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THE RIO VIRGIN: A TURBULENT RIVER, MORMON PIONEERS, AND THE  
CREATION OF A LANDSCAPE 1854-1921

by

Spencer Wayne McConkie

A thesis submitted in partial fulfillment  
of the requirements for the degree

of

MASTER OF ARTS

in

History

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2022

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## ABSTRACT

The Rio Virgin: A Turbulent River, Mormon Pioneers, and the Creation of a Landscape

1854-1921

by

Spencer McConkie, Master of Arts

Utah State University, 2022

Major Professor: Dr. Christopher Conte  
Department: History

This thesis explores the creation of a hybrid landscape in the Virgin River Basin by Mormon settlers between 1854-1921. The Mormons originally settled the area with the intent of growing Southern cash crops such as cotton, tobacco, and sugarcane. The efforts at growing these crops proved futile by the 1870s due to the arid climate, seasonal flooding, conflicts with the local Southern Paiutes, and the misconceptions the Mormons had concerning the local environment. The failure of these farming efforts led the Mormon settlers to adapt crops and technologies from different cultures that were better suited for the local climate. By 1921 Mormon fields of alfalfa, fruit orchards, and dry farms came to be the prominent features of the Mormons' newly created landscape. This landscape was the creation of human and natural forces and only existed for a short period of time as these forces continued to transform the landscape after the initial Mormon settlement of the basin. This thesis provides important information on the evolution of the Virgin River Basin Landscape while providing a larger context to the creation of landscapes throughout the West during the late 19th Century.

(112 pages)

## PUBLIC ABSTRACT

The Rio Virgin: A Turbulent River, Mormon Pioneers, and the Creation of a Landscape

1854-1921

Spencer McConkie

This thesis explores the changes to the landscape of the Virgin River Basin by Mormon pioneers and the environment between 1854 and 1921. This thesis shows the ways in which the Mormons replaced the local vegetation of the basin with new crops and expanded the area available for farming through the use of irrigation canals and different farming techniques. Along with showing the ways in which the Mormons changed the landscape the thesis explores the ways in which environmental changes played into this process. The process of creating the new landscape of the Virgin River Basin involved both natural and human made forces, showing that the creation of a landscape is dependent on various factors. The processes found in the creation of this new landscape can be applied to the creations of new landscapes and the process of Climate Change.

## DEDICATION

To my wife, Sarah, and the family we are just beginning.

## ACKNOWLEDGMENTS

I would like to thank the members of my committee: Dr. Christopher Conte, Dr. Lawrence Culver, Dr. Patrick Mason, and Dr. Jack Schmidt for their help with research and in forming my thoughts into this thesis. I also want to thank the History Department and the College of Humanities and Social Sciences for providing funds for me to conduct the research so necessary for my work. I would especially like to thank Dr. Jamie Sanders, who worked tirelessly to help me with the adjustment from undergraduate to graduate work here at Utah State.

I also need to thank the staff of the now Utah Tech University Special Collections in St. George, Utah. While conducting research in their archives they found sources for me that I had not been aware of. These sources helped to turn my questions in new directions and helped me uncover important stories about dry farming in Southern Utah. Without their help I would not have been able to tell the story contained in the following pages.

Finally, I want to thank my friends and family. To my friends Monique Davila and Mitchell Fellows, who provided important feedback and made my time at Utah State an enjoyable experience. To my parents Wayne and Cindy McConkie, who accompanied me on my research trips and provided many of the photos found in this thesis. To my sister Audrey Merket, who along with my father edited and helped me rewrite multiple drafts of this thesis. Finally, to my wife Sarah McConkie, who encouraged me to pursue a career path that I enjoy and who taught me the importance of staying ahead of deadlines.

Spencer McConkie

## CONTENTS

	Page
Abstract .....	iii
Public Abstract.....	iv
Dedication .....	v
Acknowledgments.....	vi
List of Tables .....	vii
List of Figures .....	ix
Introduction.....	1
Chapter I “Dixie” Recreating the South (1854-1862).....	19
Setting the Stage .....	19
Southern Dreams.....	25
The Great Flood of 1862.....	33
Chapter II Desert Struggles (1862-1871).....	40
Hunger at the Expense of Cotton.....	40
Outlet to the Pacific .....	49
Biblical Pests and the Specter of War.....	54
Abandonment and Taxes.....	63
Chapter III Shifting Riverbanks (1871-1921).....	68
Silver Reef, Peddling, and Striving for Economic Independence .....	68
Bench Farming.....	76
The Dry Farming Revolution.....	86
Conclusion The End of the Pioneer Era and the Changed Landscape.....	95
Bibliography .....	99



LIST OF TABLES

	Page
Table 1 Table of Washington City's Population in 1860 Census and place of birth.....	28
Table 2 Table of historic floods on the Virgin River.....	77

## LIST OF FIGURES

	Page
Figure 1. Map of the Virgin River Basin and its different areas.....	17
Figure 2. Map of the Upper-Middle Basin.....	76
Figure 3. Map of LaVerkin and Hurricane Canals .....	84
Figure 4. Map of the Dry Farming Areas in Washington County .....	90
Figure 5. Abandoned fruit trees in Grafton, Utah.....	96
Figure 6. The Virgin River in 2021 .....	98

## Introduction

Adorning a rock outcrop known as the Sugarloaf in St. George, Utah is the word "Dixie." This is not the only place the name appears as one of the town's high schools is Dixie High and even the local university is currently called Dixie State. In years past, its mascot was the rebel and its yearbook bore the Confederate Battle Flag.<sup>1</sup> At holiday meals, locals eat a dish consisting of locally grown pomegranates, pecans, and apples known as "Dixie Salad." St. George is not the only town to claim the moniker of Dixie as at one point the name applied to the majority of the Virgin River Basin, a part of the Colorado River Watershed. Yet, the Virgin River Basin is located hundreds of miles from the former Confederate States of America or the states that traditionally constitute the American South. Neither does the Virgin River Basin resemble those humid southern states as the basin is located in a desert.

The connection between the American South and the river basin located in southern Utah goes back to the early Mormon settlement of the area in the 1850s and 60s. During this period, the Mormon village of Santa Clara experimented with the growing of cotton and in 1857 a group of converts from the South settled on what they called the Rio Virgin to establish a mission for the growing of cotton.<sup>2</sup> The original mission consisted of the town of Washington, but with an influx of colonists in the late 1850s and early 1860s it grew into multiple settlements stretching from the headwaters of the Virgin River to its

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<sup>1</sup> In 2021 the Utah legislature approved to change the name of Dixie State University to Utah Tech University in June 2022 (Ashley Imlay, "Utah Legislature passes Dixie State name change," *Deseret News* (Salt Lake City), November 10, 2021).

<sup>2</sup> The Church of Jesus Christ of Latter-day Saints referred to many of their colonization efforts as missions. In the Virgin River Basin members were called to serve missions as cotton planters while in Cedar City, Utah members of the Church were called to serve in the Church's Iron Mission. *Great Basin Kingdom: An Economic History of the Latter-day Saints, 1830-1900*, (Cambridge: Harvard University Press, 2005), 33, 122-127, 216-222.

confluence with the Colorado River in Nevada. These efforts of colonization were all under the direction of Brigham Young, the President of the Church of Jesus Christ of Latter-day Saints in Salt Lake City. Because of the advent of the American Civil War, Young ordered Church members to leave the more developed settlements in Northern Utah and claim the best farmland in Southwestern Utah for the growing of cotton, indigo, figs, olives, and citrus trees.<sup>3</sup> By growing these warm weather crops Young sought to make the territory of Utah economically independent from the rest of the United States and secure the southern part of this territory against non-Mormon settlers.

As the colonists set about completing the mission given them by Brigham Young, they remade the landscape of the river basin. The local Southern Paiutes who occupied and farmed corn on the best farming land were removed by Mormon settlers. On these lands, the Mormons established their own fields of cotton and wheat, all irrigated by canals dug from the local streams. Mormon communities sprang up next to these farm sites and local trees were cut down to provide timber for houses and other buildings. Many of the changes made by the settlers were deliberate as they intentionally worked to recreate the agricultural landscape of the American South in Utah's Dixie.

An incomplete knowledge of the environment and some naivete on the part of the colonists led to problems in the recreation of this "Southern Landscape." The southern commodities, especially cotton, failed to grow well in the semi-arid region. The local streams ran dry when precipitation failed to fall during the hot summer months and washed away communities during rainstorms. The Southern Paiutes fought back against the taking of their lands and the destruction of their traditional lifestyles. To counter these

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<sup>3</sup> Brigham Young to Orson Hyde, October 13, 1861, Church History Library Historian's Office collected historical documents, circa 1851-1869, Church History Library (hereafter CHL), Salt Lake City, Utah.

unintended consequences, the Mormons built canals to water fields and relocated settlements to less easily eroded land. They worked to subdue the Indigenous peoples through relocation and making the local Paiutes dependent upon the settlers for food and goods. The settlers also adopted crops better suited to semi-arid environments from other cultures. The result of these efforts was the creation of a hybrid landscape that I call the Southern Utah Pioneer Landscape.<sup>4</sup> This thesis will show how the Mormon colonists altered the landscape that existed pre-1854 and created one that by 1921 was more degraded and less sustainable than that which existed prior.

Hybrid landscapes are landscapes in which a variety of forces contribute to the creation and maintenance of an environment and its society. This idea of the hybrid landscape also focuses on the interaction among these different forces and that there is no passivity in any of them. These landscapes, though not natural, contain many natural features making it difficult to separate the natural world from the manmade. In the American West, the study of these landscapes centers around controlling water and the establishing of a “Hydraulic Society.”<sup>5</sup> In this society water is redirected from its natural course via canals to farmlands and cities. These communities are then structured around the water. The rich benefit greatly from the water by using it to grow crops on massive acreage, while the poor and racially minoritized work in the irrigated fields. The result is the use of different technologies to take advantage of the natural flow of rivers to recreate the landscape in the picture imagined by those at the top of the “Hydraulic Society.”<sup>6</sup>

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<sup>4</sup> I use the term pioneer to describe this landscape because the colonists that settled in Southern Utah are referred to as pioneers in much of the secondary literature.

<sup>5</sup> Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Pantheon Books, 1985), 6-11.

<sup>6</sup> *Ibid.*, 199-205.

This type of society is viewed as one in which the people and nature are under the complete control of the elite at the top. In actuality these managers are not able to control any of these resources as fully as they wish. In the case of the American West where many large cities are dependent on the flow of rivers such as the Colorado, the management of streams is tenuous at best. In hopes of maintaining large populations and growing crops like those in the more humid Eastern United States, more water is diverted each year from local streams. This leads to decreased streamflow and the destruction of local environments due to increases of soil salinity.<sup>7</sup> While the environment is not intentionally working to destroy the “Hydraulic Society,” the unintended environmental impacts make managing and maintaining the social order more difficult than simply building more canals.

The unnatural rivers and lakes created by dams and canals become new homes for local flora and fauna. Muskrats tunnel into the sides of irrigation ditches, beavers dam these new water ways, and birds treat these newly created riparian sites as homes. Moss and algae grow in the canals and clog the waterways before being removed by managers, while the banks become home to trees and grasses that are grazed by cattle.<sup>8</sup> At these canals, the unnatural comes in contact with the natural creating a hybrid environment.

The management of the “hydraulic society” is also complicated by the human members that are not part of the elites. Small farmers in Idaho, when denied their water rights, often banded together against those that managed their water, filing lawsuits against water companies and taking control of water gates if needed to ensure irrigation

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<sup>7</sup> Reisner Marc, *Cadillac Desert: The American West and Its Disappearing Water* (New York: Viking, 1986), 6-9, 49-51,

<sup>8</sup> Mark Fiege, *Irrigated Eden: The Making of an Agricultural Landscape in the American West* (Seattle & London: University of Washington Press, 1999), 45-52.

water for their fields.<sup>9</sup> In many cases, this fight over water control came down to environmental issues such as drought. In some cases, these problems were overcome by compromise with those on top, but other situations turned violent.<sup>10</sup> The combination of unforeseen consequences of water management and human responses shape the creation of hybrid landscapes.

In order to best understand these hybrid landscapes, understanding adaptation by human managers and nature is important. In Southern Idaho, farmers began growing potatoes, which were native to South America, but grew well in the Idahoan climate.<sup>11</sup> This shows just one example of adaptation. In the case of the creation of the Malheur National Wildlife Refuge in Oregon, the creation of this “natural” riparian environment did not mean the removing of humans from the local area and letting nature take its course. Instead, the refuge is a hybrid system in which human management is involved in maintaining riparian environments. Ranchers allowed their cattle to graze in the original riparian environments and drained them via irrigation canals. To restore these sites conservation managers mowed down grasses, uprooted invasive willows, and poisoned carp, rodents, and beavers. These all helped to create an environment in which waterfowl flourished.<sup>12</sup> There is also the creation of farm ponds in the early twentieth century in which farmers created ponds on their lands from either rain, ground, or stream water. These ponds acted as water troughs for animals or fishing ponds. While created by humans, these ponds relied on natural resources to be made and became homes for

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<sup>9</sup> Ibid., 89-94.

<sup>10</sup> Ibid., 81-85, 103-112.

<sup>11</sup> Ibid., 155-167.

<sup>12</sup> Nancy Langston, *Where Land and Water Meet: A Western Landscape Transformed* (Seattle and London: University of Washington Press, 2003), 3-11, 21-26, 38-42, 105-106 113-116.

different plants and animals.<sup>13</sup> This hybrid landscape shows how complicated maintaining many of these “natural” landscapes is.

As stated earlier, these hybrid landscapes make separating the natural and man-made difficult. They incorporate many local natural elements such as streams, flora, and fauna, but also combine foreign plants, animals, and human methods of management. Previous historical studies of the Virgin River Basin examine certain aspects of hybridity, but do not fully delve into the subject. Early studies focused mainly on the Mormons’ building of canals to irrigate regions far from the flooding of the river, but do not explain how the river inundated these canals with sediments or became habitats for trees and algae.<sup>14</sup> They do mention the usage of local Cottonwood trees for creating soap and that farmers utilized the minerals deposited by irrigation waters on farmland for leavening in bread.<sup>15</sup> The primary environmental focus of these studies are on the growing of cotton, its failure, and the introduction of other crops to the area. These studies of cotton agriculture are mainly interested in the economic impact of farming instead of the long term environmental impacts and the creation of a new landscape.<sup>16</sup>

A few more recent historic and scientific studies of the Virgin River Basin look at the environmental impact of the basin’s streams on the local Mormon settlements and their role in shaping the landscape. A geomorphic study of the Virgin River in the 1990s examined the movement of the river from the time of Mormon colonization to the

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<sup>13</sup> Sally McMurry, “The American Farm Pond,” *Buildings and Landscapes* 27, no. 2 (Fall 2020): 39-41, 53-54.

<sup>14</sup> Douglas D. Alder and Karl F. Brooks, *A History of Washington County: From Isolation to Destination* (Salt Lake City: Utah State Historical Society, 1996), 182-184.

<sup>15</sup> Andrew Karl Larson, *I Was Called to Dixie: The Virgin River: Unique Experiences in Mormon Pioneering* (Salt Lake City: The Deseret News Press, 1961), 265-266, 357-375.

<sup>16</sup> Leonard J. Arrington, “The Mormon Cotton Mission in Southern Utah,” 25, no. 3 (August 1956): 221-222.



present. The findings showed that from the 1880s to the 1920s the river basin experienced one of the wettest periods in its history. Increased flooding impacted the communities built along the riverbanks by eroding away farmland or shifting the channel of the river away from irrigation canals. As the channel of the river moved, it also deepened in a process known as entrenchment.<sup>17</sup> The authors of the study concluded that this entrenchment was a result of the increased rainfall in combination with weakened flora due to settlers cutting down local trees and allowing their livestock to graze on local grasses.<sup>18</sup> This shows human and natural forces combining together to reshape the environment in unintended ways and creating a hybrid landscape.

Another article from the *Utah Historical Quarterly* considers the Great Flood of 1862 which destroyed many of the Mormon settlements along the Virgin River and its tributaries. The article points out that this type of flooding event was typical for the Mormon settlers of the Church's Cotton Mission and that these settlers were often faced with the decision of starting again or leaving.<sup>19</sup> There is also an emphasis on how the flooding of the river changed the surrounding landscape, uprooting trees, destroying buildings, and altering the appearance of the area along the river.<sup>20</sup> While the article mostly focuses on establishing the exact date of the flood and examining the sources about the flood, it does show the ways in which the environment and the newly arrived Mormons interacted.

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<sup>17</sup> Richard Hereford, Gordon C. Jacoby, and V. A. S. McCord, "Geomorphic History of the Virgin River in the Zion National Park Area, Southwest Utah," *USGS Open-File Report 95-515*, 1995, 61.

<sup>18</sup> *Ibid.*, 70.

<sup>19</sup> Todd M. Compton, "The Great Washout," *Utah Historical Quarterly* 77, no. 2 (August 2009): 109.

<sup>20</sup> *Ibid.*, 118.

This thesis will show how the landscape of the Virgin River Basin was altered by the arrival of the Mormon colonists in the 1850s and how this alteration came about due to false perceptions, environmental conditions, and adaptation to their new home. In so doing they created a hybrid landscape where new crops grew alongside old flora, the original inhabitants were replaced by Mormon settlers, and new agricultural technologies brought people to areas outside of the easily irrigated farmland. The period that this thesis will cover will be from 1854 when the first cotton-growing Mormon settlement was established on the banks of the Santa Clara River to 1921 when the last of the original Cotton Mission settlements, Grafton, was abandoned.<sup>21</sup> The abandonment of Grafton marks an unofficial end of the Pioneer period in the river basin. At the time of abandonment, the raising of cash crops replaced subsistence farming and the tourist industry grew with the opening of Zion National Park. At this same time, the period of increased rainfall came to an end.

To best understand the creation of this landscape by Mormon settlers, it is important to evaluate the sources that recount the settling of the basin. *The Annals of the Southern Mission* was the official record of the Cotton Mission written by the Mission's Secretary James G. Bleak, who gave a detailed year-by-year summary of life in the mission. As a member of local Church Leadership in Southern Utah, Bleak had a vested interest in making the Mission and its leaders look successful, especially the Mission's President, Erastus Snow. Bleak uses the record to confirm prophecies made by Church

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<sup>21</sup> During the period of Mormon settlement in the Virgin River Basin many settlements were established. Many like St. George, Washington City, and Santa Clara have been inhabited continuously. Others like Grafton, Harrisburg, and Heberville were abandoned, with the abandonment of Grafton occurring at the latest date. For a full description of the Mormon Ghosts town in the Utah part of the Virgin River Basin see Stephen L. Carr, *The Historical Guide to Utah Ghost Towns*, (Salt Lake City: Western Epics, 1972), 130-143.

leadership and casts dissenters in a bad light. Despite these biases, Bleak openly discusses the troubles that the mission faced from drought, providing food for its people, failing to grow cotton, and flooding from the river. All of these troubles are discussed in a faith context that things will improve and that most of the problems are caused by unbelieving Church members. The annals also provide a timeline of important events, censuses of each settlement, the acreages of crops in each community, and the orders of Church leadership pertaining to which crops should be grown each year. Bleak's top-down view of the mission nonetheless provides important background information on the settlement of Southern Utah and provides a baseline for this thesis.

Along with the official record kept by the Church are many other documents provided by the Church of Jesus Christ of Latter-day Saints' Church History Library. These records include letters to Church Leadership in Salt Lake City from local leaders and colonists, journals from colonists, and official reports from the Deseret Agricultural Manufacturing Society regarding agriculture and irrigation in Utah. Since many of the letters are written to those in charge of the Church it is important to remember the power dynamics at play. Even though the letters are respectful, the letters' authors point out problems and voice their complaints when needed. These letters paint a picture of the conditions faced by the settlers in the early days of the colony. The journals kept by Mormon settlers and used in this thesis range from official Church records to personal accounts for posterity. Because of this, the audience of each journal needs to be kept in perspective when being analyzed. Finally, the official records regarding agriculture and irrigation from the Deseret Agricultural Manufacturing Society show the lengths of canals in each settlement in the state of Utah, the money expended on these ventures, and

the crops being grown throughout the territory. These documents give straightforward statistical information, but the calculation of expenditures on cleaning and maintaining irrigation canals needs to take into account that this is not expressly the amount of cash spent, but manpower which was calculated at \$2 per day.<sup>22</sup> The records found in the Church archives not only give a feel for the lives of typical colonists and their leaders' roles, but also important statistical figures for understanding the changing environment.

Two other sources help to fill out this statistical information being the US Censuses from 1860-1920 and climate records found at the Utah State University Special Collections. The Censuses provide information regarding the movement of settlers within the basin and the amounts of crops being grown every year. Since this information was being gathered nationwide, it is then easy to compare this data with other areas across the country. The problem with the Census is that it is only a snapshot of every ten years within the basin and does not show the overall change over time in people and crops. Information from other documents such as *The Annals of the Southern Mission* is needed to fill the gaps. Each yearly Census also reflects what the Federal Government thought was important at the time of data collection. This means that the majority of the censuses collected during the creation of the Southern Utah Pioneer Hybrid Landscape, fail to count Native Americans meaning that a large portion of the basin's population are excluded from the official record. The data regarding crops changes from year to year depending on the economic importance of the crop. This means that as cotton's importance declined after the Civil War that there is less information on cotton in the

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<sup>22</sup> James G. Bleak *Annals of the Southern Mission*, circa 1903-1906; 1847-1869 (Book A), CHL, 123D.

censuses from the 1900s, but fruits grown on trees which were originally lumped in one category of orchard products are then listed individually in later censuses.

