tennessee” Allen, April 21, 1859, letter published in the *San Francisco Herald*, April 29, 1859.

with an agreed exception for a section of land to be set aside in the future for an individual or company willing to erect a sawmill.⁸⁶ Reese and Company would construct the first sawmill in the valley in 1854, and Orson Hyde set about establishing his own shortly after his arrival in 1855.⁸⁷ By 1859 Richard Allen noted how the “three saw mills now in operation cannot supply half the demand for lumber required.” As previously noted, much of the timber found use in fencing, “while those who happen to need a few boards for building a kitchen, are obliged to enter their name at the mill and wait a month or more for their turn.”⁸⁸ The lush forests of cedars, ponderosa, and sugar pines of the Sierra Nevada provided what settlers perceived to be an endless supply of timber, and these early sawmills were established at the edge of these communities near the tree-line.

Despite the availability of timber along the slope, the cedars and ponderosa pines were primarily utilized for building materials, for the settlers found these trees to be of poor quality for everyday uses such as heating and cooking. The trees were either too large and labor intensive for the average family to process or did not burn in a manner that met settlers’ expectations. Instead, they turned their attention to the piñon pines which blanketed the ranges to the east of Carson, Eagle, and Washoe Valleys. Here, the settlers found a short, stocky tree not only reasonably easy to fell, transport, and process, but which also met the settlers’ requirements for use within the home. For those settlers further removed from the Sierra in the mining camps at Chinatown (later renamed Dayton) or Gold Canyon, the piñon pines served as their only timber supply. Though the mining camps had few permanent

⁸⁶ First Records of Carson Valley, 7, 13.

⁸⁷ Ibid., 74-75. Correspondence of Orson Hyde, Church of Jesus Christ of Latter-Day Saints Church History Library, CR1234, box 22 folder 20 and box 23 folder 17.

⁸⁸ Richard “Tennessee” Allen, August 25, 1859, letter published in the *San Francisco Herald*, September 24, 1859.

structures compared to their counterparts in the valleys, they still required timber for a variety of purposes including constructing sluices, as well as for heating and cooking. To meet demands, they too began to cut down the piñon pines.

To Washoes, the *T'agim* (piñon pine) was sacred. The pine nut harvest was the culmination of the gathering year. “It is pretty generally known,” John Muir would observe years later when traveling through Nevada, “that this tree yields edible nuts, but their importance and excellence as human food is infinitely greater than is supposed. In fruitful seasons like this one, the pine nut crop of Nevada is, perhaps, greater than the entire wheat crop of California.”⁸⁹ Indeed the yield was so high that the Washoe would devote much of September and October to the collection, processing, and storage of pine nuts. The work was labor intensive.

The cones, which are a bright grass-green in color and about two inches long by one and a half in diameter, are beaten off with poles just before the scales open, gathered in heaps of several bushels, and lightly scorched by burning a thin covering of brushwood over them. The resin, with which the cones are bedraggled, is thus burned off, the nuts slightly roasted, and the scales made to open. Then they are allowed to dry in the sun, after which the nuts are easily thrashed out and are ready to be stored away.⁹⁰

Working in such a manner, an individual could produce anywhere between 20 to 40 pounds of nuts per day.⁹¹ At the end of the gathering season, it would not be uncommon for the Washoe to have acquired several tons of pine nuts.

⁸⁹ John Muir, *Steep Trails*, Chapter XIII “Nevada Forests” (1918) accessed via Project Gutenberg, April 2018, <http://www.gutenberg.org/ebooks/326>.

⁹⁰ Ibid. Though published in 1918, Muir’s account was recorded in Eureka, Nevada in 1878. Muir reflects the process anthropologists have attributed to humans living throughout the Great Basin, as well as accounts by the Washoe themselves and utilized here for its succinct description of the harvesting process. The Washoe continue to practice the annual harvest to this day.

⁹¹ Walter J. Perry, “A Word for the Lowly Pinon,” *Journal of Forestry*, Volume XX (1922), 524.

Once the initial preparation was complete, the nuts could be processed further or cached for use during the winter. Utilizing a stone mortar and pestle, Washoe ground the *t'agim* into a fine flour, leached to remove tannin, and stored it in baskets. When ready to use, the flour was combined with water to make a mush, soup, or to create a dough baked into a biscuit. The remaining *t'agim* would be placed in baskets and stored in caves, rock structures, or grass lined pits. Both the *t'agim* and the flour produced from the nuts would provide the primary source of winter food. A successful *t'agim* harvest often spelled the difference between survival and starvation.⁹² The elimination of the *T'agim* forests by the settler population created further stress on Indigenous subsistence.

Forest destruction proved especially prevalent near mining camps. For much of the early period placer mining predominated along the rivers, streams, and canyons that abutted the immigrant trails. Men on their way to California would often try their luck while passing through, and those who settled the area took-up prospecting in addition to—and sometimes in lieu of—their farming and ranching duties. By the end of the decade mining had become a full-time profession for many settlers. Groups of men banded together to form small mining companies, stakes were claimed, small tent villages sprung up in the hills and mountains to the east of the fertile valleys, and the earth was overturned in pursuit of mineral wealth. With miners in the hills and mountains, and the farmers in the valleys, little competition existed for finite water resources allowing both to pursue their endeavors relatively free from conflict.⁹³

⁹² Downs, 20, 25; “Wa She Shu,” 17-20.

⁹³ *Nevada Historical Society Papers*, 171, 178-179; Sally Zanjani, *Devils will Reign: How Nevada Began* (Reno: University of Nevada Press, 2006), 10-11, 41-48; Grant R. Smith, *The History of the Comstock Lode* (Reno: University of Nevada Press, 1943), 1-3; James W. Hulse *The Silver State: Nevada's Heritage Reinterpreted*, 3 ed. (Reno: University of Nevada Press, 1991), 66-67.

Away from the firs of the Sierra, piñon pine groves often constituted the only source of lumber available to prospectors. Not only was timber required for cooking and heating, but for constructing the sluices that carried the water to support their mining ventures, to create flumes for water diversions, or to support the walls of diggings. Settlers also discovered that the piñon made excellent charcoal that could be utilized by blacksmiths, and later by those wishing to melt down and refine the ore. Year by year the settlers felled more and more trees from the piñon groves to meet their insatiable appetite for lumber. Because mining activities concentrated on the hills to the east of the valley settlements, the groves that the settlers exploited were the same forests upon which the Washoe long depended upon for their annual pine nut harvests.

In less than a decade Euro-American settlement cascaded in devastating effect on the environment, all while settlers celebrated their role facilitating these prosperous alterations. The changes were small, but not so insignificant to go unnoticed. “Owing to the great number of cattle brought into Carson Valley across the plains from California,” Richard Allen noted, “the grass is pretty closely shaved from our meadows.”⁹⁴ Overgrazing also effected the large game already in a slow decline due to competition with cattle. Ever increasing numbers of cattle negatively impacted water quality, fisheries, and the habits of many small mammals and birds. Among the Carson and Virginia ranges to the east, piñon pine groves shrank at an alarming rate to meet the demands for timber.

Nature’s balance had begun to crumble, and each impact of Anglo settlement cascaded through the biome. With each new struggle, a multitude of species suddenly found

⁹⁴ Richard “Tennessee” Allen, October 22, 1859, letter published in the *San Francisco Herald*, October 28, 1859.

themselves in crisis. These reverberated throughout the ecosystem. Fish, game, piñon pine—all suffered distress resulting from Euro-American settlement. Even settlers noticed. “During the late severe weather we have had, the Washoe Indians have suffered much for want of food,” Allen wrote. “I am told that several have died of starvation in this Valley and probably a great many more in the mountains. Game, such as they are accustomed to hunt is becoming scarce.”⁹⁵ As the Washoe struggled to sustain themselves, they gradually turned in desperation to the only readily available food source they could find: cattle.

Conflict over resources steadily increased as intruders grew in number.⁹⁶ Forced off their lands and facing starvation due to the changes wrought by the settlements, the Washoe turned to raiding the ranches and settlements. Settlers responded with the common rhetoric utilized throughout westward expansion. “The Indians, I fear, will have to be conquered and taught a lesson by force,” Orson Hyde remarked as early as 1856. “Though they have suffered many wrongs and grievances... I do not like to hear of their killing the brethren and driving off the stock.”⁹⁷ Not all sought violence as a solution, however. Richard Allen published his view that “it [was] high time Uncle Sam provide something for their assistance.”⁹⁸ Rather than risk all-out war with the Washoe, settlers turned instead to the local Indian agent, Frederick Dodge.

⁹⁵ Richard “Tennessee” Allen, January 1, 1859, letter published in the *San Francisco Herald*, January 6, 1859.

⁹⁶ Because no official census was conducted until 1860, it is difficult to ascertain precisely how many individuals settled in and around the Carson Valley during this period. Estimates range from 700 to 1,000 settlers. The 1860 census lists a population of 6,857, however, many of these individuals arrived during the initial Rush to Washoe.

⁹⁷ Orson Hyde to Brigham Young, April 20, 1856, Church of Jesus Christ of Latter-Day Saints Church History Library, CR 1234 box 39 folder 23.

⁹⁸ Richard “Tennessee” Allen, January 1, 1859, letter published in the *San Francisco Herald*, January 6, 1859.

In 1859, Dodge proposed the creation of two reservations to be located at Pyramid and Walker Lakes. The Washoe, he intended, would share these reservations with the Numa tribes who also resided in the area. Both groups would have access to water, fish, game, and undisturbed piñon forests. The plan, however, proved impractical from the start. Though the two tribes shared subsistence practices specialized to their geographic locations, they spoke distinctly different languages. The Numa language is part of the Uto-Aztecan family—prevalent throughout the tribes of the Great Basin and was remarkably similar to the language of the Western Shoshone. The Washoe, however, were the only Great Basin tribe whose language did not originate from this language group; their language belonged to that of the Hokan family spoken by Central California tribes such as the Esselen, Salinan, and Chumash.⁹⁹ In addition to the hardships that arose from difficulties communicating, the two tribes had often been in conflict, and had not shared friendly relationships at the time of the proposal and within the preceding decades likely as a result of resource competition. Finally, the locations at Pyramid and Walker Lakes were traditional Numa lands—the Washoe would be required to move away from the lands they knew and loved and forced to abandon their sacred grounds at *Daw Ow Aga* (Lake Tahoe) and become intruders themselves. The Washoe resisted any attempt to be relocated and insisted that they “intended to live on the land where the Maker had created them.”¹⁰⁰ Though the reservation plan Dodge envisioned did not materialize as planned, other events in 1859 would decidedly tip the scale in the settlers’ favor.

⁹⁹ Downs, 6-7.

¹⁰⁰ “Wa She Shu,” 27.

In the decades following the initial Euro-American incursion, the Washoe did what they had done for millennia: adapt. Just a quarter century after the arrival of Frémont, the occupation of Washoe lands was so complete that the local agent informed his superiors in Washington “there is no suitable place for a reservation in the bounds of their territory, and in view of their rapidly diminishing numbers and the diseases to which they are subjected, none is required.”¹⁰¹ Some bands would attempt to retain their traditional modes of substance as best they could, dwelling on the periphery of the Anglo settlements. For many, their survival came at the cost of acculturation. They adopted American clothing, learned English, found jobs as ranch hands, and realized various means to contribute to the new settler economy.

Water, ranching, timber. These activities are not unique to the Comstock, but rather a continuation of the practices already in place from the earliest days of settlement. To understand the environmental alterations that resulted from Comstock mining, we need to hear the backstory as prelude. All of this occurred before the first industrial mine, before silver. The first decade of Euro-American settlement laid the groundwork for all the activities that would follow, and near the end of the 1850s, it was Anglo agriculture that dominated the region.

¹⁰¹ “Wa She Shu,” 26.

Chapter 3

By the end of the 1850s, competition over northwestern Nevada's liquid resources had emerged between Indigenous communities who attempted to retain their traditional use, and Euro-American settlers who began utilizing water for agriculture. The balance of power in the region slowly began tilting in favor of the settlers, yet their numbers remained relatively small. Subsistence farms and family ranches dotted the valleys abutting the Eastern Slope, and prospectors roamed the surrounding mountains. The towns of Genoa, Dayton, and Carson were founded in this decade, but they stood out more as the first American settlements after the empty deserts and solitude of the Great Basin for emigrants traveling westward than as true urban centers. The region would remain a far-flung corner of Utah Territory, but in 1859, all this would change.

The mining boom that followed the 1859 discovery of silver inexorably altered the region. From a quaint settlement nestled between the desert and the mountains, through the mid-1860s the region grew to include the second largest urban center west of the Mississippi River.¹⁰² Growth brought many challenges, among them increased competition over water. Contests that previously had been resolved through colonial dispossession of Indigenous lands and quasi-legal claims among settlers in the region ballooned into multi-faceted

¹⁰² Like any mining boomtown, it is difficult to ascertain precise population figures as people came and went with the fortunes of the mines. Virginia City maintained large tent cities full of semi-permanent residents throughout its boom years. The extent these individuals were counted in official census records remains unknown. There are also large discrepancies between the federal census and census data collected by the State of Nevada. Historians agree that the population was likely larger than the official number of approximately 12,000 recorded by the 1870 census, estimating it at somewhere between 20,000 and 30,000 at its most prosperous point. Even utilizing the census figures, Virginia City would still be counted among the largest urban centers in the West at this time, second to San Francisco and on par with Sacramento with 16,000 residents in 1870. See Grant Smith, *History of the Comstock Lode* (University of Nevada Press, 1943) and Ronald James, *The Roar and the Silence: A History of Virginia City and the Comstock Lode* (University of Nevada Press, 1998).

competition. Euro-American settlers seeking farmsteads continued to challenge Indigenous claims to lands abutting the region's main rivers. At the same time, industrialists began to harness the water in support of mining activities adding further strain to the limited supply. All the while, water remained a necessity, and securing a stable supply of drinking water became paramount as people increasingly flocked to Western Nevada. Mineral wealth also led to long-desired self-government, yet each water claimant interpreted water rights in the manner most convenient to their position, setting the stage for future conflict.

That Damned Blue Stuff

At the head of Gold Canyon, mining activity steadily increased over the first decade of settlement, and discoveries of gold bearing quartz veins drew much excitement. The enthusiasm attracted miners and prospectors from the surrounding region hoping to stake a claim on rich diggings. One of the individuals wooed by the siren's call of gold was William Wright, better known by his penname Dan DeQuille, who had been prospecting along the eastern slope of the Sierra Nevada near Mono Lake.¹⁰³ DeQuille later recounted stories of these early days, offering us a glimpse into that world.

From the first mentions of men digging in the Virginia Range in 1852 to DeQuille's observations concerning the discovery of silver in 1859, the hunt for precious metals was conducted by placer mining just as it was elsewhere in the far west. The task of panning for gold in the American River and countless other rivers and streams running off the western

¹⁰³ Mono Lake is approximately 90 miles south of the Carson Valley, approximately 65 miles north of the head of the Owens Valley and the present-day town of Bishop and is at the eastern entrance to Tioga Pass.

slope of the Sierra Nevada into California was made easier by having consistent sources of water nearby. The tiny rivulets of Gold and Six Mile Canyons fed by springs and snow melt hardly matched the luxury offered to miners across the divide. For the hardscrabble prospectors trying to make a living in the mountains of Nevada, access to water became almost equally as important as access to gold. Without water, placer mining was impossible.

So vital was water to early prospectors that DeQuille made several references to the efforts of miners—both prior to and immediately following the discovery of silver—to secure and furnish a ready water supply. In 1856, miners had collectively employed a group of approximately forty Chinese immigrants for the purpose of constructing a ditch “by means of which water was to be brought to the Gold Cañon mines from the Carson River.”¹⁰⁴ While this may have served those working the mouth of the canyon, it would have done little to help those working further up the ravine.

With much of the attention competing for the easy diggings at the base of the canyon, prospectors were slowly making their way up towards Sun Mountain (later named Mt. Davidson) from Gold and Six Mile canyons searching for the source of the gold deposited below. The further up the mountain they traveled, the more limited water became. Without an immediate water source, the only alternative available to these prospectors was to prospect a site and carry the dirt back down the mountain where it could be processed near the Carson River. The more knowledgeable men of the camps further recognized the gold they sought on the mountain was likely to be trapped among quartz veins in rock deposits. The hard rock miners not only had to dig and carry their potential ore bearing rocks back down the

¹⁰⁴ DeQuille, 29.

mountain but faced the additional burden of crushing the rock by hand before continuing with the normal placer methods. This work was both labor intensive and inefficient, but without water, one of the few options available to the region's miners.

Prospectors and placer miners had long contended with the region's aridity yet had managed to make do throughout the mid-1850s. To their dismay, their luck was about to run out. The year 1857 was marked by severe drought. No water meant miners could not pan for gold, nor operate sluices or rockers. The drought dramatically impeded mining in the Virginia Range, and without the water necessary for their work, many miners quit their claims and moved on in search of new opportunities.¹⁰⁵ Reaffirmed to all was the correlation between an adequate water supply and success in their endeavors.

The following year was no better. It was clear to the prospectors that without access to a reliable water source, the Gold Canyon diggings would most certainly fail. "Investors" was the word on everyone's lips along the eastern slope that year. The *Territorial Enterprise*, the local newspaper that doubled as the Carson Valley's booster, published a series of articles throughout the spring of 1858 drawing attention to the rich opportunities afforded the region by its promisingly prodigious mineral deposits. All that was needed, its authors concluded, was the water infrastructure necessary to make it possible. The miners shared this sentiment forming the Columbia Quartz District to generate further interest and attract investors who could bring the water that would make them all rich. But talk was cheap, and despite the local buzz, things continued much as before. Mining activity diminished but did not disappear entirely.¹⁰⁶

¹⁰⁵ Elliot Lord, *Comstock Mining and Miners* (1883), 33; Ronald James, *The Roar and the Silence* (Reno: University of Nevada Press, 1998). 5.

