Lost lake: A deep map of a farm field

by

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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this thesis. The Graduate College will ensure this thesis is globally accessible and will not permit alterations after a degree is conferred.

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DEDICATION

To C.I., Clark, and Lucca:

I endeavor to remain curious and pursue dreams as far as they take me,

for the three of you and for myself.

TABLE OF CONTENTS

	Page
LIST OF FIGURES	iv
ACKNOWLEDGMENTS	v
ABSTRACT	vi
CHAPTER 1. INTRODUCTION Examining Place, a Place, and a Sense of Place	1 2
CHAPTER 2. THEORY AND METHODOLOGY The Idea of Place Deep Mapping and the Deep Map Deep Mapping and Lake Cairo	8 9 17 22
CHAPTER 3. A FINE BODY OF WATER, ABOUNDING IN FISH A Distinct Ecosystem Managed and Built Spaces Lake Cairo in the Local Press	25 25 31 34
CHAPTER 4. IN ORDER TO ENLARGE THEIR DOMINATION OVER INANIMATE NATURE Worthless Land That Body of Water Will Soon Be Only a Reminiscence Obstacles and Opposition The Big Lake Cairo Farm Should Have Planted Bullheads Instead of Potatoes	42 42 45 51 58 63
CHAPTER 5. MUD LAKE IS DOOMED For Better Drainage Bitter Fight Is On Building Ponds The Future Looks Mighty Rosy	70 70 76 82 88
CHAPTER 6. CONCLUSION	91
BIBLIOGRAPHY	95
APPENDIX. LAKE CAIRO. IT BELONGS TO THE RIPARIAN OWNERS. FULL TEXT OF THE DECISION AS HANDED DOWN FROM THE DEPARTMENT OF THE INTERIOR. IT LOOKS LIKE TROUBLE FOR MR. KENT.	108

LIST OF FIGURES

	Page
Figure 1. The surficial geology of the Des Moines lobe in Hamilton and Webster Counties	28
Figure 2. Soil Series	29
Figure 3. D.A. Kent	49
Figure 4. Dredging Machine	81

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v

ABSTRACT

Farm fields are an integral part of the Iowa landscape. Seemingly simple-looking from the surface, an unknowing observer might consider a farm field a plain patch of dirt. Much less known is that these fields, with their built systems, make up the majority of space within the rural built environment. Today, these spaces are highly designed systems of infrastructure that includes miles of subterranean tile drainage. Through the process of deep mapping, which allows for the combination of multiple quantitative, qualitative, and multimedia data about a place with the purpose of building a spatial narrative, this project tells the story of Lake Cairo, a former lake located just northwest of Jewell in Hamilton County, Iowa. Lake Cairo is one example of many in a massive de-centralized and uncoordinated undertaking to drain the northern Iowa landscape of its lakes during the first part of the twentieth century. This process of change shifted the ecology and land use putting into motion changes that would affect the communities, economy, and the environment of Iowa for decades to come.

CHAPTER 1. INTRODUCTION

Looking out across the grasses, the horizon fell far away in every direction as low hills of the terminal moraine rose in the distance, enveloping the basin from the east and the west. The grasses, both tall and short, rocked in the breeze. There always seemed to be a breeze across this mostly flat landscape of north-central Iowa. Birds flew out of their cover in the grasses, having just fed on the many insects that spent time collecting pollen from the flower blossoms of mid-August. The birds flew up into the blue sky. Late summer, the weather was warm, but not too warm, with a light breeze and a beating sun. Shade was scarce except for a small band of trees, which sat along the north shore of a lake. The lake was lower than the surrounding prairie; itself filled with reeds and grasses. The lake was large, and the surface of the water stretched out as small waves flowed across it. Dotted here and there were the mounds of muskrats, and perhaps, a beaver. The entrances to their homes were submerged for protection from predators like coyotes. Occasionally, at dawn or dusk, deer walked through the landscape, eating and drinking, moving from one place to the next on their nomadic voyages across the prairie. The landscape seemed alive with movement as if all the flora and fauna were dancing amongst each other.

In Hamilton County, Iowa, just a mile or two north of Jewell and a few miles south of Kamrar, a lake sat nestled into the prairie landscape. This area, particular within Iowa, was known for the wet prairie. Unlike many of the other lakes, ponds, and marshes in the area, this lake was large. Known as Lake Cairo, this lake was much larger than all other bodies of water in the county. Today, if out on a drive through the countryside, turn west onto 320th Street just north of Jewell off Highway 69. About two and a half miles down the road, park the car. Stand alongside the road and look to the north across the cornfield. What appears to the average viewer as a farm field filled with thousands of rows of corn has a deeper history to tell. This overlooked place, a farm field, likely taken for granted by the people who drive past it on the average day is, first and foremost, a <u>place</u>. The farm field is a place with many layers of history and systems at work. Various forces at various times in history set these systems in motion. Now all work together to make this place seem just like the next farm field in the next section, township, or county. What cannot be seen by the average viewer, standing alongside the gravel road, is just

how different this place was, and still is, from the next. Look north into the distance and see the band of trees along what was the north shore of Lake Cairo.

Examining Place, a Place, and a Sense of Place

This thesis is an experiment that combines a few big ideas with a methodology. The methodology, deep mapping, has evolved and become recognized within the field of history with the spatial turn of the past few decades.¹ All ideas come together around the theme of place, and how the theory of place paired with a specific place can be both a method and subject of historical inquiry. This thesis is an ode to the specific place, the farm field described in the paragraphs above, that exists in Hamilton County, Iowa today. The ways the place changed over time, the systems involved, and how those systems came to be used in the farm field make this thesis a work of environmental history. In his environmental history of Seattle, *Emerald City*, Matthew Klingle wrote, "The human and non-human unfold in time, and inhere, in place, and we live with the outcomes. To ignore our connection to place is to reap the returns of historical ignorance. To face it squarely, though, is first to acknowledge the consequences of human actions, past and present, and then to develop a more expansive ethic of place."² Klingle called on historians to uncover and study the connection between place, whether in a natural or built environment, and humans as a way to better understand the past and consequences of the past on the present and future.

The narrative of Lake Cairo begs a few questions that lie at the foundation of this research. First, what qualifies a place as valuable? Inherently, the people that interact with the

¹ Jo Guldi, "The Spatial Turn in History," *Spatial Humanities* (Charlottesville: University of Virginia Library), Accessed on February 4, 2019, Available at http://spatial.scholarslab.org/spatial-turn/the-spatial-turn-in-history/index.html.

² Matthew W. Klingle, *Emerald City: An Environmental History of Seattle* (New Haven: Yale University Press, 2009) 270.

place ascribe it with value. Places may be purported to be valueless due "to a subtle dismissal of the landscape" often described as "empty" or "nothing."³ This attitude also dismisses the nature and histories of people that existed within the place in the past as well as in the present. When Euro-American people first started to settle onto the prairies, they redefined how they lived within their surroundings and reshaped the land fitting it to their needs.⁴ These changes continued based on how people adapted to their place and how societal values changed over time. Second, why do some places hold more value than others, and more particularly, why does some nature hold more value than other nature? Consider the prairies of Iowa and Yosemite National Park. In her chapter, "The Great Plains," historian Julie Courtwright noted that these imputed valueless places often lack vertical landscape features.⁵ What the prairie ecosystem lacks in verticality, it makes up for in distance, flatness, and vast open space. Both types of places, prairies and mountain ranges, contain ecosystems that are vital to the health of the region they exist within and the regions around them. Euro-Americans valued prairies for the same features, distance, flatness, and vast open space, that people attribute to emptiness. Settlers converted the prairie ecosystem to agricultural use. The ease of conversion, after the moldboard plow was invented, made prairie places more valuable for the agricultural potential than the natural ecosystem. This narrative about Lake Cairo presents an example of how and why the ways people value a place changes over time.

Also important is the methodology, deep mapping, which is the combination of a wide variety of sources to tell a more complete narrative of a place. The act of deep mapping, the

³ Julie Courtwright, "The Great Plains," *The Routledge History of Rural America*, Pamela Riney-Kehrberg, ed. (New York: Routledge, 2016), 70-71.

⁴ Elliot West, *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado* (Lawrence: University of Kansas Press, 1998).

⁵ Courtwright, "The Great Plains."

methodology and theory, produces deep maps in practice. These deep maps communicate the depth of knowledge that exists within interstitial places, or places that are overlooked, forgotten, or misunderstood. Geographers have a long-standing critique that space and place became a backdrop to history instead of a focus. This is a critique of historians and part of the reason for the spatial turn within the field of history. Historian Kate Brown makes the case that a landscape can be used as a primary source, something to be studied and learned from to have a better understanding of a place, just as historians use journals, census records, and newspapers to better understand and interpret history. In her book, Dispatches from Dystopia, Brown questioned what made the Kazakh steppe, seemingly empty space, a place. She wrote that when European settlers arrived, what bothered them "the most was the emptiness: the stillness with nothing behind it."⁶ The settlers referred to the land as "the naked steppe,' devoid of water, trees, streams, houses, people -- geography itself -- empty of everything but space."7 Brown made clear that what the settlers did not realize was the steppe was recently cleared of the nomadic ethnic groups of people who once lived there. The land "was not empty but emptied."⁸ The land had a history, a sense of place, that was not immediately knowable to the new inhabitants.

Deep mapping can be used as a tool to better understand these interstitial places and the sense of place, or value of the place, and how the sense of place changed over time. As historian Richard White showed with his book, *The Organic Machine*, environments are not just natural or built systems but a combination of the two. They exist in a delicate balance, constantly in flux, and the balance shifts due to natural forces and human forces.⁹ The farm field is a designed space

⁶ Kate Brown, *Dispatches from Dystopia: Histories of Places Not Yet Forgotten* (Chicago: University of Chicago Press, 2015) 111-112.

⁷ Brown, Dispatches from Dystopia: Histories of Places Not Yet Forgotten, 111-112.

⁸ Brown, Dispatches from Dystopia: Histories of Places Not Yet Forgotten, 111-112.

⁹ Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995).

of the rural built environment, altered by human forces into an organic machine, that exists so subtly within the landscape that the average viewer only knows what can be seen from the side of the road. The human forces within the organic machine are the forces that attribute value or a sense of place. Geographer Tim Cresswell described a sense of place as "the subjective and emotional attachment that people have to place."¹⁰ How people attribute value is complex. Also complex is what makes a place more or less valuable. The farm field also shows the relationship between people and nature over time. Cresswell continued, "Place, at a basic level, is space invested with meaning in the context of power."¹¹ Power, and who or what was in power, shifted in Hamilton County over time. By using the landscape, the farm field, as an example the ways in which power changed over time becomes apparent.

The main primary sources for this thesis were newspapers ranging from 1868 to 1961, combined with other sources typically used by historians including magazine articles, journal articles, court cases, and bills passed by the Iowa Legislature. Other primary sources included climatic data, ecological information, soil surveys, maps, geographic information systems, geological information, and archaeological reports. The wide variety of data, including data typically reserved for prehistory or geological history, is a requirement of the deep mapping methodology. In his book, *Half-Earth*, biologist Edward O. Wilson stated the importance of this. He wrote, "The two levels, biological and cultural, flow one into the other. This is the reason that history makes no sense without prehistory, and prehistory makes no sense without biology."¹² Through a close reading of the sources a pattern emerged. For Lake Cairo, the relationship between people and nature shifted several times. Humans used, managed, cultivated, and heavily

¹⁰ Tim Cresswell, *Place: An Introduction* (Hoboken: Wiley Blackwell, 2014) 12.

¹¹ Cresswell, *Place: An Introduction*, 19.

¹² Edward O. Wilson, *Half-Earth: Our Planet's Fight for Life* (New York: Liveright Publishing Corp., 2017) 192-193.

changed the landscape, altering it into what would best suit their needs. Topics included wayfinding, beauty, recreation, agriculture and cultivation, experimentation, capitalism, and conservation.

The organization of this thesis is mostly chronological. The bulk of the history discusses Lake Cairo from 1868, the first time the lake was mentioned in the Iowa newspapers, to 1961. This was the last time the lake was mentioned in local newspapers that pertains significantly to the narrative. While human characters and institutions are interwoven into the story of Lake Cairo, the lake itself, remains the subject and protagonist. Chapter two introduces the theory behind the idea of place, and also, the differences between the ideas of place and space. It delves into what a deep map is and how the methodology of deep mapping is used. Chapter three introduces Lake Cairo and the history of the lake to the early-1890s. Chapter four presents a major pivot point in the history of Lake Cairo as well as the main character behind the changes. Chapter five discusses the fate of the lake and the reason why a farm field currently sits in the location formerly known as Lake Cairo.

The history of Lake Cairo is one example of a trend that occurred across the northern half of Iowa starting in the 1890s to the 1930s. This trend was the drainage of the natural ecosystem for agricultural purposes. With Lake Cairo, one person initiated the great change that was to happen to the lake over the course of twenty-five years. While this single farmer may not have caused an entire ecosystem change, a pattern of decentralized actions taken by individuals and local governments changed the entire character and ecosystem of the northern half of the state. The value of the place, or how people perceived Lake Cairo, shifted from a place of recreation and beauty to a swamp land "to the best farm field in the state which means in the world."¹³ The

¹³ "Brains Produce Money," Ames Intelligencer, October 4, 1894.

farmers had agency to change the ecosystem as a result of improved technology, new federal and state policy, and a capitalistic worldview. Drainage was a form of land conservation when the practice took off in the 1890s to the 1930s. This mentality also changed, for some, as time went on. From 1868 to 1911, Lake Cairo transformed from an identifying feature on the landscape that was valued for its beauty and recreational uses to another farm field. Within one hundred years' time, the attitudes of humans about this farm field, and the value they attributed to it, came almost full circle. The history of Lake Cairo demonstrates how human action, in many little, decentralized ways changed an entire ecosystem across northern Iowa forever.

CHAPTER 2. THEORY AND METHODOLOGY

Now: we ride a ridge, then edge down, the truck tilting laterally, a bit precariously I think, cross a pond dam, climb again, then down, make a zigzag course across creeks I'd have thought impassable, rise again to hit an eroded and invisible cattle trail that slams the wheels hard, stop for me to open a gate, and on, another gate, and all the time I marvel at Paul's navigation over this grassland that to a novice carries the sameness of face as a sea. He has no compass: on a cloudy day, he takes his direction from the wind and gets lost only with an abrupt shift of the blowing or on a foggy day when there is no wind.¹⁴

Written by William Least Heat Moon, in his book *Prairyerth: A Deep Map*, the excerpt above is thick, rich description of a small place in Chase County, Kansas. Least Heat Moon wove a vivid mental picture of a drive through the grasslands of central Kansas. This excerpt, and Least Heat Moon's book, are examples of a deep map. Deep maps and the process of deep mapping are relatively recent methodological additions within the toolbox of the spatial humanities. Used by a variety of interdisciplinary authors, the process of deep mapping provides a deep, multi-layered understanding about a place. This is a basic definition created from sifting through dozens of ideas about what a deep map actually is and what the process of deep mapping actually looks like. The result of the aforementioned sifting provided more questioning than clarification.