The climate records provided a wealth of information regarding the climatic conditions that the settlers faced during the settlement period. The records consist of sheets that allowed for the entering of daily temperatures and precipitation in different towns. From this it is possible to get a sense of how much water a town received each year and how much temperatures fluctuated. The problems that occur in this information are that it is not complete and there are many gaps. The climatological data on these forms was collected by volunteers, these volunteers at times missed a few days of collecting data or even entire months. Some towns only have records for a few years making a complete picture of the river basin incomplete. The only town with a long history of record keeping is St. George where James G. Bleak recorded this data. Even in the St. George records there are gaps, especially from the 1870s and 1880s. Because of these gaps, a full picture of the climate of the river basin is not possible as differences in elevation led to major differences in precipitation and temperatures. Still, the data from St. George along with data from other towns give an idea of climatological patterns in the cotton-growing areas of the mission.

Local and statewide newspapers also help to provide information regarding water projects, flooding, and growing conditions within the basin. The *Deseret News*, the *Salt Lake Herald-Republican*, and the *Washington County News* provide the most information regarding the settlement of the basin. Each newspaper relied on letters and reports from settlers of various communities to provide the details of life outside the primary settlements of Salt Lake City and St. George. These reports provide mundane details that

would be overlooked in regular articles by reporters and give a view into the daily lives of settlers. These local reports though became less common in the 20th Century as newspapers like the Washington County News relied more on professionally written articles that focused on local boosterism. These articles focus more on the farmers' ability to grow Californian crops and sell the area as a place for development. Still, even in these articles we can find which crops came to replace southern commodities and how settlers adapted to their environment.

The final important sources in creating this thesis are the collections at Dixie State University. These collections hold regional records regarding the local irrigation companies and oral histories from people who lived through the creation of the hybrid landscape. The oral histories have proven especially helpful as they contain the firsthand accounts of living in these communities. They provide details on how crops were grown and then used to support a way of life in the river basin. Most importantly they tell the story of dry farming in the area which is overlooked in histories written about the river basin. These oral histories focus on a triumphalist narrative of the Mormon settlement of Southern Utah as many of the oral histories are given by children and grandchildren of the basin's original settlers.

All the sources for this thesis are exclusionary as none of them are from the Southern Paiutes and very few are written by women. This is partly explained by the archives which were available for research which collected mostly documents from Church members, government documents, and historical documents from the local communities. In future research on the creation of the hybrid landscape it will be important to expand the scope of this project to include women and the Southern Paiute

by finding more sources representing women and working with the Shivwits Band of the Paiutes to locate more sources including their perspectives and to remove them from the role of “ecological Indians.”<sup>23</sup> For this project, the Paiutes will mostly be included through secondary sources to give a sense of how they interacted with the Virgin River Basin landscape.

This analysis of the creation of the Pioneer Hybrid Landscape will be divided into three chapters. Chapter One will cover from 1854 to 1862 and lay out what the pre-Mormon landscape was like and how the Southern Paiutes interacted with their environment. This chapter will explain what plans Church leadership had for their new colony in Southern Utah and the early attempts at growing cotton before the colony was strengthened by new settlers in 1861. The chapter will also examine the role of a large flood in 1862 that destroyed many of the new settlements in forming the attitudes of the new settlers for dealing with the environment around them.

Chapter Two covers from 1862 to 1871 and shows the continued perseverance of the Mormon settlers to grow cotton and other crops not well suited for the climate of the river basin. This paper will describe the interactions between the Paiutes, the local environment, and the Mormon settlers to show how these relations helped to shape the landscape. The chapter will explain some of the reasons why colonists persisted in growing these crops because of pressure from Church and local leaders. The chapter will end with the abandonment of Mormon settlements on the Muddy River, a tributary of the Virgin, and right before the agriculture work of basin settlers turned to the growing of crops better suited to the environment.

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<sup>23</sup> Shepard Krech III, *The Ecological Indian: Myth and History* (New York: W.W. Norton & Company, Inc, 1999).

Chapter Three will cover the time period of 1871 to 1921 and explore the different ways in which the Mormon settlers began to adapt to the climate of the river basin. The adoption of crops better suited to the environment from non-Mormon cultures will be examined in replacing fields of cotton. The inhabitants of the river basin also adopted different technologies such as dry farming and bench farming in order to transform lands they had deemed unprofitable. This chapter will show the final steps in the creation of the Southern Utah Pioneer Hybrid Landscape.

Since the Church of Jesus Christ of Latter-day Saints plays such a large role in the creation of the development of the Virgin River landscape, an explanation of Church hierarchy and terminology is needed. The Church is led under the direction of a Prophet who acts as the President of the Church. The President has two Counselors forming the First Presidency and these men make the executive decisions for the Church. Beneath the First Presidency is the Quorum of the Twelve Apostles, a group of twelve men who are delegated responsibilities by the First Presidency. Under the direction of the Quorum of the Twelve Apostles are Seventies, who help carry out the administrative duties of the Church. Members of the Quorum of the Twelve Apostles and the Seventies are referred to as Elders. At the local level several congregations known as wards or branches form an organization known as a Stake. A Stake is led by a Stake President who has two counselors. Wards are made up of between 100 to 300 members of the Church and have specific geographic boundaries. A Ward is directed by a Bishop, who acts under the supervision of the Stake President.

The Prophet and the Quorum of the Twelve Apostles stay in their callings for life. Stake Presidents, Bishops, and other Church leaders only serve in their position for



several years. The First Presidency approves all members that serve as Stake Presidents or Bishops. After a few years, Bishop and Stake Presidents are released from their position and replaced by another lay member of the congregation. The callings of Bishop and Stake President can only be filled by active males and are thus closed to women. Other positions exist within the Church and are occupied by male and female members. For understanding the history of the Cotton Mission, the most important callings are those already listed.

In order to fully understand the forces that created the Virgin River landscape, it is important to understand the names used to refer to the various areas of the river basin. The primary areas of focus are the Lower Middle Virgin River and the Upper Middle Virgin River. The first area includes the river west of the Hurricane Cliffs and extends southward to the Utah-Arizona border. The primary settler communities of the Lower Middle Virgin River include St. George, Santa Clara, Toquerville, and Washington. This section of the river takes in two major tributaries Ash Creek and the Santa Clara River. The Upper Middle Virgin area extends eastward from the Hurricane Cliffs to the town of Springdale on the North Fork of the Virgin River and Shunesburg on the East Fork of the Virgin River. The major settlements in this area are Grafton, Rockville, and Virgin City.

Two other areas make up the rest of the Virgin River Basin. The first is the Long Valley which covers the East Fork of the Virgin River east of Zion National Park. The major settlements of the Long Valley are Berryville (now known as Glendale) and Windsor (now known as Carmel Junction). The final area is the Muddy River Valley. The Muddy River during the time period of this thesis emptied into the Virgin River. Because of the construction of the Hoover Dam in the 20th Century the Muddy River now flows

into Lake Mead. The major pioneer settlements of this region were St. Thomas located near the mouth of the river and St. Joseph which was located several miles upstream. These various areas experienced differences in climate, geography, elevation, and flora and fauna that affected the creation of the hybrid landscape. All of these will be examined in turn to see which role they played.

# Virgin River Basin

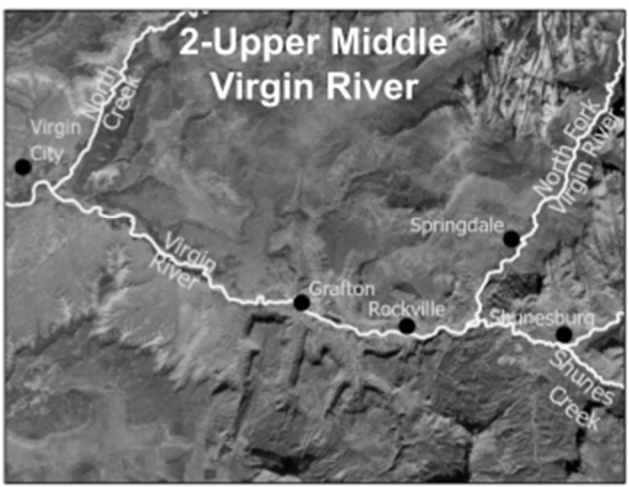
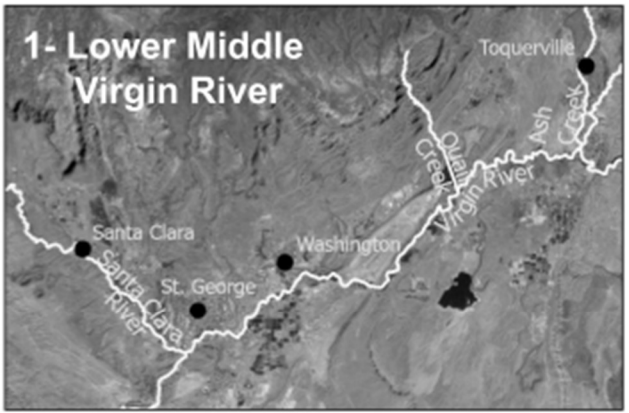


Figure 1. Map of the Virgin River Basin and its different areas. Starting from the top left corner and working counterclockwise, the areas are the Lower Middle Virgin River, the Upper Middle Virgin River, the Muddy River, and the Long Valley. Map created by Spencer McConkie. Data Credits: Earthstar Geographics, UT AGRC, GISGeography.

The creation of the Virgin River Basin's Mormon hybrid landscape connects to a wider story of the creation of hybrid landscapes in the American West as part of the "Hydraulic Society." These settlers, like the settlers of the Great Plains in the 1880s, who believed that "rain followed the plow" came with preconceived notions of what they would be able to achieve in this new region. Both groups followed the guidance of governmental and religious leaders and worked to the best of their abilities to implement the transformation of the Western landscape. These ideas changed as environmental and human factors limited the ability to achieve these goals leading to adaptation and the creation of a new landscape.<sup>24</sup> The story of the Mormon settlers differs in several aspects from that of the Great Plains. The first being the religious aspect as Mormon settlers were commanded by their religious leaders to settle new areas risking spiritual and temporal punishment if they refused.<sup>25</sup> Second, the Mormon settlers of the Basin wished to bring a Southern culture to the area which was reflected in the settlers sent to found the original Cotton Mission, the crops they grew, the name they gave the area, and the way they treated the Southern Paiutes. Thirdly while the settlers of the Great Plains settled on separate farms Mormons settled in villages surrounded by farmland.<sup>26</sup> All of these factors combined together creating the Southern Utah Pioneer Hybrid landscape.

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<sup>24</sup> Gary D. Libecap and Zeynep Kocabiyik Hansen, "'Rain Follows the Plow' and Dryfarming Doctrine: The Climate Information Problem and Homestead Failure in the Upper Great Plains, 1890-1925," 62, no. 2 (March, 2002): 89-101..

<sup>25</sup> Arrington, *Great Basin Kingdom*, 28-33.

<sup>26</sup> *Ibid.*, 10, 24-25.

Chapter I  
“Dixie”  
Recreating the South  
(1854-1862)

**Setting the Stage**

The landscape that existed when the Mormon settlers started the Cotton Mission was already a hybrid created over hundreds of years by the interactions of the environment with the indigenous inhabitants of the Virgin River Basin. Ancestral Puebloans, the Fremont people, and Paiutes all called the Virgin River and its tributaries home. In 1776 the Spanish Priests Dominguez and Escalante while traversing the Colorado Plateau on their way to California turned southward due to early season snow around present-day Cedar City, Utah and entered the basin following Ash Creek before crossing the Virgin River. Escalante described a landscape which changed from being cold in October around the present site of New Harmony, Utah to being warm as the creek descended abruptly over the Black Ridge into the “Dixie” region. Green grasses grew in this warmer climate, cottonwoods (*populus*) and willows (*salix*) grew along riverbanks, and swampy areas could be found along the area’s creeks. Once over the Black Ridge the expedition encountered the Huascari people (a subset of the Paiutes) who subsisted on a diet of grass seeds, hares, and pine nuts.<sup>27</sup> The way the Huascari were viewed by Europeans fit into the narrative typically written about the Paiute peoples of Southern Utah in which they lived at one with nature and did not alter the landscape around them. Yet these people described by Escalante did interact and change their environment by affecting animal populations and transporting grass seeds with them. By

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<sup>27</sup> Father Fray Silvestre Velez de Escalante, “Father Escalante's Journal,” trans. Herbert S. Auerbach, *Utah Historical Quarterly* 11, (1943): 76-85.

doing this the Huascaris acted as an important component in the shaping of their local landscape.

Besides the Huascaris the Escalante and Dominguez expedition encountered the Parrusits people (another subset of the Paiutes) who dwelt along Ash Creek around the present-day site of Toquerville. Escalante had spoken disparagingly about the Huascaris but praised the Parrusits because of their ability to farm. The Parusi, as Escalante called these people, raised crops of corn along the banks of Ash Creek on small fields. These fields were watered by irrigation ditches from the creek.<sup>28</sup> The Parrusits, much like the Mormon settlers that would come in the 19th century, worked to use the environment for their benefit by harnessing the natural water sources and using crops that were well adjusted to the arid conditions of the Virgin River Basin. The presence of these farms show that the Paiutes were growing crops within the basin from at least the start of the 18th century and possibly earlier. These farms though were almost exclusively located on the most productive farmlands in the floodplains of the Virgin, Santa Clara, and Muddy Rivers. Away from the bottomland farms the Southern Paiutes mostly subsisted on foraging.<sup>29</sup>

After 1776 the people of the Virgin River Basin did not exist isolated from the wider world. The basin sat on the Old Spanish Trail connecting New Mexico to California making it an important route for trading and exploring. The American trapper Jedediah Smith journeyed along the Virgin River in 1826 and even called the Santa Clara

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<sup>28</sup> Ibid., 85-86

<sup>29</sup> James R. Allison, Cathryn M. Meegan, and Shawn Sabrina Murray, "Archaeology and Archaeobotany of Southern Paiute Horticulture in the St. George Basin, Southwestern Utah," *Kiva*, 73, no. 4 (Summer, 2008): 419, 424.

River “Corn Creek” because of the corn he saw growing there.<sup>30</sup> Smith also mentioned the use of brush dams by the Paiutes to divert water out of their streams into irrigation ditches, but that their farms were located very close to the streams to best make use of the water source.<sup>31</sup> During the 1830s and 1840s traders used the Old Spanish Trail to transport goods, including enslaved Native Americans, between New Mexico and California.<sup>32</sup> Another American, the explorer John Fremont, visited and mapped the Virgin River Basin in 1844. Before establishing their first settlements along the basin’s streams, Mormons such as Jefferson Hunt traversed the area during the late 1840s in order to buy seeds from California, to reach the Mormon settlement of San Bernardino, and lead non-Mormon miners to California.<sup>33</sup> Europeans were not the only people connecting the basin to a wider world; the Timpanogos leader Chief Walkara, known to the Mormons as Chief Walker, frequented the area on his way to California stealing livestock from white settlers and selling enslaved Native Americans he captured during raids.<sup>34</sup>

In 1849 Parley P. Pratt, a Mormon Apostle, led an exploring party to Southern Utah to look for economic resources and future settlement sites for the growing Mormon population in the territory of Utah.<sup>35</sup> After exploring the area of Iron County, Pratt took several members of his party on an expedition to the warmer climates of the Virgin River

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<sup>30</sup> Alder and Brooks, *A History of Washington County*, 7-8.

<sup>31</sup> Allison, Meegan, Murray, “Archaeology and Archaeobotany of Southern Paiute Horticulture in the St. George Basin, Southwestern Utah,” 420.

<sup>32</sup> Jared Farmer, *On Zion’s Mount: Mormons, Indians, and the American Landscape*, (Cambridge: Harvard University Press, 2008), 33.

<sup>33</sup> “The Face of the Land,” *Utah Historical Quarterly* 29, no 3, (1961), 195-196.

<sup>34</sup> Farmer, *On Zion’s Mount*, 33-35. Larson, *I Was Called to Dixie*, 21.

<sup>35</sup> For a better understanding of the Mormon economic development in Utah see Leonard J. Arrington, *Great Basin Kingdom: An Economic History of the Latter-day Saints, 1830-1900*, (Cambridge: Harvard University Press, 2005).

Basin. Pratt noted that on his trip he wanted to visit the Indians who grew corn.<sup>36</sup> The Pratt Expedition encountered a landscape very similar to that found by the Spanish Priests less than 75 years prior. The landscape outside of the floodplains was dominated by bunch grass, sage, and greasewood. While in the rivers' floodplains cottonwoods, willows, and ash trees grew in small clumps. The Parrusits still lived along Ash Creek raising fields of corn that were supplied water by irrigation ditches. These fields ranged anywhere from a few rods in length to an acre. This latest expedition also made note that these garden patches also included what the Mormon missionaries called "wild grapes" and buffalo gourds (*curcubita foetidissima*). The buffalo gourds are a member of the squash family and grew wild in the area, but the Parrusits had begun planting them in their garden patches and ate the seeds and pulp of the gourds while using the outsides of the gourds as containers.<sup>37</sup> On the Santa Clara River the expedition encountered the Shivwits band of Paiutes, who also grew many of the same crops on irrigated fields.

The contact that the Southern Paiutes had with various outside groups greatly affected their way of life. By the early 1850s Paiute farmlands sprouted wheat, beans, sunflowers, amaranth, potatoes, and "broom corn" which might have been sorghum. These crops were not grown during the 18th century and were likely collected through trade connections with different Indian groups and European visitors.<sup>38</sup> Along with diversifying their crops, Paiutes also learned to fear outsiders as other Native American groups and Europeans made them targets of enslavement. This hostility from strangers

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<sup>36</sup> Robert Campbell, "Journal of Robert Campbell," *Over the Rim: The Parley P. Pratt Expedition to Southern Utah, 1849-1850*, ed. William B. Smart and Donna T. Smart, (Logan: Utah State University Press, 1999) 89.

<sup>37</sup> *Ibid.*, 92-93.

<sup>38</sup> Allison, Meegan, Murray, "Archaeology and Archaeobotany of Southern Paiute Horticulture in the St. George Basin, Southwestern Utah," 420-421.



potentially led some Paiutes to leave their farmlands along the riverbanks and turn to greater subsistence efforts in order to remain hidden.<sup>39</sup> The dangers of enslavement did lead some Paiutes to welcome the presence of Mormon settlers as they had little interest in holding Native Americans as slaves and offered some protection from enslavers.<sup>40</sup>

The first Mormon settlement of the Virgin River Basin was Fort Harmony (5,305 ft) in 1852 at Ash Creek near the site of present-day New Harmony. From this new fort missionaries were sent south to try and convert the Southern Paiutes to the Church of Jesus Christ of Latter-day Saints. A group of missionaries entered the area of “Dixie” and visited Chief Toquer on Ash Creek where they viewed his fields of corn, potatoes, wild grapes, and squash that were irrigated by a half mile long ditch dug completely by using sticks. Chief Toquer and the other Paiutes of the Virgin River Basin did not subsist entirely off of their harvests, but also supplemented their diets with grass seeds which they ground up into a flour and then ate as a porridge. These Paiutes also worked to clear fields for farming by burning patches of ground in order to create space for their new fields.<sup>41</sup> While the missionaries viewed the fire as a way to clear land it also served a second purpose of returning nitrogen to the ground as corn depletes soil of this element.<sup>42</sup>

Despite the presence of a farming and irrigating culture within the river basin, the Mormon missionaries sought to instruct the Indigenous peoples of the valley on better farming methods. The first settlement in Utah’s “Dixie” Santa Clara (2,762 ft) was

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<sup>39</sup> Ibid., 423.

<sup>40</sup> Larsen, *I Was Called to Dixie*, 21-24.

<sup>41</sup> Thomas D. Brown, *Journal of the Southern Indian Mission: Diary of Thomas D. Brown*, ed. Juanita Brooks, (Logan: Utah State University Press, 1972) 44-46, 49-53.

<sup>42</sup> Allan P. Sullivan III and Kathleen M. Forste, “Fire-reliant subsistence economies and anthropogenic coniferous ecosystems in the PreColumbian northern American Southwest,” *Vegetation History and Archaeobotany* 23 (May 2014), 135-148.

established on the Santa Clara River in November 1854 by Jacob Hamblin, who had been a member of the 1854 missionary journey through the river basin. Part of these settlers' goal was to teach the Shivwits Paiutes how to build diversion dams in order to carry out irrigation on a wider scale than they had done so before. Apparently, the Shivwits were skeptical of the diversion dams knowing that at times during the summer the Santa Clara River could dry out completely and that ferocious floods were at times known to sweep along the water courses.<sup>43</sup> From this new settlement the Mormon colonists began their transformation of the previous environment.

The Southern Paiutes who inhabited the Virgin River Basin for hundreds of years before the arrival of Mormon settlers had worked within the bounds of their local landscape shaping it into one of give and take between the natural and the human-made features. Fields were cleared and nitrogen returned to the soil by burning cottonwoods and willows, plants that were native or did well in the area were planted, and water was diverted from the Virgin River's tributaries, but only watered small patches due the limited nature of the water and the difficulties associated with constructing canals with only sticks as digging implements. The Paiutes also worked to supplement their diets off of the natural flora and fauna becoming an important part of the lifecycle of the river basin. The landscape of the river basin, though different from that which the Mormons sought to develop, was a hybrid one. Like the Paiutes, the new settlers relied on the water of the local creeks to maintain their landscape. The Mormon settlers manipulated water and farming on a larger scale than those of the previous inhabitants and with much more degradation to the local environment.

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<sup>43</sup> Chapman Duncan letter to the Editor, *Deseret News*, January 19, 1862.