¹⁰⁶ James, 5-6.

In 1859 near Sun Mountain on what would become the future townsite of Gold Hill, John Bishop found a little color; a deposit that ultimately gave the town its name. “The next difficulty,” Johnson later recalled of working the site, “was to obtain water.”¹⁰⁷ A short distance to the northeast in the spring of that year, Pat McLaughlin and Peter O’Riley also set up a claim at the head of Six Mile Canyon. There, the two men dug a small hole to serve as a reservoir to facilitate their mining efforts, avoiding the need to travel up and down the mountain.¹⁰⁸

Water remained of such vital importance to the early diggings that Henry Comstock and his partner Emanuel “Manny” Penrod used it to their advantage to help strongarm their way into McLaughlin and O’Riley’s diggings. McLaughlin and O’Riley had posted their claim in accordance with local customs and mining laws, but upon seeing the posting and the ore quality coming from the claim, Comstock argued they had no right to the water they were using as it flowed over 160 acres he had allegedly staked for a ranch in the preceding years. Furthermore, Comstock argued, the water flowed from Caldwell Spring which, incidentally, Comstock also claimed ownership over. Even if the two men could successfully prove their claim did not overlap with his, “they could not consistently ignore his claim to the water flowing over it,” he argued. Comstock’s assertions were nebulous at best. In the previous year he, Penrod, and James “Old Virginny” Fennimore had purchased water from a spring along with some sluice boxes from Joe Caldwell at the top of the canyon near McLaughlin and O’Riley’s claim. Sluice boxes and permission to use spring water were a far cry from

¹⁰⁷ DeQuille., 45.

¹⁰⁸ Ibid., 60.

actual ownership and rights to the water, but this did not stop Comstock from boisterously repeating the claim to any man who would listen—and likely many others who would not.¹⁰⁹

To make amends for this alleged infringement of his rights, Comstock demanded he and Penrod be given a 100-foot stake to the proposed claim as a compensation for the water McLaughlin and O’Riley had allegedly stolen as well as for their continued future access and use. Finding appeasement preferable to a drawn-out fight in the tight-knit mining camp, the two men consented to the agreement. The decision proved fortuitous, for the claim was located over what McLaughlin and O’Riley believed to be a rich quartz deposit. As the four men worked the claim, however, DeQuille noted how they, along with other miners in the region, grew increasingly frustrated with a bluish-black substance that continually clogged their pans, rockers, and sluices. “They damned this stuff from the rising of the sun to the going down thereof, and worked in it for a considerable length of time before anyone knew what it was,” DeQuille recalled.¹¹⁰

As the men dug deeper in the ground, however, the gold was becoming increasingly less concentrated, and when they attempted to amalgamate the alloy, “the damned blue stuff leached with the gold, changing its color, and steadily reduced the value of latter metal. Two years previous, in 1857, brothers Josiah and Ethan Allen Grosch, both highly educated and familiar with minerology, became suspicious of this recurring problem and conducted an assay. The material the miners had cursed and tossed aside in frustration, they discovered, was nearly pure silver.¹¹¹ Tragically, Hosea died of sepsis following an injury to his foot later

¹⁰⁹ Ibid., 51-52.

¹¹⁰ Ibid., 40.

¹¹¹ More specifically, it was a silver sulfate which had been alloyed with sprinkling of gold. The silver sulfite led to the discoloration of rock.

that year, shortly followed by his brother Ethan who acquired frostbite during a harsh crossing of the Sierras made to raise funds for a mine and stake his claim and died from complications of amputation. Despite their deaths, rumors began circulating that both silver and gold were to be found in the hills above Gold and Six Mile Canyons. These rumors remained in the summer of 1859 as the dark blue material continued to dilute the gold coming from the head of Six Mile and Gold Canyons.¹¹²

In July of 1859, a rancher from the Truckee Meadows ventured up the mountain to inspect the diggings for himself. There, he obtained a sample of ore and took it over the Sierras to be assayed in Grass Valley, California. The results came back astonishing: the assayer estimated a value of several thousand dollars per ton in gold and silver. DeQuille cheekily recalled, likely with some exaggeration, what happened next.

It was agreed among the few who knew the results of the assay, that the matter should, for the time being, be kept a profound secret; meantime they would arrange to cross the Sierras and secure as much ground as possible on the line of the newly-discovered silver lode. But each man had intimate friends in whom he had the utmost confidence in every respect, and these bosom friends soon knew that a silver-mine of wonderful richness had been discovered over in the Washoe country. These again had their friends, and although the result of the assay made by Mr. Atwood was not ascertained until late at night, by 9 o'clock the next morning half the town of Grass Valley knew the wonderful news.¹¹³

The Rush to Washoe, as Nevada was then called, was on.

It did not take long for McLaughlin and O'Rielly's suspicions to be confirmed that they were indeed atop of a rich quartz deposit. Though the ore body below them certainly contained gold, it was the rich vein of silver that brought people from all walks of life to the foot of Sun Mountain. The four men sold their claims soon thereafter. Scholars and

¹¹² Hosea died of sepsis after injuring his foot and Ethan died following amputation for frostbite acquired during a harsh crossing of the Sierras in an effort to raise funds for a mine and stake his claim.

¹¹³ DeQuille, 60.

enthusiasts continue to debate whether the men sold out too soon and could have commanded a higher price per foot by waiting, but even at this early stage one thing was increasingly clear to these prospectors: the placers were limited and accessing the vein would require industry and capital beyond their financial means. Though mining now turned downward, water remained an important issue.

Shortly after the mining boom commenced in Virginia City and Gold Hill, animal powered quartz mills sprung up throughout the region. At first, things proceeded much as they had during the placer years. Ore was loaded onto mules or other beasts of burden and carried elsewhere for processing. The first large scale processing infrastructure put in place was the development of arrastras for refinement. These arrastras incorporated simple technology utilized by the Spanish for centuries: ore was placed in a circular pit with flat stones. Smooth grinding stones attached to an arm pushed or pulled by human or animal power were dragged over the ore pulverizing it into the desired processing size.

One such arrastra was built by William Hickman Dolman and his compatriots during the winter of 1858-59. “This is perhaps the rudest effective mode of pulverizing quartz,” Dolman noted, but it was necessary if the miners were to free the precious metals from the quartz ore. The construction was “circular in form, and one and a half feet deep and some ten feet in diameter... was paved with large stones, leaving a surface as nearly level as practicable.” Smooth rocks were set around the pit in a manner Dolman described as a ring mirroring that one might find in a circus. A long circular center post was raised with a perpendicular sweep attached that extended over the pit and to the ring road running parallel outside. “Horses hitched to the outer end of the top sweep walked round and round in a circle. The quartz was pulverized between the rock bed and the drag rocks.” Under an

experienced hand, Dolman claimed the arrastra could crush a ton of rock per day, although he noted that the process took time to perfect as he and his fellow miners were largely unfamiliar with the crushing and refining process and needed to learn the proper steps and appropriate proportions necessary to achieve a productive flow.¹¹⁴

Though the mills that supported the Comstock Lode would utilize various methods to crush the ore and extract its metals, there remained a need for power to crush the ores and water to help facilitate amalgamation processes. Animal powered arrastras, like the one operated by William Dolman, facilitated processing near mining sites, but once processed, the amalgam still needed to be transported to a water source to wash and separate the precious metals. As the scale of mining gradually increased, the need for high-capacity refinement grew more urgent.

In October of 1859, stamp mills were introduced to the region to increase capacity. Two of these mills were constructed in the town of Dayton at the mouth of Gold Canyon along the Carson River where much of the mining activity had been centered the preceding decade. The first of these mills operated by Logan and Holmes had four stamps that utilized horses in a fashion like those used by the arrastras to power their stamps. The second, operated by Hastings and Woodworth, utilized the power of the Carson River to turn a water wheel.¹¹⁵ Water powered arrastras were also constructed near the river to concentrate the refining process in a single location. To those concerned with the development of the region, water, it seemed, would play a key role in the mining industry that was sure to come following the discovery of silver and the rich gold deposits that continued to be unearthed.

¹¹⁴ William Hickman Dolman, "Before the Comstock," Special Collections, Matthewson IGT Knowledge Center, University of Nevada Reno, MS 83-12.

¹¹⁵ DeQuille, 69.

California papers noted the urgency which mining entrepreneurs were accumulating land along the Carson River and staking claims to water rights.¹¹⁶ Here, miners and entrepreneurs alike could use the river's water to power their machinery and have a ready source of water for use in refinement. Though stamp mills and arrastras were eventually built throughout Virginia City, Gold Hill, and the shores of Washoe Lake in the coming decade, but by far the largest concentration of mills were constructed along the Carson River Canyon corridor between the towns of Empire and Dayton.¹¹⁷

In the river canyon we see the first glimpse of transformations in legal thinking concerning rights to and ownership over water in the region. As mining activity increased over the decade and access to water became increasingly important to the mining community, the tell-tale signs of a movement away from the riparian system that initial settlers in Carson Valley utilized began to emerge. Locating one's stamp mills next to the river guaranteed riparian rights—that is, owners were ensured the free use of any water flowing over their property. Utilizing the natural flow of the river to turn a waterwheel that powered machinery was a well-established acceptable practice under riparian systems.

In the United States, the riparian doctrine faced a litany of tests during the first half of the 19th century that made clear the rights of water users and the limitations placed upon them. Largely centered in the Northeast, these cases focused not on stamp mills for processing ores, but the textile mills that had emerged at the start of the Market Revolution. Much as the stamp mills along the Carson River utilized the flowing water to power their machinery, so too did the textile mills of the Northeast. Some of these mills created small

¹¹⁶ "From Carson Valley," *Sacramento Daily Union* vol. 18, no. 2706, November 29, 1859, p. 2.

¹¹⁷ The Empire townsite is now incorporated into eastern Carson City.

diversionary channels or canals that concentrated the water in a controlled descent thus increasing its flow creating energy for the mills to harness. But strictly speaking, under common law, riparian rights permitted only the use of water flowing over or adjacent to one's property. Were diversions legal?

The case of *Tyler v. Wilkinson* in the United States District Court for Rhode Island established that such diversions were indeed lawful, but in so doing, added an American addendum to the doctrine: reasonable use. Justice Joseph Story's opinion made clear that all riparian property owners had an equal right to reasonable use of the water, but only so long as this use was not "positively and sensibly injurious" to the rights held by others along the waterway.¹¹⁸ Story's decision was succinctly summarized by James Kent in his 1827 treatise *Commentaries on American Law* where he described the riparian doctrine thus: "All that the law requires of the party, by or over whose land a stream passes, is that he should use the water in a reasonable manner, and so as not to destroy or render useless, or materially diminish, or affect the application of the water by the proprietors below on the stream."¹¹⁹ In short, riparian owners were free to use the excess flow over their properties to the benefit of each, but could not take actions that would inhibit the equal rights of other riparian owners. As Justice Story remarked, all benefited and suffered equally with the ebb and flow of a waterway's natural cycle.

This doctrine was reaffirmed by Story in 1838 during the case of *Webb v. Portland Manufacturing Company* and was largely accepted in the Northeastern courts shortly thereafter. By the time the early Nevada miners were erecting their mills along the Carson

¹¹⁸ *Tyler et al. v. Wilkinson et al.*, United States Circuit Court for the District of Rhode Island, Case number 14,312, 4 Mason 397 (1827).

¹¹⁹ James Kent, *Commentaries on American Law*, 1ed. (1828), 354.

River, reasonable use had become accepted principle throughout the country. Where then was the departure? Mills throughout Carson River Canyon and along the river in Dayton operating downstream of the ranches and farms of the Carson Valley all abutted the Carson River and utilized its water for their necessary purposes with mutual success and misery as the river rose and fell in accordance with the annual Sierra snowpack just as Story's ruling intended. To understand the miners' departure, one must understand what Story left as universally understood by all parties in the *Tyler* decision.

Reasonable use and the limitations of diversion to the textile mills arose from long-standing water policy dating back to Roman law. In most of the European legal traditions shaping American legal thought, water was not something one could own. Just as one could not reasonably claim ownership to all the air that filled one's property boundary, so too it had long been held that water flowing over one's property was something held in common by all. The Justinian Code made clear that water was held collectively and noted its importance for drinking, fishing, and water transportation, yet notably, it spoke nothing of a common right for use in irrigation or waterpower.¹²⁰ Riparian proprietors had a right to use of the water, but only what was needed. When one understands water as a common, Story's decision on reasonable use becomes clearer: no proprietor can claim ownership, they can only use that which would naturally be available to all.

Coming from a background of English common law that shaped the United States' early legal doctrine, Story's decision seems like a reasonable yet notable departure from previously established tradition adjusting to changes marked by an industrializing society.

¹²⁰ Michael C. Meyer, *Water in the Hispanic Southwest: A Social and Legal History, 1550-1850* (Tucson: University of Arizona Press, 1984), 117.

But the climates of New England and Great Britain differ significantly from those of Nevada whose climate was shaped by oscillations in Pacific surface water temperatures creating variable wet and dry cycles with the dry years far outnumbering the wet. The concept of reasonable use had long been practiced by Spain and applied to its colonial possessions in the Americas. Spanish legal scholarship incorporated Islamic traditions and legal practices addressing aridity and water rights during its occupation for they were better suited for the environment of the Iberian Peninsula and its later American colonial possessions in what we today identify as the American Southwest. Here, water scarcity meant that to utilize water for the common good, standards of reasonable use must be applied. Even though reasonable use was nothing new, Story's application to industrial use was original, for the laws of New Spain still held that water was held in common trust by the crown to be used for individual personal needs like those long established in Roman antiquity.¹²¹

When the *Alta California* and *Sacramento Daily Union* remark on the acquisition of property abutting the water, this can be understood as following these same customary riparian rights. However, when these and other papers of their day remark on miners discussing acquiring individual water rights, the conversation shifts away from water held in common trust to water as a commodity. Given the aridity of the Great Basin, one might take for granted that water was a commodity one could own; however, in the mid-19th century, this was a nascent legal thought taking shape in the American West, and as historian Donald Pisani notes, ideas concerning water commodification were as much social as environmental.¹²²

¹²¹ Ibid., 118-120.

¹²² Donald Pisani, *Water, Land, and Law in the West: The Limits of Public Policy, 1850-1920* (Lawrence: University Press of Kansas, 1996).

Euro-American settlers in early Nevada brought ideas about water rights with them that resulted in two prominent avenues of thought: practices among Latter-Day Saints communities whose settlers came from the Great Salt Lake Valley and were responsible for nascent agriculture and irrigation in western Nevada, and those originating from practices in the California gold fields. These two ideas also clearly demonstrate early schisms concerning water rights between agrarian and mining pursuits harboring tensions that continued to grow as the Rush to Washoe intensified.

Growth and Conflict

Like the Washoe who were slowly pushed off their land and faced difficulties in traditional survival practices because of environmental settler colonialism, the Numa (referred to in anthropological scholarship as the Northern Paiute and by Euro-American settlers as Pi-utes) also faced hardships as increasing waves of emigrant populations swept over Numa lands. The first troubles came from emigrants on the overland trails traversing from the Humboldt to Truckee Rivers and across the Truckee Meadows where they often rested and grazed their herd animals before making their push over the Sierra Nevada. Euro-Americans' overland migrations arrived in western Nevada during the summer. This timing corresponded to the period the Numa would ply the same lands collecting wild grasses and seeds, hunting the game that came to the river to drink from its waters, and fishing for the large, native Lahontan cutthroat trout and cui-ui suckers found in the waters of the Truckee River and Pyramid Lake. Just as the Numa harvested the bounty nature provided, so too did the emigrants.

Settlers and prospectors passing through inexorably damaged the land. Large emigrant trains frightened many of the game animals upon which the Numa might reasonably depend. What little game remained was over-hunted as Euro-American emigrants took the opportunity to replenish their dwindling supplies. They freed their teams and livestock to feed on the wild grasses that grew along the river and across the Truckee Meadows: the same grasses the Numa gathered for their own food. Trails that tracked the rivers had the reciprocating effect of forcing the Numa away from the verdant lands they traditionally relied upon most during the hot, dry summers.¹²³

Emigrant trains continued their westward journeys, however, a reverse migration from California eastward over the Sierras and into the Carson Valley and Virginia Range also began. The mining boom that followed the discovery of silver brought a new wave of settlement to the region. Virginia City grew into a major metropolitan center, and the population of the surrounding region rose and fell with the success of the silver mines. Between 1860 and 1870, the region's population grew nearly six hundred percent.¹²⁴ The settlers that Indian Agent Fredrick Dodge warned would be coming to the arable riparian valleys became a reality. Irrigation ditches diverted river waters, and all the good land was plowed or grazed—all the land, except for that which had been set aside for the Numa through the Bureau of Indian Affairs.

Though the plan Dodge had originally envisioned of a combined reservation for Washoe and Numa never materialized, two reservations were set aside for the Numa at Pyramid Lake and Walker Lake in November of 1859. The request to set aside lands for the

¹²³ Martha C. Knack and Omer C. Stewart, *As Long as the River Shall Run: An Ethnohistory of Pyramid Lake Indian Reservation* (Berkeley: University of California Press, 1984), 41.

¹²⁴ United States Census Bureau, Department of Commerce, Eighth and Ninth Census.