This historiography was an exercise in paradoxes, which originally set out to accomplish two things. The first is to provide an understanding of the theory of place and sense of place, and the second is to define the process of deep mapping and the product of deep maps. Deep maps are interdisciplinary, both with the fields of the various authors, but also within the types of information included in the writing. Though typically used to describe small, rural places, deep maps can and have been used for places of intersection, rivers, concentration camps, cities,

¹⁴ William Least Heat Moon, Prairyerth: A Deep Map (Boston, MA: Mariner Books, 1999), p. 151.

literature, and public art. It seems that the process of deep mapping can be useful for many complex places, whether rural or not. Finally, what a deep map looks like as an end product is vague. To some, a deep map is solely textual; to others a deep map is focused on visualizations of information with text used only in support of the illustrations.

As the diverse fields of deep map makers suggests, the final product of a deep map is just as interdisciplinary. Through the deconstruction of several examples, this historiography provides many definitions of what the process of deep mapping and the product of a deep map could be. This historiography raises more questions than perhaps it answers. Despite the undefinition, deep mapping is an effective way of writing about place and a sense of place through an interdisciplinary lens. Just as a deep map is always shifting and changing, the scholarship of deep mapping and deep maps will change over time with the addition of more information.

The Idea of Place

The concept of place, or the historical progression of place as an idea, traces back to Aristotle and Plato in Ancient Greece. Plato wrote of a limited sense of place as simply, a location, and Aristotle defined place as a container.¹⁵ While place as an idea is quite old, scholars began to develop place as more than a location or container in the nineteenth century. French philosopher Gaston Bachelard was particularly concerned with the connection between memory and place. For Bachelard, memory is "the recollection of the past in the present," which is "sited in space."¹⁶ In his famous book, *The Poetics of Space*, Bachelard wrote about place through interior space and how it "provides appropriate places for the soul or psyche."¹⁷ German philosopher Martin Heidegger believed that place was central to human existence. He used the

¹⁵ Tim Cresswell, *Place: An Introduction* (Chichester, United Kingdom: John Wiley & Sons Ltd, 2015), p. 25.

¹⁶ Cresswell, *Place: An Introduction*, p. 30.

¹⁷ Cresswell, *Place: An Introduction*, p. 30. & Gaston Bachelard, *La Poétique de l'Espace* (Paris, France: Presses Universitaires de France, 1958; Translated to English, 1964).

word *dasein*, which translated to 'being there' or 'being in,' within his work. The idea of *dasein* "marked a stronger connection between a thing and its place" as the idea was concerned with an engaged connection to place.¹⁸ Heidegger believed the "act of place creation produced space."¹⁹

In the 1970s, humanist geographer Yi-Fu Tuan and geographer Edward Relph changed the focus of place within humanism and humanist geography. Human geographer Tim Cresswell wrote that place was "a universal and transhistorical part of the human condition. It was not so much places (in the world) that interested the humanists but 'place' as an idea, concept, and way of being-in-the-world."²⁰ In the twenty-first century, philosopher Edward Casey wrote that place became a more analytic and universal topic.²¹ Most recently, the spatial humanities, and more specifically spatial history, have become an addition to academia. Scholars have been working within this field since the 1980s, developing the field to bring greater understanding and a new perspective of the idea of place throughout history. Some scholars have started to use other methods within the spatial humanities to visually recreate places and events for new perspectives and understanding.

The word, place, can be defined in many ways. A simple definition from the dictionary defines place as "a physical environment."²² As Cresswell noted, defining a place can be as simple as a city, town, or neighborhood. Place can also be defined as a way of knowing or as an object, which can be "obscure and hard to grasp."²³ Most importantly, place is a "complicated interplay between people and the environment," whether the environment is built, natural, or

¹⁸ Cresswell, *Place: An Introduction*, p. 27-28.; Martin Heidegger, *Sein und Zeit* (New York, NY: Harper Perennial Modern Thought, 2008).

¹⁹ Cresswell, *Place: An Introduction*, p. 28.; Heidegger, *Sein und Zeit.*

²⁰ Cresswell, *Place: An Introduction*, p. 35.

²¹ Edward S. Casey, *Getting Back into Place: Toward a Renewed Understanding of the Place-World* (Bloomington, IN: Indiana University Press, 2009).

²² Merriam-Webster, Incorporated, 2019.

²³ Cresswell, *Place: An Introduction*, p. 18.

wilderness.²⁴ To understand this, place is categorized two ways, through epistemology and ontology. Epistemology is the theory of knowledge, especially with regard to its methods, validity, and scope, and the distinction between justified belief and opinion: a way of knowing.²⁵ Ontology is a particular theory about the nature of being or the kinds of things that have existence: a thing in the world.²⁶ Place is both "as much a way of knowing as it is a thing in the world."²⁷ Beyond these basic ideas of place is the addition of meaningfulness.

According to Cresswell, place is not place but merely space unless it has been made meaningful by a person or a group of people.²⁸ Meaningfulness adds value to a space, and by adding value to a space, it becomes a place. A simple way to think about this idea is by relating it to a location; a place is a meaningful location. This definition is reductive as place is a more complicated idea than just a location. Political geographer John A. Agnew described a place as having three parts. First, he said that a place must have a location that can be found on a map. Second, a place must have a locale, which is understood as a material setting for social relations. Third, a geographical place must have a sense of place, which is the subjective and emotional attachment that people have to that place.²⁹ A sense of place is what Relph described as "essence."³⁰ Relph wrote that the "essence of place lies in the largely un-self-conscious intentionality that defines places as profound centers of human existence."³¹ Place is vital to human existence and explicitly tied to human experience. Relph pairs his idea of essence with

²⁴ Cresswell, *Place: An Introduction*, p. 18.

²⁵ Oxford University Press, 2019.

²⁶ Merriam-Webster, Incorporated, 2019.

²⁷ Cresswell, *Place: An Introduction*, p. 18.

²⁸ Cresswell, *Place: An Introduction*.

²⁹ Cresswell, *Place: An Introduction.* & John A. Agnew, *Place and Politics: The Geographical Mediation of State and Society* (Boston, MA: Allen & Unwin, 1987).

³⁰ Cresswell, *Place: An Introduction*, p. 38. & Edward Relph, *Place and Placelessness* (London, United Kingdom: Pion, 1976).

³¹ Relph, *Place and Placelessness*, p. 43.

the concept of intentionality as the act of having purpose. Intentionality is vital for both the place and the people within the place as "the only way humans can be humans is to be 'in place'. Place determines human experience."³² Relph's essence takes form when a space is deemed valuable to a human and the experiences associated with that space. A sense of place, or essence, forms when people assign meaning or intentionality on a location within the physical environment. In turn, place (or places) allows humans to fully experience life.

In theory, place is egalitarian as it allows all humans to fully experience life. Agnew and Jonathan Smith discuss place as an idea that is "bottom-up" as all people have the opportunity to experience place.³³ Somewhere as simple as a house, workplace, or outdoor area allows any person to experience place. Typical folk can participate in the making of place through their everyday lives as it "is inscribed in space and takes on meaning for specific groups of people and organizations."³⁴ Place is a concept that is used, thought of, or experienced in everyday life by all people. Cresswell wrote, "We live in one place, work in another, play football in another. But we are also willing to protect our place against those who do not belong, and we are frequently nostalgic for places we have left."³⁵ The willingness to protect or have nostalgia for a place, or places, reveals "the deeper significance of place to human 'being."³⁶ Place can be mundane as people go through the everyday routine of their lives. Despite the banality, everyday places can be imbued with a sense of place by the people who experience them. Through these typical, overlooked experiences, people build on their knowledge of place and places.

Place is infused into everyday life, whether experienced at a local, regional, or global

³² Relph, *Place and Placelessness*, p. 43.

³³ John A. Agnew & Jonathan M. Smith, *American Space/American Place: Geographies of the Contemporary United States* (New York, NY: Taylor and Francis Group, 2002).

³⁴ Agnew & Smith, American Space/American Place: Geographies of the Contemporary United States, p. 5.

³⁵ Cresswell, *Place: An Introduction*, p. 36.

³⁶ Cresswell, *Place: An Introduction*, p. 36.

scale. The scale of place can change drastically, and all the while, still hold a sense of place. At home is localized place, while within a community or neighborhood the scale of place expands. Regardless, all are place, and both can have a sense of place. Scale is a contentious idea within place as Cresswell wrote that a location cannot be too small, while Tuan disagrees. For Tuan, "Place can be as small as the corner of a room or as large as the earth itself: that the earth is our place in the universe is a simple fact of observation to homesick astronauts."³⁷ Place is difficult to define and, for Tuan, most definitions are arbitrary. Agnew and Smith expanded the idea of place further through "larger areas, depending upon patterns of activities, network connections, and the projection of feelings of attachment, comfort, and belonging."³⁸As Tuan described above, scale is important, but also, arbitrary within the idea of place. A global community can be considered place as well as a network whether it is tangible or intangible. The scale of place is also subjective, and sense of place is often defined by the person experiencing the place.

Just as scale is arbitrary within the idea of place, so is the fact that place is not necessarily static. Place does not have to be a single location. It does not need to be fixed to be a place. Both Relph and Tuan quoted philosopher Susanne Langer in their scholarship. She wrote, "A ship constantly changing its location is nonetheless a self-contained place, and so is a gypsy camp, an Indian camp, or a circus camp, however often it shifts its geodetic bearings. Literally we say a camp is in a place, but culturally it is a place."³⁹ This idea expands the definition of place. Place can be mobile. It is not always static but can be moveable. Just as the "gypsy" camp settled into the location where the "Indian" camp previously was, does not mean that the place or the sense of place was the same after the change of groups of people happened.⁴⁰ This intangibility or

³⁷ Yi-Fu Tuan, "Space and Place: Humanistic Perspective," *Progress in Human Geography* 6, p. 245.

³⁸ Agnew & Smith, American Space/American Place: Geographies of the Contemporary United States, p. 5.

³⁹ Relph, *Place and Placelessness*, p. 29.

⁴⁰ Use of the word gypsy is in reference to the quote in footnote 24, as an old term for the Romani people. This word

move-ability of a sense of place can be difficult to grasp. As Langer stated a place can physically move, like a ship. A sense of place can also move as the individual or group of people who assign essence onto the place move. As with the example of the Indian camp, the sense of place moved with the community of people. Thus the community became the place, and the geographical location became less relevant.

Two important concepts that help to define the idea of place are topophilia and topophrenia. Outlined and described in Tuan's famous book, *Topophilia: A Study of Environmental Perceptions, Attitudes, and Values,* the definition of topophilia is "the affective bond between people and place or setting."⁴¹ Essentially, topophilia is the intense love of place or a place. Sense of place plays an important role within the idea of topophilia. Contrarily, topophobia is, as Relph wrote, "all the negative emotional responses people have to spaces, places, and landscapes that they find distasteful or frightening."⁴² People have positive (topophilia) and negative feelings about place (topophobia). Relph presented several words that are tied to the negative feelings of place. These include: placelessness, non-places, dislocation, uprooting, dystopia, displacement, delocalization, and disembedding.⁴³ Often these words become associated with a place due to the loss of topophilia or the addition of topophobia as through experiences the place becomes hated. Robert Tally Jr., Professor of English, argued that every place has topophilia and topophobia, thus creating a combination of feelings that he called topophrenia. Topophrenia refers to a "spatial anxiety" and "uneasy place mindedness."⁴⁴ This

was originally used by Susanne Langer in the 1950s with continued use in this paper when referencing her original historic quote. The author of this paper does not intend the use of the word in a derogatory way.

⁴¹ Yi-Fu Tuan, *Topophilia: A Study of Environmental Perception, Attitudes, and Values* (New York, NY: Columbia University Press Morningside Edition, 1974), p. 4.

⁴² Edward Relph, "Topophobia," *Placeness, Place, Placelessness*, Retrieved on April 1 from <u>http://www.placeness.com/topophobia/</u>.

⁴³ Relph, "Topophobia."

⁴⁴ Robert T. Tally Jr., *Topophrenia: Place, Narrative, and the Spatial Imagination* (Bloomington, IN: Indiana University Press, 2019), p. 1.

melding of topophilia and topophobia is a "simultaneous sense of place-consciousness coupled with a feeling of disorder, anxiety, and dis-ease," and no place is complete without a combination of both the positive and negative aspects of the place⁴⁵

As scholars attempt to define the idea of place and sense of place, many make the effort to distinguish between place and space. Similar, though very different, Tuan, Cresswell, Relph, and others focus on the differentiation between space and place to add to the definition of place. Often space and place are considered one in the same thing, but they are not the same. One is essential for understanding the other. Tuan wrote, "Space' is more abstract than 'place." Space becomes place as it is endowed with value. Tuan describes "space as that which allows movement" and place as the pause.⁴⁶ The transformation of space happens when people pause; after a pause, meaning is given to a space, and it becomes place. Cresswell contrasted the two ideas. He added, "Tuan developed a sense of space as an open arena of action and movement while place is about stopping and resting and becoming involved."⁴⁷ Cresswell's idea added a sense of motion, process, and time to the transition as space turns into place. After a person in the space completed an action and decided to take a rest, the space became place. The person gave meaning to the point and location of rest transforming it from a space, without meaning, to a place, with meaning. This process is known as placemaking. At this point in the placemaking, the person added value and belonging to the place. As Tuan wrote, "While space is amenable to the abstraction of spatial science and economic rationality, place is amenable to discussions of things such as value and belonging."48

⁴⁵ Tally, *Topophrenia: Place, Narrative, and the Spatial Imagination.*

⁴⁶ Yi-Fu Tuan, *Space and Place: The Perspective of Experience* (Minneapolis, MN: University of Minnesota Press, 1977), p. 6.

⁴⁷ Cresswell, *Place: An Introduction*, p. 35.

⁴⁸ Cresswell, *Place: An Introduction*, p. 35.

Places with value and belonging are important to many. Just as Agnew and Smith discussed place as happening from the bottom-up of everyday life, space is top-down. The power shifts as space is defined by those in power, which imposes control on those not in power.⁴⁹ Agnew and Smith defined space as "a field of practice in which a group operates, held together in popular consciousness by a map-image and a narrative or story that represents it as a meaningful whole."⁵⁰ An example of a group could be a government or state that often has control over the access to and experiences within space. An action often made to turn space into place is through naming the space.⁵¹ As Cresswell wrote, "A realm without meaning" is not a place, but simply space.⁵² Naming a space is a powerful action that adds meaning to the space, and ultimately, turns that space into a place that can be described to another person or added to a document. The naming of the space gives the place identity.