## Southern Dreams

The people of Fort Harmony with their location north of Black Ridge quickly realized the potential for growing subtropical crops in the warmer climate located directly to the south of their new settlement. On January 10, 1854, Brigham Young's Territorial Government received a petition from the people of Fort Harmony complaining of the lack of cotton clothing within the territory of Utah.<sup>44</sup> The petitioners proposed that the solution to the lack of cotton was to send 150 men down Ash Creek to the Virgin River and establish cotton plantations along with vineyards. The petition included the names of many men who would play prominent roles in the settlement of Southern Utah including Nephi Johnson, who would establish settlements along the Upper Virgin River and John D. Lee, who infamously led the Mountain Meadows Massacre.<sup>45</sup> The territorial government refused to establish these cotton plantations citing hostility from the natives and the lack of funds to carry out such a venture.<sup>46</sup>

The settlers of Harmony decided to show the viability of growing cotton in the Virgin River Basin, despite the lack of governmental support. Fort Harmony for a short period had served as the headquarters of the Church's Southern Indian Mission, but this

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<sup>44</sup> Brigham Young served as the first territorial governor of Utah starting in 1851 until 1858 when he was replaced by Alfred Cumming. This change occurred after the events of the Utah War when United States President James Buchanan sent armed forces to put down a supposed Mormon rebellion in Utah. No actual armed conflict took place between the Church and the Federal Government and Brigham Young stepped down. Even after no longer being in office, Young continued to wield enormous political power in Utah due to the majority of the territory's white population being members of the Church. Arrington, *Great Basin Kingdom*, 170-194.

<sup>45</sup> Petition of John D. Lee and Others, January 10, 1854 Nineteenth-century legal documents collection, 1829-1973; Utah Territory. Legislature (Third Session, 1853-1854), CHL.

<sup>46</sup> Arrington, "The Mormon Cotton Mission in Southern Utah," *Utah Historical Quarterly* 25, no. 23 (August 1956): 222.

headquarters was relocated to Santa Clara in order to be closer to the Southern Paiutes.<sup>47</sup>

In 1855 the inhabitants of Santa Clara had collected about three quarts of cotton seed which they hoped to plant. One of the settlers, “a gentleman professing a knowledge of cotton-growing [sic],” convinced the group to soak the majority of the cotton seeds in milk before planting. Unfortunately, the entirety of the wet seeds failed to grow at all. The small number of seeds that had not been soaked grew and produced 75 pounds of cotton or around 99 yards of cloth when processed.<sup>48</sup> This 75 pounds was the first successful growing of cotton within the Virgin River Basin and provided the seeds for future experiments in cotton growing by the people of Santa Clara.

In 1856 five acres of Upland Cotton (*Gossypium hirsutum*) or as the Mormons called it “green seed cotton” were planted at Santa Clara and only produced a disappointing 200 pounds of lint or only 40 pounds per acre.<sup>49</sup> In 1857 another 50 acres were planted and produced only 13 pounds per acre. Cotton is a water intensive crop and the Virgin River Basin during this time period received an insufficient 3-12 inches of rain per year.<sup>50</sup> Because of this the cotton crops of Santa Clara were almost entirely dependent upon irrigation waters in order to survive. The year 1857 had been extraordinarily dry as the Santa Clara ran empty, and the settlers blamed the lack of water for the year’s small cotton crop.<sup>51</sup> In wetter years the settlers hoped irrigation waters would be able to sustain healthy cotton crops.

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<sup>47</sup> Larson, *I Was Called to Dixie*, 38-42.

<sup>48</sup> James McKnight, “Cotton and its Culture in Utah,” *Deseret News*, October 20, 1858.

<sup>49</sup> The U.S. Government and cotton growers measured the amount of ginned cotton produced in bales of 400 pounds. U.S. Census Bureau, 1860 Census: Agriculture of the United States, Introduction, xcii.

<sup>50</sup> St. George, box 25, Utah Climate Center Weather Station reports, 1860-1992, Utah State University Special Collections and Archives (hereafter referred to as USUSCA), Utah State University, Logan, Utah.

<sup>51</sup> James McKnight, “Cotton and its Culture in Utah,” *Deseret News*, October 20, 1858.

Despite these poor results, the Church leadership decided that the benefits of becoming self-sufficient and not having to rely on cotton imports from the southern states outweighed the difficulties. In 1857 at the Church of Jesus Christ of Latter-day Saints' General Conference Brigham Young and the First Presidency called fifty families to settle in the Virgin River Basin and form a new colony. While the settlements of New Harmony and Santa Clara were established as part of the Church's Southern Indian Mission, this new settlement known as Washington (2,792 ft) was to be established for the express purpose of starting a new cotton mission. The majority of the colonists for this new mission came from southern cotton growing states.<sup>52</sup> When these colonists arrived at the Virgin River in May 1857 William H. Crawford of Alabama wrote to the *Deseret News* that the missionaries had been called to grow cotton and other goods that would not grow in the northern part of the state, pronouncing the region "a good place for that business" due to the availability of land and water.<sup>53</sup> The region would be nicknamed "Utah's Dixie" because of the focus on growing Southern crops, the warm climate, and the settlers' cultural makeup.

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<sup>52</sup> In 1860 Washington, Utah had a population of 233 people. Excluding the 81 children born in the territory of Utah there were 152 people, 99 of whom were born in Southern states. FamilySearch.org, *1860 U.S. Census*, Washington, Washington County, Utah Territory, July 27, 1860, 146-147.

<sup>53</sup> William H. Crawford Letter to the Editor, *Deseret News* May 7, 1857.

Place of Birth	Number of Men, Women, and Children Present in Washington City during 1860 Census	Amount of Adult Males from each State	Percentage of Adult Male Population
Alabama	17	10	21.74%
Arkansas	3	0	0.00%
California	19	0	0.00%
Carolina	12	5	10.87%
England	4	1	2.17%
Georgia	7	2	4.35%
Illinois	8	3	6.52%
Indiana	5	4	8.70%
Iowa	13	0	0.00%
Kentucky	3	3	6.52%
Louisiana	2	1	2.17%
Mississippi	15	4	8.70%
Missouri	10	4	8.70%
New York	4	1	2.17%
Tennessee	18	6	13.04%
Texas	6	0	0.00%
Utah	81	0	0.00%
Vermont	1	0	0.00%
Virginia	1	0	0.00%
Wales	2	0	0.00%
Wisconsin	1	1	2.17%
Unknown	1	1	2.17%

Table 1. Table of Washington City's Population in 1860 Census and place of birth. This table lists the birthplace of every single white citizen of Washington City. The table also lists the adult male population and which percentage these made up. Southerners made up 76.09% of the adult male population of Washington.

Other settlements quickly followed Washington, and by 1858 Mormon settlers from San Bernardino settled Toquerville (3,389 ft) on Chief Toquer's fertile farmland on Ash Creek and settlers from Northern Utah settled an experimental cotton farm called Heberville (2,523 ft) on the Virgin River.<sup>54</sup> Each of these settlements had high hopes for the growing of cotton in 1858. Santa Clara, despite their repeated failures at raising this cash crop, planted only twenty acres, but expected to harvest 12,000 pounds of lint. Heberville put in 33 acres expecting 19,200 pounds. Washington had the most ambitious plans for the year planting 130 acres from which they hoped to grow 156,000 pounds. Toquerville planted 8 acres of cotton, which was destroyed by a hailstorm.<sup>55</sup> If these settlements obtained the harvests they expected then they would have produced over 450 bales of cotton. This was comparable to the amount of cotton produced by some counties in Tennessee, where the second largest subset of the settlers of Washington City came from.<sup>56</sup> This though would pale in comparison to the 5,198,077 cotton bales produced by the Southern States in 1860.<sup>57</sup> For a cotton-starved territory such as Utah, these bales had potential value as long as growth remained consistent, and the First Presidency provided the money and manpower to bring the machinery for processing cotton across the plains to Southern Utah.<sup>58</sup>

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<sup>54</sup> During the Utah War Brigham Young encouraged the drawing in of the Mormon population to Utah. This included the abandoning of the Mormon colony San Bernardino and some plans to relocate the majority of Utah's population to the south of the territory away from the US Army. Larson, *I Was Called to Dixie*, 30.

<sup>55</sup> James McKnight, "Cotton and its Culture in Utah," *Deseret News*, October 20, 1858.

<sup>56</sup> U.S. Census Bureau, 1860 Census: Agriculture of the United States, Tennessee, 133, 137.

<sup>57</sup> U.S. Census Bureau, 1860 Census: Agriculture of the United States, Introduction, xxvi.

<sup>58</sup> The Church of Jesus Christ of Latter-day Saints sent groups of wagons across the Plains to Nebraska where they would bring back converts and supplies that could not be manufactured or grown in Utah. The First Presidency and Quorum of the Twelve provided manpower for these wagon trains by calling upon volunteers from local congregations throughout the Territory. Arrington, *Great Basin Kingdom*, 205-211.

These cotton producing settlements struggled through these early years, failing to produce good crops of cotton. Part of this problem could be blamed on the Virgin River which proved a poor partner for the cotton missionaries. Dominguez and Escalante had referred to the Virgin River as the Rio Sulfureo or Sulfur River due to sulfurous springs that emptied into the river upstream from Ash Creek.<sup>59</sup> These minerals flowed with the irrigation waters diverted from the river and deposited themselves on the farmed soils. These minerals raised the alkalinity of the soil which increased the mortality rate of cotton seed making the number of plants that reached maturation much lower than the amount of seeds planted.<sup>60</sup> The Paiutes had avoided some of the pitfalls of alkalinity by limiting their farms to the easily irrigated bottomlands of the Santa Clara River and Ash Creek that did not have springs releasing sulfur into them. The basin's river also at times refused its waters for irrigation purposes during droughts or by washing away the \$1,000 diversion dam at Heberville or two or three dams at Washington.<sup>61</sup> By 1860 Washington County only produced 30 bales of cotton, far below the expected hundreds.<sup>62</sup>

During the late 1850s, several more settlements were established in the Virgin River Basin. Most of these settlements like Virgin City (3,606 ft) and Grafton (3,665 ft) were established to grow cotton, while Pine Valley (6,800 ft) located in the mountains to the north near forests was the site for a sawmill that provided lumber to the timber-deprived region of the Cotton Mission. None of these new settlements grew to be very large, and even though Grafton and Virgin were located above the sulfuric springs on the

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<sup>59</sup> Father Fray Silvestre Velez de Escalante, "Father Escalante's Journal," trans. Herbert S. Auerbach, *Utah Historical Quarterly* 11, (1943): 85.

<sup>60</sup> W. I. Thomas, E.R. Holekamp, and K.R. Frost, *Cotton Planting*, (Tucson: Agricultural Experiment Station University of Arizona, 1951), 16.

<sup>61</sup> James McKnight, "Cotton and its Culture in Utah," *Deseret News*, October 20, 1858.

<sup>62</sup> U.S. Census Bureau, 1860 Census: Agriculture of the United States, Utah, 181.



Virgin, they did not have any greater success than Washington or Heberville in their endeavors to grow southern crops. During this time many settlers decided to return to the better established Mormon settlements to the North in order to escape the summer heat and failed crops. Unless there was a major influx of resources and people, the Cotton Mission appeared ready to wither and die just like their fields of cotton.

Church Leadership though was determined to make cotton growing a successful venture in Southern Utah. George A. Smith, an Apostle and distant cousin of the Church's founder Joseph Smith, writing on the behalf of the territory's Committee on Cotton Culture acknowledged the problems faced by cotton planters in Utah's Dixie. Though he framed these efforts as experiments. These farmers were figuring out when was the best time to put in cotton, which soils were the best for planting, and how to best use irrigation practices for the cultivation of cotton. Smith also argued that many of these settlers had only grown cotton in the fertile South where slave labor did most of the work, the Mormons would eventually make up part of this labor gap by drawing upon the local Paiute population as a workforce.<sup>63</sup> Smith claimed that every year had "shown a decided improvement in the quality of cotton produced" and that "our mountain home be made to produce the necessary articles in sufficient quantities...to ensure successful competition with imported [cotton]."<sup>64</sup> Despite this declaration of support for Utah grown cotton, the demand was not enough at that time to encourage serious support from Church leadership in regards to providing manpower, financial aid, and industrial capabilities.

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<sup>63</sup> Ronald L. Holt, *Beneath These Red Cliffs: An Ethnohistory of the Utah Paiutes*, (Logan: Utah State University Press, 2006)13-14.

<sup>64</sup> George A. Smith, "Report of Council Committee on Cotton Culture in Utah," *Deseret News* December 28, 1859.

Finally in 1861 national events elevated Utah's "Dixie" to a place of importance in the economy of the territory of Utah. With the election of Abraham Lincoln to the presidency in 1860, the cotton producing American South seceded from the United States and stopped exporting cotton as part of a failed attempt at receiving international recognition.<sup>65</sup> With the supply of processed cotton reaching Utah cutoff, the Church, which operated as the main political power in Utah, made a push to reinvigorate the Southern Mission. At the October General Conference of 1861 Brigham Young announced that he had called Swiss members of the Church to settle at Santa Clara in order to raise grapes for winemaking. Along with these Swiss settlers he called for 200 families to volunteer to grow cotton, indigo, figs, sugar, and olives. The Church President announced that the leading brethren of the Church would decide which families would be called to settle in the Cotton Mission, when there failed to be enough volunteers.<sup>66</sup>

While the original settlers of Washington City came predominantly from the Southern States the new groups of settlers came from three different areas throughout the territory: the Salt Lake Valley, Utah Valley, and Sanpete Valley.<sup>67</sup> The Church leadership hoped to stabilize an area which had struggled to keep settlers by calling men that were not just farmers, but school teachers, blacksmiths, coopers, etc.<sup>68</sup> Along with the

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<sup>65</sup> During the Civil War Southern ports were blockaded by Federal forces. At the beginning of the war this blockade proved ineffective as blockade runners easily came in and out of Confederate ports providing a means for Confederate goods to reach foreign countries. Confederate international policy proved more effective at preventing these goods, especially cotton, from getting to a wider market. The Confederacy cutoff shipments of cotton to countries like the United Kingdom in order to hurt their textile industry and cause them to intervene on the side of the South. This self-imposed embargo failed to bring open support from the British Empire. James M. McPherson, *Battle Cry of Freedom: The Civil War Era*, (Oxford: Oxford University Press, 1988), 382-391.

<sup>66</sup> Journal History of the Church (hereafter JHC) October 7-8, 1861, CHL.

<sup>67</sup> George A. Smith Letter to Jacob Hamblin, October 16, 1861, Historian's Office letterpress copybooks, Volume 1, 1854-1861, p. 987-988, CHL.

<sup>68</sup> JHC October 8th, 1861, CHL. Larson, *I Was Called to Dixie*, 71.

members called to the mission came some volunteers such as Edward Bunker who asked Brigham Young if he could go South in order to improve his health.<sup>69</sup> At the time Americans believed that dry climates were more beneficial to health.<sup>70</sup>

Missions established by the Church were presided over by Apostles and so the Church Leadership called Apostles Erastus Snow and Orson Pratt to lead the new mission. Brigham Young, who had visited the southern region of Utah previously, advised the new settlers to establish a city north of the confluence of the Santa Clara and Virgin Rivers and that this new city be called St. George (2,700 ft) after George Albert Smith.<sup>71</sup> With those orders, the settlers headed South with ideas of transforming the desert landscape into fields of cotton, indigo, tobacco, sugarcane, and groves of olive and fig trees. These dreams would soon face the environmental realities encountered by the earlier settlers of Washington and Santa Clara.

### **The Great Flood of 1862**

The missionaries faced their first major environmental decision, before reaching the future site of St. George. In the lower basin of the Virgin River the settlers of Washington, Heberville, Santa Clara, and Tonaquint suffered through bouts of malaria which they called the “chills.” In the upper basin settlements of Toquerville, Pocketville (Virgin City), and Grafton cases of malaria were less common due to the area being less swampy.<sup>72</sup> Orson Pratt decided to settle in the upper basin at the town of Rockville (3,740

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<sup>69</sup> Edward Bunker to Brigham Young, October 13th, 1861, Brigham Young office files, 1832-1878 (bulk 1844-1877); General Correspondence, Incoming, 1840-1877, General Letters, 1840- 1877, CHL.

<sup>70</sup> Conevery Bolton Valenčius, *The Health of the Country: How American Settlers Understood Themselves and Their Land*, (New York: Basic Books, 2002), 123.

<sup>71</sup> JHC October 8th, 1861, CHL.

<sup>72</sup> JHC March 7th, 1861, CHL.

ft) in order to avoid malaria. Erastus Snow on the other hand continued onto the site of St. George in the lower basin. Though both the settlements of the upper and lower basin made up part of the Southern Mission and would be under the direction of the Mission's President Apostle Erastus Snow in St. George, the two areas were separated geographically due to the Hurricane Cliffs which cut from the north to the south across the Virgin River just to the West of Virgin City. This division was also political as the upper Virgin settlements for a time were a part of Kane County created in 1864.

Church leaders in Northern Utah told the new arrivals about the mild winters experienced in "Utah's Dixie". Brigham Young advised the new settlers to labor during the mild winter months preparing their fields for the warm summers when subtropical crops would grow.<sup>73</sup> George Albert Smith told the settlers that the basin was an area where wheat could be planted in the fall and corn in the spring, thus providing two crops in one calendar year.<sup>74</sup> The new members of the Cotton Mission were greeted by wet and snowy weather, instead of the mild winter they had expected.

The winter of 1861-1862 across the American Southwest was wet and flooding was experienced from Oregon through Los Angeles and into New Mexico.<sup>75</sup> Flooding even affected the expedition plans of Union soldiers in the territory of New Mexico.<sup>76</sup> Starting Christmas Day of 1861, rains in the valleys and snows in the mountains started inundating the Mormon settlements along the Virgin River and its tributaries. For the

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<sup>73</sup> Brigham Young to Orson Hyde, October 13th, 1861, Historian's Office collected historical documents, circa 1851-1869, CHL.

<sup>74</sup> JHC October 7th, 1861, CHL.

<sup>75</sup> Lucy Jones, *The Big Ones: Natural Hazards that Have Shaped Us (And What We Can Do About Them)*, (New York: Doubleday Publishing, 2018) 59-75.

<sup>76</sup> Megan Kate Nelson, *The Three Cornered War: The Union, the Confederacy, and Native Peoples in the Fight for the West*, (New York: Scribner, 2020) 124-126.

next few weeks precipitation fell continuously which must have been a miserable experience for the people of St. George, who lived in tents.<sup>77</sup> The heavy rain continued to raise the levels of the streams until the night of the 17th of January, when the streams of the river basin burst their banks and wreaked havoc on the small communities built alongside it.

At Santa Clara the roar of the Santa Clara River woke most of the inhabitants. The waters surrounded Fort Clara and the women and children were evacuated including one Swiss woman who Jacob Hamblin carried across the waters on his back while clinging to a rope tied to the fort and the other side to a tree across the floodwater.<sup>78</sup> One family climbed a cottonwood tree and were stranded for several hours until the waters receded in the morning. When the waters abated the settlers realized that the walls of the fort and many of the town's buildings were collapsing from eroding riverbanks. The victims of the flood worked quickly to remove their provisions and furniture from the buildings to higher ground as the fort disappeared into the river by three the next morning.<sup>79</sup> The Santa Clara continued to widen and deepen its channel, uprooting cottonwoods, orchards, farmland, and gardens. Jacob Hamblin reported that 5,000 peach trees had been lost in the flood and just as bad was the loss of Walter Dodge's fruit nursery which had contained fig, peach, almond, and apple trees.<sup>80</sup>

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<sup>77</sup>Todd M. Compton, "The Great Washout," *Utah Historical Quarterly* 77, no. 2 (August 2009): 113. J.W. Crosby letter to the Editor, *Deseret News*, February 12, 1862.

<sup>78</sup> Jacob Hamblin to George A. Smith, February 2, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, H-O, 1862, CHL.

<sup>79</sup> Daniel Bonelli to Brigham Young, January 19, 1862, Brigham Young office files, 1832-1878 (bulk 1844-1877); General Correspondence, Incoming, 1840-1877, General Letters, 1840- 1877, A-Bo, 1862, CHL.

<sup>80</sup> Jacob Hamblin to George A. Smith, February 2, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, H-O, 1862, CHL.

The waters of the Santa Clara streamed on from the devastated settlement of Santa Clara to the small town of Tonaquint, named for one of the bands of Paiutes who lived in the river basin.<sup>81</sup> With its location at the confluence of two rivers the settlement was completely destroyed as the small willow houses that made up the town were carried away.<sup>82</sup> The damages to the town were estimated at around \$1,800 and the inhabitants of this town relocated to other settlements. Two miles to the north of Tonaquint was St. George, which occupied high ground and so suffered little damage from the flood. The river did carry away the town's diversion dam in the midst of this flooding, but this was the worst damage experienced in the new settlement.<sup>83</sup>

On the Upper Virgin River, the devastation was just as bad. At Grafton the settlers were surprised by the flood in the middle of the night and had to relocate to higher ground as floodwaters surrounded their homes. During this relocation Sister Tenney, the wife of the town's founder Nathan C. Tenney, gave birth to a child named Marvelous Flood Tenney.<sup>84</sup> The flood swept away most of Grafton and the furniture of the town would later be seen floating down the river past Virgin City.<sup>85</sup> Above the Fork of the Virgin River settlers were awakened by a Paiute who warned them about the flood just in time to save them from being carried away. While at Rockville most of the town was destroyed and the only two recorded deaths of the flood occurred when a Paiute woman

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<sup>81</sup> Stephen L. Carr, *The Historical Guide to Utah Ghost Towns*, (Salt Lake City: Western Epics, 1972), 131.

<sup>82</sup> James G. Bleak *Annals of the Southern Mission*, circa 1903-1906; 1847-1869 (Book A), CHL, 53.

<sup>83</sup> Erastus Snow to George A. Smith, February 10, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, P-W, 1862, CHL.

<sup>84</sup> Luwayne Wood, "Grafton, Utah", interview by Douglas D. Alder, October 25, 2001, Dixie Pioneers and Story Tellers Oral History Collection, Dixie State Special Collections and Archives (hereafter DSSCA), St. George, Utah.