Numa was made by Dodge to his superiors in the Bureau of Indian Affairs as necessary for the development of the region and the well-being of peaceful relations between American settlers and Indigenous communities. Wishing to avoid possible altercations over land in the future and utilizing the mechanism of reservations as means to cede claims over all lands excepting that which was granted in the lands set aside for future tribal use, this request was one the Interior Department was pleased to consider. The appeal was further aided by Dodge's insistence that the relatively small amount of land reserved to these tribes were "isolated spots... embracing large fisheries, surrounded by Mountains and Deserts, and will have the advantage of being their home from choice."¹²⁵ Here, bureaucracy worked to Dodge's advantage. Both the Bureau of Indian Affairs and General Land Office that managed federal lands were nested within the Department of the Interior. The Indian Affairs commissioner spoke to the commissioner of the General Land Office and the lands were withdrawn from public domain and set aside for use as a reservation. The descriptions of the lands were initially vague, with the first at Pyramid Lake being described simply as a tract varying 25 to 53 miles in length, triangular in its shape, and including the northwest portion of the Truckee River valley and the entirety of Pyramid Lake within its boundaries. The bureaucrats agreed distinct boundaries could be settled later when the government began its official survey of the region.¹²⁶

At first, Euro-American settlers had few objections to the creation of these two reservations. The lands that were now reserved to the Numa lay distant from areas of Anglo settlement and were largely centered on Pyramid and Walker Lakes whose waters held little

¹²⁵ Bernard Mergen, *At Pyramid Lake* (Reno: University of Nevada Press, 2014), 12.

¹²⁶ Knack and Stewart, 90.

value to settlers due to their slightly brackish and alkaline qualities. The reservations, settlers hoped, would be effectively managed by Indian Agents to keep Indigenous members confined to these small spaces thus preventing future raids on American communities and the emigrant wagon trains crossing through Numa lands.

Water played a crucial role for the future of the Numa. The Indian Agents tasked with acculturation by teaching tribal members agriculture and incorporating them into society found access to the reservation's riparian lands necessary as they were one of the few areas which water for farming was readily available. For the Numa, whose primary concern was continuing access to traditional fishing grounds, the waters of the Truckee River and Pyramid and Walker Lakes were equally vital to their survival. Although Indian Affairs would ultimately recognize the economic advantages of providing fish for the region's growing population, the plan still required a readily available supply of clean water. But as the region's population grew, so too did the need for food and water.

The Numa's emerging commercial fishery to supply the growing urban mining centers paled in comparison to the growing demands for beef. Those rich grasses that had long been used to graze livestock before crossing the Sierra found new life as cattle ranches. Though ranching had been prevalent in the valleys prior to the mining boom, driving them over the Sierra to markets in California had limited profitability. With local markets emerging, agrarian settlers found multiple markets now open to them. The California beef markets—facilitated by driving local herds over the Sierra to market—combined with emerging local markets created an incentive for cattle ranching. More cows meant more hay. The riparian grasslands and meadows abutting the Carson and Truckee Rivers provided

natural sources of hay that settlers used to support the developing herds. To meet growing demands, however, sage lands were converted to alfalfa fields supported by streams, tributaries, and an increasing number of irrigation ditches.

The lands of the Pyramid Lake reservation suddenly garnered much more interest among Euro-Americans, and as mining camps emerged in Esmerelda and Aurora, grasslands among the Walker Lake Reservation fed by the Walker River and the Sierra snowpack also piqued the interest of potential settlers. Nineteenth Century American ideology concerning acquisition of land and its proper use were closely intertwined with rhetoric concerning Manifest Destiny. Not only did Americans believe they had a divine right to spread across the continent and prosper, but they also held firm to the belief that to prosper required putting otherwise perceived underdeveloped lands to beneficial use. The American ideal of the strong, independent farmer toiling in his fields still held sway over large segments of the American psyche, yet here in the Nevada high desert, they found their ambitions blocked by the very antithesis of this ideal: Indigenous subsistence practices of hunting, fishing, and gathering.

In the minds of settlers, the reservation lands with their valuable access to water were being wasted. “There is no good reason why a few Piutes [sic] should hold this magnificent tract of land to the exclusion of white men who would be glad to settle upon it and make homes which would add greatly to the prosperity of the State” later opined the editor of the *Nevada State Journal* catching in a sentence the growing hostility and resentment.¹²⁷ “It is very unfair,” wrote the editors of the *Reno Evening Gazette*, “that Indians should control

¹²⁷ “The Walker Lake Reservation: Piute Nomads Holding the Best Land in Nevada,” *Daily Nevada State Journal*, October 15, 1884.

these two great lakes and enjoy privileges [sic] that are denied to white men.” If this land were turned over to Americans for mining and agrarian development, they argued, “its waters will be levied upon to supply the wants of the neighborhood, in spite of hoggish Indians and jealous agents.”¹²⁸

The Bureau of Indian affairs remained unmoved. Indian Agent Franklin Campbell noted the growing animosity in reports to his superiors. “The great cause of complaint by the whites is not that Reserves are set off for the Indians, but that they are allowed to lay idle furnishing nothing to the Indians but a camping ground.”¹²⁹ The Numa, settlers believed, did not properly utilize the land to its fullest potential. Despite on-going complaints that there were “no Indian stock nowhere near to eat the grass,” editorials repeatedly note that try as they might, “the U.S. authorities will not let us use it.”¹³⁰

Utah authorities largely ignored the complaints of settlers on the remote western fringe of the territory. Furthermore, as a territory, Utah had no voting member of Congress, thus it seemed all but impossible to effect the changes in land policy settlers desired. The silver boom, however, created an opportunity for change in governance that some of the settlers had long sought.

Self-Government

The establishment of Carson County, Utah Territory brought a certain degree of order to the region—at least as far as recording property and establishing courts for the resolution

¹²⁸ *Reno Evening Gazette*, February 7, 1883.

¹²⁹ Knack and Stewart, 50.

¹³⁰ *Ibid.*

of disputes. For Euro-American farmers and miners alike this should have been a welcome addition to their fledgling communities, yet it seemed few in the Carson, Eagle, or Washoe Valleys or those in Gold Canyon were happy. The close relations between Utah authorities and the Church of Jesus Christ of Latter-Day Saints troubled many community members not of that faith, and the dual appointment of Orson Hyde to serve as probate judge and leader of the Saints' spiritual community in the region only further served to affirm fears of blurred lines between the Church and local governance.

Adding to trepidations was Hyde himself. A man of strong convictions and unyielding faith, Hyde had no illusions that he saw western Utah's mineral bearing mountains and verdant river valleys ripe for expansion and colonization by fellow Saints. His letters to church president, prophet, and then governor of Utah Brigham Young spoke of the "rich and fertile" valleys that Hyde noted were "sufficient to make a State or an Empire."¹³¹ Hyde brought with him a group of Mormon settlers when he traveled to the Carson Valley to assume his official duties. He also brought to the Valley one of his four wives which triggered consternation among the non-LDS members of the region.

Hyde's vision that the region be quickly brought under management of Salt Lake City and in firm control of LDS adherents took little time to implement. In the spring of 1856, Hyde called for the election of county officers. The offices of sheriff, recorder, selectmen, and constables for each of the districts were all filled by Saints. Charles Daggett, who

¹³¹ Orson Hyde to Brigham Young, Carson County, June 19, 1855, Church of Jesus Christ of Latter-Day Saints Church Library, CR1234-1.

became treasurer was the only non-LDS member to be elected that year.¹³² The election of a nearly full Mormon slate added to the anger and resentment of the non-adherents.¹³³

In response to the consolidation of Mormon control, residents of the Carson Valley sent a petition to neighboring California requesting the valley be annexed to that state because “their business and commercial relations are entirely within the State of California” and because they had no desire to be associated with the Mormon faith. The California legislature passed the request to their representatives in Congress. “They represent that the territorial laws are not administered with justice, but that those who are not Mormon, and not ‘zealously affected’ towards that faith, are subjected to gross persecutions” concluded a report to the House of Representatives’ Committee on Territories. The citizens of the Carson Valley also addressed their concerns with Orson Hyde who they informed members of the California delegation and the United States Congress brought “among them ‘one of his spiritual wives,’ whom they regard as no better than a ‘scarlet lady.’ While the committee expressed concern with what they viewed as recurring grievances concerning the governance of Utah, California, in their minds, was already large enough and should not “be made still more unwieldy by a further extension of its boundaries.” For now, the Carson Valley would remain part of Utah.¹³⁴

¹³² Thompson and West, *History of the State of Nevada*, Chapter VI, “Carson County Organized” (Howell-North, 1881), Church of Jesus Christ of Latter-Day Saints Church Library, M277.93

¹³³ Albert Ray Page, “A Survey of the History of the Carson Valley from 1849-1861 (1968), p. 7. Church of Jesus Christ of Latter-Day Saints Church Library, 979.3 P132s.

¹³⁴ United States House of Representatives, 34th Congress, 3rd Session, “Carson Valley, Utah—Annexation to State of California—and Eastern Boundary of California,” January 20, 1857, Church of Jesus Christ of Latter-Day Saints Church Library, M243.3 U58ca.

Despite the setback, the residents of the Valley remained undeterred. If they could not join California, then why not be separated from Utah to form their own territory they asked themselves? In 1858 their request was received by President Buchanan and forwarded to Congress for their consideration. To make their case for self-governance, the petition repeated previous claims of a government who represented only those of the LDS faith. They went on to claim the government of Utah had done little to protect them against raiding bands of hostile Indians—a highly misleading claim designed to illicit an emotional response. The petitioners also substantially exaggerated the number of inhabitants in the region, claiming “the population in the various valleys...number at present at least ten thousand.”¹³⁵ It is difficult to obtain a precise census of Anglo inhabitants residing in the valleys and prospecting in the mountains, but most historians place the population around 500—a far cry from the 10,000 they asserted.¹³⁶

Again, their pleas were rebuffed. Even the discovery of silver did not lead to the immediate creation of Nevada Territory, but as the population continued to grow, and the mineral wealth generated by the region became evident, Congress acceded to the separation from Utah. Nevada Territory was officially established in 1861, and although settlers now had the means of self-government, the all-crucial issue of water rights failed to find resolution. The territorial legislatures that met annually between 1861 and 1864 were not

¹³⁵ United States House of Representatives, 35th Congress, 1st Session, Message from the President of the United States, “A memorial of the citizens of the Carson Valley, asking for the establishment of a territorial government over them,” April 13, 1858, Utah Division of History, MS3879.

¹³⁶ If the populations of the Numa and Washoe were added to those of the Euro-American settlers only then would 10,000 be a realistic number. Given racial prejudices of the era and the fact that Indigenous populations were not counted toward enumeration at this time, we must conclude that the petitioners were playing on the ignorance of Washington politicians exaggerating the size of the Euro-American settlers in the hope their petition would be more favorably received.

ignorant of water issues, but the few actions they took provide a clear glimpse into the priorities of the burgeoning communities of the western Great Basin.

Of primary concern to the legislators were establishing environmental and conservation protections for the fish within the region's waters that were already proving to be of crucial subsistence to local mining economies—not just within the Comstock but along the Humboldt and Walker Rivers as well. During its first session, the Nevada Legislature enacted legislation prohibiting residents from catching or attempting to catch fish “by any means of drag or drags, or any kind of a net, or any fish basket, or pot, pond or weir, or by any poison, or any deleterious substance, whatsoever.” The legislature also barred the construction of any works along any waterways of the territory that would obstruct “the natural transit of fish.”¹³⁷ The design of the legislation was two-fold. When read together with the rest of the provisions of the act, it is clear the intent was to protect the territory's fish and game from excessive harvests in order to secure a steady supply to meet the growing demands of Nevada miners as well as those of California. When read closely, however, a more nefarious intent emerges.

The harvesting of fish by Numa communities both for their own survival and for sale on the local market was providing economic stability to this Indigenous group as well as demonstrating a beneficial use to the waters of the Truckee and Walker Rivers as well as Pyramid, Walker, and Winnemucca Lakes. By enacting legislation that made hook and line the only lawful practice of fishing, the legislature was barring the use of traditional Numa

¹³⁷ “An Act relating to Wild Game and Fish,” *Laws of the Territory of Nevada, Passed at the First Regular Session of the Legislative Assembly, Begun the First Day of October and Ended the Twenty-Ninth Day of November, 1861 at Carson City* (San Francisco: Valentine & Company, 1862), p. 32, accessed via Hathi Trust, <https://hdl.handle.net/2027/uc1.b4375113>.

and Washoe practices that utilized spears, weirs, and baskets. Doing so pushed a policy of acculturation, and criminalized behaviors that might be used to facilitate future dispossession of valuable riparian lands Euro-Americans coveted. The act can also be read as an attempt to eliminate Indigenous competition in favor of Euro-American business.

Land acquisition occupied the thoughts and concerns of the territorial legislatures. Although formal governance under Utah had brought an air of authority that allowed settlers to register their claims with the county government, a process that continued when individual territorial status was achieved, their claims remained just that: claims. All territorial lands belonged first to the federal government.¹³⁸ Because the General Land Office in Washington, D.C. and its subsidiary offices across the country officially held title over the land, it was only the federal government who could transfer title to the settlers who made claims. Knowing this, the legislature lobbied officials in Washington to establish with utmost urgency an office and district of the General Land Office in the territory.¹³⁹

The process by which settlement occurred in Nevada created several problems with this proposal. First, the General Land Office was administered with the purpose of surveying lands prior to settlement then selling pre-specified tracts to settlers and later homesteaders following passage of the Homestead Act in 1862. The Eastern Slope had not been surveyed and had remained a low priority until the Rush to Washoe began and Euro-Americans swarmed the region. Despite agreeing to establish this office in Carson City in 1861, the

¹³⁸ Long-standing legal principle held via the Discovery Doctrine that Indigenous claims were ceded via treaty and through the process of discovery to the federal government. See *Johnson v. M'Intosh* (1823) and *Cherokee Nation v. Georgia* (1831).

¹³⁹ John M. Townley, *Alfalfa Country: Nevada Land, Water and Politics in the 19th Century* (University of Nevada Reno, 1980), 42.

Department of the Interior moved slowly. The delays and general uncertainty concerning the ability to obtain official title would have serious implications for settlers—particularly those who had squatted in the Carson Valley prior to the silver rush—when later determining who had preeminent claims.

In the summer of 1864, delegates to the Second Constitutional Convention for the State of Nevada convened at the Warm Springs Hotel outside Carson City to piece together a founding document for their incipient state. On July 7, the third day of the convention, the delegates charged to review the suggested Declaration of Rights saw Thomas Fitch, a delegate from Storey County, rise to question a seemingly innocuous provision in section 8. The item that drew Fitch’s attention was an exception to the requirement of indictment by a grand jury “in cases of the militia when in actual service, and the land and naval forces in time of war.”¹⁴⁰ “I would like to inquire,” Fitch asked, “in what portion of the Territory—I ask for information—we are likely to find men engaged ‘in the naval forces of the United States?’”¹⁴¹ Seizing the moment, delegates shouted replies in quick succession. “Carson River! Kings Cañon! Humboldt Lake! Lake Tahoe!” The room erupted in laughter. “Oh!” replied Fitch, “I did not know; I simply inquired for information. There might possibly be naval forces over in Humboldt or Lander somewhere.” More laughter followed.¹⁴²

Remembering the region’s mountainous, arid environment reminds us why Fitch asked the question in the first place. The Carson, Truckee, and Walker rivers were primarily

¹⁴⁰ Andrew J. Marsh, *Official Report of the Debates and Proceedings in the Constitutional Convention of the State of Nevada, Assembled at Carson City, July 4, 1864, to Form a Constitution and State Government* (San Francisco, 1866), 59.

¹⁴¹ *Ibid.*

¹⁴² *Ibid.*, 60.

fed by the Sierra's winter snowpack, and once snow melted, the rivers slow to a trickle or dry up entirely. The lakes that dot the landscape are equally dismal. The Humboldt Lake, mentioned by one of the delegates, forms at the mouth of the Humboldt River where water pools before sinking into the ground. The flow of the river is often weaker than evaporation causing the lakebed to be dry with only a small pond at the river's end throughout much of the year. The idea that any naval forces would be found in the state was, indeed, farcical.

In their laughter, the convention's delegates recognized the scarcity of water within the state, but neither the territorial government nor the state government they established had done much to address the issue. Yet even as the delegates met, the need for water became abundantly clear to the state's fledgling settler population. As people flocked to western Nevada seeking opportunities in the silver mines of Virginia City and upon the grasslands of the valleys adjacent to the rivers and streams flowing down from the Sierras, access to water remained a serious issue.

A Good System of Water Works

"One of the many urgent wants of this city is that of plenty good water," wrote the *Virginia Evening Bulletin* in July of 1863. "Pure, wholesome water, in quantity sufficient for all practical purposes is an indispensable necessary to comfortable and healthful existence."¹⁴³ The rapid growth of the region that had precipitated demand for food met by agriculture in the surrounding valleys and the Numa fisheries also exacerbated the need for reliable sources of drinking water. As mining operations expanded, emigrants to the region stressed an already inadequate supply.

¹⁴³ "Water! Water! Water!" *Virginia Evening Bulletin* vol 1, number 6. July 11, 1869.

Obtaining water was problematic from the start. During the Rush to Washoe in 1859, observers remarked that given the distance of the diggings from wood or water that “it is remarked as a wonder that they were even discovered at all.”¹⁴⁴ Yet water was needed, and so denizens of the boomtown began boring tunnels into the mountain side and drilling shafts as a means to tap the region’s relatively high water table to supply both man and machine with the liquid resources necessary for both to function.¹⁴⁵ Obtaining rights to subterranean water bore little resemblance to the riparian system currently functioning in the state; whereas surface water was held in common, groundwater use more closely resembled mining law where one posted claim to an underground resource.

The need for water was not restricted solely to the mining communities nestled within the Virginia Range, however. Access to a ready supply of water was just one of the problems facing early Nevadans; the infrastructure to deliver it, another. “The question is frequently asked” the *Carson Daily Appeal* informed its readers, “Why has not Carson City been supplied with a good system of water works?” Despite what editor Henry Rust Mighels described with substantial embellishment as the best prospects for an abundant water supply in the state, he lamented to his readers that the inhabitants of the city were dependent on “wells yielding a very inferior article of water which is entirely unfit for drinking purposes— or upon buying water from carts.” The inadequacies of this system could only be improved, Mighels concluded, through the construction of water infrastructure.¹⁴⁶

¹⁴⁴ “The New Carson Valley Mines,” reprinted in *Sacramento Daily Union* vol. 18, no. 2672, October 20, 1859, p. 2. Original article published in the *Grass Valley Observer*.