Cresswell also wrote that it is important to distinguish between space, place, and landscape. All are interconnected, yet different. He described landscape as "the portion of the Earth's surface that can be viewed from one spot."⁵³ Landscape and place can be separated from each other through the physical location of the viewer. If the viewer is looking beyond where they stand, they are viewing the landscape. They are not a part of the landscape they are viewing. Cresswell wrote, "This is the primary way in which it [landscape] differs from place. Places are very much things to be inside of."⁵⁴ Landscapes are the shape, or material topography, of a piece of land. They are not lived in but looked at.⁵⁵ On the other hand, space is "amorphous and

⁴⁹ Agnew & Smith, American Space/American Place: Geographies of the Contemporary United States.

⁵⁰ Agnew & Smith, American Space/American Place: Geographies of the Contemporary United States, p. 5.

⁵¹ Cresswell, *Place: An Introduction*, p. 15.

⁵² Cresswell, *Place: An Introduction*, p. 16.

⁵³ Cresswell, *Place: An Introduction*, p. 17.

⁵⁴ Cresswell, *Place: An Introduction*, p. 17.

⁵⁵ Cresswell, *Place: An Introduction*, p. 17-18.

intangible."⁵⁶ Relph noted that when describing a space "there is nearly always some associated sense of place."⁵⁷ Space and place, though separate ideas, are interdependent, and often, used to describe each other.

This introduction into the theory of place is the foundation for the methodology described in the rest of this chapter, deep mapping. The ideas of place and a sense of place are complex, and often, hard to grasp. From Bachelard and Heidegger's connections between place, memory, and time to Agnew and Smith's definition of place as egalitarian and intangible, the idea of place has a long history within scholarship. Place is a word with many meanings, but at the foundation of the definition is the interaction of people within spaces. As Cresswell wrote, places "are all spaces which people have made meaningful. They are all spaces people are attached to in one way or another. This is the most straightforward and common definition of place -- a meaningful location."⁵⁸ With this in mind, the rest of this chapter will focus on the methodology of deep mapping as a tool to understand and document place.

Deep Mapping and the Deep Map

Place is an interdisciplinary concept as noted by the many different types of scholarship that study place. The concept of place exists within the arts, humanities, and social sciences. Scholars within the interdisciplinary field of the spatial humanities put the idea of place at the center of many topics of study within the field. One branch of the spatial humanities is spatial history. According to historian Tiffany Earley-Spadoni, "Spatial history is a field that emerged in the early 2000s at the nexus of the digital humanities, geography, sociology, anthropology, and

⁵⁶ Relph, *Place and Placelessness*, p. 8.

⁵⁷ Relph, *Place and Placelessness*, p. 8.

⁵⁸ Cresswell, *Place: An Introduction*, p. 12.

history."⁵⁹ Scholars refer to this shift in the field as the spatial turn.⁶⁰ The shifts run deeper than simply a change in methodology. The scholars of the spatial turn seek to "reject the universal truths, grand narratives, and structural explanations that dominate the social sciences and the humanities during much of the last century."⁶¹ The idea of place comes to the forefront in the efforts to understand the particular and the local.⁶² Ultimately, the spatial turn is an attempt to understand culture through "how it developed in certain circumstances and in certain times and at certain places."⁶³ For historians, this turn is important; it provides a route for new perspectives on historic events and places. As historian John Lewis Gaddis wrote, "In 'mapping' the past, the historian too is laying down a grid, stifling particularity, privileging legibility, all with a view to making the past accessible for the present and the future...the effect is both constraining and liberating: we oppress the past event as we free it."⁶⁴ Thus the spatial turn can be revisionist providing more context and perspective to narratives that may not have been there before. Display and analysis of the complexity is the goal in this intersection between human agency, place, and time. One methodology proposed to provide an organizational structure is deep mapping.

In 2012, scholars David J. Bodenhamer, John Corrigan, and Trevor M. Harris began to compile ideas about deep maps and spatial narratives in an attempt to better define the emerging methodology. They define deep mapping as "simultaneously a platform, a process, and a

⁵⁹ Tiffany Earley-Spadoni, "Spatial History, deep mapping and digital storytelling: archaeology's future imagined through an engagement with the Digital Humanities," *Journal of Archaeological Science, 84* (Amsterdam, Netherlands: Elsevier), p. 95.

⁶⁰ David J. Bodenhamer, John Corrigan & Trevor M. Harris, *Deep Maps and Spatial Narratives* (Bloomington, IN: Indiana University Press, 2015).

⁶¹ Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives, p. 9.

⁶² Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives.

⁶³ Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives, p. 9.

⁶⁴ John Lewis Gaddis, *The Landscape of History: How Historians Map the Past* (New York, NY: Oxford University Press, 2002), p. 135.

product."⁶⁵ As a platform, a deep map has "the power of the map to display information cartographically in a manner that provides fresh perspective and new insights into the study of culture and society."⁶⁶ This emphasis on a fresh perspective and the interdisciplinary nature of deep mapping is important. Bodenhamer et al., themselves, are evidence of the importance of interdisciplinary studies within the methodology of deep mapping as an historian, religious studies scholar, and geographer respectively. The many types of information available to study the idea of place or a place is staggering. The authors questioned, "How might we combine the obvious strengths of geographic understanding with the focus on the ineffable, the irreducible, and the particular? How might we integrate structure, process, and event? How might we combine space, time, and place?"⁶⁷ Their answer was through narrative. Narrative is a tool used by historians to construct a portrait of a person, event, or place. Bodenhamer et al. wrote, "Narrative encourages the interweaving of evidentiary threads and permits the scholar to qualify, highlight, or subdue any thread or set of them. It uses emphasis, nuance, and other literary devices to achieve the complex construction of culture, past and present."68 The complexity of the available information led to the need for a defined methodology that could incorporate and contain the complexity; thus deep mapping became one solution.

While a traditional map is a drawing that represents space, a deep map is a combination of many different types of material to give a deep understanding of a specific place. As Bodenhamer et al. wrote, "The spatial considerations remain the same: geographic location, boundary, and landscape remain crucial. What is added is a reflexivity that acknowledges how engaged human agents built spatially framed identities and aspirations out of imagination and

⁶⁵ Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives, p. 3.

⁶⁶ Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives, p. 2-3.

⁶⁷ Bodenhamer, Corrigan & Harris, *Deep Maps and Spatial Narratives*, p. 3.

⁶⁸ Bodenhamer, Corrigan & Harris, *Deep Maps and Spatial Narratives*, p. 2-3.

memory...⁶⁹ This material-gathering is part of the process of deep mapping. The types of material used are diverse including historic documents, oral history, personal experience, biography, archaeology, ecology, folklore, natural history, science, weather, and storytelling.⁷⁰ According to Bodenhamer et al. there are "endless connections among events and actors" and the "interrelatedness plays itself out with two dimensions -- space and time.⁷¹ Included within the idea of space and time is the concept of place, or as Bodenhamer et al. described it, "occupied space.⁷² Time is expanded to include memory, imagination, and experience. Thus deep mapping is the process of combining these many ideas into one narrative of a place, which traditionally has been small in scale and rural.

A deep map as a product is less cohesive than a deep map as a platform or process. Due to the many disciplines that work with the methodology of deep mapping, the final product varies greatly between disciplines. Bodenhamer et al. described the deep map product as "a finely detailed, multimedia depiction of a place and the people, animals, and objects that exist within it and are thus inseparable from the contours and rhythms of everyday life."⁷³ They argued that deep maps are not only tangible but include feelings like the "dreams, hopes, and fears of residents" that live in the place.⁷⁴ Just as place varies in scale, so does the deep map, which can "reveal the ties that places have with each other...and range from the local to the global."⁷⁵ Just as with a traditional map, a deep map revolves around spatiality of the place that it is about; location and landscape remain important parts of a deep map. A traditional map may

⁶⁹ Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives, p. 3.

⁷⁰ Tim Ingold, *The Perception of the Environment: Essays on Livelihood, Dwelling, and Skill* (New York, NY: Routledge, 2011).

⁷¹ Bodenhamer, Corrigan & Harris, *Deep Maps and Spatial Narratives*, p. 2.

⁷² Bodenhamer, Corrigan & Harris, *Deep Maps and Spatial Narratives*, p. 2.

⁷³ Bodenhamer, Corrigan & Harris, *Deep Maps and Spatial Narratives*, p. 3.

⁷⁴ Bodenhamer, Corrigan & Harris, *Deep Maps and Spatial Narratives*, p. 3.

⁷⁵ Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives, p. 3.

stop there, but a deep map contains knowledge about how the "engaged human agents build spatially framed identities and aspirations out of imagination and memory and how the multiple perspectives constitute a spatial narrative."⁷⁶ Thus a deep map, as a product, could be visual, textual, or a combination of both. A deep map could be two dimensional or three dimensional; it could be tangible as in touchable or intangible as in audible, performed, or read. A deep map, as a product, is fluid, and the deep mapmaker can change the deep map in the ways that work best for the particular narrative.

Beyond the basic definitions of a deep map, the method, or process, of deep mapping is varied. The process includes the items listed above, or as a deep map becomes less connected to a location, it becomes more theoretical. Visual theorist Clifford McLucas wrote a manifesto of deep mapping, calling for a set of tenets that each deep map should contain. A few of his ideas include the variety of media that should be used to form a deep map, the importance of interdisciplinary collaboration within the creation of a deep map, and ability of a deep map to change over time as the narrative represented by the map dictates.⁷⁷ McLucas' manifesto shows that while many are striving to define a deep map, perhaps the greatest strength of the methodology is the fluidity. While Bodenhamer et al. have a definition with set parameters, they seem to agree with McLucas as "the deep map offers the potential for an open, unique postmodern scholarship that embraces multiplicity, simultaneity, complexity, and subjectivity."⁷⁸ Grand narratives are not the aim. Rather "a spatially facilitated understanding of society and culture embodied by a fragmented, provisional, and contingent argument with multiple voices,

⁷⁶ Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives, p. 3.

⁷⁷ Clifford McLucas, *Deep Mapping*, Retrieved on April 1, 2019 through <u>http://www.cliffordmclucas.info/deep-mapping.html</u>.

⁷⁸ Bodenhamer, Corrigan & Harris, *Deep Maps and Spatial Narratives*, p. 5.

views, memories, allowing them to be seen and examined at various scales."⁷⁹ The complexity of the information used to craft the narrative reduces "promises an alternate view of history and culture through the dynamic representation of memory and place, a view that is visual and experiential, fusing qualitative and quantitative data within real and conceptual space."⁸⁰ Thus a deep map, as platform, process, and product, is fluid and changing. The scholars that use the methodology of deep mapping invite revision to the definition as research continues and more information is added to the ever-growing field of the spatial humanities.

Deep Mapping and Lake Cairo

The process of deep mapping is fluid, and the product of the deep map varies based on the disciplines and topics involved. There is not one commonly held deep mapping system or one definition of what a deep map must be. This section focuses on what was involved in the process of deep mapping for this thesis and proposes a definition of the process and outcome. The deep map making process for this thesis can be broken into four characteristics. First, deep mapping involves a variety of sources, and some may not be typical for historical narratives. Qualitative and quantitative data, as well as emotion and meaning, about the specific place combine to make a spatial narrative. Often multimedia data is included. The deep mapping process includes the act of collecting, compiling, and interpreting the data "including what is believed, remembered, experienced, presumed, feared, desired, rumored, and forgotten."⁸¹ Where traditional maps serve as statements, deep maps serve as conversations."⁸² These characteristics are not so different

⁷⁹ Bodenhamer, Corrigan & Harris, *Deep Maps and Spatial Narratives*, p. 5.

⁸⁰ Bodenhamer, Corrigan & Harris, Deep Maps and Spatial Narratives, p. 5.

⁸¹ The Polis Center, "Deep Maps and Spatial Narratives," Accessed on September 28, 2019, Available at https://polis.iupui.edu/about/spatial-humanities/deep-maps-and-spatial-narratives/.

⁸² The Polis Center, "Deep Maps and Spatial Narratives."

from what other types of historical writing may look like. The characteristics that make deep mapping a methodology and a distinct product lie in the following features.

Second, deep maps are spatial narratives that weave diverse sources together to combine time with space and meaning. Environmental histories and deep maps are particularly conducive to each other. As an environmental history, the narrative of Lake Cairo includes natural and human forces. Environmental historians make space for animals, plants, soils, ecosystems, and other nonhuman entities where these become "the co-actors and determinants of a history not just of people but of the earth itself."⁸³ Historian William Cronon stated, "For scholars who share my perspective, the importance of the natural world, its objective effects on people, and the concrete ways people affect it in turn are not an issue; they are the very heart of our intellectual project."⁸⁴ This speaks to the foundation of deep mapping.

Third, deep mapping is an epistemology, an immersive system for spatial inquiry that allows researchers to explore data at the points of intersection of time, space, and meaning. With the diverse sources, researchers form an interface between the place and the various historical events or processes that happened there. This interface allows researchers to study spatial patterns, through the diversity of the data, and develop theories about why the patterns exist. The interface helps researchers to grasp meaning and present the argument. It can also help researchers understand processes and phenomena connected to the place of study.

Fourth, place must be the protagonist of the narrative. Human interaction with nature is required for an environmental history, but place as the central focus of a spatial narrative is the most important part of a deep map. The protagonist of the narrative is not the human actors who

⁸³ William Cronon, "A Place for Stories: Nature, History, and Narrative," *The Journal of American History* 78, 4, March 1992, Pages 1347–1376, Available at https://doi.org/10.2307/2079346.

⁸⁴ Cronon, "A Place for Stories: Nature, History, and Narrative."

weave into and out of the story, but the place itself. Typically the places of deep maps are small and rural. Considering scale is important. With this deep map about Lake Cairo the physical scale of the place is small, but the scale of time includes geologic, prehistory, and historic time. Geologic time allows for the biology and ecology of the place, which is so important to the formation of an environmental place, to be included. Similarly, prehistory is necessary to explain those that lived on the landscape before Euro-Americans settled there, even if their history is difficult to discern. The scale also speaks to the process of change. For example, if a tree falls in a forest and no one witnesses it, is it important? If a forest falls and no one witnesses it, but it affects an entire ecosystem, is it important? The draining of Lake Cairo is one example of many that occurred within a similar time period. The process of deep mapping is as complex as the multi-layered information included within the deep maps themselves. The methodology of deep mapping is a system for the analysis of interdisciplinary information to better understand the sense of place, or value, of a geographical location, and the deep map is a spatial narrative that presents that sense of place.