<sup>85</sup> Chapman Duncan letter to the Editor, *Deseret News*, January 19, 1862.

and her child drowned trying to cross the river.<sup>86</sup> At Virgin City floodwaters carried away most of the farmland and sediment silted up the irrigation ditches.<sup>87</sup>

The Great Flood of 1862 came as a surprise to the settlers of the Virgin River Basin. The Mormon colonists who had dwelt in the basin the longest remarked that this was the wettest winter they had experienced.<sup>88</sup> The native Paiutes of the Virgin River Basin were not completely surprised by the flood as a flood similar in size had swept along the river causing great damage forty years prior.<sup>89</sup> The flooding of the river changed how the Mormons viewed the small streams of the Virgin River Basin. Before the flood these rivers only carried small amounts of water, were easily crossed, and often ran dry during the summers. This incomplete view of these streams made the danger of drought more likely than flooding. As the Virgin and the Santa Clara filled with floodwaters, they began to resemble the rivers that the settlers had experienced in the East such as the Missouri and the Platte River.<sup>90</sup>

Besides the increased amounts of water coursing through the rivers during several weeks in December and January the rivers also physically altered the landscape that had greeted the Mormons. The river cut away the existing riverbanks shifting its channel into farmland, villages, or shifting away from the irrigation canals dug into the desert soil.

The river also tore away the native cottonwoods and willows, and nonnative fruit trees

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<sup>86</sup> Erastus Snow to George A. Smith, February 10, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, P-W, 1862, CHL.

<sup>87</sup> Chapman Duncan letter to the Editor, *Deseret News*, January 19, 1862.

<sup>88</sup> Erastus Snow to George A. Smith, February 10, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, P-W, 1862, CHL. Jacob Hamblin letter to George A. Smith, February 12, 1862 *Deseret News*.

<sup>89</sup> J.W. Crosby letter to the Editor, *Deseret News*, February 12, 1862.

<sup>90</sup> Robert D. Covington to George A. Smith, February 1, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, B-F, 1862, CHL.

along the waterways removing an important local source of fuel, building materials, soap-making materials, and food.<sup>91</sup>

The flood was the first sign to the new immigrants of the Cotton Mission that transforming the desert landscape was not going to go as they had imagined. With the destruction of their best farmland in the bottoms of the streams, the carrying away of orchards, and the destruction of property, many of the settlements were put on a dangerous footing for 1862. Daniel Bonelli remarked that he was afraid of the people running low on food and that they would have to import wheat from Cedar City to the north.<sup>92</sup> The fruit trees that survived could provide some relief, but the loss of farmland meant that they would have to reconsider which crops to plant. The flood also damaged some of the irrigation ditches meaning that much of the work that had gone into prepping for that year's growing season would have to be redone.

St. George had survived basically unscathed and looked to be in a great position for the upcoming year. The people of Rockville, Grafton, and Santa Clara had lost their community, but they were able to relocate to higher lands less affected by flood waters. After weeks of raining the precipitation finally stopped allowing for the destitute settlers to import grain from the north. More sawmills were being built in Pine Valley in order to provide better shelters than those that were available at many of the settlements prior to the Great Flood. As J. W. Crosby put it in a letter to the *Deseret News* describing the flood, "The people are zealous to carry out the President's wishes in regard to cotton

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<sup>91</sup> Larson, *I Was Called to Dixie*, 265-266.

<sup>92</sup> Daniel Bonelli to Brigham Young, January 19, 1862, Brigham Young office files, 1832-1878 (bulk 1844-1877); General Correspondence, Incoming, 1840-1877, General Letters, 1840- 1877, A-Bo, 1862, CHL.



raising.”<sup>93</sup> This zealousness was tested in the upcoming years as the Mormons extended their colonies within the basin and struggled against the environment of their new home.

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<sup>93</sup> J.W. Crosby letter to the Editor, *Deseret News*, February 12, 1862.

Chapter II  
Desert Struggles  
(1862-1871)

**Hunger at the Expense of Cotton**

The Mormon missionaries sent to the Virgin River Basin in 1861 had hoped to utilize the cooler winter months to prepare for putting in crops during the Spring. The rains that caused the flood of 1862 lasted from Christmas Day 1861 and persisted into February 1862 making fieldwork difficult. The rain not only made life miserable for the poorly sheltered new arrivals, but also for their livestock. There was sparse forage for the oxen that arrived as part of the new colony and so these working cattle wandered about the basin in search of feed. The increasingly muddy soil, especially in the bottomlands, became a trap for many of these oxen which had to be dragged from the mire by the settlers.<sup>94</sup> The oxen's struggle caused them to use precious energy not easily replaced due to the scarcity of local grasses.

By March the rains ceased, and the weary men, women, and animals began the work of making the basin more hospitable. In all of the settlements the men started work on controlling the waters that had proved so destructive during the first few months of the reinvigorated Cotton Mission. The Swiss brethren at Santa Clara had completed a dam and laid out a new town on the Santa Clara River just before the flood. The work completed had cost \$1,030 and was all lost during the disaster. When the flood waters receded, the Swiss worked to build a new townsite and dig an irrigation ditch. This newly completed work cost four times as much as the original constructions.<sup>95</sup> In Washington,

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<sup>94</sup> Bleak, *Annals of the Southern Mission*, 132.

<sup>95</sup> *Ibid.*, 123D.

the Saints began work on a new irrigation ditch in consequence of the damage to their original canal. This new canal also came at great cost, but the hope was that this one would be in a better location than that of the earlier ditch.<sup>96</sup>

With St. George's location between the Santa Clara and Virgin Rivers the town could hope to rely on both of these streams as water sources. The flood of 1862 had caused little damage to the irrigation ditch that the town's citizens were constructing from the Virgin River. This so-called Virgin Ditch consisted of a long canal and then a tunnel. The people of St. George were optimistic that they would be finished with the ditch in time for putting in cotton and wheat crops.<sup>97</sup> The southern crops were to be grown in the Virgin field along the Virgin River, which was a more reliable source of water than the Santa Clara River which often ran dry during the summer months. The water in the Santa Clara was easier to take out as the gentler terrain and location of the Santa Clara Field in the bottomlands allowed irrigators to bring water directly onto the field without digging long canals or tunnels and so President Erastus Snow allowed for the farming of wheat in the bottoms of the Santa Clara on 169.5 acres. This raising of wheat was only allowed under two conditions: that this would not be a permanent situation and that the farmers remember that their first and foremost duty was the growing of southern crops.<sup>98</sup> In this early stage the leaders prioritized the growing of the cash crops instead of breadstuffs as they had been sent to grow cotton instead of grain.

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<sup>96</sup> Robert D. Covington to Brigham Young, March 26, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, B-F, 1862, CHL.

<sup>97</sup> Erastus Snow to George A. Smith, February 10, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, P-W, 1862, CHL.

<sup>98</sup> Bleak, *Annals of the Southern Mission*, 121.

Cotton seed had been distributed throughout the settlements and Walter E. Dodge, whose nursery had been destroyed during the flooding, traveled to California where he obtained olive, lemon, orange, and black pepper seeds.<sup>99</sup> Many of these plants that Dodge brought to grow in Southern Utah did not thrive in the desert landscape. Though Erastus Snow had remarked that the environment was conducive for the growing of lemons that was not so due to the colder temperatures experienced during the winter months. These temperatures can easily drop into the 30s which can damage citrus trees. The oranges also were ill suited for this climate though one tree was seen to be growing in Toquerville in 1868.<sup>100</sup>

The construction of the Virgin Ditch proved slower than originally thought. By May 24th the canal was nowhere near completion and construction was abandoned for the season as focus turned to putting the southern crops in along the banks of the Santa Clara. This delay in putting in these crops meant that the long growing season required for many of these plants would not be met and only some crops would be ready to harvest. Despite this late start on the 1st of June, Erastus Snow promised that if the Saints were willing to work together in a spirit of unity that they would see bountiful crops of cotton and corn.<sup>101</sup> Snow's comments underlay a Latter-day Saint Doctrine and belief held by Church members that if the Saints did as their leaders commanded them then they would be able to overcome the obstacles even those placed by the environment. These beliefs were challenged during the upcoming summer months as the settlements relied on food imports from Cedar City, Beaver, Sevier County, and Sanpete County all of which

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<sup>99</sup> Ibid., 131.

<sup>100</sup> "Correspondence," *Deseret News*, April 7, 1869.

<sup>101</sup> Bleak, *Annals of the Southern Mission*, 143

lay miles and thousands of feet higher in elevation than the Cotton Mission. These imports of wheat were traded for the small amounts of cotton, molasses, and tobacco that had successfully been raised. Each of these crops had a monetary value assigned to it that determined how much of each item should be traded for another.<sup>102</sup>

During the summer of 1862 the nearly 380 Mormon families in the valley faced different environmental conditions than had greeted them the past winter.<sup>103</sup> The daily temperatures soared into the hundreds and barely dropped into the high 50s. Unlike the settlers that had settled Washington who came from mostly southern states, these new settlers came from cooler climates and had dwelt in Northern Utah for many years.<sup>104</sup> During this first summer the heat combined with a lack of supplies caused many people to abandon the Cotton Mission for the cooler climes of Northern Utah.<sup>105</sup> Utah's Dixie was proving to not be as tolerable as Brigham Young, George Albert Smith, Erastus Snow and other Church leaders had sold to many of the missionaries.

In the Fall of 1862 Brigham Young visited the new and struggling colony. His trip spanned the length of the basin from Santa Clara to Grafton on the upper Virgin. He reemphasized the growing of southern commodities to these hungry communities telling the people of Grafton to utilize the small amount of farmland to the growing of cotton and fruit trees. In Washington, Young told the Saints to grow the California Grape (*vitis californica*) to produce sacramental wines. The Saints were also exhorted to grow tobacco

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<sup>102</sup> Ibid., 74-75, 210-212, 247.

<sup>103</sup> Ibid., 85-86, 97.

<sup>104</sup> Many of the new settlers came from either the Eastern United States or Western Europe. *1870 U.S. Census*, St. George, Washington County, Utah Territory, June 1, 1870, 1-30. *1870 U.S. Census*, St. George, Washington County, Utah Territory, June 1, 1870, 1-30.

<sup>105</sup> Ibid., 144.

as \$60,000 was annually spent on importing the product to Utah.<sup>106</sup> While on this trip, President Young surveyed the damage caused by the recent flooding, but his concerns were focused on making sure that these pioneers produced cash crops.

By the end of 1862 the crops that had been produced in combination with importing wheat from other Mormon colonies had afforded the Virgin River Basin settlers the ability to survive. Cotton had grown well enough that the entire county had produced 100,000 pounds of lint, which was more than had been produced in the other years, but still was much lower than the lofty expectations for the mission. This cotton proved to be of little value to those who grew it. The Upland Cotton is a short staple variety and in order for short staple to be useful it had to first be ginned which could be done in Washington and Toquerville, but not on a large scale. There were plans to build a cotton mill in Washington that would process cotton into fabric, but the “Cotton Factory” as it was called was not in operation until 1867.<sup>107</sup> Then the cotton had to be transported to Northern Utah where it could be made available to the larger settlements. This proved difficult due to distance with St. George being over 240 miles away from Salt Lake City and the poor conditions of the roads connecting the two areas. During the early history of the Cotton Mission the territorial government constantly sponsored efforts to build a road over the Black Ridge to Utah’s Dixie, but no group of men were ever willing to make a bid for the construction and so the local church leaders ended up volunteering their own congregation members.<sup>108</sup> Because of this the settlements had an abundance of unprocessed cotton that could not be traded for food.

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<sup>106</sup> J.V. Long letter to the Editor, *Deseret News*, October 1, 1862.

<sup>107</sup> Larson, *I Was Called to Dixie*, 194-195.

<sup>108</sup> Bleak, *Annals of the Southern Mission*, 23.

Since 1862 had been a terrible year for the mission, efforts were made by Erastus Snow and Orson Pratt, who had moved to St. George after the destruction of Rockville, to secure the future of the mission. At St. George the settlers hoped to gain access to a more reliable water source free of sulfur for the towns and crops by creating an artesian well. Snow wrote the leadership in Salt Lake asking them to send more men south to replace the missionaries that had abandoned their posts during the past year and that one of these replacements be Nelson Bebee of Provo, who worked on artesian wells in California before immigrating to Utah.<sup>109</sup> This extra water might ease the dry conditions being experienced by the cotton crops of the mission and provide water with less alkaline than was carried by the Virgin River.

After experiencing a winter in which the price of flour rose from \$.08 a pound to \$.10 there was a push to make the settlers less dependent on wheat imported from the North. During the Spring and early Summer of 1863 Snow and Pratt encouraged the people of the mission to grow corn as a supplement to the small amounts of wheat that were being grown within the basin.<sup>110</sup> Wheat made up the primary component of the Mormon diet, but as it became more expensive to import the settlers turned to growing corn which the Paiutes had grown in great abundance. Corn produced more bushels per acre within the confines of the basin and in an area where large portions of the arable land were prioritized to the growing of cotton, corn proved a better bet for producing food.

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<sup>109</sup> Erastus Snow to George A. Smith, November 4, 1862, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, P-W, 1862, CHL.

<sup>110</sup> Bleak, *Annals of the Southern Mission*, 180, 184-185.

Along with focusing on growing more corn, the settlers made an effort to reclaim land that had been lost during the flood of 1862. Heberville, which lay below the confluence of the Virgin and Santa Clara, had been established in 1858 as an experimental farm for the growing of cotton. The results of this experiment proved mixed and the town itself had never been very large. In 1862 most of its farming land had been covered in sand of a depth of 2-6 feet. In 1863 settlers returned to this area and prepared the land for renewed farming by constructing dams and irrigation ditches.<sup>111</sup> The land at Heberville was more fertile than that found at St. George which should have made it a promising place for growing southern commodities. Instead, Heberville proved to be a failure and was abandoned again in 1867 as the town did not have easy access to reliable drinking water, and floods wrecked irrigation ditches.<sup>112</sup> Brigham Young ordered the area reoccupied in 1874 and renamed Price City. Most of these new settlers left after Brigham Young's death in 1877.<sup>113</sup>

Once again during the summer of 1863 the best laid plans of the Mormon farmers ran up against the natural environment. The water supply that summer ran low, and the Santa Clara ran dry. The crops that relied on water from irrigation dried up and many people who lived along the empty Santa Clara picked up and relocated westward to Panaca, Nevada (4,729 ft) and Clover Valley (5,318 ft).<sup>114</sup> In a conference for the Southern Mission in November 1863, the Bishops of the different communities reported on their crops from the year. Each of the Bishops optimistically reported a crop of cotton despite the entire county only producing over 56,000 pounds, a significant decrease from

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<sup>111</sup> Ibid., 182

<sup>112</sup> Ibid., 73-74. James McKnight, "Cotton and its Culture in Utah," *Deseret News*, October 20, 1858.

<sup>113</sup> Carr, *The Historical Guide to Ghost Towns*, 130-131.

<sup>114</sup> Bleak, *Annals of the Southern Mission*, 183.



the prior year. The corn crop proved not to be the savior that Snow and Pratt had hoped it would be. In Grafton, 90 acres were dedicated to growing cotton and as for the corn crop, the farmland produced only a third of what was expected by the settlers. In Santa Clara only a quarter of the expected corn crop was produced. All of the settlements would have to rely on trading dried fruits, cotton, or outright purchasing flour during the upcoming year in order to have enough bread to make it through the next season. The church leadership once again told the members of the mission that they would have to do better on growing wheat. The dire situation of the Saints was only made worse when the Church leadership in Salt Lake City demanded that the local leadership go to each home in the Mission and make sure that they were paying a full tithing.<sup>115</sup> For the cash strapped members of the Church this meant paying their tithing in kind.

Once again, the hope for the new year proved futile as 1864 proved just as bad as those previously. The Virgin Ditch which the settlers had hoped would deliver water to the Virgin Field of St. George in 1862 was finally completed in 1864. The ditch had been completed at a cost of \$85,000 and only irrigated 161.5 acres.<sup>116</sup> But even as the ditch was completed, the area was facing more drought conditions as little rain had fallen during the winter and spring.<sup>117</sup> During this period Kane County spent \$20,700 to build and maintain irrigation ditches for only 904 acres of land. Meanwhile, Washington

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<sup>115</sup> Ibid., 185-193. In the Church of Jesus Christ members are required to pay one tenth of their increase in order to be in good standing. While currently members pay one tenth of their income during the early days of the Church members also paid tithing in crops and livestock.

<sup>116</sup> Deseret Agricultural and Manufacturing Society, Utah agricultural and irrigation statistics, 1864-1867, Irrigation statistics, 1865, CHL.

<sup>117</sup> Solon Foster to George A. Smith, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, F-J, 1864, CHL.

County spent \$126,688 on their irrigation ditches which supplied water for only 3,496 acres.<sup>118</sup>

These irrigation canals were a large investment in time and effort for the farmers. Despite this great cost, farmers were willing to continue digging and maintaining ditches if they provided a reliable water source. Failure at this kind of work though could prove disastrous as was the case for Chapman Duncan a school teacher. According to local legend in Virgin City, Duncan had been put in charge of constructing an irrigation ditch from the Virgin River to the city. His surveying measurements for the canal proved to be faulty and he dug a canal that, as the locals said, tried to “flow uphill.” Because of this Duncan left Virgin and started the town of Duncan’s Retreat (3,602 ft).<sup>119</sup> Whether this story is true or not it shows the important role that irrigation canals played in the efforts of the settlers to transform the landscape. Without reliable rains, the only way to make sure that water reached their crops required extensive investment in capital and labor. But even with these canals, sediments could clog them, requiring irrigators to clean them out. Dry years and moving river channels could also make ditches completely useless.

The dryness of 1864 took its toll once again with the wheat crop only producing a third of the flour needed to survive the winter. More food imports from the northern settlements were needed once again. Cotton also produced less than expected. As the year ended though, rains fell again and an unusual three inches of snow fell at Washington City.<sup>120</sup> These rains and snows promised a better year for moisture within the basin, but

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<sup>118</sup> Deseret Agricultural and Manufacturing Society, Utah agricultural and irrigation statistics, 1864-1867, Irrigation statistics, 1864, CHL.

<sup>119</sup> Larson, *I Was Called to Dixie*, 87-89

<sup>120</sup> William Crawford to George A. Smith, December 17, 1864, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, B-D, 1864, CHL.

also the potential for more croplands destroyed by flooding. The survival of Utah's Dixie's settlements relied on the constant flow of water through the local streams, but these increased waters could prove to be too much of a good thing.

### **Outlet to the Pacific**

While Brigham Young preached the idea of self-sufficiency to the members of the Church, there were many goods that could not be produced in sufficient quantities within the Utah Territory, such as machinery. The machinery to process cotton could not be built in Utah and so needed to be procured by the Mormons from the Eastern United States. Before the construction of the Transcontinental Railroad the Mormons of Utah had only two ways to bring goods to the Great Basin. The first was to bring them across the plains via wagon and the second was to ship goods to California and then bring them overland. Besides bringing supplies these routes also brought recent converts to Utah. Transporting supplies and converts this way required manpower, organization, time, and money which were in short supply within the territory.

With costs of overland shipping rising due to the Civil War and conflict with the Plains Indians, another option needed to be explored and that was the potential of the Colorado River as a route for transportation.<sup>121</sup> In the year 1864 Church leadership saw the idea as promising and worked to make the Southern Mission an important part of the territory instead of an isolated region on the periphery. The idea was for settlers to be sent to the Colorado River somewhere below where the Virgin River entered the stream and

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<sup>121</sup> The Mormons were not the only Americans to view the Colorado River as a potential route for trade during the 19th century. For the stories of some of these attempts see, George A. Johnson, "First Commerce on the Colorado," *Journal of Arizona History* 16, no 1 (Spring 1974): 29-34. *Water and the West: The Colorado River Compact and the Politics of Water in the American West*.

establish a port from which goods could be shipped via boat, unloaded, and then taken by wagon through Saint George and then to Salt Lake City. If this could be done, then hundreds of miles would be cut off of the wagon part of the trip and hopefully the prices of goods would drop within the territory. Opening up this route also provided the potential of selling surplus goods such as cotton and defray some of the costs of bringing converts to Utah.<sup>122</sup>

Church leadership sent Anson Call in 1864 to explore the Colorado River and find a suitable place for the establishment of this new port. Leaving Salt Lake City on the 15th of November with three other men, Call arrived at St. George on the 24th and added Jacob Hamblin and his son, Lyman Hamblin, to their company due to Hamblin's experience with the area while preaching to the Hopis. On the 2nd of December the expedition reached a spot several miles downstream from the confluence of the Colorado and the Virgin. The location was described as being 150 yards wide or as wide as the landing at Peoria, Illinois. The area was dubbed Call's Landing and James Davids and Lyman Hamblin were left at the landing in order to start construction on a warehouse for goods while Call returned north to report on his journey.<sup>123</sup>

While on his trip to the Colorado, Call passed through the Muddy River Valley, a tributary of the Virgin River. In this valley he reported on the gentle flowing water and the many grasses that grew there and made up part of the local Paiute diet.<sup>124</sup> This river valley, it was proposed, would act as a main thoroughfare for goods traveling from the

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<sup>122</sup> Arrington, "Inland to Zion: Mormon Trade on the Colorado River 1864-1867," *Arizona and the West* 8, no. 3 (Autumn 1966): 240-241.

<sup>123</sup> Anson Call to George A Smith, "Head of Navigation on the Colorado," *Deseret News*, January 18th, 1865.

<sup>124</sup> *Ibid.*

landing to St. George and avoid the Virgin Gorge.<sup>125</sup> This road would run along the Muddy Valley and then cut eastward through the mountains towards St. George and the rest of Washington County. In order to secure this road, the Church needed to establish settlements along its route. Brigham Young made plans to settle some three hundred families within the Muddy Valley as part of the Muddy Mission, an extension of the Cotton Mission.<sup>126</sup>

The Muddy Valley lay to the southwest of the previously established Mormon settlements in the river basin and sat at an altitude over a thousand feet lower. Because of its geographic location the valley experienced warmer average temperatures than those experienced by the majority of the Cotton Mission. Because of these warmer temperatures and longer growing seasons the settlers expected that southern commodities would grow well within the boundaries of the valley. Thus, the Muddy Mission, as it came to be called, would serve double duty of securing a road and extending the reach of Utah's Dixie.