¹⁴⁵ *Ibid.*

¹⁴⁶ Henry Rust Mighels, “A Good Investment,” *Carson Daily Appeal*, September 4, 1867.

To the west of the city lay Kings Canyon through which flowed a stream of fresh alpine water. Like much of the water along the eastern slope of the Sierras, the stream was fed by the annual snowpack. Mighels estimated that it was no more than a half a mile from the canyon to a point where water could be channeled into pipes to feed the town. With an estimated elevation drop of approximately fifty-to-sixty feet, gravity would address distribution. The range to the west of the city would also supply the material needed to construct this water system, Mighels noted, for “the mountains in the immediate vicinity abound with timber suitable for making wooden conducting pipes.” This, he estimated, could be done for less than \$5,000 and because the pipeline would require little upkeep, would return its owner(s) an estimated sum of \$3,000 to \$4,000 dollars per year.¹⁴⁷

Mighel adeptly noted that such water infrastructure also provided numerous benefits to the city beyond supplying it with a consistent drinking supply. The water works “would be of incalculable advantage in irrigating a beautifying the town and furnishing a reliable supply of water for our engines in case of conflagration.” These ample benefits required money, however. “The only thing needed,” Mighels concluded, “is some man with money, public spirit, and backbone enough to undertake the enterprise.” Alternatively, leading citizens of the city might band together in a joint stock venture to facilitate construction. “Let this matter be discussed,” he urged, “and we may yet see a good system of water works in Carson.”¹⁴⁸

Yet the fact remained that despite the hardships that faced communities in the valleys, supplying the rapidly growing urban center of Virginia City remained paramount. From the

¹⁴⁷ Ibid.

¹⁴⁸ Ibid.

small groups of placer miners present throughout the late 1850s, the mining town boomed to 4,000 inhabitants by 1862 then nearly quadrupled to a population exceeding 15,000 the following year.¹⁴⁹ As the population grew, the city struggled to meet urban water demand. The snow melts that trickled down through Six Mile and Gold Canyons barely met the placer miners' needs and were wholly insufficient to meet the new metropolis' insatiable demands. Here, the city's predominate industry provided a possible solution: underground mining had led to the revelation that the region had a high ground water table that the city could use to its advantage. To tap the aquifer, the city tunneled into the mountains that abutted the boomtown allowing water to drain out where it was collected in a small reservoir. But residents universally complained of the groundwater's poor taste, claiming it was unfit for human consumption. It was clear utilizing groundwater pumped from the mines was only a temporary solution and the city needed a significant and permanent water source that could meet the city's needs: a need that an engineer named Alexis von Schmidt believed he could meet.

In September of 1863, von Schmidt, at the head of the Lake Tahoe and Nevada Water Works Company, approached Virginia City's mayor and Board of Aldermen to propose a solution to the city's growing water woes. "Some time ago," he wrote, the company had submitted to the city leaders a plan "for your consideration having the object the supplying of Virginia City with water from Lake Tahoe."¹⁵⁰ Distance and elevation complicated the plan von Schmidt proposed. Water would be extracted from Lake Tahoe at an elevation of 6,224

¹⁴⁹ Grant H. Smith, *The History of the Comstock Lode* (Reno: University of Nevada Press, 1998), 28-29

¹⁵⁰ "Lake Tahoe Water Company," *Virginia Evening Post*, September 12, 1863.

feet above sea level, then, though use of steam pumps, the water would be lifted one thousand feet in elevation over the Carson Range before traveling down to the hills above Carson City at an elevation of approximately 5,100 feet. The water would then travel in pipes uphill via an inverse syphon to the Virginia divide before flowing down into Virginia City at a final elevation of 6,148 feet. In all, the plan called for thirty to forty miles of flumes with an additional twenty miles of pipeline. It would be a massive undertaking; one understood by all to be one of the greatest engineering feats of the age if it were built.

Clearly, this proposal required complex engineering to accomplish its aims and its feasibility was in question. Opponents of the plan were quick to question whether the project could be built and deliver the water as promised. “As Virginia City is situated on the eastern slope of Mt. Davidson,” his critics leveled, “it would be impossible to take the water to the very top even if Lake Tahoe were at a much higher elevation.”¹⁵¹ In short, they said, physics simply would not work in the company’s favor. The start and end elevations were too similar, and even if the water were pumped over a pass in the Carson Range, the pipeline infrastructure would also need to pass over the crest of the Virginia Range and work against the inverse syphon envisioned by von Schmidt and the Lake Tahoe and Nevada Water Works Company. Furthermore, even if the physics were to work in von Schmidt’s favor, at the point where water transitioned from the Carson to Virginia range at its lowest point “pipe would have to be laid sufficiently strong to sustain a pressure of a column of water 800 feet high.”¹⁵² No such pipe of this strength, it was argued, could be constructed to facilitate

¹⁵¹ Ibid.

¹⁵² Ibid.

delivery of the water. And then, of course, there was the issue of price. Engineering on this scale would not come cheap.

At no point did anyone question the need for the city to acquire a permanent water source. Public hearings and editorials within the local press all made clear a pressing need existed, but whether the public treasury could be co-opted into what was viewed by citizens at the time as largely within the purview of private enterprise was another matter. If the Lake Tahoe and Nevada Water Works Company believed they could supply the water, the citizens of the city would be happy to consider purchasing their product upon delivery, but why should the citizenry be required to back bonds for a project whose engineering was questionable and whose feasibility was in doubt? For their part, the Board of Alderman found the company's demand to be the city's sole water provider abhorrent.¹⁵³ It became increasingly clear that Virginia City viewed the project as a pipe dream destined to failure. Lacking public support, von Schmidt's proposal was ultimately rejected.¹⁵⁴

Though Virginia City had shied away from the proposal, the idea of transporting water over long distances lay dormant within Virginia City and the mind of von Schmidt. Missing from the conversation of supply were questions concerning what right citizens of Virginia City had to the water of Lake Tahoe—a lake whose waters were shared between both Nevada and California. Over the coming decade, the appropriation and transportation of

¹⁵³ Donald J. Pisani, “‘Why Shouldn’t California Have the Grandest Aqueduct in the World?’ Alexis von Schmidt’s Lake Tahoe Scheme, *California Historical Quarterly* 53, no. 4 (Winter 1974), 348.

¹⁵⁴ A decade later, a similar version of this plan would ultimately be built as part of the Marlette Water Project that dammed Marlette Creek and transferred the impounded water via flume and inverted syphon pipelines to Virginia City. The Marlette system continues to supply Virginia City with its water today.

water would help shape how Nevadans came to think about the liquid resources along their border and within the boundaries of their new state.

Chapter 4

On March 3, 1866 Nevada enacted *An Act to allow any person or persons to divert the Waters of any River or Stream, and run the same through any Ditch or Flume, and to provide the Right of Way through the Lands of Others*. The act is one of few pieces of legislation passed by the legislature concerning the role of water and its use within the state, yet the timing and purpose of this act speak to broader changes underway throughout the water infrastructure of the state in the late 1860s and 1870s.

For a law whose title mentions the diversion of waters, however, the act's language addressed rights-of-way for ditches and flumes more than water rights. The law explained how companies or individuals wishing to construct ditches or flumes must first register their claim and obtain certificate via their county recorder, and if wishing to traverse private property, the steps to be taken in assessing and providing just compensation to the owner(s) of the property where easement or condemnation is necessary. Indeed, the water rights to make such projects possible are only implied in the final section of the bill requiring "all persons or corporations who have heretofore constructed, and now maintain, ditches flumes or aqueducts in this State, from whatever source they may have procured water" to register with the County Recorder before any future extension to reservoirs or other potential sources of water.¹⁵⁵ Though subtle, we can discern a slow change emerging within this legislation and the legal thinking within Nevada.

¹⁵⁵ "An Act to allow any person or persons to divert the Waters of any River or Stream, and run the same through any Ditch or Flume, and to provide for the Right of Way through the Lands of Others," *Statutes of Nevada 1866*, Chapter 100, p. 202-203. Legislative Council Bureau of Nevada Research Library.

The conveyance of water through a ditch or flume speaks to the broader infrastructural changes taking place to meet the demands of the mining industries on the one hand, and agricultural communities on the other. As mines sunk deeper into the Virginia Range the vast forests of the Sierra Nevada were tapped to provide the timbers necessary to secure the walls of the mines and hold the force of hard rock at bay. Here again, water would prove key to facilitating another piece of industrial mining's expansion and the infrastructure necessary to facilitate growth. At the same time, even agrarian communities recognized the need for irrigation in Nevada's arid climate. The Act facilitated the development of these two important constituent communities and allowed for growth within the nascent timber industry. In doing so, it began to move away from traditional riparian rights setting up future legal battles over riparianism and appropriation.

Simultaneously, the necessity for urban water demands continued to grow. Plans for the conveyance of water over long distances and through high elevations that seemed fantastical to residents in and around the Comstock in the early-to-mid 1860s were examined with renewed interest during the following decade. But Nevadans were not alone with a thirst for more water, and the clear blue waters of Lake Tahoe became a point of contest that further pushed Nevadans toward adopting and advocating for rights of appropriation.

This was not the only point of contest. With expansion of extractive industries and agrarian domains, both the Washoe and Numa faced further challenges to their ancestral claims over the land and its water. The events set in motion during the late-1860s and 1870s had lasting implications for both tribal communities: the Washoe pushed out of their

remaining ancestral lands at Tahoe, and the Numa securing their reservation lands and the water rights associated with them.

The Numa and the Railroad

When Congress considered the passage of the Pacific Railway Act, the idea of an iron road connecting the two halves of the country seemed logically sound, but financially uncertain. In 1862 the nation was consumed by the Civil War straining the meager resources of the federal treasury. Though the country was short of funds, lawmakers realized one commodity the government claimed could be used to support the project: land. Despite amendments to the original act, the land grant process created in 1862 remained largely unchanged: companies were granted the right-of-way through all federally owned land previously unclaimed by Euro-American settlers with additional allotments from the public domain distributed in "five alternate sections per mile on each side of said railroad, on the line thereof, and within the limits of ten miles on each side." Much of the land the two companies traveled through was open, and—at least on paper—under the control of the federal government. In Northwestern Nevada, however, the Central Pacific ran into a problem.¹⁵⁶

Surveying the route, engineers sought the path of least resistance: the easiest trail through the mountains with the lowest possible elevation gains, smooth and level grades, and easy access to necessities such as fuel and water. Unsurprisingly, the route surveyed for the Central Pacific through Nevada chose to follow the Truckee River as it descended from the

¹⁵⁶ Pacific Railway Act of 1862, Thirty-Seventh Congress, Session II, Chapter 119, accessed via Library of Congress.

Sierras to the river canyon east of present-day Sparks until it reached the Big Bend where the railroad would leave the river and begin its trek across the Forty Mile Desert before meeting the Humboldt. The surveyors also quickly realized that as the railroad traversed the Truckee River Canyon near the Big Bend, that their right-of-way would cut through the southern tip of the Pyramid Lake Paiute Reservation set aside through executive action in 1859.

To grant an easement, required the Paiutes be guaranteed something of value in exchange for use of their land. The final agreement the Central Pacific arranged allowed for the free passage of tribal members and free shipment of freight on the railroad. The Central Pacific initially viewed the agreement as a great victory. Why would Indians need to travel, they asked themselves, for a people who practiced traditional subsistence living surely had no need to ship freight? Less than a decade after the railroad was completed, however, the Central Pacific second guessed their decision.

A.J Barnes, the Indian Agent for Nevada, reported to his superiors at the Bureau of Indian Affairs in Washington that “The C.P. Railroad Company allows Indians to ride for free on the platforms of any train of cars, or, in many cases, in the second class cars... Men, women, and children get on to any train and go where they please, without restriction from the Govt. Agent or the Railroad Company.”¹⁵⁷ Passage on the railroad allowed the Numa to board and disembark trains at their leisure to hunt and gather seeds, and at the end of the day, carry their bounty back to the railroad and travel home. Simultaneously, the cutthroat trout of the Truckee and Pyramid watershed provided the perfect economic opportunity for the Numa

¹⁵⁷ A.J. Barnes, Indian Commission Report 1877, Nevada Indian Agency, Pyramid-Lake Reserve, p. 150.

to meet the increased demands for food. The Numa shipped thousands of pounds of trout along the Central Pacific at no cost—much to the chagrin of the railroad.

Because the Pacific Railway Act had guaranteed the Central Pacific the right to choose its allotments, the railroad had proposed a section that included the fertile bottom lands of the Truckee River and extended northward encompassing most of Pyramid Lake. The Central Pacific argued that because the Reservation had not been set aside by Congress, the land legally remained in the public domain and could be claimed by the railroad. In 1875, the Secretary of the Interior decided in favor of the Numa, declaring “The subsequent order of the President, of March 23, 1874, defining the boundaries of the reservation, should, in my opinion, be held merely as a reaffirmation of the reservation made December 8, 1859.”¹⁵⁸ Because the reservation had been set aside prior to the passage of the Pacific Railway Act, the Interior Secretary declared that the land was removed from the public domain and therefore not available under the land-grant system authorized by Congress. The Central Pacific Railroad held title to right-of-way, and nothing more.

Washoe Pan Process

Along the Carson River, the milling and refining process continued to grow. The metal bearing ores extracted from the mines contained a ratio of approximately thirty percent gold to seventy percent silver that required a specialized amalgamation process to separate the precious metals from the rock.¹⁵⁹ The ore was categorized as belonging to three classes.

¹⁵⁸ Marth Knack and Omer Stewart, *As Long as the River Shall Run: An Ethnohistory of the Pyramid Lake Indian Reservation* (Berkeley: University of California Press, 1984), 92.

¹⁵⁹ Lee R. Grabill, *Treatment of Gold and Silver Ores as found in the Comstock Lode*, Thesis, Missouri School of Mines (1878), 3.

The first-class ores were referred to as rebellious ore because the ore was heavily intertwined with sulfides that required it to be treated prior to beginning the amalgamation process. The second- and third-class ores lacked these sulfides and required no special treatment.

Processing first-class ores began by drying the ore in an eight-by-twelve-foot roasting pan. This pan was placed in a charcoal kiln to remove all the moisture from the ore before continuing. Settlers found the piñon pines that covered the adjacent range particularly well suited for making charcoal—the same piñon pines from which the Washoe tribe gathered pine nuts for their survival. Once dry, the ore was placed in small stamps which crushed the ore into a fine material that allowed for amalgamation. Harnessing the flow of the river to turn their machinery, the stamp mills crushed the ore at average rate of sixty-five beats per minute. A small dam or obstruction would be placed in the river, diverting the water into a ditch or channel toward the stamp mill where the water would turn a water wheel that powered the stamp. Once crushed, the ore received a chloritizing roast whereby “the silver is reduced from the form of sulphide [sic], with in which form it will not amalgamate, to the form of chloride, by which it becomes capable of further reduction and subsequent amalgamation.”¹⁶⁰

Second- and third-class ores did not require the baking and roasts that were necessary for the first-class ores. Instead, the earth and rock were sent immediately to stamps to reduce it to a uniform size before amalgamation. Whereas the first-class ores utilized the traditional European barrel method of amalgamation, the second- and third-class ores used a new process developed specifically for the Comstock: the Washoe Pan Process. The most

¹⁶⁰ Grabill., 4-6.

common type of pan in use was the Wheeler pan which was four feet in diameter and two feet deep. In the middle of the pan was a small cylinder with four connecting arms that allowed the contents of the pan to be stirred. Crushed ore would be placed into the pan, a lid sealed on top, and a combination of water and steam drawn from the adjacent river were added through the top of the vessel by hose. The mixture would be stirred for two hours at a rate of 65 revolutions per minute. Sixty-to-seventy pounds of mercury would then be added to the pan along with a copper sulfate and salt and the pan stirred for an additional four hours.¹⁶¹ At the end of the process, a plug was removed from the bottom of the pan, and the pan rinsed out with yet more water allowing for the separation of the amalgam for refinement. The amalgams were placed in a furnace where the final impurities were removed, treated with sulfuric acid to separate the silver from gold, and then melted and cast into ingots. The mercury was salvaged for use in future cycles before being dumped in the river.¹⁶²

The mills would further refine the slimes and tailings left over from the processing of each class of ores to maximize the quantity of silver and gold recovered.¹⁶³ The slimes were first placed in large ponds where the material settled for a pre-calculated length of time. The water diversions that powered the mills also provided water for the settling ponds. After the material had settled it was collected and run through the Washoe Pan Process, with the exception that this material required significantly more mercury. In contrast, the tailings were

¹⁶¹ 60 to 70 pounds was the average for a used pan. New pans would require 200 pounds or more of mercury to obtain the desired results.

¹⁶² Grabill, 8-15.

¹⁶³ According to Grabill, "The 'slimes' are those finely divided portions of the ore coming from the batteries which do not settle in the settling tanks, but flow past them with the water through the outlets at the top. The 'tailings' are those portions of the ores which are discharged from the separators and agitators, and with the water from the barrels in the treatment of the first-class ores." p. 24.

collected in ponds before being agitated then run through a blanket sluice. In either process, wastewater and excess material—including mercury—were simply drained into the ground or dumped back into the river.¹⁶⁴

Clearly, water held the key to the refinement operation. The growing dependence of mills along on the waters of the Carson River foreshadowed conflict with agrarian communities upstream in the Carson River who also tapped the river’s limited supply to meet their demands.