CHAPTER 3. A FINE BODY OF WATER, ABOUNDING IN FISH

A Distinct Ecosystem

The margins are dark with sedges; in the middle the cat tail lifts its blades, un-disturbed; while over the deeper waters the pond lilies spread the broad leaves like inverted shields and star the surface with flowers; innumerable birds fill the air with strident, unmusical sounds; ducks steer their miniature fleets about, mud hens wade among the calamus roots; black birds cry as if life depended upon unceasing noise; the tern hover above the more open waters or sit upon the sand as if.by sea; the bittern sits among the reeds, bills straight up, more like an inverted stake, than any stake-driver and over all, the evening clouds of insects; mosquitoes make eerie the air on every side. For the rest boulders are now few; occasionally a big one lies on the shore tum-bled down by the undermining of the waves. In the earlier morning, the mists from the waters screen from the traveler the beauti-ful grain-covered hills that slope down on every side and the lake lies in primitive wildness, an isolated reminder of the weird marshy topography that so recently charac-terized not these counties only, but all northwestern Iowa—the land of a thousand lakes.⁸⁵

"The land of a thousand lakes" aptly described the landscape of north-central Iowa prior to Euro-American settlement.⁸⁶ An aerial view of the landscape evoked Swiss cheese with a succession of small to large-sized bodies of water folded into flat plains and gently rolling hills. The landscape was mostly treeless and later described by inhabitants as a sea of grasses. The occasional timber, or oak savanna, would appear around the larger bodies of water or along the river valleys that stretched from the north to the southeast or southwest depending on the side of the continental divide they existed on. The sea of grasses was a subtle, but intricately, connected ecosystem that included a variety of soil types, known as soil series to scientists, flora, and fauna. The north-central landscape of Iowa was the result of millennia of natural forces working upon the earth.

⁸⁵ "Hamilton County Has Only One Lake," Webster City Daily News, August 18, 1921.

⁸⁶ "Hamilton County Has Only One Lake," August 18, 1921.

The landscape viewable to the first inhabitants, Native Americans, and later Euro-American settlers was quite young, geologically speaking. A variety of glacial advances, starting with the Pre-Illinoian phase, 2,500,000 year ago, to the most recent Wisconsinan phase as early as 10,500 years ago, shaped the topography of the Iowa landscape. The Wisconsinan phase was the most recent glacial advance and the dominant process of geological change upon the Iowa landscape. The glaciers left a variety of debris across the landscape, from the till, an assortment of pebbles, sand, and boulders, deposited directly by the glacial ice to melt-out debris as the glaciers melted and retreated.⁸⁷ The part of the Wisconsinan phase that touched Iowa is the Des Moines Lobe, which "is part of the state last touched by the huge sheets of frozen water. This last glacial episode occurred only 12,000 to 14,000 years ago."⁸⁸ The Des Moines Lobe shaped north-central Iowa from the border of Minnesota in the north to Polk County in the south and Buena Vista County in the west to Hardin County in the east. Hamilton County sits toward the middle of the Lobe's greatest expanse. As the ice began to melt, "cavities and tunnels formed within and beneath the ice."89 These cavities and tunnels became drainage ways for the meltwater, and eventually, "the larger, more permanent segments...became sites of the Lobe's present-day rivers and some of its larger lakes."90

Along with other large lakes and the many smaller ponds and marshes, this wetland system, and its features, are commonly known as potholes or the prairie pothole region, which covered "approximately 7.6 million acres...6 million acres of prairie-wetland [was] in existence in the early 1800s."⁹¹ The region is "historically dominated by tall and mixed grasslands,

⁸⁷ Jean C. Prior, *Landforms of Iowa* (Iowa City: University of Iowa Press, 1991).

⁸⁸ Jean C. Prior, *Landforms of Iowa*, 36.

⁸⁹ Jean C. Prior, *Landforms of Iowa*, 40.

⁹⁰ Jean C. Prior, *Landforms of Iowa*, 40.

⁹¹ Richard A. Bishop, "Iowa's Wetlands," *Iowa Academy of the Sciences* 88, 1, 11-16, 1981.

covering north central Iowa and western Minnesota, the area of North and South Dakota east and north of the Missouri River, and northeastern Montana."⁹² The prairie potholes are collected in this region, because "networks of streams were poorly developed and over 80% of the land surface drained into potholes rather than streams and rivers."93 The water remained in these lakes, "because of the highly retentive clay. Owing to cultivation and the drainage, many of the small lakes have disappeared, but before cultivation these lakes were extremely common throughout this part of Iowa. These are indicated on many of the old surveys where they are outlined."94 The region had an "historic attraction...for great flocks of nesting and migrating waterfowl."95 The prairie pothole region is one part of the greater ecosystem of the prairie that spreads across the central United States. In Iowa, "the extent of pre-settlement prairie is that it occupied six/sevenths (85%) of the state."⁹⁶ Prior to Euro-American settlement, Hamilton County was "an immense complex of prairie interspersed with numerous potholes, marshes, wet meadows, meandering rivers and streams, shallow lakes and four large deeper lakes.⁹⁷ Lake Cairo was part of the prairie pothole system as one of the larger, more permanent segments of drainage that established as a shallow lake on the landscape. In a wet spring, Lake Cairo, and the area around it, was "a continuous complex of wet prairie, sloughs, sedge meadows and marshes."98

⁹² Rex R. Johnson, Fred T. Oslund, and Dan R. Hertel, "The Past, Present, and Future of Prairie Potholes in the United States," Journal of Soil and Water Conservation 63, 3, May/June 2008, 84A-87A.

⁹³ Johnson, et. al., "The Past, Present, and Future of Prairie Potholes in the United States."

⁹⁴ L.H. Pammel, "Old Lake Vegetation in Hamilton County, Iowa," *The Plant World 2*, 3 (Wiley on behalf of the Ecological Society of America, December 1898) 42.

⁹⁵ Jean C. Prior, *Landforms of Iowa*, 44.

 ⁹⁶ Daryl Smith, "Iowa Prairie: Original Extent and Loss: Preservation and Recovery Attempts," *Journal of the Iowa Academy of Science 105*, 3, 94-108, Available at: https://scholarworks.uni.edu/jias/vol105/iss3/4.
⁹⁷ Bishop, "Iowa's Wetland."

⁹⁸ Smith, "Iowa Prairie: Original Extent and Loss: Preservation and Recovery Attempts."

The wetlands were a diverse array of formations, large and small, of varying depths of water and used by the local flora and fauna. Underneath the wetland formations existed an equally complex soil system. Most commonly found beneath the water of Lake Cairo is the soil series, Blue Earth. The Blue Earth soil series is "very deep, very poorly drained soils that formed



Figure 1. The surficial geology of the Des Moines lobe in Hamilton and Webster Counties shows the dispersion of many small lakes. The dark pink color denotes the same soil type found in the lakebed of Lake Cairo, which is the largest area of the dark pink color denoted with a notation on the right side of the image. Image is part of a larger document from the Geological Survey Bureau.⁹⁹

in 75 to more than 200 centimeters of co-progenous earth and the underlying loamy till,

lacustrine sediments, or outwash of Late Wisconsin glaciation. These soils are on plane or

slightly concave slopes in former lake basins in moraines, flood plains, and lake plains."¹⁰⁰ The

most recent glaciation that happened across north, Central Iowa was from the Late Wisconsin

phase, 10,500 to 30,000 years ago, and the area is known as the Des Moines lobe.¹⁰¹ The surface

⁹⁹ Deborah J. Quade, James D. Giglierano, E. Arthur Bettis, Robin J. Wisner, *Surficial Geologic Map of the Des Moines Lobe of Iowa, Hamilton and Webster Counties*, Geological Survey Bureau, Open File Map 2000-1, May 2000.

¹⁰⁰ "Blue Earth Series," *National Cooperative Soil Survey* (U.S. Department of Agriculture, 2009). Available at: https://soilseries.sc.egov.usda.gov/OSD_Docs/B/BLUE_EARTH.html.

¹⁰¹ Jean C. Prior, *Landforms of Iowa* (Iowa City: University of Iowa Press, 1991).

soil is a "gray silt loam, high in organic matter and containing a high percentage of soluble salts, which in many places effloresces as a white deposit on the surface."¹⁰² The sub-surface soil is also a gray silt loam with "much finer divided organic matter, the quantity being sufficient to give the mass a spongy consistency...it contains a large amount of lime carbonate and other soluble salts."¹⁰³ These soils continued to build through "the development of deeply penetrating and thoroughly efficient root systems. Moreover, roots occur in layers: shallow, medium, and deep."¹⁰⁴ These rich soils and bountiful wildlife "supported by the productive prairies and wetlands enticed early pioneers to settle."¹⁰⁵



Figure 2. Soil series (Palms, Klossner, Collinwood, and Blue Earth) in relation to the Des Moines lobe. Lake Cairo is marked near the center with the yellow square denoting the Blue Earth series from the University of California Davis *Soil Series Explorer*.¹⁰⁶

¹⁰² Knute Espe and Lawrence E. Lindley, *Soil Survey of Hamilton County, Iowa* (Washington D.C.: Government Printing Office, 1920), 24.

¹⁰³ Espe and Lindley, Soil Survey of Hamilton County, Iowa, 24.

¹⁰⁴ J.E. Weaver, Prairie Plants and Their Environment: A Fifty-Year Study in the Midwest (Lincoln: University of Nebraska, January 1, 1968) 61.

¹⁰⁵ Richard A. Bishop, "Iowa's Wetlands," *Iowa Academy of the Sciences* 88, 1, 11-16, 1981.

¹⁰⁶ Soil Series Explorer, University of California Davis, Accessed October 17, 2020.

The grasses were the defining feature of this landscape. Both short and tall, a variety of species, they each played a role in the ecosystem of the prairie and prairie pothole ecosystems of north-central Iowa. Ecologist and novelist Herbert Quick described the prairie as

...a great green sea...the hillsides were thick with the wooly possblummies in their furry spring coats protecting them against the frost and chill...the first fruits of the prairie flowers...standing higher than the peering grass rose the rough-leafed stalks of green which would soon show us the yellow puccoons and sweet-williams and scarlet lilies and shooting stars...the wild-fowl were clamoring north for the summer's campaign of nesting...It was sublime!¹⁰⁷

Lake Cairo, and the marshes around the lake, were filled with rushes and natural timbers along the edges.¹⁰⁸ Three types of marshes, inland shallow fresh, inland deep fresh, and inland open fresh, hosted a variety of plant species, including smartweed, sedges, spike rushes, arrowhead, bulrushes, cattails, phragmites, bur reed, pond weeds, coontail, water milfoil, and reeds."¹⁰⁹ Open water fresh marshes, like Lake Cairo, were open water lakes with less than ten feet of water, ringed with the species above, and usually displayed several submergent plants like pondweeds, coontail, and water milfoil.¹¹⁰ Observations of a lake near Lake Cairo, from the 1920s, described, "the great body of the lake-bed is covered with cat-tails from four to six feet," and "...the surface of the shallow waters is literally covered with lily pads, and yellow and white lilies, while water hyacinths, cat tails, reeds and many aquatic plants abound."¹¹¹

These wet grasslands hosted many animal species including bison, elk, coyotes, wolves, bobcats, deer, beaver, muskrats, otter, and a variety of birds. Prairie potholes were of "unparalleled importance to breeding waterfowl and many other species of wetland wildlife."¹¹²

¹⁰⁷ Herbert Quick, Vandemark's Folly (New York, 1921), 111-113.

¹⁰⁸ "Hamilton County Has Only One Lake," Webster City Daily News, August 18, 1921.

¹⁰⁹ Pammel, "Old Lake Vegetation in Hamilton County, Iowa."

¹¹⁰ Bishop, "Iowa's Wetlands."

¹¹¹ "Hamilton County Has Only One Lake."; Pammel, "Old Lake Vegetation in Hamilton County, Iowa," 42.

¹¹² Johnson, et. al., "The Past, Present, and Future of Prairie Potholes in the United States."
Bird species included the upland sandpiper, dickcissel, long-billed curlew, marbled godwit, prairie chicken, the sandhill and whooping cranes, and other waterfowl.¹¹³ Observing a lake near Lake Cairo, a newspaper described, "...the red and yellow winged blackbirds built their nests and swayed in the cat tails which lined the edges of many, many ponds and sloughs."¹¹⁴ In Hamilton County, the average annual precipitation is 34.55 inches. Approximately 20 inches falls during the spring, summer, and fall, while the rest falls in the winter. Droughts occur in July and August. The soil has excellent moisture-holding capacity, and excess moisture often happens with spring rains. According to a 1920 survey, the driest year on record, to that point, was 1894 at 19.52 inches of precipitation for the year.¹¹⁵

Managed and Built Spaces

The prairie ecosystem and prairie pothole region has always been a system of interaction between natural and human forces. Archaeological records show that Native Americans have existed, and assumably, managed the landscape of Iowa for the past 14,000 years.¹¹⁶ More recently, from the 1600s to the time of Euro-American settlement in the mid-1800s, several Native American tribes lived in parts of Iowa, including Ioway, Meskwaki, Sauk and Fox, Omaha and Ponca, Otoe, Missouria, Pawnee, Arikara, Potawatomi, the Illinois Confederacy, Santee and Yankton Sioux, and Winnebago.¹¹⁷ Native Americans managed and used the prairies for specific purposes. In the mid-1700s, a French Jesuit priest, traveler, and historian named

¹¹³ James J. Dinsmore, A Country So Full of Game: The Story of Wildlife in Iowa (Iowa City: University of Iowa Press, 1994).

¹¹⁴ "Hamilton County Has Only One Lake," *Webster City Daily News*, August 18, 1921.

¹¹⁵ Knute Espe and Lawrence E. Lindley, *Soil Survey of Hamilton County, Iowa* (Washington D.C.: Government Printing Office, 1920).

¹¹⁶ Gretchen M. Bataille, David M. Gradwohl, and Charles L.P. Silet, *The Worlds Between Two Rivers: Perspectives on American Indians in Iowa* (Ames: Iowa State University Press, 1978).

¹¹⁷ Bataille, et. al., *The Worlds Between Two Rivers: Perspectives on American Indians in Iowa*. Lance M. Foster, *The Indians of Iowa* (Iowa City: University of Iowa Press, 2009).

Pierre François Xavier de Charlevoix made the following observation of Native Americans on the prairies in central Illinois. He wrote

They dwell commonly in Meadows, under Tents made of Skins, and well-wrought: They live on wild Oats, which grow in Abundance in their Marshes and Rivers, and by hunting, especially of the Buffaloes that are covered with Wool, and which are in Herds of Thousands in their Meadows: they have no fixed Abode, but travel in great Companies like the Tartars, and never stay in one Place any longer than the Chance detains them.¹¹⁸

The Native Americans in Iowa lived similarly to those in Illinois. One example is the Ioway tribe, the namesake of the state, who lived in many areas of the state over time. They managed the landscape around them with a combination of using natural resources in a hunter gatherer lifestyle and farming based on the season. Mobility characterized their lifestyle. In the summer, some of the tribal members were away from the villages "to hunt, fish, and collect rushes and other building materials."¹¹⁹ They grew gardens of corn, beans, and squash. At times, the Ioway traveled to western Iowa and southern Minnesota to hunt bison on the prairie.¹²⁰ They also hunted for fur animals, such as beaver, and fished.¹²¹ The periodically burned the prairie to maintain the flora ecosystem for their needs.¹²² The Native American people used the prairie pothole ecosystem and managed it through their interactions. By hunting beaver or choosing specific plant species for food, Native people altered the landscape around them.¹²³ Between 1820 and 1840, the Ioway ceded their lands to the United States Government in present-day Minnesota, Iowa, and Missouri.¹²⁴

¹¹⁸ Charlevoix, Letters to the Dutchess of Les Diguieres; Giving an Account of a Voyage to Canada, and Travels through the vast Country, and Louisiana, to the Gulf of Mexico (London: R. Goadby, 1763), 279-280. ¹¹⁹ Dorothy Schwieder, *Iowa: The Middle Land* (Iowa City: University of Iowa Press, 1996) 6.