In January 1865 Thomas S. Smith of Farmington, Utah led a small group of men and women to a point a mile above the mouth of the Muddy River and established the community of St. Thomas which was named after Smith and would be the first of several villages to be established along the length of the tributary. Within a few months of their arrival, the new settlers had planted corn, sugarcane, cotton, and fruit trees. Like the settlers that arrived in the basin in 1861, they expected to harvest two crops a year, to

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<sup>125</sup> The Virgin Gorge is extremely narrow and steep cliffs made traversing the area difficult. A road did not stretch through the area until a 29.5 mile section of I-15 was completed in 1973. This section of road took over a decade to build and cost over \$61 million ("\$61 Million Interstate to be Dedicated," *Times Independent* (Moab), December 13, 1973).

<sup>126</sup> Brigham Young to Daniel H. Wells, *Millennial Star* (Manchester, England), April 1, 1865.

provide their own wheat and corn without outside assistance, and to easily control the river around them, as the Muddy River was easier to control than the Virgin.<sup>127</sup> Also in 1865 Joseph W. Foote, who would later serve as a Bishop, founded the eponymous town of St. Joseph (1,352 ft).<sup>128</sup>

The Muddy River was given its name not because of the color of its water, but because of a large alkali swamp that formed in part of the valley. The water in the stream was in fact clear, but during the summer the surrounding air temperature made the water too hot to drink.<sup>129</sup> This swamp existed because the Muddy Valley did not experience much of a drop in elevation and caused the water to collect in the flood plain. This swamp acted as a breeding ground for mosquitoes causing the early settlers to suffer the malaria of the “Dixie variety” experienced along the lower part of the Virgin River. In November 1865 alone there were six deaths caused by fever from malaria in St. Joseph.<sup>130</sup> This swamp not only affected the health of the settlers, but also made crossing the valley difficult. The colonists drained the swamp by digging canals which they used to water their crops.<sup>131</sup> In St. Joseph, digging a canal proved difficult as the soil was sandy, and floods easily cut into the surrounding ground and shifted the canal.

The Muddy Valley settlements transformed the local landscape by draining the swamp and placing fields of cotton and fruit orchards along the river. The landing on the Colorado River did not become the important entry port for goods to Utah as originally planned. The river did not provide easy access all the way to Call’s Landing. William

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<sup>127</sup> “Home Items,” *Deseret News*, May 24, 1865.

<sup>128</sup> Larson, *I was Called to Dixie*, 141-142. L.A. Fleming, “The Settlements on the Muddy 1865-1871: ‘A God Forsaken Place,’” *Utah Historical Quarterly* 35, no 3 (1967): 61-86.

<sup>129</sup> Joseph W. Young letter to the Editor, *Deseret News*, July 8, 1868.

<sup>130</sup> “Home Items,” *Deseret News*, November 30, 1865.

<sup>131</sup> N. H. Felt, “Correspondence,” *Deseret News*, January 29, 1868.

Hardy, a non-Mormon, operated the landing at Hardyville 98 miles below Call's Landing and originally planned to sell goods to the Mormon settlements. When it became obvious that the Mormons hoped to bring goods directly to their own landing Hardy began stopping boats at Hardyville under the pretense that the river became unnavigable above his landing.<sup>132</sup> This cutting off of supplies made using the river a less reliable source of goods than transporting across the plains and made the prospect of moving new converts through Southern Utah to Northern Utah unpromising.

The completed road from Call's Landing to St. George also proved to be dangerous for goods to be transported. The road ran along the Muddy, Santa Clara, and Virgin Rivers for most of its length and crossed these bodies of water multiple times. These streams experiencing their yearly floods could easily prevent crossing especially that of a wagon loaded down with supplies and even caused deaths. In the Spring of 1866 Smith Heap was traveling from St. Joseph to Beaver, Utah with his family in their wagon. While crossing the Virgin River for the eighth time his wagon was overturned and destroyed by the river. Three of Heap's five children were drowned while it was only with "greatest exertion" that Heap's wife and two oldest daughters were saved.<sup>133</sup>

The combination of difficulties transporting goods to Salt Lake from the Colorado River along with the construction of the Transcontinental railroad derailed the Call's Landing venture but left a series of settlements that transformed the landscape in ways similar to those in Washington and Kane Counties. The settlements left behind after the failed experiment in Colorado shipping were much like the other settlements of the

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<sup>132</sup> Arrington, "Inland to Zion," *Utah Historical Quarterly* 8, no. 3 (Autumn, 1966): 244-246.

<sup>133</sup> "Home Items," *Deseret News*, May 31, 1866.

Southern Mission: commanded to grow Southern cash crops, at the expense of their own food needs.

### **Biblical Pests and the Specter of War**

In 1865, shortly after the establishment of the Muddy River colonies, a Southern Mission clerk Henry Eyring reported that the entirety of the mission would once again have to rely on the importation of flour from their northern neighbors if they were to survive another season. Eyring asked the members of the Southern Mission to be thankful to the Church members providing them with this sustenance.<sup>134</sup> Brigham Young also was concerned about this situation and commented on it while writing to George Albert Smith who was visiting the mission. President Young was afraid that the dire situation would cause the settlers to start importing wheat from Missouri or Oregon to alleviate the situation.<sup>135</sup> If this were to happen it would be a major blow to the Church's vision of economic independence.

The dearth of flour among the Southern Saints was partially explained by the continued pattern of drought and overemphasis on growing inedible crops that did not grow well in the environs of Southern Utah. The only area that seemed to have any success in the growing of cotton were the new settlements of the Muddy where in some cases the fields were producing between 200-500 pounds of cotton compared to the paltry 50 pounds per acre that were produced in the best cotton producing settlements in

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<sup>134</sup> Bleak, "Conference of the Southern Mission Minutes," *Deseret News*, November 23, 1865.

<sup>135</sup> Brigham Young to George A. Smith and Erastus Snow, March 5, 1866, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, S-Y, 1866, CHL.



Washington and Kane Counties in 1866.<sup>136</sup> Even in the Muddy Valley this cotton proved to be of little help to the settlers as they could not easily trade it with other settlements due to their distance from St. George and inability to process the cotton into a usable product.

Another contributing factor to the hunger experienced by the settlers was that of a plague similar to those found in the Bible.<sup>137</sup> During the 1860s and 70s the Virgin River Basin was plagued by swarms of grasshoppers or “ironclads” as they were called in the newspapers that traveled from one area to the next consuming crops as they went. In 1865 grasshoppers had appeared along the Muddy River consuming the newly planted crops as they were growing during the early summer months.<sup>138</sup> In 1868 another wave of grasshoppers affected the Muddy Valley and the area of St. George. The infestation in 1868 only compounded problems for the town of St. Joseph where a fire had burned down the town’s fort and created a disaster only helped by an outpouring of supplies from the already needy settlements in Washington County.<sup>139</sup> In 1869 the grasshoppers returned, eating not only the crops of grain, but also causing damage to the peach trees in Virgin City. The only beneficial thing during this year was that the pests appeared to have mostly remained in the Upper Virgin and the Muddy River settlements were spared from the destruction.<sup>140</sup>

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<sup>136</sup> “Home Items,” *Deseret News*, November 30, 1865. 1866 Utah agricultural and irrigation statistics, 1864-1867; Agricultural statistics, 1866; CHL.

<sup>137</sup> In the Book of Exodus when the Pharaoh refused to allow the Hebrews to leave Egypt God sent a series of plagues, one of which was a plague of locusts. Exod. 10: 1-15.

<sup>138</sup> “Home Items,” *Deseret News*, July 12, 1865.

<sup>139</sup> “Fire in St. Joseph,” *Deseret News*, August 26, 1868. Bleak letter to George A. Smith, *Deseret News*, September 9, 1868.

<sup>140</sup> “Items,” *Deseret News*, June 9, 1869. “Co-operation on the Muddy,” *Deseret News*, July 7, 1869.

These “hoppers” as they were also known to the basin’s farmers came each year causing havoc throughout the 60s and into the 70s. There was little that the settlers could do to prevent each successive wave as there were no pesticides at the time and the only way to really curtail the grasshopper population was to stop planting crops which would only compound the starvation experienced in these communities especially during the early 1860s. By working to transform the landscape to reflect those of the Southern states the missionaries were providing a smorgasbord for the sustaining of large hordes of grasshoppers as these pests consumed every plant sown by the settlers including young cotton.<sup>141</sup>

The transforming of the local landscape not only created tenuous relationships with the basin’s various streams, vegetation, and fauna, but with the indigenous inhabitants. From Dominguez to the Mormon colonists, those of European descent that came into contact with the inhabitants criticized the Paiutes for not growing crops and relying on hunting and foraging as a major part of their diets. Even people like the Parrusits who grew crops of corn, cleared farmland for farming, and even utilized irrigation as a part of their farming techniques were criticized by the Mormons for being too primitive. The Paiutes dug their irrigation canals using sticks and were thus looked down on for not utilizing more advanced tools like shovels. The missionaries sent to proselyte to the Paiutes of the river basin worked to disrupt the relationships that the Paiutes had developed with the land and to create ones more in line with the ones imagined by the Mormons.<sup>142</sup>

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<sup>141</sup> Dixie,” *Deseret News*, June 30, 1869.

<sup>142</sup> Brown, *Journal of the Southern Indian Mission: Diary of Thomas D. Brown*, 56-57

An early story that illustrates this re-envisioning of Indigenous people's role in the landscape occurred at Santa Clara where the missionaries dug a new canal and built a dam. The Paiutes who had lived in the area far longer than the colonists complained about the dam since it prevented water from flowing freely downstream to their fields. This water would prove important especially when the stream would eventually run dry during the summer. The settlers told the Paiutes that the Lord would provide them with the requisite moisture to prevent that from happening. The stream did dry up during the spring of 1857 and the drought was only alleviated by a thunderstorm that watered the fields and filled the Santa Clara River.<sup>143</sup> This story illustrated to Mormons that Paiutes would be better off adopting Mormon customs including religion and farming techniques.

As the Mormons continued to expand across the basin some of the Indigenous peoples did adopt their new vision of landscape. Some members of the Shivwits Paiute tribe accepted the customs of the Mormon colonists by accepting baptism into the faith, building Mormonlike farms along the Santa Clara River, and participating in farming in the fields surrounding the village of Santa Clara.<sup>144</sup> One Native American by Beaver Wash received the name Indian Thomas and grew wheat after being taught to do so by the Mormon missionaries. In other areas settlers hired Paiutes as farm laborers to help with growing crops and with basic chores. These laborers often worked for food and clothing.<sup>145</sup> Many of the Mormons who were part of the exploration of the Virgin River Basin for the Church wrote that the indigenous peoples wanted Mormons to settle on

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<sup>143</sup> Alder and Brooks, *A History of Washington County*, 23-24.

<sup>144</sup> *Ibid.*, 22-25.

<sup>145</sup> "Correspondence," *Deseret News* January 29, 1868.

their lands and teach them new farming techniques.<sup>146</sup> The settlers probably believed that their presence was welcomed by some Native Americans because of Mormon doctrine that taught Native Americans were descendants of the Lamanites, a people from the Book of Mormon, who would be redeemed in the latter-days.<sup>147</sup> Many Paiutes refused baptism and probably saw the presence of Mormon settlers as protection from slavery. With this protection also came the dispossession of land from the Paiutes which made the Mormons a source for food as Brigham Young preached a policy of feeding natives instead of waging war.<sup>148</sup>

The Paiutes who farmed along the Santa Clara and the Virgin River still grew corn, wild grapes, melons, and squash as only a part of their diet. They continued to hunt for sources of protein, foraged for edible plants, but also began to rely on food provided by Mormon farmers. As the colonists established their villages, they did so alongside former Paiute communities creating the towns of Santa Clara, Toquerville, and Shonesburg (3,979 ft). As these settlements grew, they displaced the Native peoples who originally occupied these lands and removed them from areas that in the case of Parrusits along Ash Creek had been farmed since before the signing of the Declaration of Independence. This was part of the Mormon idea of transforming the landscape by replacing small communities of Indians with villages of wooden structures surrounded by fields of crops and cattle wandering farther afield, grazing on the natural grasses of the basin.

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<sup>146</sup> Anson Call to George A Smith, "Head of Navigation on the Colorado," *Deseret News*, January 18th, 1865. Brown, *Journal of the Southern Indian Mission: Diary of Thomas D. Brown*, 56-64.

<sup>147</sup> Alma 9:16-17

<sup>148</sup> Farmer, *On Zion's Mount*, 87.

The cattle proved to be a major breaking point in the relations between the Paiutes and the Mormon settlers. Oxen played an important role in Mormon construction and farming projects and cows were used for providing milk, butter, and beef.<sup>149</sup> In the early days of Mormon settlement there was little forage for oxen and milk cows. Instead, settlers allowed cattle to wander free, grazing on whatever they could find, oftentimes these cattle wandered into the fields of the farmers and began grazing as most of the original farmland lacked fences.<sup>150</sup> These groups of cattle eventually grew into large herds of livestock and some farmers realized that it was easier to raise cattle or sheep than cotton. The expanding of herds allowed for the settlement of the upper reaches of the East Fork of the Virgin River such as the Long Valley (5,197 ft) where southern crops were unable to grow due to the higher elevations and colder temperatures.<sup>151</sup>

Herds of sheep and cattle ate up large portions of meadows filled with grass. These grasses constituted a major part of the Paiute diet as they harvested the seeds from rice grass (*achnatherum hymenoides*), ground them up, and ate them as a porridge. While the Mormons suggested farming as a replacement for the sustenance provided by these grasses, their own experiences of importing food from other settlements proved that farming did not always provide a viable means of sustenance within the basin. Searching for a way to continue to survive because of the removal of their food source, the Paiutes

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<sup>149</sup> In 1860 there were 165 oxen, 382 milk cows, 320 other kinds of cattle, 1,303 sheep in the Southern Mission (US Census Bureau, 1860 Census: Agriculture of the United States, Utah, 180). By 1870 after most of the raiding on the Mormon herds had ended there were 205 oxen, 1,752 milk cows, 2,680 other kinds of cattle and 4,193 sheep. The increase of cattle and sheep during the 1860s put greater strain on the available forage and meant that the range for these herds was constantly being expanded (US Census Bureau, 1870 Census: Agriculture of the United States, Utah, 263.)

<sup>150</sup> Due to a lack of building materials during the original period of settlements many fields lacked fences. In order to prevent cattle from grazing on crops settlers had to keep watch at night. (Bleak, *Annals of the Southern Mission*, 123).

<sup>151</sup> Larson, *I Was Called to Dixie*, 135-139.

sought other ways to feed themselves that often brought them into conflict with their new neighbors.

In the Muddy Valley, the local Paiutes raided the farms of St. Thomas and St. Joseph in order to feed themselves. In the years of 1865 and 1866 the local settlements complained that large portions of their corn and livestock were stolen by Indians.<sup>152</sup> After a visit to the settlements of the Muddy Valley, Jacob Hamblin believed that the mission would not survive unless the sites were strengthened by more settlers and the problems with the Indians solved.<sup>153</sup> These conflicts came to a head in 1866 with the killings of James M. Whitmore and Robert McIntyre near Pipe Springs, Arizona (5,000 ft) while the two were out tending Whitmore's herd of cattle. Mormon sources do not give a reason for the killing, but it was probably related to Whitmore protecting his herd from cattle rustling. This attack led to the calling out of the local militia in search of hostile groups of natives. The militia arrested two Native Americans found slaughtering a bull. The arrested Paiutes reported a camp of nearby Navajos, which the militia attacked, killing two men and capturing five. While the militia continued searching for more natives the local herds were removed from the Pipe Springs area.<sup>154</sup> Then in April of that same year Joseph Berry, his brother Robert Berry, and Robert's wife Isabella Berry were killed while traveling to Berryville (5,778 ft) in the Long Valley.<sup>155</sup>

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<sup>152</sup> "Home Items," *Deseret News*, November 30, 1865. James G. Bleak to Erastus Snow, April 2, 1866, Historian's Office collected historical documents, circa 1851-1869; James G. Bleak letter, St. George, to Erastus Snow, CHL.

<sup>153</sup> Jacob Hamblin to George Albert Smith, December 23, 1865, George A. Smith papers, 1834-1877, General Correspondence, Incoming letters, H-K, 1865, Jacob Hamblin letter, CHL.

<sup>154</sup> Bleak, *Annals of the Southern Mission*, 297-304.

<sup>155</sup> *Ibid.*, 316.

Most of the attacks carried out against the settlers in the Virgin River Basin appear to have been carried out not by local Paiutes, but by bands of Navajo that crossed the Colorado River. The Paiute people acted as sources of information on the location of hostile bands of Navajos, reclaimed missing livestock, and tended abandoned fields.<sup>156</sup> There were cases in Meadow Valley and along the Muddy River where local tribes did take part in attacks and raids.<sup>157</sup> Despite the overall friendliness of the Virgin River Basin tribes, the Mormon settlers questioned the friendliness of these people. Nephi Johnson, who had settled Virgin City claimed that the Berrys were killed not by Navajos, but by Paiutes.<sup>158</sup> This state of uneasiness along with the raids made by the bands of Navajos meant the carrying out of drastic measures in order to ensure the continued survival of the colony.

In May of 1866, less than a month after the deaths of the Berry family, President Brigham Young wrote to the leaders of the Southern Mission to consolidate the smaller settlements within the basin into larger communities with at least 150 armed men at each site. At these enlarged villages fortified settlers constructed corrals in order to prevent the stealing of livestock. While the people were for the most part to stay within their newly fortified towns, they were allowed to leave the settlements in armed groups to collect firewood, graze their cattle, and tend to the crops at their abandoned townsites. The belief was that if stealing cattle became too difficult then the attacks by Native American tribes

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<sup>156</sup> Ibid., 294-295.

<sup>157</sup> Ibid., 314.

<sup>158</sup> Larson, *I Was Called to Dixie*, 530-535.

would subside.<sup>159</sup> This policy also allowed for the continued destruction of native grasses and the growing of crops in various farmlands.

The mission leadership in St. George decided that the settlements of the Long Valley needed to be deserted. The inhabitants of Windsor (5,203 ft) and Berryville left their homes and relocated to the heart of the mission surrounding St. George and Santa Clara. Erastus Snow told these refugees that the valley would not be reoccupied, but they would be allowed to return to harvest their crops.<sup>160</sup> As for the settlements on the upper middle Virgin such as Grafton, Rockville, Northop, Springdale (3,898 ft), and Shunesburg they were advised to gather at Rockville as this was deemed the most defensible site in case of attack. On the Muddy River the settlers of St. Thomas were allowed to stay while the people of St. Joseph were required to relocate to a site called Mill Point.<sup>161</sup> All throughout the summer of 1866 the river basin was a flurry of activity as settlers relocated to better defended communities in order to better protect themselves.

In 1866 Kane County went from having 16 settlements to only 3. Despite this reduction of communities, large crops were still grown on these lands. All of the abandoned communities still produced harvests of wheat, corn, and cotton. In some cases, wheat fields were even producing 33 bushels of wheat which was an improvement over previous years. For the first time since the Great Flood of 1862 there were no complaints made by local leadership at the November Conference of the Southern Mission about having to import wheat to survive the upcoming winter.<sup>162</sup>

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<sup>159</sup> Brigham Young, Heber C. Kimball, and Daniel H. Wells to Erastus Snow, May 2, 1866 in *Annals of the Southern Mission*, 319-324.

<sup>160</sup> Erastus Snow to John W. Berry and L.H. Roundy, June 21, 1866, in *Annals of the Southern Mission*, 338-341.

<sup>161</sup> Bleak, *Annals of the Southern Mission*, 327-331, 336.

<sup>162</sup> *Ibid.*, 349, 353-355.



The policy of gathering together appeared to deter the raiding of herds by Native Americans as fewer attacks were reported by the end of the year. By November 1866, the people of Duncan's Retreat were told they could return to their settlement, and in 1867 the rest of the settlements of the Upper Middle Virgin were allowed to be repopulated.<sup>163</sup> While raiding occurred less often, tension still existed between the Native Americans as the people of the Upper Virgin River in 1869 wished that more settlements would be built to the South and East of them to protect them from attack.<sup>164</sup> Along with this the settlements of the Long Valley remained abandoned.

### **Abandonment and Taxes**

While the settlements of the Muddy Valley survived the volatile year of 1866, their population remained small, and Brigham Young sought to substantially increase the number of men in the area by resorting to his tactic of calling new settlers. During the Church's October 1867 General Conference, Young ordered 158 men to settle with their families along this river and take part in growing cotton.<sup>165</sup> An article in the *Deseret News* declared that while Californians from San Francisco sent resources to transform the West's landscape, it was in fact the Mormons who were going to places like the Muddy Valley and creating new settlements.<sup>166</sup> The settlement at the time was enjoying relatively good health after their early struggle with the Chills which had probably declined since the draining of the local swamp. The average production of 500 pounds of cotton per acre provided hope that the river valley would become a significant population center on the

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<sup>163</sup> Ibid., 361

<sup>164</sup> "Correspondence," *Deseret News*, March 7, 1869.

<sup>165</sup> Ibid., 384-387.

<sup>166</sup> "Settlers for the Muddy," *Deseret News*, November 27, 1867.

edge of the Southern Mission.<sup>167</sup> This view, though optimistic, proved to be false for those people newly called to the mission.