The Mines and the Forest

As mining in Virginia City and Gold Hill worked its way underground, access to ore bodies proved one of the first challenges the miners faced. The topography and shape of the mineral deposits pushed the limits of nineteenth century mining technology. “No such great width of ore had ever before been seen,” wrote Dan DeQuille, “and the miners were at their wits’ ends to know how to work it and keep up the superincumbent ground.”¹⁶⁵ Cave-ins and full collapses plagued miners, making their work both increasingly dangerous and expensive. A means that allowed the mines to expand in three dimensions following the ore seam, yet still provided a support structure that prevented collapse proved difficult, however.

Philip Deidesheimer, an immigrant German engineer, was hired by the Ophir Mine—the leading producer on the Comstock at the time—to address this issue. Deidesheimer devised a solution by using timber frames to create a box that was reinforced along all three axes—a method that became known as square set timbering. “The plan was to frame timbers

¹⁶⁴ Ibid., 24-27.

¹⁶⁵ Dan DeQuille, *History of the Big Bonanza: An Authentic Account of the Discovery, History, and Working of the World Renowned Comstock Silver Lode of Virginia City, Nevada* (1876), 134.

and put them in the shape of cribs, four by five or six feet in size, piling these cribs one upon another—but all neatly framed together—to any desired height. Thus, was the ground supported and braced up in all directions.”¹⁶⁶ Implementation of the square-set method allowed the mines to dig vertical shafts to hoist men and equipment to the elevation desired, and then move outward following the veins sending ore and waste material back out the shaft.

As square-set timbering took hold, the need for lumber in the Comstock continued to grow. The mines had need not just for the timbers that made their shafts possible, but to fuel their steam engines that hoisted men, machinery, and ore into and out of their shafts and to turn the pumps that cleared lower levels of the foul groundwater the denizens of the city still refused to consume. As the city grew, so too did residents demand timber for the construction of homes, businesses, churches, and the other trappings of an American city on the rise. The small piñon pine forests that blanketed the hillsides surrounding Virginia City were quickly consumed in the initial fervor following the silver discovery. With all the nearby wood used, an alternative timber source needed to be harvested if the mines were to continue their production and the city’s prosperity continue.

A convenient solution lay less than 50 miles to the east. Mine owners and entrepreneurs turned their gaze toward the old-growth forests of the Sierra Nevada and particularly the lush alpine groves within the Lake Tahoe Basin to meet demands for lumber. “This is all very well for the company and for the mining companies, who must have lumber and timber,” wrote Dan DeQuille, an author and journalist who worked in Virginia City

¹⁶⁶ Ibid., 134-135.

throughout much of its heyday, “but it is going to make sad work, ere long, with the picturesque hills surrounding Lake Tahoe, the most beautiful of all the lakes in the Sierra Nevada Mountains. Where tall pines now shade all the shores and wave on all the mountain slope, nought [sic] will shortly be seen, save decaying stumps and naked granite rocks. But timber and lumber are imperatively demanded, and the forests of not only these hills but of a thousand others, will doubtless be sacrificed.”¹⁶⁷ Sadly, his vision would soon become visible.

Though sawmills and timber harvesting had been prevalent along the eastern slope since some of the earliest days of Euro-American settlement within the Carson Valley, the eagerness with which timberlands were obtained by mining entrepreneurs and their agents grew nearly as quickly as the men in Virginia City could dig. Correspondence to Henry M. Yerington, one of the leading Comstock businessmen and early lumber entrepreneurs demonstrates the necessity of lumber to the operation by the large tracts of land purchased for the endeavor. “Sir,” wrote one letter from his land agents in 1875 at the height of the bonanza, “we have to acknowledge receipt from you of the sum of three thousand dollars, to be applied to the purchase of two thousand acres of timber land...as per locations already made.”¹⁶⁸ Purchase of timber land by the hundreds and thousands of acres was quite normal based on Yerington’s correspondence, and attended to with similar punctuality and lack of fanfare elsewhere.¹⁶⁹

¹⁶⁷ DeQuille, 242-243.

¹⁶⁸ Mullan & Hyde to H. M. Yerington, July 12, 1875, Special Collections, Matthewson IGT Knowledge Center, University of Nevada Reno, El Dorado Wood and Flume Company Records NC76.

¹⁶⁹ See correspondence within El Dorado Wood and Flume Company NC76; Markleeville Flume Company NC120; and Nevada Flume Company NC1186, Special Collections, Matthewson IGT Knowledge Center, University of Nevada Reno.

Companies sprang up around the eastern slope and Tahoe basin to meet the growing demand for timber. The Central Pacific Railroad received land grants under the Pacific Railway Act as it progressed through the Sierras on its transcontinental route and was all too happy to sell these lands to the timber barons eager to snatch them up before it was too late.¹⁷⁰ Much of the Comstock's lumber came from the Carson & Tahoe Lumber and Flume Company operating on the southern and eastern shores of Lake Tahoe, or the Pacific Wood Lumber and Flume Company operating on the lake's northern shore and the Truckee River's northeastern drainage, the Sierra Nevada Wood and Lumber Company operating near Donner Summit, and the El Dorado Wood and Flume Company operating near present-day Markleeville California. Wherever the wood was harvested, water would be key in bringing it to market in mining communities of Nevada.

The need for water as a means of transportation grew from the hardship of harvesting timber in the rugged conifer forests that blanket the Lake Tahoe basin and eastern Sierra. Here, the bountiful old-growth jeffrey, ponderosa, and sugar pines looked to the silver barons of the Comstock as the land of plenty—at least enough to meet the needs for their mines. One of the corporations that rose to meet demand was the Carson & Tahoe Lumber & Fluming Company (C&TL&F) established by Duane. L. Bliss. Bliss had purchased a sawmill and some timber lands from Augustus Pray, who had started a small timber business at Glenbrook shortly after his arrival in 1860.¹⁷¹ The small operation Pray had built may have served as the foundation for Bliss's timber empire, but when first acquired, the operation was

¹⁷⁰ While the railroad did harvest and sell timber at different points along the line, the timber lands of the Sierra proved some of the only portions of the land grant the railroad could prosper from as there was little interest in purchasing the desert lands of Nevada and Utah through which the railroad ultimately progressed.

¹⁷¹ Duane L. Bliss Papers, Special Collections, Matthewson IGT Knowledge Center, University of Nevada Reno.

one of many along the lakeshore struggling to meet the demands of the Nevada mines. Bliss set out to dominate the industry by controlling vast parcels of land and expanding operations throughout the basin to feed a continual supply of lumber to the company's mills in Glenbrook.

The C&TL&F hired hundreds of men to fell the trees that had grown undisturbed for millennia.¹⁷² Men were assembled in work gangs ranging in size from six to twenty individuals. Some were assigned by the company, others had contracted their services as a group, while a select few were experienced gangs who had previously logged areas of California and Oregon.¹⁷³ Each gang would be assigned a plot of land to work. Crews worked in pairs with axes, cross-cut saws, and double-cut saws to bring down the aged trees. White crews could earn wages ranging from \$55-70 per month with board; Chinese crews worked for far less, averaging \$30 per month without board.¹⁷⁴ Regardless of one's race, the work was grueling, and the hours long. The virgin forest grew thick and the undergrowth dense.

Once a tree lay felled and prepped, the process of bringing it to market began. The tree would need to be segmented and stripped of its foliage in preparation for transportation. Hauling a tree out of the woods was much as it had been for generations. Using a combination of sleds, carts, wagons, levers, pulleys, and extensive use of animal and

¹⁷² Though the Washoe tribe had long resided along the lake during the spring and summer months, no archaeological evidence exists to suggest they cut down the trees. The tribe's oral tradition and the evidence both indicate that firewood was likely gathered by collecting forest debris, deadwood, and other fallen or downed wood.

¹⁷³ Carson and Tahoe Lumber and Fluming Company Records, Special Collections, Matthewson IGT Knowledge Center, University of Nevada Reno, NC72.

¹⁷⁴ Sue Fawn Chung, *Chinese in the Woods: Logging and Lumbering in the American West* (Urbana: University of Illinois Press, 2015).

manpower, the C&TL&F crews slowly loaded wagons and specially made carts to haul the logs out of the forest. The journey out of the woods might be less than a mile and could be traversed more than once each day. Longer journeys were the norm however, with crews traveling ten, fifteen, even twenty miles in some instances.¹⁷⁵

Long distances with heavy loads over difficult terrain proved time consuming and hurt the profitability of the company. Though muddy, and often rut filled due to the extreme weight loads passing over them, primitive roads proved much easier to traverse than the cluttered forest floors. Constructing roads required all the trees along a route be felled and the immediate area in and around the right-of-way to be cleared, leveled, and—to varying degrees—flattened to allow for transport. Some of this work might have been done by a work gang as they entered and began to log their assigned area. Road building crews might also be assigned specifically for that task by the company depending on the need and manpower at any given time.

Roads also allowed the C&TL&F to begin the process of bringing organized infrastructure to the coniferous forests. Previous worked or clear areas could be utilized as staging points where material could be collected before being shipped out to the waiting sawmills. After the lumber was hauled out of the forest, whether transported directly or taken to a staging area, it required shipment to the company's sawmills for processing. The Carson and Tahoe Lumber and Fluming Company had extensive logging operations in the Lake Tahoe Valley covering the area between present-day Camp Richardson and the town of

¹⁷⁵ Carson and Tahoe Lumber and Fluming Company Records, Special Collections, Matthewson IGT Knowledge Center, University of Nevada Reno, NC72.

Meyers, California. Given the distances and topography, transportation via oxen team to the sawmills at Glenbrook, Nevada was extremely difficult and inefficient. The lake provided the answer.

Logs were brought out of the forest, first by animal power and later by rail, then floated and collected in booms. Once the logs had been floated, steamships towed the rafts across the lake. The Carson and Tahoe Lumber and Flume Company originally used a side mounted paddle-wheel tug named *Governor Blasdel* that was part of its purchase from August Pray in 1863. The company later expanded its fleet adding the propeller driven *Emerald* in 1870, *Meteor* in 1876, and the *Emerald II* to replace the original in 1887.

The scale of the operation substantially increased the limited capacity offered by the oxen, horse, mule, and other animal teams. Not only could railroads and steamships haul larger quantities of the conifers as they made their way from the forest, but they also did so more quickly. The waters of Lake Tahoe made this possible.

Water also made possible moving the milled lumber down the mountain. For the C&TL&F, along with the numerous other lumber companies operating in and around Lake Tahoe, this involved the heavy use of flumes. The use of V-flumes—so named because of the distinctive v hull design—required water to float the timber. Because the ridge sat several hundred feet above the rim of the lake, utilizing the lake's water was simply not possible; therefore, the timber companies dammed and flooded streams and meadows to create the reservoirs necessary to fill the flumes and facilitate the transportation of lumber.

Rivers flowing down from the snow melts of the eastern slope also transported lumber. On Lake Tahoe's northern shore, the Truckee River allowed harvested lumber to be

floated down the river to sawmills in the towns and river canyon below, true as well for the timber companies operating in the southern Carson Valley and Markleeville. After milling the timber, wood would be gathered and stored for the spring melt. When the river ran high enough, massive quantities of timber would be floated down the river through the Carson Valley to the towns of Empire, Dayton, and even toward the Carson Sink for use in mining camps of Austin.

Both the harvesting of timber and the creation of reservoirs triggered new deforestation on Lake Tahoe's shores. Photographs of the lake from this period show a landscape increasingly stripped bare leaving just a sparse tree here and there. To say the Carson and Tahoe Lumber and Fluming Company practiced clear cutting would not be entirely accurate, however. Though the company harvested nearly every tree in the areas it logged, the technology of the time limited what the company could process. Trees whose trunk diameter was approximately eight inches or less were often passed over because the operators found it difficult to mill these small trees into the valuable timbers and boards the company needed to profit. Despite this, large swaths of old-growth forest were being removed with each passing year, leaving fewer forested areas along the lake's northern, eastern, and southern shores.

The Washoe had long summered at the lake, with different tribal bands returning to different parts of the lake each year. As logging companies claimed possession over the land, they continued the process of dispossessing the Washoe of their ancestral homes and continued pushing them from their land. Traditional summer camping grounds became inaccessible, and their way-of-life challenged by the Euro-American logging industry.

The Washoe hunted, gathered berries and wild grains, and fished the Tahoe basin. Deforestation inhibited all these activities. The berries, fruits, and grains collected by Washoe communities during the late-spring, summer, and early autumn months were the result of a rich biome supported by old growth forest. With the lush forest cover removed, much of the biome collapsed. The vanishing forest not only removed much of the varied flora with it, but as plants and forest cover vanished, so too did wild game. The dams creating reservoirs for flumes prevented the trout and other fish species of Lake Tahoe from running upstream to spawn. Fish habitats and spawning grounds were further degraded by deforestation as the thick forest that had once prevented erosion disappeared allowing snowmelt and runoff to run rapidly down the mountainsides bringing large quantities of sediment with them.

By the late 1870s, environmental degradation nearly completed the process of Washoe dispossession. Early Euro-American settlers in the Carson, Eagle, and Washoe Valleys had pushed the Washoe away from the rivers, lakes, and streams as they established their agrarian communities. These ranchers and farmers along with early miners felled the piñon pines upon whose sustenance the Washoe depended for timber and fuel. And now, with deforestation of the Lake Tahoe basin, the summer camps and native flora and fauna the Washoe had long survived disappeared. Traditional subsistence for the Washoe community vanished, and it seemed things were likely to get worse, for the lumber companies were not the only interested party in the waters of Lake Tahoe.

Von Schmidt's Grand Project

Though his plans for Virginia City ended in disappointment, Alexis von Schmidt's belief that Lake Tahoe would make a superior reservoir that could be utilized to furnish an urban water supply had not diminished. Even while advocating his beliefs in Nevada, von Schmidt had been hard at work in San Francisco. "One of the greatest wants of all large cities, is an abundant supply of clean and sweet water" the *Daily Alta California* remarked in August 1857, "and it is a want San Francisco has severely felt."¹⁷⁶ Largely dependent upon ground water accessed by artesian wells, the city supplemented its needs by the Sausalito Water Company that withdrew potable water from a spring in neighboring Sausalito and shipped the water across the Bay by ferry delivering it to the city. Both sources were limited in the quantity of water they could supply, and as a result, by the end of the 1850s, water prices in San Francisco were rising.

In 1857, von Schmidt had joined the board in founding the Bensley Water Company chartered by the city to "furnish abundant water for the wants of the city, within one year, at one-fourth of the current prices."¹⁷⁷ By February of the following year, the company received sole authority to lay pipes within the city for the purpose of furnishing water, and by July, the Bensley Water Company reported that their efforts to secure and transport water to the city center from Lobos Creek had been successful and citizens would soon reap the benefit.¹⁷⁸ Yet the success was only temporary, for as the city continued to grow, even this new water

¹⁷⁶ "The Water Used in San Francisco," *Daily Alta California*, Volume 9, Number 108, August 7, 1857.

¹⁷⁷ *Ibid.*

¹⁷⁸ "By Telegraph," *Daily Alta California*, Volume 10, Number 37, February 7, 1858. and "Fresh Water," *Daily Alta California*, Volume 10, Number 189, July 12, 1858.

supply could not keep pace with user demands. San Francisco required a substantial source that met the city's present need yet provided ample quantity to permit increasing withdrawals that could facilitate growth.

Von Schmidt had not forgotten about the clear alpine waters of Lake Tahoe, and if the mining districts of the Comstock did not want it, perhaps San Francisco would. On June 20, 1865, von Schmidt announced the creation of the Lake Tahoe and San Francisco Water Works whose "purpose is to supply San Francisco, Sacramento, Stockton, and other places along the lines of its works with water."¹⁷⁹ The "scheme," as the San Francisco *Daily Call* labeled it, was to "tunnel the mountain so as to turn the surplus water from the lake to this side of the mountains" conveying it to cities along the route with "enough water for extensive irrigation of farm lands, as well as mining purposes."¹⁸⁰ If his detractors thought the Virginia City plan was grandiose engineering whose feasibility was questionable, then the San Francisco plan was surely impossible. Yet to his supporters—especially those in the press—the project was "decidedly the most stupendous water-works enterprise ever undertaken on the American continent" and one that "would throw into the shade all similar works of either ancient or modern times, in the old or new world."¹⁸¹

Optimism aside, the engineering for the proposed project seemed daunting. Von Schmidt's plan called first for a dam to be constructed on the Truckee River where it exits the lake's northern shore. The dam would allow the lake level to be raised six-to-eight feet in elevation, and because of the lake's large surface area, the effect of building a small dam

¹⁷⁹ "New Corporations," *Daily Alta California*, volume 17, no 5584, June 20, 1865.

¹⁸⁰ "The Lake Tahoe Scheme," reprinted in the *Sacramento Daily Union*, volume 29, number 4458, July 6, 1865.

¹⁸¹ *Ibid.*

would be substantial, impounding approximately 700,000 acre-feet of water behind it.¹⁸²

Next, von Schmidt proposed to build a second dam downriver near the townsite of Truckee.

This dam would divert the water to the west and into a canal rather than following its natural course east toward Nevada.

Turning westward, however, would mean turning the course of the water directly into the crest of the Sierra, and it was at this point von Schmidt proposed the greatest feat of engineering for the project: a five-mile tunnel bored through the granite divide that would allow water to flow to California. The proposal soon became known as the “grand bore.” Around the same time von Schmidt put forward his proposal, the Central Pacific Railroad illustrated the obstacle that lay before the Lake Tahoe and San Francisco Water Works when it began boring a 1,659-foot tunnel at Donner Summit as part of its effort to complete the first transcontinental railroad route. Working with hand chisels and blasting powder, Chinese immigrant workers labored around the clock on the tunnel, at times advancing just an eighth of an inch in a day. It took the Central Pacific three years to complete a tunnel that was 6% of the length of the grand bore von Schmidt envisioned. Once through the tunnel, the water would be conveyed through a series of canals and pipelines until it reached its final destinations in California’s urban centers.