¹²⁰ Schwieder, *Iowa: The Middle Land*.

¹²¹ Foster, *The Indians of Iowa*.

¹²² Courtwright, "The Great Plains."

¹²³ Hugh Prince, Wetlands of the American Midwest: A Historical Geography of Changing Attitudes (Chicago: The University of Chicago Press, 1997).

¹²⁴ Native American Land Cession in Iowa, Library of Congress, Accessed at URL: http://memory.loc.gov/cgi-

Specific information about Native Americans living in the immediate area of Lake Cairo is scarce, if nonexistent. A few secondary anecdotal accounts exist without any sort of citation or attached evidentiary information.¹²⁵ Several archaeological sites are noted within the parcels that contain the lake.¹²⁶ These include: seven Euro-American sites with building foundations and rubble and three prehistoric lithic sites containing chert core and fragments. All sites were previously disturbed and described as prehistoric and historic scatter. While the archaeological data from the area has been mostly erased through time, Native Americans did spend time in the area of Lake Cairo. The government enforced a "neutral zone," between the Lakota and the Sauk and Fox tribes that existed just north of the lake in the northern third of Hamilton county.¹²⁷ Lake Cairo even appears on the government map denoting the land cession for the "neutral zone."

Euro-Americans began to settle in Hamilton County in 1846. The first settlement, Homer, was at the crux of the Des Moines and Boone Rivers in the western part of the county. Many small settlements and towns sprang up around the county in the first decade. The state of Iowa conducted a road survey in the county in 1853 where "the swampy conditions caused rerouting," and "portions of the roads were impassable in the wet seasons."¹²⁸ In 1921, a newspaper reminisced

There is hardly a man who ever drove about the county in the 60's, the 70's and even the 80's, who does not recall at least one experience of having been stuck in the edge of a slough. Between this city and Homer, one might stick in the mud every season except in very dry weather; west of the city there were sloughs, east of the city one got stuck going

bin/query/d?hlaw:0:./temp/~ammem Vm9B:.

¹²⁵ There are two anecdotal instances, from histories of Hamilton County, of members of the Meskwaki tribe traveling to Lake Cairo to collect a specific species of grass from the lake. Another anecdotal instance describes the death and burial of a Meskwaki warrior on the shores of Lake Cairo. These are anecdotes without conclusive evidence to their truthfulness.

¹²⁶ Office of the State Archaeologist, Iowa Archaeological Forms, State Site Nos.: 13HM45, 13HM46, 13HM47, 13HM48, 13HM49, 13HM50, 13HM76, 13HM136, 13HM137, 13HM138.

¹²⁷ More research needs to be conducted to better understand the relationship between Native Americans and the Lake Cairo landscape.

¹²⁸ Martin E. Nass, *Hamilton County: Its Towns and Settlements* (Webster City: Hahne Printing Co., 1976) 35-36.

to Blairsburg and Will-iams and always expected to have that ex-perience between Blairsburg and Jewell.¹²⁹

In 1880, the entire population of Hamilton County was rural as classified by the United States Census, and many of those people were farmers. As the farmers learned how to break the prairie grass sod and cultivate the land, the natural ecosystem of the prairie and prairie potholes began to shift to a built system of graded land, furrows, and fences. Farmers started farming the land near wooded areas and small prairies first. Large sections of prairie and prairie potholes were largely uninhabited and uncultivated.¹³⁰ These were owned by the government or large estates. Farmers, largely, remained prejudiced against prairie pothole areas due to "the menace of insects and the incidence of fires, storms, and floods," which "sustained a constant mood of anxiety."¹³¹ Drainage technology advanced, starting in New York state, and became known for the reduction of insects by destroying the breeding grounds for the pests. By the 1890s, drainage technology, government policy, public opinion, a persistent professor, and a prolonged drought opened the door to the drainage of the prairie potholes of Hamilton County.

Lake Cairo in the Local Press

"...assembled on the pebbled shore in the beautiful grove...the table was filled with the choicest viands and with the most beautiful flowers of the season. Amusements of various kinds were gotten up for the pleasure of the children...feats of dexterity with [the] light canoe upon the placid water, the woods resounding with the merry laugh of the children, while the older conversed upon the various topics of the day. Thus the day, in joy and pleasure, passed, and long will it be remembered by those who participated in it."¹³²

¹²⁹ "Hamilton County Has Only One Lake," *Webster City Daily News*, August 18, 1921.

¹³⁰ Prince, Wetlands of the American Midwest: A Historical Geography of Changing Attitudes.

¹³¹ Prince, Wetlands of the American Midwest: A Historical Geography of Changing Attitudes, 166.

¹³² "Pic-nic Celebration," *Hamilton Freeman*, July 15, 1868.

In this way, in 1868, Lake Cairo first appeared in local newspapers making note of a "pic-nic celebration" along the shore of the body of water.¹³³ Non-indigenous people began to settle in the area before Hamilton County existed. An early history of the county noted, "No Indians were seen by settlers until some six years after the first settlement, and no depredations were ever committed by them."¹³⁴ This "settling up" included the area around Lake Cairo, also known as Mud Lake, which was "a fine body of water, abounding in fish."¹³⁵ At this time, Lake Cairo was one of eight lakes in Hamilton County and the largest, covering two sections in Lyon Township and one section in Hamilton Township. Settlement in Hamilton County happened gradually, but steadily, "with a thrifty and industrious population" due to "her abundant coal, lime, timber, water privileges, productive soil...and is one of the best in the Northwest."¹³⁶ One of the best, it likely was, and Lake Cairo was listed as one of the locations of "heavy settlement."¹³⁷

Over the next few decades, mentions of the lake appeared here and there under three distinct categories of use by the locals in the area. First, the lake was a natural gathering place for the people of Hamilton County. A feature on a relatively flat and subtly featured landscape like the prairie, the lake became a place for people to meet and recreate together. The small grove of trees along the north shore of the lake may have influenced this use as well as the next. Second, the rich flora and fauna of the lake encouraged use by hunters. People hunted and fished around and within the lake. Third, the lake was a way-finding device, an identifier of where people lived or how they were moving around the county.

¹³³ "Pic-nic Celebration," July 15, 1868.

¹³⁴ "Early History," *Hamilton Freeman*, January 2, 1878.

¹³⁵ "Lake Cairo," *Hamilton Freeman*, June 15, 1870.

¹³⁶ "Early History," January 2, 1878.

¹³⁷ "Early History," January 2, 1878.

No doubt that people associated Lake Cairo with a certain subtle beauty that many Iowans use to describe the prairie. From the first Fourth of July picnic celebration on the shores of the lake, people began to congregate there for various reasons from recreation to religion. One of the few distinct features in the sea of grasses, the lake attracted people to it. In 1874, Reverend D. Austin baptized fourteen people in the lake in the presence of 500 others, which was deemed an "encouraging success."¹³⁸ At half past eight in the morning in August 1882, a party of eighty people traveled to the lakeshore via the train, "over the prettiest route by rail...in the county...the river and prairie scenery both being a charming landscape," from Webster City.¹³⁹ Tickets cost fifty cents per partygoer. Their aim was a "grand good time," a picnic on the beach complete with "several boats...plyed upon the calm water," "a propeller with two side-wheels," and "an inviting basket dinner...served in the shady nooks along the beach."¹⁴⁰ "The ride over the steel rails -- the boat rides, the dinner, and various games of innocent amusement, made the day an enjoyable one to all."¹⁴¹ This excursion, hosted by the Methodist Church, was one of many to take place alongside the lake over the coming years.

The subtle beauty of the lake extended from the local flora to the fauna. Recreation was a popular use of the lake and surrounding landscape. Known as one "a popular resort with fisherman and hunters" in the area, the new town of Jewell Junction capitalized on the proximity to Lake Cairo.¹⁴² An advertisement from 1887 stated, Jewell "contains a population of about 700, is beautifully located on a fine undulating prairie, on the west bank of the outlet of Lake Cairo, and is about midway between Little Wall Lake and Lake Cairo... These are both very nice lakes

¹³⁸ Hamilton Freeman, May 20, 1874.

¹³⁹ "The Methodist S.S. Excursion," *Hamilton Freeman*, August 30, 1882.

¹⁴⁰ "The Methodist S.S. Excursion," August 30, 1882.

¹⁴¹ "The Methodist S.S. Excursion," August 30, 1882.

¹⁴² Sioux City Journal, May 26, 1881.

and furnish fine sporting grounds, they being infested with large quantities of fish and game."¹⁴³ Waterfowl used the lake as a resting place on annual migrations. When the geese started to fly north in the spring, locals "expected soon to see the Marshalltown gunners skipping around on their hands and knees on the classic shores of Lake Cairo, looking for something to draw a bead on."¹⁴⁴ Those from out of town were not the only people to partake in the excellent hunting alongside the lake. One night in December 1880, a Lakin boy killed 300 ducks while Joe Smith's young son got 100 more ducks the next night. Both say near the opening in the ice and shot the ducks as they flew in for the night. They noted, "This is the 'best luck' we have heard of in this region of country in duck hunting."¹⁴⁵ Doc Sargent captured two wild geese in 1875 and proposed to domesticate them.¹⁴⁶

Waterfowl were not the only fauna found in the area. Fishing was another popular pastime at Lake Cairo especially when the water was high. In 1877, there was excellent fishing in the spring. A group from Lakin's Grove reported to have caught 700 pounds of fish in one day.¹⁴⁷ Nearly a decade later, the *Webster City Freeman* still reported on the local catch, stating, "A quantity of Lake Cairo fish is being sold at Jewell. They are fine."¹⁴⁸ The occasional rare animals appeared in the area with a hunter wounding and capturing "America's proud birth o'freedom," a gray eagle, "which measured seven feet, eight inches between the tips of his wings" in 1878.¹⁴⁹ Mentioned just once in the local press was a call for a wolf hunt on Saturday, February 18, 1882. Predators in the area were likely sparse due to their reputation as pests for

37

¹⁴³ "Jewell Junction. A pen picture and brief review of the thriving and sprightly town bearing the above name," *Jewell Record*, April 20, 1887.

¹⁴⁴ "Coming," *Hamilton Freeman*, February 28, 1872.

¹⁴⁵ "Ducking to Some Purpose," *Hamilton Freeman*, December 1, 1880.

¹⁴⁶ Hamilton Freeman, August 25, 1875.

¹⁴⁷ Hamilton Freeman, April 18, 1877.

¹⁴⁸ "Jewell," *Webster City Freeman*, January 14, 1887.

¹⁴⁹ "Captured," Hamilton Freeman, November 13, 1878,

killing livestock. Participants were to drive toward the center by two o'clock in the afternoon from the Boone River and Webster City in the west to Ellsworth, Jewell, and Lake Cairo in the east.¹⁵⁰ Perhaps this mention was the last known wolf in the county.

As the largest natural feature in the sea of grass, Lake Cairo at 1,500 to 1,800 acres depending upon the season, made for an easy way to identify a place within the landscape.¹⁵¹ Whether noting the sale of someone's farm on the shores of Lake Cairo or the death of someone who lived there, the use of Lake Cairo most often cited in the local press was that of a way-finder or an identifier of where people lived and how they moved about the county. These notations were often mundane or comical. In 1872, Ed Shaw escaped the sheriff after his arrest and was eventually found at a house near the lake after hiding in the grass for hours and attempting to get his shackles off.¹⁵² That same year, H.E. Brown gifted a bottle of wine for Thanksgiving dinner. He lived near Lake Cairo.¹⁵³ In 1874, Bing Howard raised a "golly whopper" turnip, twenty-six inches around and six pounds, near the lake.¹⁵⁴ In 1878, a bull threw and trampled M.H. Norman, who lived two miles south of Lake Cairo. He survived.¹⁵⁵

By the 1880s, the newspapers shifted from noting everyday events and facts of life around Lake Cairo to more intentional discussion of the agriculture there. In 1879, C.C. Dakin bought land near the outlet of the lake, which the newspaper declared as a good deal that would be worth double his money in five years. "The land lays well, is all under fence and cultivation

¹⁵⁰ "Wolf Hunt," *Hamilton Freeman*, February 15, 1882.

¹⁵¹ Through all the research, nearly 300 newspaper articles, the size of Lake Cairo varied greatly from 1,000 to 11,000 acres. The most common acreage used was from 1,500 to 1,800 acres depending on the season. The lake was often smaller, and drier, in the summer and fall.

¹⁵² "Ed Shaw's Escape," *Hamilton Freeman*, July 17, 1872.

¹⁵³ "Fine," *Hamilton Freeman*, November 27, 1872.

¹⁵⁴ "The 'Biggest' Yet," *Hamilton Freeman*, November 11, 1874.

¹⁵⁵ "Gored by a Bull," *Hamilton Freeman*, July 3, 1878.

except about 10 acres, and will make a very desirable farm residence."¹⁵⁶ Others near the lake grew successful crops. In particular, "John Frank...and S.L. Davis...have harvested a good crop of tobacco this year."¹⁵⁷ In 1884, the corn promised to be a great crop after two years of deficiency.¹⁵⁸ In 1886, an "old settler" wrote an editorial to the Webster City Freeman, noting the recent weather and crop conditions among his reminiscing as an original inhabitant of the lakeshore. He described

We see no blighted wheat nor weedy corn; oats are well filled. The only think I can see for farmers to complain of in these townships mentioned is scarcity of water; why people should send out such reports that crops are all burning up, I can't see, and that isn't as scarce as it was twenty-two years ago, for at that time I was building a house at Mud Lake, now Lake Cairo, and in the middle of July, grass would have burned any place you would set fire to it, and to let you know how scarce hay was then...and the privilege of picking anywhere and that the hay all burned but one stack of it that same fall; the first run so fast that cattle could not get out of the way of it; I saw thirty head of cattle burned to death that fall on September 15th; just one-half mile south of the Lake, and where Jewell now stands there were ten more burned and I dug a hole in Lake Cairo five rods from shore and two feet deep to get water to water some of the cattle that were not burned quite to death. ...and still they had good average corn crops...forty bushels per acre, after the blackbirds had taken their share. There were only four houses around the lake at that time...one I built, they were the only houses in six miles...and where Jewell now stands I have seen deer, wild turkeys and wolves; and what can you see to-day? ...a little railroad town and what is better you will see what is supporting these railroads, - corn, wheat, oats, hogs, and cattle.¹⁵⁹

As the newspapers noted, the perception of the land in Hamilton County shifted to the financial value of the land, the successes and failures of the farmers there, and the weather patterns. As the decade progressed, the perception of Lake Cairo and the surrounding land changed from a place

¹⁵⁶ *Hamilton Freeman*, December 10, 1879.