On Christmas Day 1867 a flood passed along the Muddy River and inundated the community of St. Joseph destroying their farmland. This flood left many of the people of the town feeling discouraged, though one optimist remarked that because of the size of the flood the settlers now knew where the high mark for flooding was.<sup>168</sup> This flood also destroyed the settlement of Beaver Dams located on the Virgin River causing it to be permanently abandoned. St. Thomas being located on slightly higher land than the two other settlements was the only one not to be significantly damaged during the flooding. An unusually wet winter caused flooding as rain fell constantly and a rare snow fell in St. Joseph, though it quickly melted and added to the increased amount of water being carried by the Muddy River.<sup>169</sup> This flooding caused many people to leave the mission for the more established settlements of Northern Utah and caused President Snow to lament passing them as he traveled southward from a visit to Salt Lake City.<sup>170</sup>

Flooding was not the only reason settlers abandoned the Southern Mission during the winter of 1867-1868. A group of the newly called missionaries to the Muddy Mission hoped to create a new settlement on the upper Muddy River which was located closer to timber and was viewed as a better spot for grazing cattle. These men, using the threat of armed confrontation, coerced the Paiutes of the upper Muddy to allow them to build a settlement on their land. This came despite fears of the original Mormon settlers of the

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<sup>167</sup> Warren Foote letter to the Editor, *Deseret News*, January 1, 1868.

<sup>168</sup> W.H. Streeper, "From the South," *Deseret Evening News*, January 14, 1868.

<sup>169</sup> "Home Items," *Deseret News*, February 12, 1868.

<sup>170</sup> "Southern Conference," *Deseret News*, May 20, 1868.

Muddy that their cattle would destroy the Paiutes' crops and lead to more conflict.<sup>171</sup> A telegram sent by Brigham Young along the newly constructed telegraph line from Salt Lake City to St. George told these men to return to the settlements they had been called to strengthen.<sup>172</sup> Thus spurned, the men decided not to fulfill their call and instead returned Northward.<sup>173</sup>

After the annual floods of the winter, the Virgin River Basin experienced a colder summer than usual. In the Muddy River Valley, the cold temperatures stunted the growth of the cotton, which did eventually rebound and provide a decent crop. The alkalinity of the soil, which was in part caused by the irrigation water, also caused poor growth for the wheat.<sup>174</sup> The wheat for that year only produced 18 bushels per acre down from the 33 bushels experienced during the previous year.<sup>175</sup> These ill omens would not have bode well for the settlers of the Muddy Valley, many of whom had lived through the hungry times experienced throughout the whole River Basin from 1861-1865. Despite the cold winter, poor crops, and flooding; the newly arrived Joseph W. Young, who became a leader of the Muddy River Mission tried to sell a positive view of Muddy River to the members of the Church who dwelt in Northern Utah. Young said that the Muddy Mission grew good cotton crops, suffered milder winters than St. George, and that the Muddy River was easier to control than the Virgin River and suffered from less flooding.<sup>176</sup>

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<sup>171</sup> Bleak, *Annals of the Southern Mission*, 394-396.

<sup>172</sup> Brigham Young telegram, February 17, 1868, in the *Annals of the Southern Mission*, 396.

<sup>173</sup> Bleak, *Annals of the Southern Mission*, 396.

<sup>174</sup> "Home Items," *Deseret News*, July 1, 1868. Joseph W. Young, "Correspondence," *Deseret News*, July 8, 1868

<sup>175</sup> "Home Items," *Deseret News*, August 19, 1868.

<sup>176</sup> Joseph W. Young, "Correspondence," *Deseret News*, July 8, 1868.

In 1868 the Muddy Valley produced 30,000 pounds of cotton, but only a small profit was made off of this due to the high costs of getting the crop to Northern Utah or to the markets of the Eastern States.<sup>177</sup> Selling the cotton for a profit always proved to be the hardest part of sustaining cotton production in the Southern Mission as the cost of establishing new settlements and irrigating the crop raised the price of the harvested product. Mormon cotton could not compete with the larger cotton market, especially with the completion of the Transcontinental Railroad in 1869. This railroad provided an important connection for the importing of goods such as cotton to the territory and minimized the need for expensive homegrown cotton. In 1870 Kane and Washington Counties along with the Muddy Settlements only produced 22 bales of cotton or 11,000 pounds of lint.<sup>178</sup> Leaders like Joseph W. Young continued to encourage the settlers to expand their cotton growing efforts, but by 1870 the people had turned to other crops that grew better within the basin.<sup>179</sup>

The decrease in the production of Southern Utah cotton also accompanied the abandonment of the Muddy River Mission. In 1870 a state survey found that the Muddy River was located within the boundaries of the state of Nevada and not in Utah Territory.<sup>180</sup> The state government of Nevada planned on collecting back taxes from the Mormon settlers and Brigham Young advised the members of the Church to abandon these communities and go back to Utah. Herds of cattle were quickly driven across the border to Utah. The settlers of the Muddy relocated to the Long Valley, abandoned by

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<sup>177</sup> D.G. Brian letter to the Editor, *Deseret News*, March 10, 1869.

<sup>178</sup> US Census Bureau, 1870 Census: Agriculture of the United States, Utah, 22.

<sup>179</sup> "Southern Conference," *Deseret News*, November 23, 1870.

<sup>180</sup> "The Boundary Line," *Salt Lake Herald-Republican*, January 7, 1871

Mormon settlers since 1866.<sup>181</sup> On the Muddy newly arrived entrepreneurs hoped to harvest the crops left behind by the previous settlers.<sup>182</sup>

With the start of the 1870s the landscape of the Virgin River Basin looked different than the one encountered by Dominguez and Escalante in the 18th century. Mormon settlements had displaced the indigenous irrigated farms they had visited, fields of cotton were watered by long irrigation canals, and in some places olive and orange trees grew.<sup>183</sup> This was an altered landscape, but not the altered landscape Brigham Young and other Church leaders had planned for. Drought and colder than expected growing seasons had foiled attempts at large-scale successful cotton growing, while flooding had destroyed farmland or stilted up irrigation canals that needed many hours of manpower to fix. Along with the environmental factors that limited the Mormons' attempts to change their desert environment, the indigenous people of Southern Utah, Eastern Nevada, and Northern Arizona had resisted the efforts of settlers to steal their land. As all of these factors worked to put limits on the landscape that the Mormons could build, these settlers turned to different crops and different innovations for transforming the landscape and extending their power over the Southern Paiutes.

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<sup>181</sup> "Settlers Moving-Myriads of Grasshoppers," *Salt Lake Herald-Republican*, March 31st, 1871.

<sup>182</sup> "Home News," *Deseret News*, May 3, 1871.

<sup>183</sup> "Correspondence," *Deseret News*, April 7, 1869.

Chapter III  
Shifting Riverbanks  
(1871-1921)

**Silver Reef, Peddling, and Striving for Economic Independence**

In 1875 silver mining operations started several miles to the west of Leeds, Utah. Newspapers described the dramatic growth of the boomtown known as Silver Reef

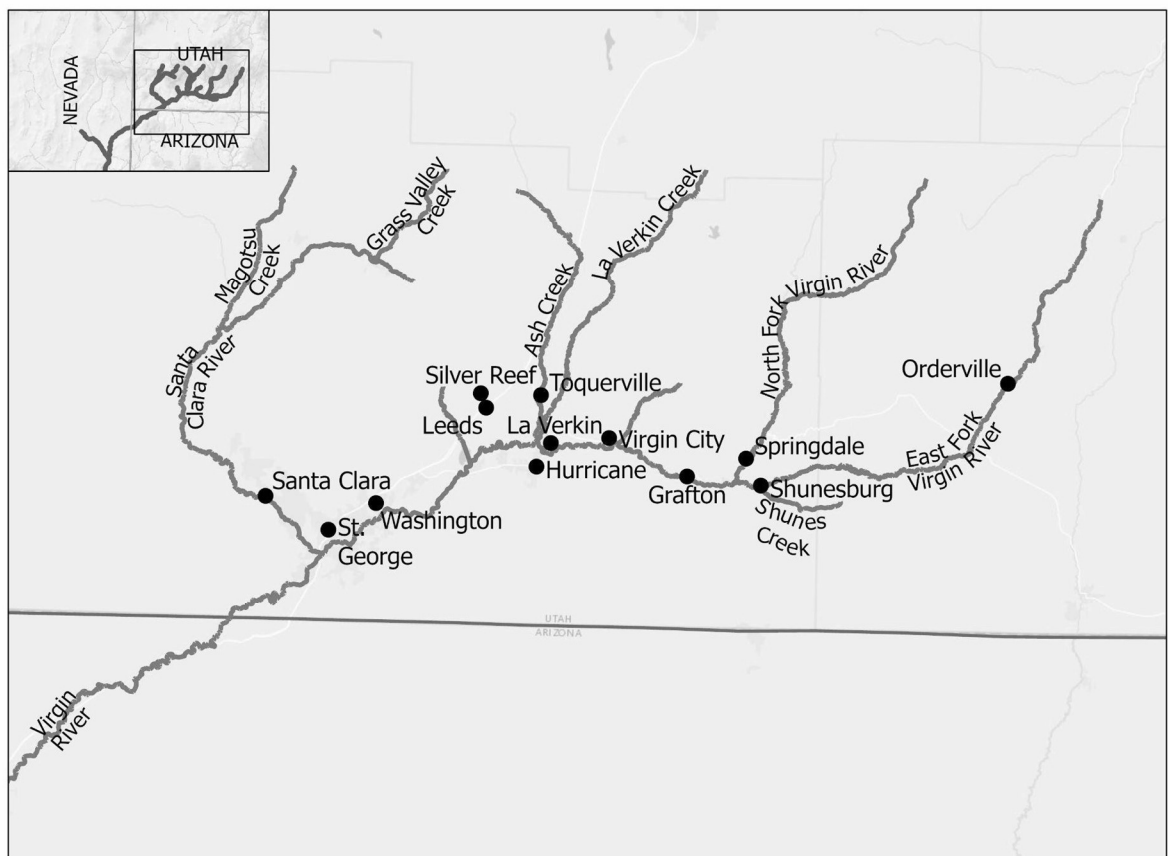


Fig 3. “Virgin River Basin in Washington and Kane Counties.” Map created by Spencer McConkie. Data Credits: Esri, GEBCO, IHO-IOC GEBCO, Delorme, NGS, HERE, Garmin, USGS, EPA, NPS.

(3,796 ft) using biblical terms comparing it to “Jonah’s gourd” or “Aaron’s rod.”<sup>184</sup> By 1879 the new settlement had a population of over a thousand people and it was believed that the town would be a permanent fixture of the region.<sup>185</sup> The town filled with non-members of the Church, who took jobs working in the mines since Brigham Young discouraged the participation of Church members in such ventures.<sup>186</sup> The town became prosperous as new buildings sprung up quickly and separate cemeteries for Protestants and Catholics were established.<sup>187</sup>

Henry Schmutz, who grew up in Washington County during this time period, said that Silver Reef was a “Godsend” for the people of Southern Utah. There was very little liquid cash in the region, and Silver Reef provided a market where Mormon settlers took their dried fruit, molasses, and “Dixie Wine” to sell for cash.<sup>188</sup> Silver Reef also provided a place to acquire manufactured goods brought in from California.<sup>189</sup> However, by 1892 the once thriving settlement of Silver Reef was nearly deserted, as the silver boom was followed by the eventual bust.<sup>190</sup> Even though Silver Reef failed to remain a permanent feature on the landscape, it played a role in the development of peddling agricultural goods by the Mormon settlers. This peddling proved possible because of the adoption of

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<sup>184</sup> “Leeds”, *Salt Lake Herald-Republican*, December 9, 1876. In the Old Testament the Lord caused a gourd to grow to such size that it provided shade for the Prophet Jonah which is where the term Jonah’s Gourd came from Jon. 4:6. Also in the Old Testament the Lord caused Aaron’s staff (rod) to miraculously sprout flowers and grow almonds Num. 17: 1-9.

<sup>185</sup> “Silver Reef Mining”, *Salt Lake Herald-Republican*, March 18, 1879.

<sup>186</sup> W. Paul Reeve, *Making Space on the Western Frontier*, (Chicago: University of Illinois Press, 2006), 118-119.

<sup>187</sup> “Bonanza”, *Salt Lake Herald-Republican*, November 24, 1876.

<sup>188</sup> John Henry Schmutz, interview by Delmar G. Gott, November 21, 1974, The Delmar D. Gott Oral History Collection, Dixie State Special Collections and Archives, St. George, Utah (hereafter DSSCA), 17-18.

<sup>189</sup> J.E. Johnson, “Our Trade with California”, *Our Dixie Times* (St. George), February 26, 1868.

<sup>190</sup> “Silver Reef”, *Salt Lake Herald-Republican*, December 27, 1892.

crops better suited for the climate of Southern Utah and which changed the makeup of the basin's flora.

As cotton failed, other crops proved more suitable to the desert environment and changed the complexion of the local landscape. As discussed in Chapter One a group of Swiss converts settled at Santa Clara in 1861 to grow grapes for the making of sacramental wine as some of them had experience with viticulture. These converts were under the direction of Daniel Bonelli, another Swiss convert. Upon their arrival the Swiss settlers set aside thirty acres of land surrounded by a ditch for the cultivation of grapes. These thirty acres were used for the cultivation of cotton during the first year of settlement, as cotton was the more important crop.<sup>191</sup> Eventually, grapes were grown in Santa Clara and the Swiss settler John S. Stucki made the first of what would become known as "Dixie Wine".<sup>192</sup> By 1864 the Swiss found that frosts in the Autumn killed off the California Grape and began experimenting with the Isabella Grape and Muscadine Grape (*Vitis rotundifolia*).<sup>193</sup>

The growing of grapes soon spread to other areas within the basin. Toquerville on Ash Creek became the basin's hub of grape growing and winemaking under John Conrad Naegle.<sup>194</sup> Wine proved to be more useful to the Saints of the Southern Mission than cotton ever was, as making wine took less effort than picking and processing cotton. Even though the wine was supposed to be used for the Sacrament it was often traded for

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<sup>191</sup> Daniel Bonelli to George A. Smith, July 18, 1862, General Correspondence, Incoming Letters, B-F, George A. Smith papers, 1834-1877, CHL.

<sup>192</sup> John S. Stucki, *Family History Journal of John S. Stucki, Handcart Pioneer of 1860*, (Utah: self-published: 1932), 35.

<sup>193</sup> Daniel Bonelli to the *Deseret News* Editor, May 29, 1864, Brigham Young office files, 1832-1878 (bulk 1844-1877); General Correspondence, Incoming, 1840-1877; General Letters, 1840- 1877; Ba-Bo, CHL.

<sup>194</sup> Naegle served as a member of the Mormon Battalion and moved to Toquerville in 1866 to produce wine. Wesley Larson, "History of Toquerville", interview by Loren Webb, Douglas Alder, and Cuba Lyle 1993, The Alder-Brooks Oral History Collection, DSSCA.



other goods. Wine was easily transportable as it could be stored in different containers and its non-perishable nature meant it would not spoil easily. Frederick Kesler, while traveling through Southern Utah in 1868, reported drinking “Dixie Wine” in Cedar City, showing that at this time wine was being traded with other settlements for goods such as grain.<sup>195</sup> The settlers also traded this wine among themselves and used the wine for their Sacrament Meetings. The use of wine was eventually banned by the Church in the 1920s, but before this many members in Southern Utah went to church specifically to get drunk off of wine.<sup>196</sup>

The Isabella Grape, not the Muscadine, came to be the most grown grape in the Virgin River Basin. The Isabella is part of the *vitis labrusca* family of grapes known more commonly as Fox Grape. These grapes are native to the United States and are known for their thick skins and producing what is known as a “foxy” or musky taste. The *Labrusca* grapes were easily cultivated in vineyards throughout the United States while French Grapes, the standard for wine producing, proved vulnerable to cold temperatures and endemic American diseases.<sup>197</sup> The Isabella was first cultivated in South Carolina and found its way to California.<sup>198</sup> From California the grape was brought to areas like Toquerville, where it became the primary ingredient for “Dixie Wine”.<sup>199</sup> These grapes thrived in Washington and Kane Counties with 3,058 gallons of wine being produced in

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<sup>195</sup> Frederick Kessler to Brigham Young, December 21, 1868, Brigham Young office files, 1832-1878 (bulk 1844-1877), CHL.

<sup>196</sup> Lenny Brinkerhoff, interview by Loren Webb, Douglas Alder, J.L. Crawford August 30, 1993, The Alder-Brooks Oral History Collection, DSSCA, 9. Schmutz, 11-12.

<sup>197</sup> C.T. Kennedy, “Grapes”, *The Oxford Encyclopedia of Food and Drink in America*, 1st ed., ed. Andrew F. Smith, (Oxford: Oxford University Press, 2012).

<sup>198</sup> Charles L. Sullivan, “Wine”, *The Oxford Encyclopedia of Food and Drink in America*.

<sup>199</sup> Larson, “History of Toquerville”, 14.

1870 and finally 10,270 gallons being produced in 1900.<sup>200</sup> The transplanting of grapes and viticulture in Southern Utah changed the makeup of the landscape along the riverbanks by replacing cottonwoods and sagebrush with vineyards.

Church leaders such as Brigham Young and Erastus Snow made note of the warm temperatures of Southern Utah and hoped that this climate was warm enough to grow Chinese sugarcane. Sugarcane, though, has a long growing season taking, from ten months up to two years to mature.<sup>201</sup> While the summer months record highs in the hundreds, the winter months in the Virgin River Basin dip below the suitable range of temperatures for the growing of sugarcane, causing the crop to die off. With the failure to grow sugarcane, the settlers turned to sorghum to produce their sweeteners.

Sorghum, a drought resistant grain, originated in Africa and is adapted to mild drier climates like that of the Virgin River Basin. By grinding up the stalks of sorghum a syrup is produced that is similar to molasses.<sup>202</sup> While this syrup is not as sweet or viscous as molasses, the people that produced this syrup and the U.S. Government referred to it as molasses. The growing time of Sorghum is only three to four months meaning that a crop could be produced quickly.<sup>203</sup> Because of the ability to produce multiple crops in a year, farmers along the Virgin River produced large quantities of

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<sup>200</sup> Kane County currently takes in the Northeastern most section of the Virgin River Basin. Originally Kane County incorporated the upper middle part of the Virgin River with Grafton, Rockville, and Toquerville each acting as the county seat at one point. The boundaries of Washington and Kane counties shifted until 1880 when the current boundaries were established. U.S. Census Bureau, 1870 U.S. Census: Volume 3. The Statistics of Wealth and Industry of the United States, Table IV, 262. U.S. Census Bureau, 1900 U.S. Census: Volume VI. Agriculture, Part 2, Crops and Irrigation, Section 7, Nuts, Fruits, and Forest Products, 691.

<sup>201</sup> Mark and Sherry Guenther, "Sorghum Syrup", *The Oxford Companion to Sugar and Sweets*, (Oxford: Oxford University Press, 2015).

<sup>202</sup> Susan Crawford Ruesch, interview by Fielding H. Harris January 6, 1969, Voices of Remembrance Foundation Oral History Collection, DSSCA, 16.

<sup>203</sup> Mark and Sherry Guenther, "Sorghum Syrup".

molasses from limited acreage. In 1867 Shunesburg, where crops always struggled to grow, the land produced 45 gallons of molasses per acre of sorghum, while on the high-end Grafton produced 140 gallons per acre. On average, a settlement could expect around 100 gallons of molasses produced from an acre of sorghum annually.<sup>204</sup> These numbers meant that by 1870 Washington County produced 18,073 gallons of molasses which trailed only Utah County for the highest production in the state.<sup>205</sup> This molasses could be used for trading and for the producing of candies.

Jacob Hamblin introduced the peach to Southern Utah early on in the settlement period when he brought peaches from the Hopi Indians of Arizona to Santa Clara in 1858. The Hopi had grown peaches in Northern Arizona since 1585 when they received some blood peaches (*Prunus persica*) from Spaniards.<sup>206</sup> Soon orchards of peaches could be found within every settlement within the basin. The Virgin River Basin was not unique among the Mormon settlements of Utah though, as areas farther north also grew peaches and grew them in greater abundance than those being produced in Southern Utah.<sup>207</sup> Since temperatures remained warmer in Southern Utah, the growing season for peaches was longer and provided for peaches to come on earlier than they could in the North. This opened up an opportunity for southern Utah farmers to trade their produce to

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<sup>204</sup> Agricultural Statistics, 1867, Utah agricultural and irrigation statistics, 1864-1867, CHL.

<sup>205</sup> U.S. Census Bureau, 1870 U.S. Census: Volume 3. The Statistics of Wealth and Industry of the United States, Table IV. Productions of Agriculture in the United States in each State and Territory, by Counties, 263.

<sup>206</sup> Melvin T. Smith, "Forces That Shaped Utah's Dixie: Another Look," *Utah Historical Quarterly*, 47, no. 2 (1979), 118.

<sup>207</sup> In 1910 Washington and Kane counties only produced a total of 13,798 bushels of peaches while Box Elder County alone produced 44,315 bushels. U.S. Census Bureau, 1910 Census: Volume 7. Agriculture, 1909 and 1910, Reports by States, with Statistics for Counties: Nebraska-Wyoming, Alaska, Hawaii, Porto Rico, 736-738.

fruit-starved northerners.<sup>208</sup> After the development of the Elberta Peach in Georgia in the 1870s, that peach variety became the most grown strand in the Virgin River Basin. Southern Utah farmers could pick the Elberta while green and then transport it to Northern Utah where it would fully ripen and be sold fresh.<sup>209</sup>

As peddling proved advantageous for the Mormons of Southern Utah, the Southern Paiutes continued to be pushed to the margins of society. The Parrusits who had inhabited the basin for hundreds of years and numbered over a thousand people at the start of Mormon settlement continued to decline in numbers due to disease until the last member of the band, Peter Harrison, died in 1945.<sup>210</sup> The Shivwits were the last remaining cohesive band in the basin as the 19th century drew to a close. Despite 166 members of the Shivwits joining the Church in 1875 there were still efforts by Mormons to displace them from the land they still occupied.<sup>211</sup>

Anthony Ivins, a Mormon Rancher ran his cattle on the Shivwits Plateau South of St. George where many of the Shivwits had retreated to. Here on the Plateau the Paiutes who had lost access to the farms where they once grew corn along the Santa Clara turned to killing livestock when the need arose for food. The killing of Ivins' cattle hurt him economically and he asked the Federal Government to purchase land for the Shivwits along the Santa Clara River. The government approved and Ivins purchased land for the surviving Shivwits to gather on west of Santa Clara. The government wanted this to be a

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<sup>208</sup> Owen Sanders, "Settlements on the Upper Virgin", interview by Dawn Martindale June 5, 2000, Dawn Martindale Oral History Collection, DSSCA.