While those on the western slope were optimistic about the project, across the Sierra, the residents of the Nevada looked with growing suspicion at their neighbors in California. “I noticed lately in the [Sacramento Daily] Union,” wrote Nevada’s attorney general George A.

¹⁸² “Lake Tahoe Dam Hydraulics and Hydrology,” United States Bureau of Reclamation, Report, October 30, 2008.

Nourse, “a statement in contemplation for supplying San Francisco and California generally with water from Lake Tahoe.” Nourse noted how the Truckee River was the lake’s only natural outlet whose waters flowed down into Nevada. Along the course of the river “mills have been erected whose owners have a right to the use of its water by appropriation, and the owners of scores and hundreds of fine ranches along its riverbanks have, under the common law, the right to the full flow of the stream in its natural channel, undiminished.” As Nevada and its mining industry continued to grow, Nourse argued, the water of the Truckee River would be of “inestimable value” to both industry and agriculture. In short, “it can hardly be expected that those thus interested in the water power [sic] of the Truckee will quietly allow the reservoir which supplies the water of that stream to be tapped and their water supply taken away for the benefit of the western Sierra.” Those in Nevada, he argued, had by both appropriation and common law use, first right to the water flowing from Lake Tahoe.¹⁸³

Nourse was raising important objections to the scheme: to whom ought water belong and under what legal authority do these corporations have right to impound and divert the waters of a lake and river? The matter was further complicated by the fact that the lake was shared by both states, leading to questions pertaining to jurisdiction. Though historian Donald Pisani would remark that “the controversy was more than one exclusively over water rights” alluding to the ways Nevadans felt exploited by San Francisco capitalists, the importance of water rights and questions pertaining to water policy are truly at the heart of this matter.¹⁸⁴

¹⁸³ “The Water of Lake Tahoe,” *Sacramento Daily Union*, volume 32, number 4846, October 9, 1866.

¹⁸⁴ Pisani, 350.

The centrality over the question can be observed in von Schmidt's response to Nourse the following week. He began by noting that Nevada was not to be seriously impacted, as "there is water enough and to spare for both sides." He went on to explain how raising the lake level would add to the quantity of water that could be allocated before responding directly to the attorney general's legal arguments. Under the appropriative doctrine, the first to claim a quantity of water and put it to beneficial use had priority claim to that water over all others that followed. Recognizing this, von Schmidt argued that mills along the river might have priority rights to the quantity of water they currently utilized for their operations, but no more. If the Lake Tahoe and San Francisco Water Works wished to divert any excess water stored in the reservoir it created, it would be free to do so long as those in Nevada continued to receive their current appropriations. This argument also addressed the agricultural sector, for if the quantity appropriated by the water mills for power generation continued to flow through the river channel, then the riparian rights of parties along the river would not be diminished. Von Schmidt's argument was that if the appropriative doctrine was administered in this case and followed to its logical conclusion, then only that water previously appropriated by Nevadans was legally required to be distributed, and all excess created by the company could be claimed and utilized beneficially by the company to distribute to the people of California.¹⁸⁵

Just as with Nevada, however, von Schmidt recognized that the shared border created jurisdictional questions. "In reference to the rights of the two states in which Lake Tahoe is situated," he remarked, "I think it would be wise to consider their respective interests to the

¹⁸⁵ "Lake Tahoe," *Sacramento Daily Union*, volume 32, number 4851, October 15, 1866.

water in proportion to the respective portion of the lake in each state.” Because one-third of the lake’s volume was in Nevada, von Schmidt argued, it would be entitled to a third of the water, with the remaining two-thirds allotted to California in whose boundaries the lake’s outlet was also to be found—ignoring the Truckee River’s ultimate terminus well within Nevada’s borders.

This latter point was important for countering one of the main attacks against the Lake Tahoe and San Francisco Water Works: how could a California company, detractors asked, claim rights to and divert waters destined for Nevada? As von Schmidt noted, the Truckee River flowed from the lake on the California side where his dam was to be built. Furthermore, the diversion would take place in Truckee, still within the borders of California, before continuing further west. “As the company is incorporated under the laws of this State and intend to build its entire works within the limits of California,” he wrote, “I cannot see how the company can be stopped in its progress or for what good reason any person can make opposition to it.” Thumbing his nose toward their neighbors to the east, von Schmidt asked “why should [Nevada] assume to prevent California from taking the two-thirds to which she is unquestionably entitled. Or does Nevada claim to take the whole lake and river?” He ended on a note of grandeur, possibly hoping to stir Californians to his side proclaiming, “why should California not match her other excellences and glories with the grandest aqueduct in the world?”¹⁸⁶

As bills were introduced in San Francisco, the California legislature, and the United States Congress to authorize public support through bonds and land grants for right-of-way,

¹⁸⁶ Ibid.

divisions emerged within both states. Nevada's prominent citizens rallied to defeat the project, with the state's leading newspaper, the *Territorial Enterprise*, increasing its rhetoric in opposition to the project. "The pure water that comes to us from Lake Tahoe... is God's exhaustless gift, and the hand of man cannot deprive us of it," they proclaimed to their loyal readers. "We advise the incorporators to bring to the mountains an escort of twenty regiments of militia. They will need them all, for we will not submit to the proposed robbery."¹⁸⁷ At the same time, some Nevadans, especially the farmers and ranchers along the Truckee, were increasingly open to the idea of a steady water supply that was not subject to the frequent droughts that plagued the region.

While the debate raged in the west, Congress became increasingly interested in western lands and questions pertaining to their management. As early as 1824 in *Gibbons v. Ogden*, courts recognized federal jurisdiction over multistate waterways under the Constitution's interstate commerce clause; however, this had largely applied to navigation rather than use of the water itself.¹⁸⁸ Water scarcity was not an issue in the eastern United States, especially in the state of New York where the *Gibbons* case originated, and therefore, the common law riparian approach had been adhered to. As claimants sought and fought over limited water supplies in the western states and territories, however, federal office holders began to recognize common law approaches were not viable. To no surprise, it would be representatives of California and Nevada who would introduce and advance bills pertaining to western lands. Key among these was the General Mining Act of 1872 that recognized the apportionment of water necessary for mining activities—a fact both states used in their fight

¹⁸⁷ *Territorial Enterprise*, Virginia City, Nevada, February 23, and March 2, 1870.

¹⁸⁸ *Gibbons v. Ogden* (9 Wheat 1, 197, 1824).

over Tahoe. Right to appropriation would not be fully recognized until the adoption of the Desert Land Act in 1877.¹⁸⁹ Yet on the question over Lake Tahoe, the federal government was quiet, and neither side seemed willing to potentially risk its stake by drawing national attention to the issue.¹⁹⁰ Despite unwillingness to proceed with litigation, it is likely given the turn toward appropriation in the western states, a ruling likely would have followed much as von Schmidt predicted: Nevada guaranteed flow to meet existing appropriations with California free to tap and divert excess.

Though the Lake Tahoe and San Francisco Water Works would eventually build a small dam on the lake, it would be the only part of von Schmidt's plan to be realized. In wake of railroad land grant scandals, there was national opposition to further grants, especially one for a small water utility that would only benefit California. Even more problematic, support for von Schmidt's plan never materialized within San Francisco. The electorate were vehemently opposed to footing the bill for such an expensive project and questioned the wisdom of granting the company a monopoly over the city's water supply.¹⁹¹ The lack of support within the city carried over into the California state legislature where lawmakers declined to issue bonds in support of the company nor back any agreement between San Francisco and the company. Lacking political support and the capital to continue, von Schmidt was forced to abandon his dream of constructing the grand aqueduct.

¹⁸⁹ Donald J. Pisani, *Water, Land, and Law in the West: The Limits of Public Policy, 1850-1920* (Lawrence: University Press of Kansas, 1996), 12.

¹⁹⁰ The issue would not be fully resolved until both states began discussing the formation of an interstate compact in the 1950s that resulted in the creation of the Tahoe Regional Planning Agency (TRPA) that was ratified by Congress in 1969.

¹⁹¹ Hesitancy that remained until the Great Quake and subsequent fire that ultimately led to the Spring Valley Water Company's insistence on damming Hetch Hetchy in Yosemite National Park to supply the city's water.

Although von Schmidt's proposal for Lake Tahoe did not come to pass, ironically, his plan to supply Virginia City with ample potable water was resurrected at the same time the city fought his "theft" of Lake Tahoe. Though the city and engineers still found it impractical to pump the waters of the lake over the summit of the Carson Range, the inverse syphon of waters running from a high elevation in the eastern slope over the Washoe Valley divide and up toward Virginia City now seemed plausible and possible to those on the Comstock desperate for a stable water supply. The reservoirs created to fill the flumes created the last link necessary to realize the project. Rather than pump from the lake, engineers dammed Marlette Creek, a small drainage over 1,000 feet above Lake Tahoe's rim, creating a freshwater reservoir that was then transported via flume and pipe to Virginia City at last meeting the city's need.

The importance of von Schmidt's two proposals to tap Lake Tahoe in shaping water policy are all too clear. Here, in the mid-nineteenth century, it was apparent to all that water was driving the west. The need of water was so great in urban centers that they would consider investing large sums of capital to build infrastructure dozens, and even hundreds of miles in length in order to obtain their liquid lifeblood. The matter was of utmost concern to all parties involved, filling page after page of daily newspapers and led to questions concerning jurisdiction and water rights. Finding answers to these questions inevitably shaped projects and proposals that followed.

Within Nevada, von Schmidt's plan foregrounded lingering questions concerning the state's ambiguous stance on toward water rights. Most of the men who drafted Nevada's constitution in 1864 and served in government during the state's early years had largely

migrated from California. The system that was becoming evident in Nevada at this time mirrored the hybrid California system they were familiar with. Though not codified as California's water rights were, Nevada in the 1860s and 70s now recognized both riparian and appropriative claims. Von Schmidt's proposal to dam and divert the waters of the Truckee River, however, forced Nevada to argue strongly for appropriation. In doing so, officials began a process of moving the state away from the hybrid California doctrine, and more exclusively toward appropriation.

Though both of von Schmidt's proposals failed, they failed not for lack of necessity, but because of innate American hostility toward taxation and a growing distrust of corporations. Neither Virginia City nor San Francisco would ultimately build von Schmidt's water infrastructure, but they both built variations when their demand for water grew too great.¹⁹² The need existed, and in addressing questions whether to build, officials at all levels were forced to grapple with solutions to questions concerning water policy. By the 1880s, engineering against aridity in both California and Nevada were seen as the only solution to climate-driven shortages, and the Sierra Nevada pipedreams would be resurrected and finally realized.

¹⁹² Virginia City created a reservoir along Marlette Creek in the Carson Range above Lake Tahoe, and San Francisco built its infamous Hetch Hetchy reservoir.

Chapter 5

The economy of Northwestern Nevada became closely intertwined with mining and the population of the surrounding region rose and fell with the vicissitudes of the silver mines and markets. Between 1860 and 1870, the region's population grew nearly six hundred percent, and all those people needed to eat.¹⁹³ Work began on irrigation ditches, and all the good land that could be put under plow or support a herd was quickly cultivated. Agricultural endeavors required water, and as more users withdrew quantities necessary for their economic endeavors, water resources became increasingly scarce. Yet even as contests over water increasingly flooded the courts, the legislature failed to take meaningful action concerning water rights. The judiciary increasingly was left to decide who had rights to the waters claimed by competing interests.

In hearing these cases and finding resolution, the courts of Nevada were increasingly determining whether the state would continue to follow the doctrine of riparian rights established through common law. As time progressed, the hardship of aridity pushed irrigators, industry, and urban water works to advocate for appropriation. Periods of pronounced drought during each of the three decades of statehood demonstrated the region's water sources were over utilized and the region's piecemeal approach to water policy brought a litany of litigation as rivers and ditches ran dry. What became clear to all was the status quo could not be maintained: a decision must be made to determine water rights in the state once and for all.

¹⁹³ United States Census Bureau, Department of Commerce, Eighth and Ninth Census.

Vansickle v. Haines

During the 1872 session of the Nevada Supreme Court, the bench would rule in the matter of *Vansickle v. Haines* and set precedent for water rights in the state. The case stemmed from a dispute between two farmers in the Carson Valley and diversions to Daggett Creek—a small tributary which flowed down from the Sierra and across a portion of the valley before joining with the Carson River. In 1857, Peter W. Vansickle diverted approximately one-quarter of the creek’s water into a ditch which he used for domestic purposes and to irrigate his lands. The point at which the diversion was made was on public land. James W. Haines obtained a patent for that section of land from the United States government in 1864, and Vansickle patented the land he had been occupying in 1865. In the autumn of 1867 Haines, along with William F. Leet and Charles Vangordor, constructed a flume along his land for irrigation and carrying lumber. Vansickle objected to the fact that the water for the flume was obtained by diverting the water from Daggett Creek. In November of 1870, Vansickle brought suit seeking an injunction to “restrain further diversion of the portion of Daggett Creek claimed to have been appropriated by him.”¹⁹⁴ The district court in Douglas County ruled in favor of Vansickle.

In his appeal to the Nevada Supreme Court, Haines’s case was brief. His counsel, R. S. Mesick, argued that prior to 1866, there was no federal law that allowed for nor granted easements across federally owned land. When Haines purchased the land through which Vansickle had made his diversion to Daggett Creek, Haines obtained “full and absolute title to the land and to the water flowing over it.” Because the patent gave him sole ownership of

¹⁹⁴*Vansickle v. Haines*, Reports of Decisions of the Supreme Court of Nevada, Volume 7, 1872, p. 251, Nevada Supreme Court Law Library, Carson City.

the land, he had sole authority to determine what to do on his land and with the water connected to that land. Furthermore, as there was no process for recognizing an easement, Vansickle's diversion amounted to a trespass not recognized by law nor excluded from Haines's patent upon purchase. "The government cannot be presumed to have intended to burthen the estate of a purchaser for the benefit of a trespasser," Haines argued. "Nor can it be presumed even that the government was aware that the tributary to the Vansickle tract at the time of the grant to Haines." Simply put, because Haines had title over the land which abutted the creek, he had first right to the water of the creek.¹⁹⁵

Rober M. Clarke, responding for Vansickle, disagreed. "The rights of Haines as a riparian proprietor do not constitute a property in the corpus of the water, but a right to use it for his natural wants as it flows in the bed of the stream." He conceded that Haines as an appropriator was free to make use of "so much of the water as is necessary or proper to satisfy his natural wants, including the irrigation of his land," but once that use had been met, Vansickle had right to appropriate the remaining water for his own use. To deny him that right was *damnum absque injuria*—a loss free of injury—that could be remedied by the court.¹⁹⁶

Clarke and Vansickle warned of the dire consequences that would result if Haines' argument were accepted. Never before had a riparian owner received full right over the waterway connected to his land. The water may pass through his land, but "the water flowing over the surface is in no manner affected by the patent, no more than the air passing over or light illuminating the surface. This is *publici juris, res communis*, the property of no one, free

¹⁹⁵ Ibid., 251-253.

¹⁹⁶ Ibid., 253.

to all; and not being property, constituting no part of the land, no right to or estate in it.” Haines was calling for nothing short of a complete abolishment of water as a usufruct. Should he win the day, Vanisckle and his counsel warned, “each riparian proprietor could insist upon the uninterrupted and undiminished flow in the bed of the stream and by this means prevent any valuable use.” Limits must be applied, for without such limits, the doctrine of appropriation would be completely overthrown.¹⁹⁷

In a thirty-three-page opinion, Chief Justice James F. Lewis broke down the case masterfully to explore the long history of water rights to arrive at his decision. First, Lewis pointed to a glaring contradiction within Vansickle’s argument. He noted that much of Vansickle’s argument was centered around the notion that free-flowing water cannot be owned and that it is held in common by the populous—a concept dating to Roman antiquity addressed earlier in this dissertation. “Yet, after arguing to show that water is common property,” Lewis observes, “it is also claimed that a stream may be absolutely appropriated by the first person who may wish to use it. In other words, that water, instead of being something which belongs to all in common... is a thing which belongs absolutely to him who first appropriates it.”¹⁹⁸ The two positions contradicted one another. Surely if running water were free to all just as the air and light, Lewis postulated, then no one has a right deprive it from another regardless of when in time that claim was made. “When positions so utterly contradictory are assumed,” he wrote, “the real questions in the case are likely to be involved and obscured, rather than elucidated.”

¹⁹⁷ Ibid., 254-255.

¹⁹⁸ Ibid., 258.

Lewis recognized two competing systems needed to be thoroughly examined in order to make a ruling in the case: riparian rights and prior appropriation. In this case, the issue was further complicated by the use of public land for private benefit. Early in the republic's history it was determined that via the doctrine of discovery and the transfer of lands from the British Crown to the newly formed United States that the federal government was the original title holder for all lands. Because the Constitution gave the federal government sole authority to treat with foreign nations and Indigenous populations, any lands acquired via treaty would also be added to the public domain where it would be held in trust until the people's representatives in Congress determined the best means for disseminating the lands. This meant that the federal government must also be viewed as a landholder with all associated rights. Riparian ownership had long been tied to possession of the land; its owners free to use that section of the water which ran through their property. Therefore, as a riparian owner of a portion of Daggett Creek, the United States was entitled to the water passing through its property and Vansickle's diversion would be considered a trespass and violation of the government's riparian right.¹⁹⁹

Yet under the county courts of Utah Territory, Vansickle argued, the court had authority to control and distribute the timber and water privileges as it saw fit. Lewis acknowledged the organic act that established Utah Territory ensured that all laws enacted by the territorial legislature would be reviewed by Congress, thus guaranteeing that all territorial laws carried the same force as federal law. If the government of the United States objected, it would not have acquiesced, thereby annulling the law. But it did not—the law was approved

¹⁹⁹ Ibid., 258-268.

and therefore the county courts had the authority to distribute the water rights under their jurisdiction. But Vansickle presented no proof that he had petitioned the court for approval. It would be necessary, argued Lewis, “to show the *right to divert* [original emphasis].”²⁰⁰ Had the land been privately owned, Vansickle would not have been permitted to enter upon and divert the water from the creek. It must be held that the United States enjoys the same right.