¹⁵⁷ *Hamilton Freeman*, December 27, 1882.

¹⁵⁸ "Independence Gleanings," Webster City Freeman, August 27, 1884.

¹⁵⁹ "Editor Tribune," Webster City Freeman, July 30, 1886.

for recreation and beauty or a wayfinding device to "some of the best farm ground in the state."¹⁶⁰

By the mid-1880s, agriculture began to dominate the pages of the Hamilton County press. Up to this point, Lake Cairo was an important feature upon the landscape that was both beautiful and recreational. The change from this perspective to that of excellent farmland reflected a shift in thought happening across the country. In 1889, a commentator in the *Webster City Freeman* discussed changes to Cairo and other lakes in the county. Astonished after a recent trip over the county, he "found good hard roads where once was impassable sloughs."¹⁶¹ He noted

...Below Kamrar three miles, is the north shore of Lake Cairo...Twenty-five years ago it was a beautiful clear lake, with large sloughs all around it -- so that one could scarcely get to it. To-day the sloughs are dry, and are either cultivated or pastured. The lake is growing up with black water-rushes, which gives it the appearance of having many small islands. There is an outlet at the east end -- a creek nearly as large as the White Fox. A hunter told me that the water in the lake is very low -- that he had not found a place but he could touch bottom with his oars -- that in many places his skiff grazed the sand.¹⁶²

As the lands around Lake Cairo, the sloughs mentioned in the passage above, became cultivated or pastureland, the lakebed of Cairo was all that remained in 1889. Even the water level in the lakebed was low due to drought¹⁶³. The commentator also noted, "At a little cost, the lake could be drained through its outlet, and made to produce corn and grass. I once saw a lake in Steuben County, Ind., about the size of this lake, and the second year after it was drained it raised a wonderful crop of corn. Below Jewell is another lake called Wall Lake. It, too, can be easily

¹⁶⁰ "Brains Produce Money," Ames Intelligencer, October 4, 1894.

¹⁶¹ "Hamilton County," Webster City Freeman, May 8, 1889.

¹⁶² "Hamilton County," May 8, 1889.

¹⁶³ "Record of Climatological Observations," National Oceanic & Atmospheric, Administration National Centers for Environmental Information (Asheville: National Environmental Satellite, Data, and Information Service), Generated on 08/07/2020.

drained."¹⁶⁴ By 1890, people began to seriously consider the prospect of draining Lake Cairo, as well as other smaller lakes around Hamilton County, and converting them to farm fields.

Lake Cairo appeared in the local newspaper for 20 years as a place to experience the beauty and recreational uses of nature. The people of Hamilton County hunted and fished on the lake. They boated on the water and held picnics on the shore. They gathered at the lake for events and used the lake as a wayfinding feature throughout the county. Until the late-1880s, the natural ecosystem of Lake Cairo was most valuable to the people living around it. As societal attitudes about public domain and the use of land for agriculture changed, so did the value that people placed on the lake. The lake went from a natural ecosystem, wildlife habitat, and recreational playground to something deemed more valuable as the 1880s moved into the 1890s, agricultural land, and some of the best agricultural land to be had, if the lake could be drained.

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¹⁶⁴ "Hamilton County," May 8, 1889.

CHAPTER 4. IN ORDER TO ENLARGE THEIR DOMINATION OVER INANIMATE NATURE

Worthless Land

During the mid-1800s, mobility was the main focus as Euro-Americans moved across the continent in droves. In 1836, journalist Francis J. Grund described a motivation for the expansion across the continent. He wrote

It appears, then, that the universal disposition of Americans to emigrate to the western wilderness, in order to enlarge their dominion over inanimate nature, is the actual result of an expansive power, which is inherent in them, and which, by continually agitating all classes of society, is constantly throwing a large portion of the whole population on the extreme confines of the state, in order to gain space for its development.¹⁶⁵

While the farmers and landowners of Hamilton County in the 1890s may or may not have heard

of Grund's idea, their perspectives on the land in the county reflected it. Much of the land in

Hamilton County was settled by Euro-Americans by 1870.¹⁶⁶ As Grund wrote, the people of

Hamilton County enlarged their dominion over inanimate nature, and they sought more land.

This would continue through the early 1920s. With much of the land occupied and already in

agricultural production, the remaining uncultivated areas consisted of various landscape features

that took more creativity, capital, and gumption to prepare for cultivation. In Hamilton County,

these landscape features were shallow lakes like Lake Cairo.

In the 1840s, states along the Mississippi River valley petitioned Congress to transfer the wet and swampy, "worthless" land to the state governments to dispose as each state saw fit.¹⁶⁷

¹⁶⁵ Francis J. Grund, *The Americans in Their Moral, Social, and Political Relations* (Boston: Marsh, Capen and Lyon, 1837) Accessed October 20, 2020, https://www.encyclopedia.com/history/dictionaries-thesauruses-pictures-and-press-releases/americans-their-moral-social-and-political-relations-1837-francis-j-grund.

¹⁶⁶ Much of the land in Hamilton County was sold to individuals by the Federal Government by 1870. This information was obtained by searching the Bureau of Land Management General Land Office records. Accessed October 20, 2020, https://glorecords.blm.gov/search/default.aspx.

¹⁶⁷ Margaret Beattie Bogue, "The Swamp Land Act and Wet Land Utilization in Illinois, 1850-1890," *Agricultural History 25*, No. 4 (1951): 170.

The states argued that these lands were "waste, unhealthful, and unwanted lands" that "spread disease and death among the people, retarded settlement, and prevented the sale of the contiguous federal land."¹⁶⁸ They demanded "that the swampy or poorly drained land, be turned over to the states to be reclaimed by them and made into cultivable farmlands."¹⁶⁹ In 1849, Louisiana received the first grant of unsold federal swamp land, and by 1850, twelve other states received the same privileges. The designation of swamp land depended on the information recorded on the original survey plats from the General Land Office. The process of meandering a boundary on a General Land Office map meant a surveyor encountered a water body that was impassable on foot. The surveyor would meander around the obstacle, and then return to the original line being surveyed.¹⁷⁰ In a move intended to generate income for cash starved county governments, the Swamp Land Grant transferred that unsold bottomland to county governments for the purpose of selling them and using the proceeds for the development of local infrastructure such as schools and roads. After many swamp land cases landed in the Supreme Court, the Act was expanded to use either "the surveyed plats and field notes of the government surveyors or [the states] could make their own surveys and provide proof that their selections conformed to the provisions of the act."¹⁷¹ Iowa chose the latter process and received the patents for 874,000 acres of "swamp and overflowed land made unfit thereby for cultivation."¹⁷² By 1966, Iowa had 1,196,392 acres patented.¹⁷³

 ¹⁶⁸ Bogue, "The Swamp Land Act and Wet Land Utilization in Illinois, 1850-1890,": 170. Paul W. Gates, *History of Public Land Law Development* (Washington D.C.: United States Government Printing Office) 321.
 ¹⁶⁹ Paul W. Gates, *History of Public Land Law Development*, 319.

¹⁷⁰ Joseph W. Otto, *Subject to Overflow: The History of Drainage Districts in Jasper County, Iowa* (Boone: Appalachian State University, 2012).

¹⁷¹ Gates, *History of Public Land Law Development*, 324.

¹⁷² Congressional Globe, 31 Congress, 1 session, 2: 1826-1827, 1831-1832, 1848-1850; 31 Congress, 1 session, House of Representatives, *Journal*, 474, 584, 1476-1478. Accessed via Bogue, "The Swamp Land Act and Wet Land Utilization in Illinois, 1850-1890," 170.

¹⁷³ Gates, History of Public Land Law Development, 325.

Public land could be purchased across the continent for low prices after the Homestead Act of 1862. This included public domain land in Iowa. Most of the public domain land that was of good quality for agriculture was acquired by the late-1880s and early 1890s. After this point, the Swamp Land Act allowed for interested parties to turn towards poor quality or marginal land for cultivation, which helped to explain the heightened interest in draining lakes that coincided with the last decade of the nineteenth century.¹⁷⁴ Increase in the use of drainage and drainage technology was viewed as a way to improve the value of these poor quality or marginal lands in a permanent way. Many of the marginal lands contain fertile soil that built up over thousands of years due to the proximity to water bodies. Also, these types of land in the northern half of Iowa, were some of the last large tracts of land available for farming. The caveat was that these lands were available if the purchaser could drain them enough to cultivate them. Even as the technology advanced, draining large lakes was difficult and a financial gamble.¹⁷⁵ Purchasers that were successful in draining the lakes of northern Iowa would have highly fertile land for agricultural production and financially valuable land that could be sold for significantly more than the purchase cost. The Swamp Land Act also generated income for "cash-starved counties" to help the counties build public infrastructure like roads and schools.¹⁷⁶ This made county governments keen on selling their marginal lands. In either instance, these marginal lands became good investments in the 1890s and into the twentieth century.

¹⁷⁴ Otto, Subject to Overflow: The History of Drainage Districts in Jasper County, Iowa.

¹⁷⁵ Bogue, "The Swamp Land Act and Wet Land Utilization in Illinois, 1850-1890,": 169. Bogue also wrote, "By 1940, 86,967,039 acres of land were organized in drainage enterprises with a capital investment of \$691,724,519 or almost \$8 per acre. But this figure is a poor gauge of the amount of capital invested in drainage of agricultural land. In addition, millions of dollars have been spent by private individuals, companies, and farmers. These ventures have largely been gambles, financed from anticipated income produced by the reclaimed land. Not a few have failed and resulted in heavy capital losses. It has been only by trial and error that satisfactory methods of land drainage have been developed and successful land-use policies adopted."

¹⁷⁶ Roscoe L. Lokken, *Iowa Public Land Disposal* (Iowa City: Iowa State Historical Society, 1942). Sherman, *Drainage Districts in Iowa: A Study in Local Administration*.

That Body of Water Will Soon Be Only a Reminiscence

A prolonged drought started in the late-1880s and lasted until mid-summer 1896.¹⁷⁷ By the summer of 1894, "many farmers are experiencing trouble by the failure of their wells during this protracted dry spell, and those who have a good deep well are congratulating themselves on their good fortune."¹⁷⁸ It was so severe that "the rain of last Thursday gave the people through central Hamilton county great cause for happiness, but made others jealous.¹⁷⁹" This drought affected the water level of Lake Cairo. Notes from the Board of Supervisors meeting in June referenced Cairo and the severity of the drought on the lake.¹⁸⁰ By July, the local press reported the last incidences of recreational use on Lake Cairo. Noting that the lake was "drying up fast," the newspaper also wrote of the fishing parties that were taking advantage of "myriads of fish of all kinds...becoming crowded for room in Lake Cairo, and if reports are true are gaining the eternal dislike of farmers of that vicinity by their disregard for wire fences, etc. Don't think that because you are away from home that you are a privileged character."¹⁸²

Rumors around the drainage of Lake Cairo started swirling in 1891, when the *Webster City Herald* reported, "We have it on reliable authority that Lake Cairo or Mud Lake, between Kamrar and Jewell on the C. & N.W. railway, will be drained early next spring, and what is now a useless slough, be converted into the richest land in the county."¹⁸³ By 1891, the drought made the water level in the lake very low. When staring out across the landscape, the interested

¹⁷⁷ "Record of Climatological Observations."

¹⁷⁸ "Jewell," Webster City Freeman, July 11, 1894.

¹⁷⁹ "Jewell," Webster City Freeman, July 25, 1894.

¹⁸⁰ "County Legislation," Webster City Tribune, June 15, 1894.

¹⁸¹ "Jewell," July 25, 1894.

¹⁸² "Jewell," July 11, 1894.

¹⁸³ *The Gazette*, October 9, 1891. It is not clear in the newspaper article whether the interested buyer was D.A. Kent or someone else.

purchaser saw a large swath of grassland and very little water, resembling a marsh or swamp much more than a lake. Even as lake drainage became more popular around the state, the technology and knowledge of how to efficiently and fully drain lakes was not fully understood. After announcing the potential sales of Lake Cairo, the newspaper also noted, "The lake contains about two sections and is not very deep in any place. It has a natural outlet that can easily be dredged deep enough to let out the water at a comparatively light expense. This idea has been long entertained and talked of but has never taken tangible form before."¹⁸⁴

Curiosity was satisfied in September of 1894. The Board of Supervisors for Hamilton County accepted the proposition of D.A. Kent, a professor at the Iowa Agricultural College in Ames, Iowa, to buy Lake Cairo.¹⁸⁵ The terms included

That he will pay the county \$4,000, cash, for its Quit Claim to said lake, that he will cause said lake to be properly drained within two years, that he will within two years dedicate to the use of the public highways 66 feet wide across said lake north and south on township line between sections 12, 13, and 24 Hamilton township, and sections 7, 18, and 19 Lyon township, and across said lake east and west on section line between sections 18, 19, 17, and 20 Lyon township and 13 and 24 Hamilton township, and grad and prepare such highways for public travel, including the construction of all necessary bridges, which are to be of proper size and of fit and suitable material and workmanship. That he will execute a bond in the sum of \$5,000 to this county with sureties to be approved by the Auditor.

Conditioned for the faithful performance of all the agreements herein before mentioned, said bond to be performable in this county; and that he will at no time or place or in any manner make any demand upon the county for a return of any of the consideration for said Quit Claim. Nor for an reimbursement whatever for any sums expended by him, in case it should hereafter appear that the county had no title to or interest in said lake, or that the county had no authority to make the conveyance herein provided for. All of the stipulations herein mentioned to be contained in said Quit Claim deed, and said deed shall contain a condition providing that said deed shall be void and lake shall revert to the

¹⁸⁴ The Gazette, October 9, 1891.

¹⁸⁵ There was a competing offer of \$4,500 against Kent's offer of \$4,000. The Board of Supervisors likely chose Kent's proposal, because he agreed to the many terms noted in the quote.

county if said Kent shall fail to perform all or any of the agreements herein before mentioned within two years from the date of the deed.

It is understood that wherever the word lake is used herein and in said deed, the meandered lines thereof as shown by the government plats, are intended. It being understood that time is of the essence of this contract, and that partial performance of the contract shall be deemed no performance. And it is hereby ordered that upon the payment of the said sum of \$4,000, and the execution of the bond herein mentioned, the Chairman of the Board and the Auditor shall execute and deliver to said D.A. Kent the deed herein provided for.¹⁸⁶

In summary, Kent agreed to purchase the lake, drain it, build a variety of roads and bridges around the townships, pay for all improvements to the land, and complete the entire project within two years. After this process, he would have approximately 1,800 acres of cultivable land for his farm.¹⁸⁷ The newspaper reports were optimistic noting, "if the work of draining the lake costs no more than the deed, Mr. Kent's farm will cost him six or seven dollars per acre, and will probably be worth four or five times that amount."¹⁸⁸ They reported that "There may be several 'slips' in this of course, but Mr. D.A. Kent isn't a gentleman who is likely to make a bad bargain for himself."¹⁸⁹

Born in Deersville, Ohio on October 31, 1848, David Allen Kent moved to Iowa with his parents in 1861 where his father farmed. He studied agriculture at the Iowa Agricultural College from 1869 to 1873, earning a Bachelor of Science. Afterwards he engaged in stock raising and farming, on and off for 21 years, with a hiatus as the Superintendent of Polk County public schools from 1881 to 1885. In 1891, Kent accepted the position of Assistant Professor of

¹⁸⁶ "Board of Supervisors; Proceedings of their Adjourned September Session," *Hamilton County Journal*, October 1, 1894.