<sup>209</sup> William Thomas Okie, *The Georgia Peach: Culture, Agriculture, and the Environment in the American South*, (Cambridge: Cambridge University Press, 2016), 68-69. "Fruit Fest at Hurricane", *Richfield Reaper*, August 25, 1910. "Utah's Dixie", *Washington County News*, January 5, 1911.

<sup>210</sup> Alder and Brooks, *A History of Washington County*, 6.

<sup>211</sup> James R. Swenson, "Reflections in the Water: An Exploration of the Various Uses of C. R. Savage's 1875 Photograph of the Mass Baptism of the Shivwit," *Journal of Mormon History* 43, no. 3 (July 2017), 96-98.

temporary solution, but the Reservation eventually received official recognition in 1903.<sup>212</sup> This Reservation though did not have any water rights meaning that the Paiutes could not return to the farming they had once practiced.<sup>213</sup> Because of this the Paiutes became even more dependent upon the Mormon settlers and were forced to beg for food or if it was Christmas for presents.<sup>214</sup>

By the end of the 19th Century with the Paiutes removed to a reservation and non-indigenous crops dotting the areas around streams, the basin no longer resembled the original Paiute landscape. Despite the already drastic changes the Mormon settlers continued to transform the makeup of the landscape. By adapting different technologies, they expanded the reach of their agricultural lands into areas far away from the local floodplains.

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<sup>212</sup> Reeve, *Making Space on the Western Frontier*, 109-110.

<sup>213</sup> Swenson, ““Reflections in the Water,” 120-119.

<sup>214</sup> Schmutz, 16.

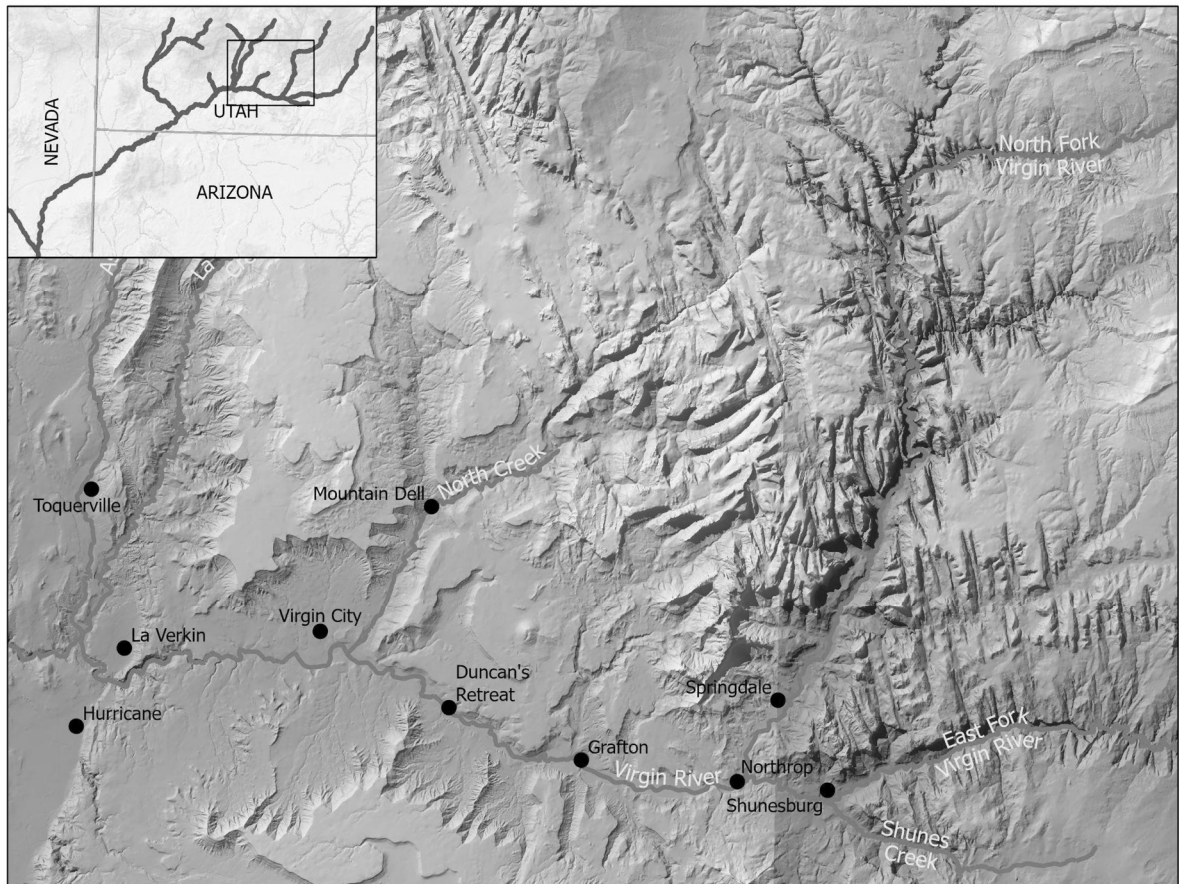


Figure 2. Map of the Upper-Middle Basin. Displays the Major settlements of the Upper-Middle Basin of the Virgin River with major streams and settlements. Map created by Spencer McConkie. Data Credits: Esri, GEBCO, DeLorme, NaturalVue, IHO-IOC GEBCO, NGS, Bureau of Land Management, UT AGRC, HERE, Garmin, USGS, NGA, EPA, USDA, NPS.

## Bench Farming

While the adoption of fruit growing and the peddling of agricultural crops provided an increased flow of goods and cash into the Southern Mission, communities along the upper-middle river basin still dealt with a tenuous living situation. The constant flooding of the Virgin River silted irrigation ditches, inundated the towns, and, in the worst cases, swept away acres of farmland. One flood resulting from a thunderstorm in 1896 filled the houses of Springdale with water and swept away furniture. In Shunesburg,

the storm ripped up fences and carried away cattle. The citizens of Rockville watched the destruction of their diversion dam and the washing away of the local roads.<sup>215</sup> While none of these storms created the same amount of destruction as “the Great Flood of 1862,” which brought about the relocation of Grafton and Rockville, they still caused problems for the farmers.

<b>Date of Flood</b>	<b>Area Affected</b>
January 1862	Entire River Basin
Winter 1867-1868	Rockville and Grafton
June 1872	Shunesburg
August 1880	Orderville
1881	Orderville
Spring 1883	Bunkerville
1884	Bunkerville and St. George
August 1885	St. George, Shunesburg, Bunkerville
December 7, 1889	Bunkerville and St. George
December 15, 1889	Bunkerville and St. George
July 14, 1896	Springdale
July 25, 1902	Bloomington
August 24, 1905	St. George
March 25, 1906	Springdale and La Verkin
August 20, 1906	St. George
October 1906	Mesquite

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<sup>215</sup> “Correspondence”, *St. George Union*, July 25, 1896.

August 13, 1909	Springdale and Northrup
September 1, 1909	St. George, Virgin City, and Orderville
1910	Mesquite
July 20, 1911	St. George
October 29, 1912	St. George
August 23, 1920	Zion National Park

Table 2. Table of historic floods on the Virgin River. This table was compiled from a table created by Hereford, Jacoby, and McCord, “Geomorphic History of the Virgin River in the Zion National Park Area, Southwest Utah,” 25.

While these constant floods and storms often swept along the length of the basin, at times sweeping away farmland, dams, and houses, the destruction was less easily absorbed by the smaller communities of the upper Virgin than by those of the lower basin.<sup>216</sup> The lower basin lay in a wider valley than the narrow canyons of the upper river; this made the loss of farmland less critical for the lower basin cities. The opening of the valley also meant that farmland could be located outside of the floodplain, but still receive water via irrigation canals dug slightly upstream. The settlements of the upper Virgin located in the Timpoweap Canyon could not relocate their farmland due to steep canyon slopes, leaving fields of sorghum and orchards of peach trees open to being washed away. This geography meant that the settlers either had to leave their crops at risk or relocate to a less vulnerable area.

As the Virgin River flows over the Hurricane Cliffs, it passes between two raised areas known as the La Verkin and Hurricane Benches. Both benches contained a

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<sup>216</sup> “River is Raging”, *Washington County News* (St. George), September 2, 1909.



combined area of 3,200 acres of cultivable land under irrigation.<sup>217</sup> In the 1870s, Washington County sent a commission of local settlers to the Hurricane Bench to survey a potential canal. The commission found the proposed route for a canal to the bench impractical due to the elevation of the bench being 3,248 feet, over 200 feet above the Virgin River which flowed along its base.<sup>218</sup> Building a canal required bringing water out six miles upstream from the best farmland, winding the canal along steep cliff ledges, and tunneling through outcroppings of rock. The total bill of building a canal added up to thousands of man hours and thousands of dollars that would have to be paid for by the local government or private investors.

In 1889, Thomas P. Judd, with the aid of local and Salt Lake investors, created the La Verkin Fruit and Nursery Company with the express intent of growing fruit on the La Verkin Bench (3,192 ft).<sup>219</sup> Judd was born in England and joined the Church of Jesus Christ of Latter-day Saints in 1864 and settled in St. George. He eventually became involved with the local Gardener's Club and worked to promote fruit growing in Washington County. This booster for Washington County fruit believed that the La Verkin Bench provided between 1,200-1,500 acres of fertile land for the growing of fruit and with little risk of being washed away by flooding.<sup>220</sup>

The La Verkin Bench suffered from the same geographical issues as the Hurricane Bench that prevented the easy building of an irrigation canal. The La Verkin Fruit Company dealt with these problems by bringing the water out of the Virgin River

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<sup>217</sup> "The Hurricane Canal", *Salt Lake Tribune*, February 18, 1901.

<sup>218</sup> "News of the State", *Salt Lake Tribune*, January 19, 1902.

<sup>219</sup> Larson, *I Was Called to Dixie*, 377. "Local and Other Briefs", *Salt Lake Herald-Republican*, June 13, 1889.

<sup>220</sup> "Outlook in Dixie," *Salt Lake Tribune*, January 19, 1902.

from a site two miles upstream and by digging an 800 foot long tunnel through the side of the mountain. The difficult dangerous work commenced in 1891. In order to reach the inaccessible worksites, the workmen suspended themselves from ropes. After two years of work, the LaVerkin Fruit Company completed the canal and water began to flow onto an area that never before received stream or irrigation water. A chemist tested the soils of the bench, locating the best growing sites for fruit trees. Newspapers exclaimed the miraculous harvests of peaches, almonds, grapes, nectarines, and cherries that farmers might harvest.<sup>221</sup> The completion of the canal also led to movement of people within the basin. Thomas Judd relocated to La Verkin and paid for the transportation of a house he owned in Silver Reef by wagon to the newly irrigated area.<sup>222</sup> This type of moving became commonplace within the upper-middle basin during the start of the twentieth century.

The completion of the La Verkin Canal demonstrated that it was possible to build a long canal along the canyons of the Virgin River Basin. In 1893, James Jeppson of Virgin and John Steele of Toquerville decided that there was potential for a canal from the Virgin River to the Hurricane Bench. They formed the Hurricane Canal Company, and the board ratified articles of incorporation on September 1, 1893.<sup>223</sup> The company gave stock to men willing to work on the canal and the only payment the workers would receive was twenty acres of land in the newly irrigated area.<sup>224</sup> The primary stockholders were men from Rockville, Shunesburg, Springdale, Grafton, Toquerville, Virgin City,

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<sup>221</sup> "A Fruit Ranch in Utah", *Deseret Weekly* (Salt Lake City), May 28, 1892. "From St. George", *Ogden Daily Standard* March 15, 1891.

<sup>222</sup> Schmutz, 5.

<sup>223</sup> Minute Book 1, box 1, folder 2, The Hurricane Canal Company Collection, DSSCA, St. George, Utah, 109-111.

<sup>224</sup> Sanders, "Settlements of the Upper Virgin", 16-17.

and Grape Vine Springs, all settlements on the upper Virgin and those most vulnerable to the flooding and in need of farmland away from the river.<sup>225</sup>

The canal construction progressed slowly with only two miles of the seven mile canal constructed by 1895.<sup>226</sup> The stockholders building the canal worked only for a few months during the winter, since they needed to raise crops during the summer to support their families.<sup>227</sup> This work schedule was also adopted as it avoided the extreme temperatures that Washington County experiences during the summer.<sup>228</sup> Illness also affected the work, as sickness easily spread through the small communities, disabling workers for periods of time. In February 1899 “the Grip” (influenza) spread through Springdale, infecting half of the people. Eleven canal workers also came down with “the Grip” and were forced to head home to recuperate.<sup>229</sup>

The finances of the Hurricane Canal Company also caused problems for construction. One newspaper reported that a man tried to get stock in the company but was told that no more stock was available. When the company heard that the man had \$6.25 available to invest in the venture, he was offered stock.<sup>230</sup> In 1902 the company had spent an estimated \$45,000 of cash and labor on the building of the canal and estimated that they needed another \$20,000 to complete the rest of the waterway. James Jeppson was sent by the company to Salt Lake City to ask the Church to help cover the costs. Jeppson met with the First Presidency, who decided to invest \$5,000 of the Church’s

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<sup>225</sup> Minute Book 1, box 1, folder 2, Hurricane Canal Company Collection, DSSCA, 112-113.

<sup>226</sup> “Southern Canal Project”, *Salt Lake Republican-Herald*, August 3, 1895.

<sup>227</sup> Sanders, “Settlements on the Upper Virgin,” 16.

<sup>228</sup> “The Hurricane Canal”, *Salt Lake Tribune*, February 18, 1901.

<sup>229</sup> “Grafton”, *Washington County News*, February 4, 1899.

<sup>230</sup> “Hard to Beat”, *Washington County News*, September 22, 1910.

money in the company in exchange for stock.<sup>231</sup> This cash infusion allowed the company to continue the work on the canal in 1902 as a group of sixty men restarted the stalled work. The company also revised their articles of incorporation to better manage their fiscal situation.<sup>232</sup>

In 1905, the Hurricane Canal finally delivered water to the Hurricane Bench. The final product included water trestles bridging ravines, tunnels, and mason walls along cliff ledges. The twenty-acre farms sites for the workers were divided out by drawing lots, a crop of wheat was planted, and a townsite was laid out to the northeast of the farms.<sup>233</sup> The new town became known as Hurricane, being named for the Hurricane Cliffs.

The farmers from the upper-middle basin soon relocated from the communities founded in the 1850s and 60s that they, their parents, and grandparents settled. For example, LuWayne Wood's family relocated from Grafton to Hurricane in 1914. The communities along the Virgin River cut down every cottonwood tree in the area to clear farmland and to build houses and structures. The constant removal of the flora meant the closest reliable source of wood for Washington County came from Mount Trumbull 60 miles to the south of Hurricane. Instead of importing wood from Arizona, the Wood family dismantled their house and brought it by wagon to their plot in Hurricane where they reassembled it.<sup>234</sup> The founding of Hurricane spelled the end for many of the upriver settlements, as many families whose husbands and sons worked on the canal and received land there relocated to the Hurricane Bench.

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<sup>231</sup> Minute Book 1, box 1, folder 2, Hurricane Canal Company Collection, 155-156.

<sup>232</sup> "Storm and Cold in the South", *Salt Lake Tribune*, March 17, 1902.

<sup>233</sup> "Completion of the Hurricane Canal", *Deseret Evening News*, April 15, 1905.

<sup>234</sup> Wood, "Grafton, Utah," 6-8.

The establishment of Hurricane in 1906 created an oasis. Many of the plots in town grew lucerne (alfalfa), which provided badly needed forage for livestock in Southern Utah.<sup>235</sup> By 1910, more acreage was used for the growing of alfalfa than for grain crops in Washington County.<sup>236</sup> The virgin land of the bench proved so fertile that farmers struggled to harvest thick fields of alfalfa.<sup>237</sup> The only crop that appeared to grow better than alfalfa were peaches. The town produced so many peaches that a newspaper declared that Hurricane should not waste its land for the production of alfalfa, sorghum, or grain.<sup>238</sup> In September 1910, the town held its first annual Elberta Peach Days as their first crop of peaches came in.<sup>239</sup> These peach orchards and fields of alfalfa marked a stark departure from the Hurricane Bench that existed before 1906.

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<sup>235</sup> Lenny Brinkerhoff, "History of Virgin, Utah", interview by Loren Webb, Douglas Alder, and J.L. Crawford August 30, 1993, The Alder-Brooks Oral History Collection, DSSCA, 14.

<sup>236</sup> U.S. Census Bureau, U.S. Census Bureau, 1910 Census: Volume 7. Agriculture, 1909 and 1910, Reports by States, with Statistics for Counties: Nebraska-Wyoming, Alaska, Hawaii, Porto Rico, 738.

<sup>237</sup> Wood, "Grafton, Utah", 12.

<sup>238</sup> "Our Correspondents", *Washington County News*, April 16, 1908.

<sup>239</sup> "Hard to Beat", *Washington County News*, September 22, 1910.

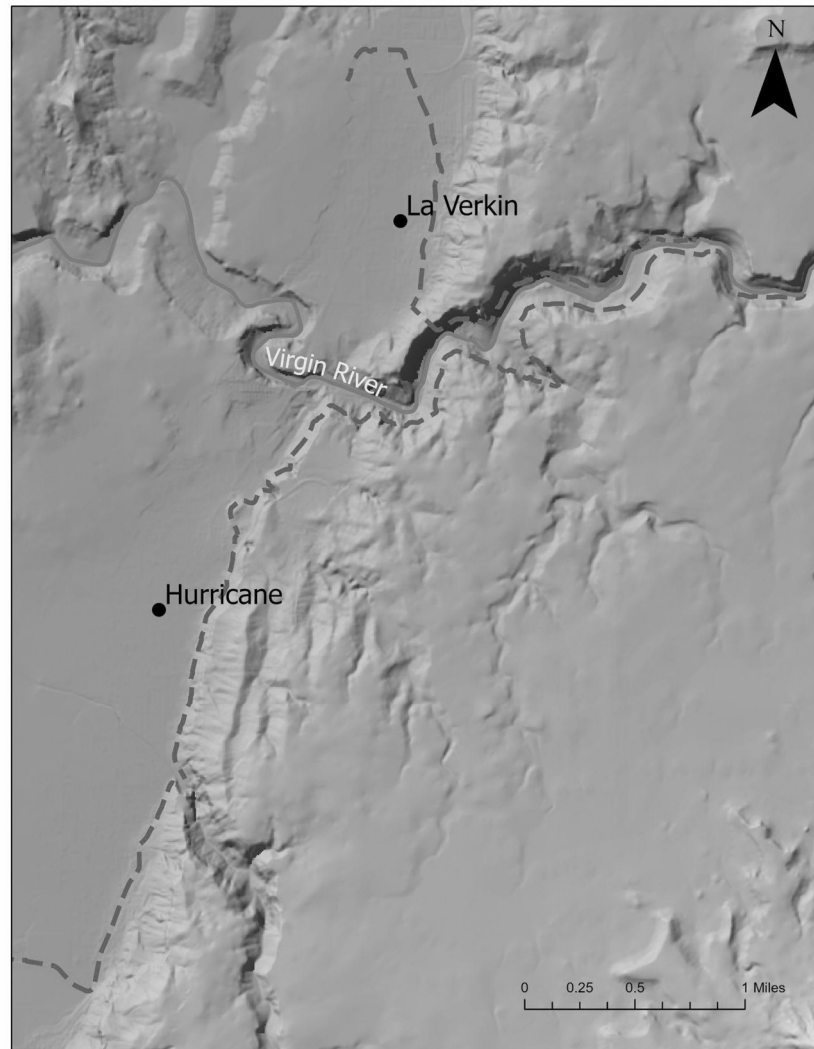


Figure 3. Map of LaVerkin and Hurricane Canals. The canals are represented by dashed lines with the LaVerkin Canal being located North of the Virgin River and the Hurricane Canal South of the river. Map Created by Spencer McConkie. Data Credits: City of Hurricane GIS, Bureau of Land Management, Utah AGRC, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS.

Even though the Hurricane and LaVerkin canals meant the removal of farmlands from floodplains, these newest towns still experienced problems involving water shortages and flooding. The *Deseret Evening News* described the Hurricane Canal when viewed “from [LaVerkin] it appears to be hung up on the face of the cliff, hundreds of

feet above the river.”<sup>240</sup> The canal’s location on the edge of this treacherous terrain caused problems. In April 1908, a landslide carried away part of the Hurricane Canal and cost \$500 to fix.<sup>241</sup> Then in December of that same year, another landslide carried away an entire section of tunnel from the canal. The inhabitants of Hurricane kept a positive attitude, claiming “We are glad its [sic] gone, as we will now make something that will stand, which will make our land worth more.”<sup>242</sup> The slides not only affected the Hurricane Canal, but also the LaVerkin Bench, where in May 1911 a slide caused a break in the canal, which cut off water from the town.<sup>243</sup> These breaks in the canals became a constant part of life for the people of LaVerkin and Hurricane as landslides and freezing caused breaks in canals that cutoff culinary/irrigation water and at one point flooded a local house.<sup>244</sup>

Disruption of these towns’ water supplies was not confined to landslides and sudden drops in temperatures caused freeze cracking. Stella Lee Shamo, whose father and sister both worked as riders for the Hurricane Canal Company, recounted that the Virgin River floods could come without warning and that riders on horseback would have to respond immediately. Riders would have to ride to the headgate of the canal and turn the water out of the ditch or else the waterway could become clogged with debris, which could cutoff the water supply or cause a break in the canal.<sup>245</sup> In September 1909, a flood carried away the diversion dam for the Hurricane Canal which had been built at an

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<sup>240</sup> “La Verkin”, *Deseret Evening News*, September 6, 1906.