Therefore, Lewis ruled, Vansickle’s diversion must be considered trespass. However, though a riparian proprietor has the right to have the water flow freely through his land, “it is not intended to be said that he has the right to *all* the water... what is meant is that no one can absolutely divert the whole stream but must use it in such manner as not to injure those below him.” The riparian owner is only permitted to appropriate and use what is just for his own beneficial use. Haines could not, therefore, divert the entirety of Daggett Creek simply because the water ran through his land. He had an absolute right under his patent as a riparian holder to appropriate water, but that allotment would be bound by the common law jurisprudence recognizing limitations to riparian rights. In the opinion of Lewis and the Court, there was no grounds for rehearing the case; the lower court did not err when it applied these limitations or recognized a basis for appropriation.²⁰¹

The *Vansickle* case had definitively recognized riparian rights within Nevada, yet it also opened the door for consideration of appropriation by noting no riparian holder had absolute right to all the water flowing over one’s land. However, by making this ruling the court created inevitable confrontations between riparian holders and those claiming

²⁰⁰ *Ibid.*, 279.

²⁰¹ *Ibid.*, 284-290.

appropriative rights. If both riparian and appropriative rights were potentially legitimate, whose claims were recognized, and which held seniority over the other?

Jones v. Adams

In the intervening decade, the Nevada Supreme Court continued to balance these two competing systems. Increasingly, the courts were directly confronted with cases where the two doctrines came into conflict: the limitations of riparian rights were becoming apparent whilst simultaneously, appropriation was progressively accepted throughout the American West. In 1885, the court heard another case stemming from the Carson Valley pitting Joseph Jones, a riparian holder, against John Q. Adams, an appropriator.

As early as 1860, Adams began using a small amount of the flow from Sierra Creek—another of the small creeks and rivulets that flowed down the eastern slope and into the Carson River as it snaked its way through the Carson Valley—to irrigate his land. But in 1865, Jones obtained patent to 320 acres of agricultural land becoming owner in fee to a plot through which the Sierra Creek flowed thus becoming a riparian holder. When the District Court in Douglas County originally heard the case, they declared that Adams was “the owner of a usufruct in the waters of said stream, and that he and his grantors, in the year 1860, appropriated and used, and that he is the owner, by right of appropriation and use, of three-tenths part of all the water customarily flowing in the stream.”²⁰² As the first appropriator upon the land, the court stated that Adams was entitled to divert the water from the stream

²⁰² *Joseph Jones v. John Q. Adams*, Nevada Supreme Court Case Number 1081, *Reports of Cases Determined in the Supreme Court of the State of Nevada*. April Term 1885, Nevada Supreme Court Law Library, 81.

onto his land by whatever means he saw fit for the purpose of irrigation “as is necessary for his stock and domestic purposes.”²⁰³

Despite obtaining the majority right to the waters of Sierra Creek, Jones appealed the ruling to the Nevada Supreme Court. Appropriation, he argued, was inappropriate in this case. The case “should have been determined by the principles of the common law in relation to the rights of riparian proprietors, instead of upon the principle of prior appropriation,” he argued.²⁰⁴ He went on to say that the application of the appropriation doctrine could not be held in cases where riparian proprietors had “procured the title in fee to their lands from the government of the United States prior to the act of Congress of July 26, 1866,” and thus the case should have been decided on common law use and riparian claims alone.²⁰⁵ To understand the heart of Jones’ argument, we must first turn our attention toward that act of Congress, for this would be the issue at the heart of the case.

At face, the act is a federal mining law. The act allowed federal lands in the public domain whether they had been surveyed or not to be claimed by citizens for the purpose of prospecting and/or developing mines. Section 9, however, addressed aridity in western states where mining claims on public lands were most likely to be staked. The act declared that:

“whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized by the local customs, law, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for he purposes aforesaid is hereby acknowledged and confirmed.”²⁰⁶

²⁰³ Ibid.

²⁰⁴ Ibid.

²⁰⁵ Ibid., 81-82.

²⁰⁶ “An Act granting the Right of Way to Ditch and Canal Owners over the Public Lands, and for other Purposes,” Thirty-Ninth Congress of the United States, Session I, Chapter 262, July 26, 1866, p. 253.

In short, the federal government was acknowledging prior appropriation as an acceptable practice in places where aridity made claiming water rights necessary to the development of agriculture and industrial interests. This, of course, was exactly what was happening in Nevada.

Jones' argument was based on a rejection of the law and its application to Nevada at the time he obtained his patent. Jones argued that because the law went into effect the year after he purchased his title that common law and riparian rights were the legal standard that should be followed. Therefore, the district court erred in applying appropriative rights to this case after the fact. Furthermore, he argued, even if the court were to consider the act of Congress, it was clear in the language of the law that appropriation could only be applied if it were recognized by local custom, law, and decisions of the courts. This was not true of Nevada in 1866 when the act went into effect nor was it true at this moment in time. Jones argued that Nevada had adopted common law, and as such, riparian ownership and claims were the only legal basis from which a ruling could be made. "The doctrine of riparian proprietorship laid down in *Vansickle v. Haines*...has become a rule of property in this state, and should be adhered to upon the principle of *stare decisis*," Jones declared. Riparian rights were "fully applicable to our circumstances and the physical condition of this country," he stated, and because the United States Supreme Court had recognized riparian rights as common law, this should be the lens through which the court made its determination. Finally, he argued, he had "an absolute and indefeasible title to his land. He own[ed] everything in it—the soil, the trees, the stones, the water—everything." Because it was agricultural land,

and water was necessary to its development, Jones argued that he could not “legally be deprived of a valuable part of his estate without his consent.”²⁰⁷

Justice Thomas Hawley wrote the opinion for the court declaring Jones’ argument sound in principle but flawed in logic. “If the theory contended for by appellant, that this case should have been decided upon the principles pertaining to riparian rights should prevail,” Hawley wrote, “it would not follow, as claimed by him, that as a lower proprietor he would be entitled to *all* [original emphasis] the water of the stream. This is not the law.”²⁰⁸ Quoting from *Vansickle v. Haines*, Hawley reiterated “when it is said that a proprietor has the right to have a stream continue through his land, it is not intended to be said that he has the right to *all* the water, for that would render the stream, which belongs to all the proprietors, of no use to any.” The court declared in that case, following long established caselaw, that riparian holders could not divert the entirety of a stream or body of water but only use that which was necessary in a manner that would cause no harm to fellow riparian holders downstream.

Hawley went on to recognize that irrigation was a suitable and legally recognized use of water under both the riparian and appropriation doctrines, yet the quantity utilized in each instance was dependent on the circumstances of each individual case based on myriad factors such as the size of the waterway and the swiftness of its current, how many people were utilizing the water of the waterway in question, the quality of the soil and how much water was required to irrigate one’s lands. Citing multiple cases, Hawley demonstrated that Nevada had never held a riparian proprietor, even when putting water to beneficial use through

²⁰⁷ *Jones v. Adams*, 79-80.

²⁰⁸ *Ibid.*, 82.

irrigation, could claim the entirety of a waterway in a manner detrimental to other stakeholders along its path.

The Court agreed with Jones' that the act of Congress made clear local custom and jurisprudence superseded the provisions of the act pertaining to prior appropriation, but they did not agree that this favored Jones. Quite the contrary. Because Adams had been appropriating and diverting the waters of Sierra Creek for five years prior to Jones' acquisition of title, it stood to reason that the local custom upon this stream was appropriation and therefore met Congress' intent. "It necessarily follows...that the court did not err in rendering its judgement and decree upon the findings in relation to prior appropriation."²⁰⁹

In arriving at its decision, the court acknowledged that it was overruling portions of the *Vansickle* case that conflicted with the judgement issued in *Jones*. Specifically, the court acknowledged the validity of the July 1866 act of Congress as a means of determining whether appropriation was acceptable in accordance with local custom. It could not be held that Nevada was solely a common law jurisdiction if residents along its different waterways were appropriating water in an organized and consistent manner. What was conjecture in *Vansickle* became precedent following the decision in *Jones*. Nevada was a jurisdiction where both riparian and appropriation were legally accepted. But in making this decision, the Court also created a system where the judiciary must hear disputes on a case-by-case basis to determine which doctrine was applicable in any given circumstance.

Then came the drought.

²⁰⁹ Ibid., 88.

Reno Smelting Works v. Stevenson

Nevada’s climate is determined in part by the El Niño Southern Oscillation—intermittent warming and cooling of the sea surface in the equatorial Pacific Ocean creates wetter and drier weather patterns that impact the region. The Sierra Nevada range creates a rain shadow that extends outward along its eastern slope leaving inhabitants in that region almost entirely dependent upon winter snowpack to sustain their rivers and streams. Dry winters caused by the La Niña phase of the oscillation are exacerbated for inhabitants in the region who must contend with limited precipitation during the winter months followed by low spring runoff. Given the short time most of the settlers had lived in the region, they had yet to experience the full hardship that accompanied a very dry season.²¹⁰

In the words of A. J. Chalmers, the year 1889 “was a year of scarcity... There was very little water that year.”²¹¹ The summer months of late July through September were never a season of plenty for the settlers in the Carson Valley. “Some years the stock can get water by going to the holes in the bed of the river where the water stands,” Benjamin Palmer recalled, “but there is no irrigation going on.” When asked how farmers watered their crops in August in September, he simply replied “I guess they don’t use very much—it ain’t there.”²¹² The year 1889 was worse than most. “That was a terrible year, Al Squires

²¹⁰ Kerri Jean Ormerod and Stephanie McAfee, “Nevada’s Weather and Climate,” fact sheet 17-04, University of Nevada Reno Cooperative Extension (2017), <https://www.unce.unr.edu/publications/files/nr/2017/fs1704.pdf>; Dan Cayan and Kelly Redmond, “El Niño in California and Nevada,” California-Nevada Climate Applications Program through Scripps Oceanographic Institute at University of California San Diego and the Desert Research Institute at University of Nevada Reno (December 2015), https://scripps.ucsd.edu/programs/cnap/wp-content/uploads/sites/109/2017/02/CNAP_ElNiño_Dec2015_FINAL.pdf.

²¹¹ Testimony of A. J. Chalmers, *Union Mill and Mining Company v. Dangberg et. al.*, p. 2200. Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 5.

²¹² Testimony of Benjamin Palmer, *Union Mill and Mining Company v. Dangberg et. al.*, p. 686. Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 4.

remembered, “fish died in the river that year... there was no water at all at my place.”²¹³

Many of the ranchers recalled driving their pigs and cattle to small pools of standing water in the riverbed in an effort to keep them alive. Some had to dig holes to bring water to the surface. “They had to drink green looking stuff, and I was very uneasy about it,” Squires confessed.²¹⁴ “My crop suffered,” Charles Henningsen stated. “There might have been a few on the east fork above us all that didn’t suffer, but generally it is my opinion that they all suffered for want of water that year for irrigation and several suffered a great deal even for their stock that had to drink bad water standing in pools... I don’t know that I could name any that didn’t suffer for water that year.”²¹⁵

What was true for farmers and ranchers in the Carson Valley was equally true for industries that abutted the Carson and Truckee Rivers. The Reno Smelting, Milling, and Reduction works depended on the waters of the Truckee River to power its machinery and turn a profit. Like many water-powered mills of its time, the company had constructed a small dam across the river impounding water behind. This was done with the consent of neighboring property owners at the time the dam was constructed.²¹⁶ Like most milling dams, it was small and allowed water to pass over it once the retaining pond behind it filled. This meant, however, that the flow of the river needed to be of sufficient strength to fill the

²¹³ Testimony of Al P. Squires, *Union Mill and Mining Company v. Dangberg et. al.*, p. 699. Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 4.

²¹⁴ *Ibid.*, p. 700.

²¹⁵ Testimony of Charles C. Henningsen, *Union Mill and Mining Company v. Dangberg et. al.*, p. 1896. Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 5.

²¹⁶ It is unclear exactly when the dam was constructed. Court records only indicate it was long before the dispute arose, and no further documentation could be found providing a specific date.

reservoir and overtop the dam to continue its course downstream. In dry years when flow diminished, this did not happen.²¹⁷

Immediately downstream from the company's reduction works was an asylum owned and operated by the State of Nevada. They too required water and were unhappy with the diminished flow resulting from the damming of the river. As a result, the state built a flume that tapped the retaining pond behind the dam conveying water to the asylum for its use. Naturally, Reno Smelting, Milling, and Reduction Works sued the state claiming it was redirecting waters the company had a rightful claim to. The district court ruled in the company's favor and enjoined the state from further diversions from the pond to its flume.²¹⁸

The state appealed the decision claiming it had a right to appropriate waters not put to beneficial use. The Reno Smelting, Milling, and Reduction Works responded asking the Nevada Supreme Court to affirm the decision arguing that the company, as a riparian holder, had right to use of the water naturally flowing through the channel that abutted its property. The court disagreed with the company's view of its rights as a riparian property owner, however. As a riparian proprietor the company was certainly free to use the water flowing over its lands, Justice Belknap wrote, but it could not divert those waters entirely from the channel and the waters must be returned to their natural course following use by the company on its property. "Without the consent of adjoining proprietors, he cannot divert or diminish the quantity of water which would otherwise descend to the proprietors below, nor throw the water back upon the proprietors above."²¹⁹ Constructing a dam that obstructed the flow of the

²¹⁷ *Reno Smelting, Milling, and Reduction Works v. Stevenson* (20 Nev. 269) 1889. Nevada Supreme Court Law Library, 269.

²¹⁸ *Ibid.*

²¹⁹ *Ibid.*, 269-270.

river to the detriment of riparian holders below was not held as an acceptable use by a riparian holder.

The company's argument was much more nuanced than whether it could build a dam and use the impounded water: at the heart of its argument was the declaration of the legislature that Nevada was a common law state. Reno Smelting, Milling, and Reduction Works' argument was that the legislature, in adopting this law, made clear its desire that water rights in Nevada followed the riparian doctrine just as they did in the eastern states who had also adopted the common law from England. Therefore, it followed that the district court could not recognize appropriative rights if riparian rights were legislated. This also meant that the rulings in *Vansickle* and *Jones* that recognized appropriation within the state under certain circumstances were also invalid.

John K. Alexander, Nevada's Attorney General representing the state, disagreed with the company's interpretation. In adopting this law, the legislature was alluding to a broad set of accepted customs and practices. It was illogical to assume, he argued, that a state whose government was formed nearly a century after separation and independence from Great Britain meant to adopt wholesale English laws and customs as its own. Instead, Alexander argued, the legislature was referring to the common law of the Pacific states rather than the common law of England. The company was quick to respond: what exactly was the common law of the Pacific states? No such thing existed!

The court saw differently. Following the precedents set forward in *Vansickle* and *Jones* and building upon their interpretation of the act of Congress of 1866, the court opined that there was clearly a set of common laws and principles unique to the states and territories of the Western United States—especially concerning water rights. This applied to the State of

Nevada the court declared. “Here the soil is arid, and unfit for cultivation unless irrigated by the waters of running streams...The condition of the country, and the necessities of the situation, impelled settlers upon the public lands to resort to the diversion and use of waters. This fact of itself is a striking illustration and conclusive evidence of the inapplicability of the common-law rule.”²²⁰

In case there was any remaining doubt about conflicts between whether riparian or appropriative rights prevailed in the case, Belknap made the court’s intent clear. “Our conclusion is that the common-law doctrine of riparian rights is unsuited to the condition of our state, and that this case should have been determined by the application of the principles of prior appropriation.”²²¹

Union Mill and Mining Company v. Dangberg Et. Al.

The ramifications immediately reverberated throughout the state where shortages caused by drought were stressing water users. Along the Carson River where the upper portion of the river was devoted to agricultural pursuits and the mid-section dotted with stamp mills supporting the mining industry, questions arose over whose claim was first in time. As the population of western Nevada rose, so too did water allocations. Farmers, ranchers, and mill operators all needed water, and each claimed they held priority right over the other.

²²⁰ Ibid., 280.

²²¹ Ibid., 282.

The drought brought shortages that harmed agriculture in the Carson Valley and stamp mills down-stream. The mills depended on the water to operate their machinery and if the river was dry in the Carson Valley, it most assuredly was dry several miles downstream in the river canyon. In 1887, the *News Reporter* in Dayton reported “there is hardly enough water to run the hurdy-gurdy wheel used to hoist the ore from the Kentuck mine and supply is decreasing.” There were serious concerns that this, and other mills, might close due to lack of water.²²² By 1889, the trickle of the previous years had nearly run dry. Most mills operating along the Carson River had been consolidated under the ownership of the Union Mill and Mining Company and to the company, the shortage of water had a clear culprit. This was no act of God, but the deliberate and irresponsible use by upstream irrigators.

Having no water to power its seven mills, Union Mill and Mining sued 125 farmers and ranchers—comprising the entirety of those with claims in the Carson Valley—arguing the company had prior appropriation rights to the water of the Carson River that superseded those of the defendants upstream. The company staked its claim on the dates the mills were constructed and began diverting water from the river. The earliest of the company’s claims dated to March 1860 with the construction of a dam and ditch to power the Mexican Mill, and the company argued the mill had “at all times used... all the water which would flow through said race when there was sufficient water for that purpose” flowing in the Carson River.²²³ Through its possession of the mill, the company argued it held all the water rights and privileges dating to 1860. It further argued that because the mills adjoined the river, it had riparian rights to the water as well. No matter which way the defendants argued, Union

²²² *The News Reporter*, Dayton, Nevada, January 20, 1887.