¹⁸⁷ 1,800 acres is an approximation. Since the water level of the lake changed constantly, it is difficult to provide an exact acreage of the lakebed. There was much discrepancy in the press about the amount of land obtained by Kent over the next few decades. The newspaper articles described as little as 1,000 acres to as much as 11,000 acres.
¹⁸⁸ "Will Drain Lake Cairo; That Body of Water Will Soon Be Only a Reminiscence," *Saturday Mail*, September

^{29, 1894.}

¹⁸⁹ "Will Drain Lake Cairo; That Body of Water Will Soon Be Only a Reminiscence," September 29, 1894.

Agriculture and an Experiment Station staff member at the Iowa Agricultural College. While teaching, he was an "instructor in agriculture and farm drainage engineering, manager of the farm and livestock; and moreover has charge of all permanent improvements on the farm and in the Department of Agriculture."¹⁹⁰

In the bulletin list for the Agricultural Experiment Station, Kent contributed to reports on a wide variety of subjects including, the treatment of fungus diseases, a feeding experiment for milk, sugar beets in Iowa, sweet versus ripened cream butter, actinomycosis and the iodide treatment, the best varieties of oats, calf feeding experiments, cornmeal and grass with stock steers, effect of feed upon the quality of milk, experiments feeding butter-milk, flax seed meal and oil meal, hog experiments, the Iowa State agricultural college creamery, time of sowing grass seed, when to cut corn, and winter wheat.¹⁹¹ Notably, he did not contribute to the report on

¹⁹⁰ The Bomb (Iowa State University Library Special Collections and University Archives, 1894), 67-68.
¹⁹¹ "List of Publications of the agricultural Experiment Stations in the United States," U.S. Department of Agriculture Office of Experiment Stations (Government Printing Office, 1907), 28-29. Wilson, James; Patrick, G. E.; Curtiss, C. F.; Eaton, E. N.; and Kent, D. A. (2017) "A feeding experiment for milk," Bulletin: Vol. 2: No.
14, Article 4. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss14/4. Wilson, James; Curtiss, C. F.; and Kent, D. A. (2017) "Best varieties of oats," Bulletin: Vol. 2: No. 15, Article 9. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss15/9. Wilson, James; Patrick, G. E.; Curtiss, C. F.; and Kent, D. A. (2017) "Calf feeding experiments," Bulletin: Vol. 2: No. 14, Article 3. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss14/3. Kent, D. A. (2017) "Corn meal and grass with stock steers.," Bulletin:

Vol. 3: No. 25, Article 7. Available at: http://lib.dr.iastate.edu/bulletin/vol3/iss25/7. Wilson, James; Patrick, G. E.; Kent, D. A.; and Curtiss, C. F. (2017) "Effect of feed upon the quality of milk," Bulletin: Vol. 2 : No. 14, Article 2. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss14/2. Wilson, James; Patrick, G. E.; Curtiss, C. F.; Eaton, E. N.; and Kent, D. A. (2017) "Experiment in feeding for milk," Bulletin: Vol. 2: No. 13, Article 2. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss13/2. Kent, D. A. and Van Houten, O. C. (2017) "Experiments feeding butter-milk," Bulletin: Vol. 2: No. 19, Article 10. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss19/10. Wilson, James; Curtiss, C. F.; and Kent, D. A. (2017) "Flax seed meal and oil meal," Bulletin: Vol. 2: No. 16, Article 2. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss16/2. Wilson, James; Patrick, G. E.; Curtiss, C. F.; and Kent, D. A. (2017) "Hog experiment No. 1," Bulletin: Vol. 2: No. 14, Article 5. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss14/5. Kent, D. A. (2017) "Iowa State agricultural college creamery," Bulletin: Vol. 2: No. 18, Article 9. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss18/9. Wilson, James; Patrick, G. E.; Curtis, C. F.; and Kent, D. A. (2017) "Soiling experiment," Bulletin: Vol. 2: No. 15, Article 6. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss15/6. Wilson, James; Patrick, G. E.; Curtiss, C. F.; and Kent, D. A. (2017) "Sugar beet growing," Bulletin: Vol. 2: No. 15, Article 2. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss15/2. Wilson, James; Curtis, C. F.; and Kent, D. A. (2017) "Time of sowing grass seed," Bulletin: Vol. 2: No. 15, Article 7. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss15/7. Kent, D. A.; Patrick, G. E.; Eaton, E. N.; and Heileman, W. H. (2017) "When to cut corn," Bulletin: Vol. 2: No. 21, Article 5. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss21/5. Wilson, James; Curtiss, C. F.; and Kent, D. A. (2017) "Winter wheat," Bulletin: Vol. 2: No. 15, Article 8. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss15/8.

rainfall record.¹⁹² There are three reports authored solely by Kent. These reports are the only sources that give insight into Kent's personal ideas about agriculture.¹⁹³ In a 1891 report for the farm department at the Agricultural Experiment Station, Kent wrote

There is a very wide difference of opinion among farmers about some of the methods of raising crops. These differences are settled best when every gentleman only describes his methods, accurately, and appends results. A comparison of these results will settle questions much more rapidly than vague theorizing over what we merely think we have done.¹⁹⁴

Kent focused on particular details of his experiments in his reports and work at the Agricultural Experiment Station. He noted numbers, conditions, and small changes in these reports with little hypothesizing as to why or what the final results would be. He believed in action over theorizing. He was dismissed from his position by the Board of Trustees at Iowa Agricultural College, now called the Iowa State College of Agriculture and the Mechanic Arts, in 1895. It is unclear why he was fired.



Figure 3. Photo of D.A. Kent from the Iowa Agricultural College yearbook, *The Bomb*, 1894.

¹⁹² "List of Publications of the agricultural Experiment Stations in the United States," 28-29.

¹⁹³ No other sources that may speak to what Kent was thinking or feeling to affect his decision-making have been identified outside these three reports that Kent wrote for the Agricultural Experiment Station.

¹⁹⁴ Kent, D. A. (2017) "Crop report of the farm department," *Bulletin*: Vol. 2: No. 16, Article 3. Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss16/3.

In 1894, the *Ames Intelligencer* wrote, "A long time ago Mr. Kent took a buggy and drove over this ground going around the lake. The idea came to him that by securing the riparian owner's rights and a quit claim deed from the county he could afterwards drain the lake and make it the most fertile soil for farms in the west."¹⁹⁵ When Kent approached the Hamilton County Board of Supervisors to purchase Lake Cairo, the lake was at its lowest water level. He began negotiations with the Board of Supervisors just before he was dismissed from his academic position. His recent life-changing events and his experiment-focused worldview likely played a role in his proposal and purchase of the lake. Motivated by the drainage of Owl Lake in Humboldt County, Kent saw an opportunity to test his theories in practice. Undertaken in the 1880s, George Pearson, a railroad capitalist purchased Owl Lake from the county and proceeded to drain it. The project was slightly less acreage than Lake Cairo and entirely funded by Pearson's private wealth. Owl Lake provided an example of successful drainage of a lake to be used for crop cultivation, and this precedent showed Kent the possibilities of draining the shallow lakes in the northern part of the state.

Armed with the precedent of Owl Lake, Kent also suspected that the soil type in the lakebed of Cairo would be good for the production of crops as long as moisture could be controlled. As the lakebed of Lake Cairo consisted almost entirely of the Blue Earth series and was the only spot in Hamilton County where it can be found, the lakebed made an ideal place for agriculture.¹⁹⁶ The lakebed of Lake Cairo was rich in minerals and organic matter, which provided good conditions for agriculture, and Kent "believed that [the lake] possessed rich soil unequalled in Iowa...Many believed or advocated that this experiment would be a failure, while

50

¹⁹⁵ "Brains Produce Money," *Ames Intelligencer*, October 4, 1894. It is unclear exactly when Kent first viewed Lake Cairo.

¹⁹⁶ "Series Extent Explorer," U.S. Department of Agriculture Natural Resources Conservation Service (Davis: University of California Davis, 2020).

others are hoping that it will do all that Prof. Kent believed it would do in the way of producing."¹⁹⁷ By January 10, 1895, "Mud Lake is no longer the property of Hamilton County, having legally passed into the hands of D.A. Kent of Ames yesterday. The lakebed has been properly drained and now will be made to produce and bring forth the cereals of the land."¹⁹⁸

Obstacles and Opposition

Even as Kent began to realize his plans for Lake Cairo, his obstacles mounted. In 1895, the Iowa Attorney General Milton Remley, hampered lake draining projects, stating, "The policy of the State should be to maintain all the lakes of Iowa in their original extent and beauty,...To convert them into fields for cultivation, appears to me to be utilitarianism run mad...If, by any means, the lakes of Iowa can be preserved, it should by all means be done. A person who drains the lakes commits a public wrong."¹⁹⁹ Kent, also, did not have enough money for the project, so he convinced Des Moines businessman, Nathan Schee, to buy into the farm for financial reasons. To meet the many terms laid down by the County in two years, Kent required financial capital, which Schee provided. One newspaper commented on the financial situation of the project. The *Ames Intelligencer* wrote, "[Kent] started out on this line, and now in a short time will commence the draining operation. He paid Hamilton County \$4000....spends another \$5,000 on draining, and another \$9,000 on incidentals, he will soon have 1,200 acres of nice land...worth forty dollars per acre. Minus the \$18,000 in costs that means a \$30,000 profit. There is more money in running a swamp land tract than there is in running a county newspaper."²⁰⁰ Where the

¹⁹⁷ Graphic Herald, July 23, 1895.

¹⁹⁸ Ames Times, January 10, 1895.

¹⁹⁹ Milton Remley to Frank Jackson, June 22, 1895, Attorney General Correspondence: Lands, Islands, and Lake Beds, 1889-1924. Box 1. DM RG 080. State Archives of Iowa, State Historical Society of Iowa. Des Moines, Iowa. "State Owns Lakes, Attorney General Puts a Damper on Various Attempts to Drain Iowa Lakes," *Evening Times-Republican*, August 9, 1899.

²⁰⁰ "Brains Produce Money," October 4, 1894.

newspaper received these numbers is unclear. What was clear was the great amount of capital needed to grade the land, dig ditches, create roads, and pay for the labor to do all of the things required to prepare the lakebed for cultivation.

Despite Kent's hold on the quit claim deed from the Hamilton County Board of Supervisors, the legality of the Lake Cairo sale to Kent was contentious. The argument of those opposed to Kent's purchase questioned whether the County had the authority to sell the lake due to the patent under the Swamp Land Act. Did Lake Cairo fall under the acreage Iowa obtained during the Swamp Land Act transition or not? The County had an engineer survey the lake, and in January of 1895, the Board of Supervisors presented a petition to Governor Frank D. Jackson requesting him to "ask the department at Washington to accept said [unofficial] survey, and issue a patent to Hamilton county."²⁰¹ The County claimed

Whereas, Lake Cairo has become nearly dry and an impassable march or swamp; and whereas, adjacent landowners have petitioned for the drainage of said lake for sanitary reasons, and for the purpose of improving adjoining lands, and extending public highways and school districts; and whereas, Said lake has been thoroughly drained, and a complete survey has been made which is hereto appended.²⁰²

Governor Jackson appealed to the United States Department of the Interior on behalf of Hamilton County. His appeal was denied as the General Land Office recognized the problem of draining lakes under the Swamp Land Act starting in 1877. The General Land Office had "grave doubt whether the United States has any claim" to lake beds.²⁰³ This placed "Prof. Kent, who has expended much time and money in having the lake drained, in an awkward position."²⁰⁴ The

²⁰¹ "Board of Supervisors; Proceedings of the Board of Supervisors of Hamilton County, Iowa, at their Special Session, Jan. 2, 1895," *Graphic Herald*, January 15, 1895.

²⁰² "Board of Supervisors; Proceedings of the Board of Supervisors of Hamilton County, Iowa, at their Special Session, Jan. 2, 1895," January 15, 1895.

²⁰³ W.M. McFarland, "The Meandered Lakes," *Report of the Secretary of State of the Transactions of the Land Department* (Des Moines, 1895), 38-39.

²⁰⁴ Webster City Tribune, March 1, 1895.

Webster City Tribune bemoaned that "Prof. Kent's mammoth celery farm will probably not now materialize."²⁰⁵

Much of the opposition to Kent's claim on a patent stemmed from neighbors who did not want to give up their rights to the lakebed. The U.S. Department of the Interior issued several reasons for denying the governor's request.²⁰⁶ Most importantly, the U.S. Department of Interior stated the Government Land Office must issue land patents. The *Hamilton County Journal* detailed more of the decision from the Land Commissioner along with a few choice words in editorial form. The newspaper reported

In the first place, the decision points out that the government has always refused to survey lands outside the meander lines of lakes, and that it has been held by the U.S. Supreme Court that the owners of land along the meandered shore of such lakes are the owners of the land embodied in the bed of such lakes, and that the riparian owner may go to the centre of the lake. In the light of this decision, Mr. Kent, who owns a farm on the east side of Lake Cairo, may go to the center of the lake, and no farther, while the owners of other farms adjacent to the lake may do the same. We believe that Mr. Kent has an agreement with all the riparian owners (except Mr. J.M. Funk) whereby he was to give them enough of the reclaimed land to square them out. Whether this agreement will cut any figure now, we cannot say, but under the decision and refusal of the Interior Department, it would seem to us that Mr. Kent had made a bad bargain, and will no doubt have considerable trouble to establish his claim as the owner of the bed of Lake Cairo. He has spent much money and labor in draining the lake, but it would seem that he did so with his eyes open, and if it turns out to have been a 'pig in a poke' we do not see that anyone is to blame for it but himself.²⁰⁷

While the official decision of the U.S. Department of the Interior was the most important in

Kent's lack of land patent, it was not the only opposition voiced in the matter.

Others shared choice words about the situation. J.M. Funk, the neighbor most opposed,

felt that "many of the people who sold their riparian rights to Mr. Kent will feel now that they

²⁰⁵ "Patent to Lake Cairo Refused," Webster City Tribune, March 1, 1895.

²⁰⁶ See Appendix A for the response from the U.S. Department of the Interior.