<sup>241</sup> “La Verkin”, *Washington County News*, April 30, 1908.

<sup>242</sup> “La Verkin”, *Washington County News*, December 17, 1908.

<sup>243</sup> “La Verkin Laconics”, *Washington County News*, May 25, 1911.

<sup>244</sup> “Correspondence”, *Washington County News*, July 22, 1915.

<sup>245</sup> Stella Lee Shamo, “Hurricane, Utah”, interview by Dawn Martindale, June 1, 2000, Dawn Martindale Oral History Collection, DSSCA, 10.

expense of \$1,000. The dam, which had been made of timbers, diverted water from the main channel of the river into the canal and then onto the Hurricane Bench.<sup>246</sup>

Even when flooding did not wash away the diversion dam or cause a break in the canal, they still impacted drinking water. The flood waters that washed away farmland created a higher energy environment that carried more sediments in solution. The river carried heavily sedimented water into the canals, which the towns used for their culinary water supply. Families would haul buckets to the canal, fill them with water, and then have to wait for the silt to settle out before the water could be consumed.<sup>247</sup>

The towns of LaVerkin and Hurricane tried to escape the ravages of the Virgin River by relocating, but found that they could not because of their reliance on the river's water. As long as they relied on river water to irrigate their crops and for culinary purposes, they would not be able to escape the consequences of flooding. Because of this flooding and the inability to bring water to many areas within the Virgin River Basin, the farmers of the region looked for another way to transform the desert landscape, one which did not rely on the river.

### **The Dry Farming Revolution**

By 1910, though 95% of farmland in Washington County received irrigation, only 1.2% of the land available for farming received any water.<sup>248</sup> This meant most of the county was not being farmed. Dry farming provided a means of expansion. As the *Washington County News* declared in a 1914 article, “‘Dry farming’ does not mean

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<sup>246</sup> “Local and General News”, *Washington County News*, September 16, 1909.

<sup>247</sup> Wood, “Grafton, Utah”, 17.

<sup>248</sup> U.S. Census Bureau, U.S. Census Bureau, 1910 Census: Volume 7. Agriculture, 1909 and 1910, Reports by States, with Statistics for Counties: Nebraska-Wyoming, Alaska, Hawaii, Porto Rico, 749.



farming without water.”<sup>249</sup> Dry farming increased ground moisture. In order to dry farm a farmer would leave his farmland fallow during the summer. If a thunderstorm occurred during this time the farmer would plow his field in order to make sure the rainwater would be stored within the soil. Then, during the fall, the field would be plowed again in order to trap more moisture in the soil. The hope was that enough moisture would saturate the ground that a crop of wheat or corn could be planted in the spring and then harvested that summer.<sup>250</sup>

The dry farming movement in the state of Utah did not start in Washington County, but at the state’s agricultural college now known as Utah State University, far to the north in Logan. Dr. John A. Widstoe of the college published an article in the *Salt Lake Tribune* positing that dry farming was cost effective and the only way in which parts of the state could be brought under cultivation, as there was only so much irrigable water.<sup>251</sup> He also said that dry farming freed up more valuable irrigated land for growing higher profit crops than wheat and corn.<sup>252</sup> Widstoe pointed to successes in areas like Box Elder, Cache, and Salt Lake Counties, where dry farming had been tried and found some success. Widstoe believed that the establishment of experimental farms throughout the state would prove that dry farming could be accomplished within most of the region.<sup>253</sup> Widstoe was joined in his push for experimental farms by Dr. Lewis A. Merrill also of the Agricultural College, who toured the state lecturing on the need for the establishment of experimental farms.<sup>254</sup> Eventually the efforts of these two men paid off as the Utah

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<sup>249</sup> “Meaning of ‘Dry Farming’”, *Washington County News*, February 26, 1914.

<sup>250</sup> Wood, “Grafton, Utah”, 13-14.

<sup>251</sup> “Arid Farming in Utah”, *Salt Lake Tribune*, January 1, 1902.

<sup>252</sup> History of the Experiment Station, box 33, folder 12, John A. Widstoe papers, 1894-1916, USUSCA.

<sup>253</sup> “Arid Farming in Utah”, *Salt Lake Tribune*, January 1, 1902.

<sup>254</sup> “Experiment Dry Farm”, *Salt Lake Tribune*, December 18, 1902.

legislature in 1903 earmarked money for the establishment of six experimental dry farms.<sup>255</sup>

The first experimental farm established by the state was located at Nephi, Utah. Under the leadership of Dr. Merrill, this station showed that winter wheat could be grown successfully in Utah if farmers followed the strict practices of leaving their fields fallow and harrowing to store excess moisture within the ground. Another experimental farm was also established near Enterprise, Utah (5,318 ft) in 1903. By 1908, the Enterprise farm was showing the success of dry farming in the Virgin River Basin with some of the farm's acreage producing 25 bushels per acre, which was above the average yield of 20 bushels per acre for a dry farm.<sup>256</sup> Not only did the winter wheat grow exceptionally well, but also "oats, barley, rye, hemp, flax, brome grass, and lucern [sic]."<sup>257</sup> The success of the Enterprise experimental farm and other farms proved that dry farming was the missing step in the complete transformation of the Virgin River Basin and the Utah desert into an agricultural wonderland.

One of these promising areas for the development of dry farming was the Big Plain (4,961 ft), an area located several miles to the south of Grafton over the Smithsonian Butte. The Big Plain covered a large flat area with soil suitable for the raising of crops, the area also did not suffer from the flooding events along the Virgin River. Despite the availability of farmland and the stability of the land, the Big Plain did

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<sup>255</sup> "The Experimental Farms", *Salt Lake Tribune*, March 23, 1903. The six dry farms were located at Parowan, Iron County; Nephi, Juab County; Verdure, San Juan County; Burville, Sevier County; ten miles west of Tooele, Tooele County; and Enterprise, Washington County. F. S. Harris, A. F. Bracken, and I. J. Jensen, "Bulletin No. 175 - Sixteen Years of Dry Farm Experiments in Utah," *UAES Bulletins* (1920), Paper 141, 4..

<sup>256</sup> "The Field", *Pacific Rural Press* (San Francisco), January 26, 1907.

<sup>257</sup> "Dry Farming in Washington County", *Deseret Farmer* (Salt Lake City), August 1, 1908.

not have a large body of water to irrigate the area and its elevation made the building of a canal like the Hurricane or LaVerkin impractical. The only option for cultivating crops came from the willingness to try dry farming.

David Hirschi's parents were some of the original settlers of Rockville having moved away from Santa Clara due to "the chills" (malaria) prevalent in that community.<sup>258</sup> Hirschi was one of the original founders of the Hurricane Canal Company and helped with the canal's construction. Hirschi followed the experiments of dry farming and decided to conduct his own experiment on the Big Plain. He established a one-acre plot of land on the plain and harvested thirteen bushels of grain.<sup>259</sup> Hirschi's example was soon followed by many settlers in the upper basin as the *Washington County News* reported in 1909 that many of the citizens of the upper river basin had created dryland farms in areas like the Big Plain and the Lower Kolob Plateau. These farmers were reclaiming land that the newspaper claimed as "worthless" by using methods of dry farming and showing that "many people will yet make homes on what is now practically a forbidding desert."<sup>260</sup>

Dry farming during the 1910s took off as farmers started planting crops on the Santa Clara Bench (3,271 ft), Mountain Meadows (5,869 ft), Gooseberry Mountain (5,200 ft), the Lower Kolob Plateau, and on the Big Plain. Dr. Widstoe proclaimed that Southern Utah had great potential for dry farming and that the taking up of dry farming

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<sup>258</sup> Apostles Orson Pratt and Erastus Snow were both sent to the Cotton Mission in 1861 as co-leaders. The two fought over where to settle. Snow wanted to settle in the area of St. George, while Pratt wanted to settle in the upper basin around Virgin. Pratt believed that settlements on the upper river were less susceptible to malaria. Larson, "History of Toquerville", 19-20. Pratt's claims are partially carried out by the actions of Hirschi's family.

<sup>259</sup> Mabel Jarvis, "David Hirschi Active in Pioneering Southern Utah; Church, Civic Leader", *Washington County News*, October 14, 1937.

<sup>260</sup> "Are Taking up Dry Farms", *Washington County News*, April 29, 1909.

would help the area develop.<sup>261</sup> Even Thomas Judd mentioned the benefits of dry farming by talking about the “good yields of plump wheat” that were harvested from the Santa Clara Bench.<sup>262</sup> The use of dry farming was called the future of farming, not just within

#### Dry Farming Areas of Washington County

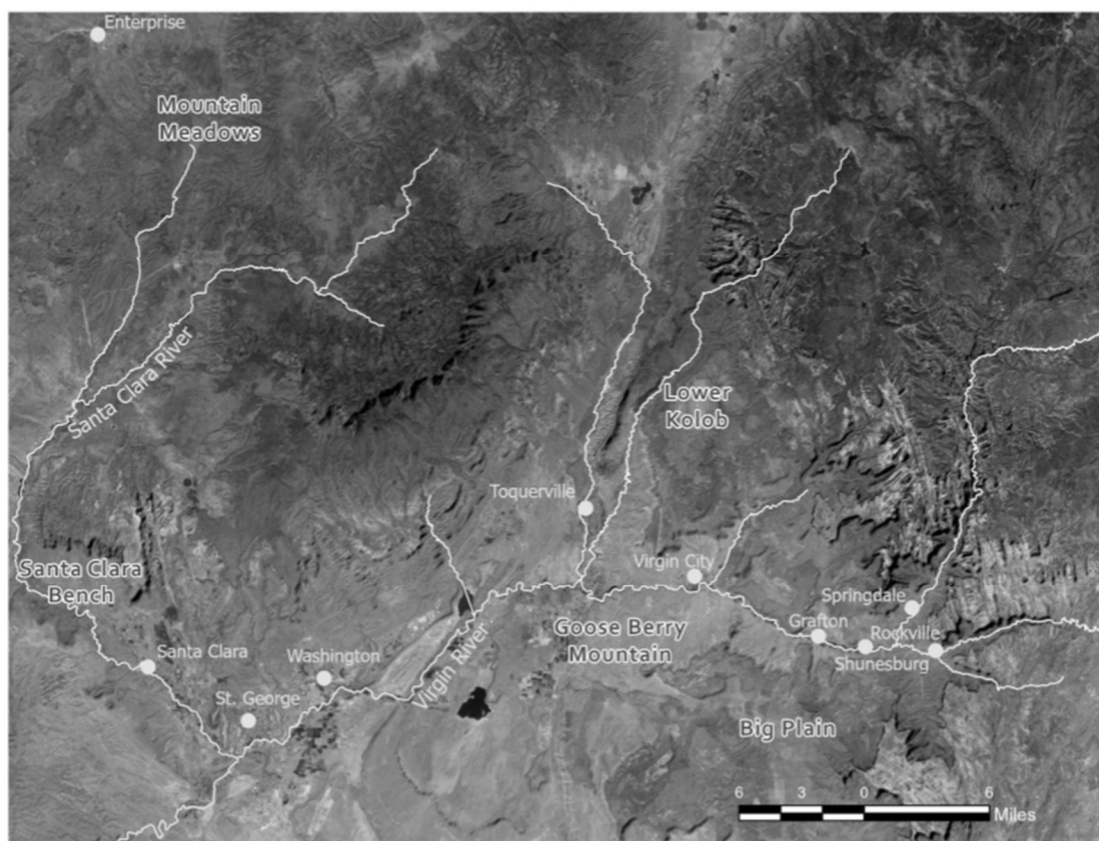


Figure 4. Map of the Dry Farming Areas in Washington County. The Map above shows the various areas in which dry farming activities took place in Washington County. Map created by Spencer McConkie. Data Credits: Earthstar Geographics, UT AGRC.

<sup>261</sup> “Aids Dry Farming in Southern Utah”, *Washington County News*, July 24, 1913.

<sup>262</sup> “Thomas Judd Here Boosting Dixie Land”, *Washington County News*, August 18, 1910.

the basin, but for the world, as the *Washington County News* lauded the efforts of “non-progressive” Hungary in adopting the American method of dry farming.<sup>263</sup>

The dry open area of the Big Plain drew not only the inhabitants of Rockville, but also Grafton, Springdale, Shunesburg, Oak Creek, and even farmers from Hurricane, where irrigated land was easily available. The local news from many of these communities commented on the frequent absence of men, who were up on the Big Plain plowing fields, planting crops, and hauling harvests over Smithsonian Butte to the Virgin River.<sup>264</sup> Access to the Big Plain proved so important to these small communities that the state government allocated money for the building of a proper road from Rockville to the Big Plain in 1923.<sup>265</sup> Like the building of the Hurricane Canal, the members of the up-river communities personally helped with the construction of this road.<sup>266</sup> The road was an important link to an area unaffected by floods which occurred at least once or twice a year in these communities washing away fields of crops amounting to the complete loss of work put into farming.<sup>267</sup> The crops on the Big Plain could not be washed away by floods, but they did prove vulnerable to drought and the slothfulness of farmers.

James W. Paxman had worked as a merchant but gave up that career in 1904 to purchase over a thousand acres of land that received little precipitation.<sup>268</sup> His farm was located close to the site of the Utah State’s dry farm experiment station. After consulting

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<sup>263</sup> “Try Dry Farms in Hungary”, *Washington County News*, July 31, 1913.

<sup>264</sup> “Springdale”, *Washington County News*, October 9, 1913. “Rockville”, *Washington County News*, December 4, 1913. “Rockville”, *Washington County News*, September 30, 1920.

<sup>265</sup> “Funds Assured for Bridge Across River”, *Washington County News*, June 21, 1923.

<sup>266</sup> Phillip Hepworth, interview by Lynn Cobb, Pioneer Voice of Zion Canyon Oral History Collection, DSSCA, 13-14.

<sup>267</sup> *Ibid.*, 37.

<sup>268</sup> “Generalities”, *Logan Republican*, April 26, 1905.

with Widtsoe, Paxman learned how to dry farm.<sup>269</sup> By using dry farming methods, Paxman increased his property value near Levan, Utah from \$2.50 per acre to as much as \$50 an acre.<sup>270</sup> Because of his success with dry farming, Paxman became an expert and started to travel the state lecturing on the benefits of dry farming methods and techniques.

In 1914, the Utah Agricultural College appointed Paxman, who was serving as President of Utah's Dry Farmer Association, to serve as the state's dry farm demonstrator. Because of the boom in dry farming, land speculators sold land that received little precipitation claiming that dry farming could reap great profits from the soil. However, soil chemistry limited crop potential. Paxman's job as dry farm demonstrator was to answer questions pertaining to dry farming, give lectures, demonstrate proper farming techniques, and visit the various dry farms throughout the state.<sup>271</sup> By accomplishing these tasks, Paxman and the Utah Agricultural College hoped to maintain faith in dry farming.

In June 1915, Paxman spent three weeks touring the dry farms of Kane and Washington County. He commented that the two counties had "nearly a million and a half acres of excellent dryfarm [sic] land..." Paxman claimed that the annual precipitation at the time amounted to between 12 and 18 inches, which proved ample for dry farming. While some areas within the basin such as St. George, Hurricane, and Springdale did receive precipitation similar to these numbers during a brief period in the early 20th century; these years were outliers. Yearly precipitation usually was less than

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<sup>269</sup> "Some Utah Arid Farms and Arid Farmers", *Utah State Farmer's Institute*, annual no. 6, (1902) 62-63.

<sup>270</sup> "The Field", *Pacific Rural Press* (San Francisco), January 26, 1907.

<sup>271</sup> "State Dry Farming Expert Named", *Salt Lake Tribune*, July 17, 1914.

10 inches.<sup>272</sup> He also noted the willingness of the Agricultural College to work with these farmers in order to produce the best crops.<sup>273</sup> During this trip, Paxman mostly praised the efforts of dry farmers, especially efforts at Kolob and a newly established dry farming subsistence community at Short Creek (5,049 ft). Paxman did warn farmers against impatience during the summer.<sup>274</sup> By not allowing their fields to fallow, farmers opened the possibility of exhausting the soil's water content.

The reason for the farmers' impatience is easily understandable. Bringing about a crop by dry farming in essence meant a two year commitment. After harvesting a crop of wheat one summer, farmers would then have to wait out the next summer in order for their field to fallow, all the while they had to remove weeds which consumed moisture stored within the soil, constantly harrow the soil, plant seeds in the spring, and hope that the seeds germinated and produced a crop of wheat that summer. LuWayne Wood recounted that moisture deficits could kill an entire crop of grain or corn.<sup>275</sup> In order to offset losses, a farmer needed at least 320 acres, and experiments showed that 640 was the amount needed in order to really make a profit. In 1910, only 59 out of 764 farms in all of Washington and Kane counties were large enough for this.<sup>276</sup> The plowing of such a large area meant owning plowing equipment, a team of horses, and from \$2,000 to \$5,000 to cover costs, which was more than most farmers could afford.<sup>277</sup> Dry farming,

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<sup>272</sup> Virgin, Hurricane, St. George, boxes 12, 25, 30 Utah Climate Center Weather Station reports, 1860-1992, USUSCA, Utah State University, Logan, Utah..

<sup>273</sup> "Praises Dry Farmers of Washington and Kane", *Washington County News*, June 10, 1915.

<sup>274</sup> "Dry Farms of Dixie are Looking Good", *Washington County News*, September 23, 1915.

<sup>275</sup> Wood, "Grafton, Utah", 13.

<sup>276</sup> U.S. Census Bureau, 1910 Census: Volume 7. Agriculture, 1909 and 1910, Reports by States, with Statistics for Counties: Nebraska-Wyoming, Alaska, Hawaii, Porto Rico, 731-732.

<sup>277</sup> "Some Dry Farm Questions", *Washington County News*, July 17, 1913.

for all of its water saving measures, required large amounts of money and time in order to be successful.

The large amount of resources required to engage in dry farming combined with the environment ended the dry farming revolution in Washington County. The streams of the Southwest experienced a period of entrenchment due to the wettest period in the basin's modern history from the 1880s to the early 1920s. This entrenchment created unstable rivers that shifted channels, gobbling up the land and making living along the riverbanks dangerous. This increased rainfall that ate away at the farmland of the Virgin River farmers made it possible for them to relocate farms to areas like the Big Plain. But as these rains decreased, these dry farm operations found it harder to grow the large crops that had been available in earlier years.



## Conclusion

### The End of the Pioneer Era and the Changed Landscape

By 1921 the Virgin River Basin no longer resembled the landscape described by Escalante or other American Explorers. The Parrusits, who farmed along Ash Creek were about to disappear as a people, the Santa Clara River was no longer a creek where corn grew, and few cottonwoods still grew along the riverbanks. The new landscape though was not filled with fields of cotton or citrus trees. Instead, vineyards, orchards, and villages lined the riverbanks. Canals watered fields of alfalfa grown on benches, and on plateaus enough rain fell to provide small harvests of corn and wheat.

This new Southern Utah Pioneer Hybrid Landscape was not created when the first Mormon settlers arrived at Santa Clara or when the largest group of colonists arrived in 1861. Instead, the creation took place over a period of several decades as the colonists adapted to the environment, clashed with the native locals, and climatic conditions changed. The Virgin River Basin landscape was not static and never has been. Even as settlers moved from towns like Grafton the landscape continued to change.

Many towns fell into decay leaving behind little but abandoned buildings. Zion Canyon became a National Park in 1919 and the populations of small towns like Oak Creek were relocated from inside the Park's boundaries in order to create a wilderness.<sup>278</sup> Visitors would begin flocking to the area creating a new tourist industry that would replace the agricultural industry that drove so much of the early history of the basin. One of Erastus Snow's grandchildren, a water engineer for Washington County, imagined

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<sup>278</sup> Ruesch, 7.

controlling the Virgin River on a larger scale than small diversion dams or canals by building large dams and reservoirs as part of a “Dixie Project.”<sup>279</sup> Cottonwoods and willows began a slow return to the floodplains of the river while a new invasive plant, the tamarisk, occupied the same space. The population of St. George would explode, becoming one of the largest metropolitan areas in the state of Utah. The Virgin River, despite all of the changes occurring around it, continued to shift its banks and flood during the summer monsoon season. Some things remained the same as fruit trees remained in abandoned settlements and alfalfa continued to be grown in towns like Hurricane. All of these changes are a story that will need to be told by further research.



Figure 5. Abandoned fruit trees in Grafton, Utah. These fruit trees were planted in Grafton and were still growing in 2021 a hundred years after the abandonment of the town. These trees exist as one of the lasting legacies of Southern Utah’s pioneer era. Photo Credit: Cindy McConkie.

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<sup>279</sup> Dixie Project, Series II-Colorado River Water Users Association (1938-1951), Box 2, Folder 1, Leo Alva Snow Papers, DSSCA

The Mormon settlers had a vision for the landscape that they could not fulfill. Instead, they modified their goals due to the changing environmental conditions adopting crops from the Paiutes and other cultures that grew better than cotton. They also brought in new technologies to further alter the landscape. All of these changes were brought about in the face of fluctuations within the climate and by a utilization of the region's water, soil, flora, and topography by the settlers. The resulting hybrid shows the complexity of studying the natural world.

As climate change continues to be one of the primary challenges faced by the modern world, understanding the changes caused by humans in environments like the Virgin River will become more important. These hybrid environments help to establish patterns regarding environmental change and provide examples of how humans have adapted to best suit their climate or in many cases failed to adapt. This story also shows the unintended consequences humans can have as they try to alter their environment to suit their needs. In order to better understand man's relationship with the natural world, we must take the lessons of the Virgin River Basin: landscapes are hybrid creations of nature and human culture.



Figure 6. The Virgin River in 2021. Notice the appearance of tamarisk on the left bank of the river. The removal of cottonwood trees by pioneer settlers provided space for these invasive plants. Photo Credit: Cindy McConkie.

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