²²³ Complaint. *Union Mill and Mining Company v. Dangberg et. al.*, p. 7. Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 1.

Mill and Mining insisted they had a right to the water that was being unlawfully diverted by the Carson Valley farmers to the detriment of the company.

Union Mill and Mining supported its claim by supplying patents for the lands it held along with the official federal government surveys. The company introduced evidence demonstrating the quantity of water utilized by the mill, stating the amount had remained unchanged since its construction and had been in continual use since the mill's construction, except for the times its machinery had broken down, been taken out of operation for repair, or when machinery was replaced. By structuring their argument in this form, the company was making a claim for prior appropriation. They established a firm date for when appropriation began—March 1860—the quantity of water that was utilized at the time appropriation began and demonstrated continual beneficial use by utilizing the water to power machinery for the refinement of metal bearing ores.

The company was also making a specific argument to counter those they anticipated from the agricultural communities upstream. The Carson Valley was the first area in the state to be settled, and some of the defendants would claim their rights were superior to those of Union Mill and Mining because they predated the company's formation, land acquisitions, and construction of its mills. To counter this, the company took two approaches.

The first was to challenge the date of an individual's water rights by attempting to raise questions about an owner's right to appropriate to an owner's title over the land. Actual ownership of an individual's claim was often mired in a complicated series of evolving governments with contesting claims to legal domain. The earliest settlers in the Carson Valley had recorded their claims with the squatters' government—an entity with no legitimate legal authority. Could these claims be recognized? Union Mill and Mining argued

no. Later, claims were officially recorded by the courts and county clerks for the territorial governments of Utah and Nevada. These, too, were problematic, for the land being settled was held in trust by the federal government, and the government had not ceded that land to the territories to distribute. Therefore, a claim to appropriate could only be established once the defendant had obtained patent to the land from the federal government.

The second approach Union Mill and Mining took was to establish specific water use claims. By listing the quantity its mills used and tying that to the original date of appropriation, the company was making clear that it had always used a certain quantity of water and thus was entitled to continued access to the same quantities. The defendants of the Carson Valley, in contrast, could not make that claim. During cross-examinations, the company's counsel made repeated inquiries concerning what alterations had been made to irrigation on a defendant's property and when. Cross examination further inquired about the quantities of water used before and after those changes were made. The company was hedging its bet. If the court determined that certain claims did indeed predate their own, Union Mill and Mining wanted to ensure that only the water appropriated *prior* to their 1860 claim would be recognized. The farmers and ranchers would only be able to use this smaller quantity, thus ensuring more water flowed downstream to meet the company's demands.²²⁴

Henry Dangberg and his fellow defendants responded with a series of complaints of their own. If the company was so concerned about the depletion of water from upstream irrigators, why only sue Nevada water users? The Carson River originated in California and the two forks of the river flowed down into the Carson Valley on the California side of the

²²⁴ Defendants Testimony. *Union Mill and Mining Company v. Dangberg et. al.* Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27.

border before reaching the farmers and ranchers in Nevada.²²⁵ Why were the California farmers and ranchers not party to the suit since they too were using the river water for irrigation purposes? This argument, however, did not gain traction with the court. Even though the suit was brought in federal court because it pertained to the waters of an interstate waterway, it was not up to the court to determine who should be a party to the case, Judge Hawley ruled, but rather to hear and rule upon the merits of the case brought before it.

When it came to appropriating water, the farmers and ranchers used a strategy similar to their opponents. The defendants claimed that Union Mill and Mining had expanded the size of the ditch used to carry water to its mills and increased the number of stamps operating in the mills since they were first constructed. By doing so, they argued, the company had slowly increased the amount of water required to operate its mills. Just as the company argued for water use tied to the date of original appropriation, the farmers and ranchers insisted the company be held to the same standard.²²⁶

In coming to his decision, Judge Thomas Hawley, the former Nevada Supreme Court Justice who wrote the opinion in *Jones v. Adams* and now sat on the federal bench, noted the unique role environment played in this case. “Water in this state is too scarce,” he wrote, and all water users needed to be mindful of waste.²²⁷ He noted that the water in the river was completely dependent upon the amount of snowfall in the mountains, and precipitation during the spring and early summer months, but, he wryly noted, “the power of regulating or

²²⁵ *Union Mill and Mining Company v. Dangberg et. al.* Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 1.

²²⁶ *Union Mill and Mining Company v. Dangberg et. al.* Special Collections, Mathewson-IGT Knowledge Center, University of Nevada Reno, collection 82-27, Box 1.

²²⁷ Judgement, *Union Mill and Mining Company v. Dangberg et. al.* 81 Federal Reporter, p. 97.

controlling the amount of rain or snow is beyond the jurisdiction of courts.”²²⁸ “The real controversy,” he declared, was “confined to a period of time ranging from July 1st to November 1st of each year, during which there is always liable to be an insufficient quantity of water flowing in the river to enable the parties to make a reasonable use thereof both for irrigating and for milling purposes.”²²⁹ What then was the court to do?

The issue was complex. Hawley began by recognizing the different legal approaches that had been taken throughout the years and argued at different points throughout the trial. Should water rights “be determined by the rules and principles applicable to riparian proprietorship, or be governed solely by the laws, rules, and decisions of the courts of Nevada,” he asked, or “should the court follow the suggestion of counsel that some of the parties can claim riparian rights, and others claim the right by prior appropriation, and others claim both rights?”²³⁰ That both parties had claim to the water of the river and were using it beneficially, there could be no doubt, yet determining whose claim was senior was much more difficult.

The dates provided by Union Mill and Mining were absolute: they pointed to a date in time when rights were established, and appropriation began. However, Hawley also recognized validity in the farmers’ and ranchers’ arguments that because a federal land claims office was not established in the territory until 1861, it was equally problematic for these individuals to obtain patent for the lands they had settled without traveling a great distance at their own personal expense. To Hawley, the answer was not directly in the date of the claims, but how the parties were putting the water to use. “It may be fairly stated,”

²²⁸ Ibid., 119.

²²⁹ Ibid., 118-119.

²³⁰ Ibid., 92.

Hawley argued, that during the early period of settlement in the 1850s, the farmers and ranchers of the Carson Valley, “only irrigated their lands by the natural overflow of the river, or by making cuts through the high banks of the river to let water out when it was not bank full, and several small ditches, taking water from these cuts, and from the sloughs and other low places, so as to lead the water off to other portions of the land.”²³¹ Because they were not making improvements that made direct use of a specific quantity of water, Hawley ruled that Dangberg and the other defendants who tied their claims to the settler period could not claim they were appropriating the water, for they were simply relying upon the natural rise and fall of the river. Furthermore, even if the court were to consider their claim to appropriate, they would only be entitled to claim the quantity of water necessary to irrigate their land holdings as they existed prior to the establishment of Union Mill and Mining’s stamp mills downstream—a number far reduced from their current holdings, and whose impact would be minimal.²³²

As Hawley went on to explain, the doctrine of prior appropriation alone could not settle this case. Nearly all the litigants in the case had previous litigation, and most had standing decrees that had resulted from those adjudications. “Why should the [farmers and ranchers], who were by the former decrees adjudged to be riparian proprietors,” Hawley asked, have those decrees destroyed? “They certainly have as great, if not greater, rights thereunder as any rights acquired by prior appropriation would give them.”²³³ Given the scarcity of water, “it would be unjust and inequitable to compel the farmers in the valley to allow the water to run down to the mills when the quantity of water was wholly insufficient

²³¹ *Ibid.*, 103.

²³² *Ibid.*, 105.

²³³ *Ibid.*, 116.

to enable [Union Mill and Mining] to run its mills with waterpower. *There must be beneficial use before any protections can be invoked* [author's emphasis]. No provisions should be contained in the decree which would result in depriving one part of the use of the water when the other party could make no beneficial use of it. This would amount to a destruction, instead of a protection, of the rights of the parties."²³⁴

What Hawley decreed was a recognition of appropriation rights of Union Mill and Mining while recognizing riparian rights of the Carson Valley ranchers and farmers that had been established via litigation when Nevada recognized riparian claims. The only reasonable solution as he saw it was to find balance between the claims in a manner that addressed the needs of all. In short, the irrigators in the valley "cannot be compelled to supply any given quantity of water which the elements fail to furnish."²³⁵ Union Mill and Mining was entitled to claim its appropriated waters except between July 1st and October 1st of each year. Throughout the same period, the farmers and ranchers were "entitled to make economic, beneficial, and reasonable use of the water" so long as it did not harm downstream proprietors.²³⁶ During the period from July to October, they were entitled to taking all the water in the river "when, and only when, all of it is absolutely required, owing to the scarcity of water in river, to enable them to make use of the water in irrigating their riparian lands without waste."²³⁷ Though the ruling was officially for Union Mill and Mining, the judgement decreed by Hawley recognized the problem of aridity and arrived at a decision that attempted hybrid approach. It would be the last.

²³⁴ Ibid., 119.

²³⁵ Ibid., 120.

²³⁶ Ibid., 121.

²³⁷ Ibid.

From the earliest points of settlement during the 1850s to the decision in the Union Mill and Mining case in 1897, contests over water in Nevada’s arid environment led to multiple approaches and innumerable points of litigation. Through this period, Nevadans grappled with questions of how to manage the commons—these liquid resources that ought to belong to all but were becoming increasingly commodified and contested as the state’s population grew. When forming the state, the delegates to the second constitutional convention remarked on aridity and did nothing. The lawmakers who served in the government they created followed in their founders’ footsteps doing little to address the contests over water that consumed the state’s judiciary. Judge Hawley noted the lack of legislative direction when he asked, “If the legislature of the state fails to act, are the courts compelled to simply declare the rule, and let the parties act under their own interpretation of it?”²³⁸ The commons needed to be governed. “It is in the interest of the public that there should be an end to litigation,” Hawley declared, and he was all too correct. In hearing Nevada water cases, the judiciary balanced individual liberties against the good of society and attempted to arrive at equitable solutions. In doing so, the courts would ultimately grapple with the state’s aridity when no one else would arriving at legal solutions for societal problems.

²³⁸ Ibid.

Conclusion

The first fifty years of Euro-American settlement brought drastic changes to Nevada and varying approaches to water use. The traditional subsistence practices of the Washoe and Numa were overtaken by settlers who brought with them ideas about a society built upon agriculture and extractive industries. Water was important to each. To Indigenous communities, water played an important role in their everyday lives sustaining the fisheries they depended upon, flowing into the marshes whose reeds they employed and whose waterfowl they hunted, and provided life to themselves and countless other plants and animals that filled their world. To Euro-Americans, water was necessary for life as well. Water irrigated their crops, watered their livestock, allowed miners to process their ores, lumber barons to transport their timber, and for cities built in the high desert to thrive. The changes examined by this dissertation are marked by contests.

What happened in Nevada between 1850 and 1900 is best described as a riparian revolt. It was along the riparian lands that Euro-Americans first settled beginning the process of displacement. By staking claims to the lands abutting waterways, settlers began replacing the socio-political structures of the Washoe and Numa that dominated this region for millennia with their own. Like many revolts, it was not a bloodless affair, yet compared to the violence that accompanied American expansion elsewhere, this revolt saw far less aggression than most. There was little need for hostility, changes to the land worked on their behalf. The development of agrarian communities along the watersheds of Northwestern Nevada inexorably altered these biomes to favor the settlers jeopardizing the careful

subsistence practices the Washoe and Numa had developed over generations ensuring their survival.

This revolt against Indigenous residents and their riparian claims continued after the introduction of formal governments. As settlers arrived in ever increasing numbers, they connected control of the region's limited water to the success of their future endeavors. Occupying the rivers and streams flowing off the Eastern Slope and through the valleys below pushed the Washoe from many of their winter camping grounds. As the mining industry grew and the need for timber rose with it, the Washoe summer camps at Lake Tahoe disappeared along with the old growth forests. Wild seeds and vegetables were replaced with Anglo crops. Fisheries were destroyed with damming for irrigation and water-powered machinery, the dumping of toxic chemicals and sawdust into the rivers, and shoreline alterations caused from livestock grazing. Game was fenced out, overhunted, and had their habitat destroyed as the Euro-American consumed the land.

The Numa faced many of the same hardships yet were partially insulated through the allotment of the Pyramid and Walker Lake Reservations. While the lakes and rivers that ran through these reservations allowed the Numa continued access to fish, marshes, game, and water denied the Washoe, the reservations created another point of revolt among the Euro-Americans. Given the scarcity of water in the region, settlers argued for the reservations to be disbanded or their boundaries altered so that Euro-Americans could put the riparian lands to a beneficial use they believed absent from Indigenous proprietorship. Though their efforts failed, the larger revolt succeeded. To secure continued access to their lands and to water, the Numa would need to advocate their claims according to Euro-American laws and customs in

Euro-Americans courts against settlers and occupiers who saw Numa uses as inferior, illegitimate, and invalid.

With growth came contention. Nevada's aridity placed agrarian, industrial, and urban water users in competition with one another in addition to their on-going displacement of Indigenous users. Like many settlers to the western United States, the Euro-Americans brought with them practices and policies that originated in England, were adapted to the eastern United States, then transplanted to the new settlements in the West. Riparian rights served early settlers that established their communities along the waterways flowing the region's valley but could not sustain its growth.

In the mining communities where no water source was readily available, the need to claim and transport water was imperative to their continued growth and success. Under the riparian doctrine no such claims could be made, transporting water to a distant location legally impossible. Aridity's limitations extended beyond consumption for the need to transport water increased exponentially throughout the state. To water crops and livestock, agrarian endeavors required acquisition of water and transport via irrigation ditches, canals, and flumes to the desert lands where it could be put to beneficial use. To the corporations whose livelihoods depended on reliable access to water, appropriation provided a degree of consistency a company could depend upon from year-to-year.

The necessity of staking claim to and transporting water sparked a slow revolt against long-held beliefs in riparian rights in favor of prior appropriation. But Nevadans were not alone devising solutions to water shortages. The revolt against riparianism gained favor among Nevadans when Alexi von Schmidt proposed impounding the waters of Lake Tahoe

and diverting them toward San Francisco. The people and businesses who depended on the lake and the waters of the Truckee River turned to prior appropriation as the mechanism through which the strongest defense of their historic claims and use could be legally mounted.

Even as public sentiment turned, Nevada's legislators failed to act leaving the judiciary to sort through myriad competing claims. In the four decades following Nevada statehood, the courts gradually recognized the constraints of aridity in conjunction with riparian rights. With each subsequent legal action, courts too gradually revolted from common law riparian rights recognizing prior appropriation as the only suitable policy to address Nevada's water scarcity.

Following each progressive president, the final revolt unfolded. Riparian holders angry at real and perceived diminishing of their rights revolted against the doctrine of prior appropriation. This revolt consisted of legal challenges advocating for strict interpretation of common law applications to the state of Nevada, and when these failed, riparian proprietors lashed out by dynamiting dams upstream, destroying irrigation ditches and flumes, and utilizing water to the detriment of downstream appropriators. These actions were for naught. By 1900 Nevada definitively recognized and employed the doctrine of prior appropriation.

Use of prior appropriation was popular politically and among the public. Following the decision in *Union Mill and Mining*, Nevada's Congressional representative Francis Newlands and United States Senator William Stewart tapped this popularity to enact a federal reclamation project in Nevada's interior. The Newlands Project dammed the Truckee

River turning out part a portion of its flow south to join the Carson River and a newly created reservoir that would provide the water for the new irrigation district.

Located just outside the Pyramid Lake Reservation, the dam completely obstructed spawning runs for cutthroat trout and cui-ui leaving both species endangered.

Simultaneously, the diversions of the Truckee River dramatically reduced its flow onto Numa lands lowering the level of Pyramid Lake. Once the lake level fell below its natural rim, water no longer flowed from its northern drainage causing nearby Winnemucca Lake to evaporate leaving only its lakebed behind.

Though the mines of the Comstock had played out even as the Union Mill and Mining Case was being decided, they too left environmental degradation in their wake. The waters that powered the mills along the Carson River were polluted with decades of accumulated mercury and arsenic dumped into the river following amalgamation. Over 150 years after the Big Bonanza, the waters of the Carson River through the river canyon remain an EPA superfund site to this day.

Tahoe would also be dammed to facilitate water for irrigation and growth. By 1900 years of logging left a moonscape of stumps and erosion. The lands accumulated by Bliss and the Carson and Tahoe Lumber and Fluming company were offered to the federal government for the creation of a national park along Lake Tahoe's shores, but the extensive degradation, it was determined, left little natural beauty to marvel. Dan DeQuille's vision of picturesque beauty felled to meet the insatiable appetite of the mines became an uncomfortable reality. Though a new forest now blankets the Tahoe basin, lack of biodiversity among trees all of a similar age makes the forest highly susceptible to disease and infestation.

The environmental alterations begun under the first Euro-American settlers and accelerated during the mining boom were all made possible through the use of prior appropriation. In recognizing water as a usufruct, Nevada made possible the resource exploitation of the nineteenth century whose ramifications reverberate to this day.

The legacy of appropriation in Nevada is not entirely negative, for the doctrine holds that first in time claims priority rights above all others. The creation of the Pyramid and Walker Lakes Reservations through executive action in 1859 and granting the Numa rights to use the waters of those lakes and the Truckee and Walker Rivers that flowed through their lands provide the Numa senior claims to these waterways.

What happened in early Nevada was a riparian revolt. Though the issue of water policy has long been decided, aridity continues to shape the state. Water litigation remains a prominent piece of Nevada jurisprudence with many of the same actors. Farmers, ranchers, miners, urban centers, and Indigenous communities all continue to assert their claims and contest those of their competitors. As Global Climate Change accelerates, senior water claims have become as prized as the precious metals that continue to contribute to Nevada's economy.

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