²⁰⁷ "Lake Cairo Bed," *Hamilton County Journal*, March 4, 1895.

could have done better to have joined hands and drained the lake themselves."²⁰⁸ The *Hamilton County Journal* also reported from *Iowa Capital* that "the largest joke any man in Iowa has experienced has been enjoyed by Prof. Kent...He had better put the water back into the lake and Hamilton had been refund his money and end the green goods game."²⁰⁹ Besides the opposition from some neighbors and newspapers, without a land patent, the quit claim deed was "not a sufficient guarantee that he may not awake some fine morning to find a dozen squatters in possession of his claim, under the preemption laws."²¹⁰ "No sooner [had Kent] completed the work than there were numerous parties trying to reap the results of his efforts by homesteading the land."²¹¹ Kent moved forward, patent-less, and was said "to be naturally very disappointed by the refusal of the government to grant a patent out will proceed to make the best terms possible with adjacent landowners and open up his big celery farm according to arrangements previously made."²¹²

While the legal matters were taking place, opposition to the draining of the lake was unfolding elsewhere. Artificial drainage was an action that stretched across the northern half of Iowa into southern Minnesota, Wisconsin, and Illinois. It was prolific throughout lowland areas, river valleys, and flood plains throughout the upper Midwest. Some thought the drainage affected the prolonged drought: that the act of artificially draining the prairie, removing surface water, caused less rain to fall in the region. By 1895, approximately five percent, or 1,500,000 acres, of land in Iowa was drained. Someone posited the question, "Is it credible that this 5 per cent, if it had remained wet and soggy, would have been sufficient to furnish vapor to condense

²⁰⁸ "Fenced It In," Hamilton County Journal, March 18, 1895.

²⁰⁹ "Green Goods," *Hamilton County Journal*, March 18, 1895.

²¹⁰ Webster City Tribune, March 1, 1895.

²¹¹ "Where Are We At? Who Does the Land Belong To In Dried Up Lakes?" *Pocahontas County Sun*, March 14, 1895.

²¹² Webster City Tribune, March 8, 1895.

into rainfall to amply irrigate the 95 per cent of dry lands?"²¹³ In response, Director Sage, of the Iowa Weather and Crop Service published a report that stated, "To furnish that amount by local evaporation or irrigation would require a reservoir or lake 100 miles long, fifty miles wide, and sixteen feet deep. It would make a river one mile wide, sixteen feet deep and 5500 miles in length. The great Mississippi river from its source to its mouth at its average stage would not contain that amount of water."²¹⁴ The newspaper article concluded, "This very simple problem in figures is conclusive enough and ought to convince anybody that the claim that the drainage of a country causes drouths is wholly absurd."²¹⁵

In 1895, the *Annals of Iowa* published a short article titled, "Destruction of Iowa Lakes," that displayed several opinions in opposition to the drainage of Lake Cairo, which had "fallen victim to private greed," and other lakes in the state.²¹⁶ This caused a volley of opinions back and forth on the matter. Professor J.L. Budd, of the Iowa Agricultural College, described the draining of Cairo as "a burning shame."²¹⁷ Instead of draining the lake, he proposed dredging, which would deepen the lake by eight feet making it "one of the most beautiful lakes of northern Iowa, and by percolation would have added to the value of thousands of acres in that section, besides giving out much needed moisture to the air. Instead of draining lakes, thousands more should be made over all parts of the states where a clay bottom is found near the surface."²¹⁸ The editors of the *Annals of Iowa* endorsed Professor Budd on the "gross, inexcusable vandalism" and added this call for action

²¹³ "Drainage Doesn't Cause Droughts," Webster City Freeman, March 6, 1895.

²¹⁴ "Drainage Doesn't Cause Droughts," March 6, 1895.

²¹⁵ "Drainage Doesn't Cause Droughts," March 6, 1895.

²¹⁶ "Destruction of Iowa Lakes," *The Annals of Iowa 2* (1895), 57-60. Available at: https://doi.org/10.17077/0003-4827.2011.

²¹⁷ "Destruction of Iowa Lakes," 58.

²¹⁸ "Destruction of Iowa Lakes," 58.

It could easily have been made a beautiful summer resort for hundreds of people who cannot go to the greater lakes...and if the lake had ultimately gone dry, it might have remained for many years an object of surpassing beauty and of much actual profit to the public. With the water supply so gradually and constantly diminishing, it looks like criminal folly to destroy such a lake simply to enable a private citizen to "make money." Good land is still abundant enough in Iowa. Other communities in this state, and throughout the country, and all over the world for that matter, are devoting tens of thousands of dollars to the work of making lakes and ponds, while Humboldt and Hamilton counties, in Iowa, are selling them out for much less in comparison than a "mess of pottage." When a private citizen employs a brainy lawyer to devise means for the destruction of such a lake, the county should be authorized to employ a brainier one to defeat him. It is certainly to be hoped that the next legislature may take some action looking to the preservation of our beautiful Iowa lakes.²¹⁹

In response, the *Webster City Freeman* stated, "that the county has no right or title in these meandered lakes, and that whatever it could get out of them was clear gain, and never, until they were contracted away, was there any special value attached to them."²²⁰ As Professor Budd decried the destruction of a valuable and beautiful recreation space, one of the newspapers closest to the draining of Lake Cairo claimed it had no value while a lake.

Just as George Pearson did with Owl Lake, Kent and Schee appealed the U.S. Department of Interior ruling and obtained a re-hearing for the land patent.²²¹ Kent's attorney, J.L. Kamrar, traveled to Washington D.C. to represent Kent and Schee in the re-hearing. Kamrar presented the "matter in such a way that the justice of Mr. Kamrar's contention was recognized."²²² Kamrar's appeal moved Commissioner Lameraux, "a western man himself."²²³ Two months later, the Government Land Office for Webster City in Hamilton County "published a notice in Hamilton county papers for the last thirty days, asking for remonstrances from adjoining property holders to the granting of a patent to the state by the United States under the

²¹⁹ "Destruction of Iowa Lakes," 59-60.

²²⁰ "Destruction of Iowa Lakes," 58.

²²¹ Hamilton County Journal, April 8, 1895.

²²² "Patent to Mud Lake Finally Issued," *Jewell Record*, December 12, 1895.

²²³ "Patent to Mud Lake Finally Issued," December 12, 1895.

Swamp Land Act.^{"224} After thirty days expired "the local land office has reported favorable to the general land office and there is little doubt but that the patent will be granted, as all the former correspondence relating to the matter has been favorable. If there are no more hitches Professor Kent will in a few weeks be the possessor of the land which a few months ago was hidden by the waters of Lake Cairo."²²⁵

By July 18, Judge Birdsell from Iowa Falls handed down his decision about the ownership of Lake Cairo giving Kent "a clear title to Lake Cairo, as he holds the county's quit claim deed to the land" just as Kent harvested a magnificent 400-acre oat crop on the lakebed.²²⁶ Besides the oats, Kent had 500 acres of corn and about 50 acres of musk and watermelons growing on the land, and "he certainly acquired a valuable and extensive farm at a very low figure."²²⁷ The state of Iowa received the swamp land patent for Lake Cairo on October 1 and began the process to transfer the patent to Hamilton County as the Swamp Land Act gave swamp lands directly to the counties. The *Jewell Record* reported

This will be good news to Prof. Kent's wide circle of friends, as it was believed after the adverse decision of the attorney general, rendered several months since, the government would refuse to patent the land to the state, and that Prof. Kent would ultimately lose the amount paid the county for a quit claim and all the extensive improvements made on the land.²²⁸

By the end of November, Governor Jackson personally assured Kent of his title to Lake Cairo. With this news, Kent "returned from Des Moines...with a happy smile on his face."²²⁹ By mid-December, Kent received the patent for Lake Cairo. The *Webster City Freeman* reported, "[this]

²²⁴ "Professor Kent Will Get a Deed to Lake Cairo in Hamilton County, Des Moines News," *Webster City Freeman*, July 17, 1895.

²²⁵ "Professor Kent Will Get a Deed to Lake Cairo in Hamilton County, Des Moines News," July 17, 1895.

²²⁶ "Webster City," *Stratford Courier*, July 18, 1895.

²²⁷ Ames Intelligencer, August 22, 1895.

²²⁸ "Prof. Kent's Title All Right," Jewell Record, October 10, 1895.

²²⁹ Saturday Mail, November 30, 1895.

will make the Mud Lake farm a credit to the county, and we hope a source of profit to [Kent]."²³⁰After months of legal battling, Kent and Schee received the land patent for Lake Cairo.

The Big Lake Cairo Farm

With patent in hand, Kent and Schee continued to farm the lakebed of Lake Cairo, the land finally legally in their possession. Even as the legal battle over the land patent raged, Kent and Schee started cultivating and planting the land during the spring of 1895. In June, the *Webster City Tribune* reported, "The Prof. is going to make one of the finest farms in Iowa from this once swampy lake and has already invested over \$12,000 in the enterprise. Of the 2,000 acres he has already 400 acres under cultivation, 300 of which is in corn, the balance being planted in oats, watermelons, cucumbers, celery, peanuts, etc., most of which he is trying an experiment."²³¹ The newspaper editorialized, "No resident of Hamilton county need regret the fact of Prof. Kent having secured Mud Lake, for he is fast converting that which was for years a vast marsh and swamp into a farm that will be alike an honor to Hamilton county and the state of Iowa."²³² By the end of July, Kent had 540 acres under cultivation including over 100 acres of vegetables. "The crop grown on untamed soil is not surpassed in this country, except the corn," reported the *Graphic Herald*.²³³

Typical crops for farms in the area consisted of corn, wheat, rye, and timothy, a perennial grass used for cattle fodder. Kent and Schee grew these things. What was not typical for farms in the area were many of the produce crops the duo grew. The farm was famous for its cucumber crop, which measured "by the thousands of bushels" at the farm.²³⁴ By September 1895, Kent

²³⁰ "A Patent Issued for Mud-Lake," Webster City Freeman, October 2, 1895.

²³¹ "News From Lake Cairo Farm," *Webster City Tribune*, June 28, 1895.

²³² "News From Lake Cairo Farm," June 28, 1895.

²³³ *Graphic Herald*, July 23, 1895.

²³⁴ Jewell Record, July 4, 1895.

employed approximately fifteen farmhands throughout the growing season. Down to six farmhands as summer drew to a close, their focus was on "gathering the cucumber crop, which is immense, fifteen acres being devoted to this vegetable. They have already filled a forty-barrel vat with salted cucumbers, which will be used for pickles, and Mr. Kent expects to fill two more."²³⁵ The farm was also famous for its melon crop. "[Kent] has nearly thirty acres of muskmelons and watermelons and the yield is enormous."²³⁶ These two crops, grown at the large scale of fifteen and thirty acres, would have not been typical for the area. Indeed much of the big Lake Cairo Farm was an experiment for Kent. He grew a variety of crops including grains, such as corn, wheat, and rye, and timothy for fodder. Considerable ground was also "devoted to the raising of peanuts, celery, turnips, onions, tomatoes, potatoes, etc."²³⁷ The variety of vegetables attracted local boys who were "stealing and destroying his melons.²³⁸" The *Graphic Herald* reported, "[Kent] has fifteen acres of watermelons and he has them guarded by mounted patrols day and night. Nobody is going to steal his watermelons if he sees them first."²³⁹

As the fall harvest began, in 1895, the *Jewell Record* had a field day reporting the successful season of the big Lake Cairo Farm. In September, the newspaper reported, "Prof. Kent was in town with a wagonload of muskmelons from his big Lake Cairo farm that left the record some fine ones. There are enough melons to supply Hamilton county and the surrounding counties until Christmas that are being sold at astonishingly low prices."²⁴⁰ By October, Kent was preparing to plant the overwintering crops. The *Record* reported

²³⁵ "The Mud Lake Farm," *Sioux City Journal*, September 2, 1895.

²³⁶ "The Mud Lake Farm," September 2, 1895.

²³⁷ "The Mud Lake Farm," September 2, 1895.

²³⁸ "The Mud Lake Farm," September 2, 1895.

²³⁹ *Graphic Herald*, September 10, 1895.

²⁴⁰ "Jewell and Vicinity," *Jewell Record*, September 26, 1895.

Threshing has commenced out at the big Lake Cairo farm, and the small grain is turning out better than expected, especially the flax, which has proven almost a total failure in other parts of the county. Prof. Kent informs us that he has commenced seeding down to timothy six hundred acres of the lakebed, and that the whole tract will ultimately be converted into a mammoth hay ranch. This year's crops have been largely an experiment, and although an immense quantity of potatoes, melons, turnips, and beets have been produced, the low prices now prevailing do not promise a profit adequate to the labor and capital expended.²⁴¹

The *Jewell Record* also reported on Schee's successes from his half of the farm. In October, Schee, "brought a head of cabbage to town last week that weighed a little over twenty-five pounds. It was taken to Des Moines as a prize winner."²⁴² A week later, Schee "shipped a carload of choice onions from his Lake Cairo farm to the Des Moines market, last Saturday. Enough onions, turnips, beets, cabbage, and potatoes have been produced this season on the big farm to supply Hamilton and several adjoining counties for at least a year."²⁴³ The last Lake Cairo Farm report of the year printed in the December 19 copy of the *Jewell Record*. The newspaper wrote, "F.G. Snyder shipped a carload of onions from the Big Lake Cairo farm to the Chicago market last Friday morning...and succeeded in making a good sale...even if he did have to deodorize himself before returning home."²⁴⁴ 1895 was a good first season for the big Lake Cairo Farm.

The 1896 season started off strong. By April, the work was progressing nicely. Kent had "280 acres of wheat [planted]...that he would compare to a wheat field with any farmer in Hamilton county...and will plant three to four hundred acres of corn."²⁴⁵ By early May, heavy rain covered the lakebed in one to three feet of water. The "water pours in from the various inlets faster than the big ditch can carry it off."²⁴⁶ The newspaper reported,

²⁴¹ "A Mammoth Hay Ranch," *Jewell Record*, October 24, 1895.

²⁴² Jewell Record, October 24, 1895.

²⁴³ Jewell Record, October 31, 1895.

²⁴⁴ Jewell Record, December 19, 1895.

²⁴⁵ Jewell Record, April 23, 1896. The Algona Republican, May 13, 1896.

²⁴⁶ "Mud Lake Flooded," Ames Intelligencer, May 7, 1896.

Prof. Kent reports that portion of the big Lake Cairo farm, which was submerged by this recent heavy rains, to be drying up nicely and that the defective ditches have been opened and repaired. A great many acres near the center of the old lake bed were flooded with from one inch to one foot of water but the crops were not seriously damaged. All of which will be pleasant news to the genial Professor's many friends.²⁴⁷

A week later, the farm was still "out of sight under an inundation." *The Courier* wrote, "It will grow no corn this year, but the owner might raise umbrella plants or start a fish farm."²⁴⁸ By May 20, the rumors were swirling. "Messrs. McCannon and Green of Spencer...came from the south and say that Prof. Kent's mud lake farm south of Webster City has four feet of water on it" while A.D. Hindman, of Eagle Grove, went through town this afternoon and said that Mud Lake farm is now almost entirely flooded, in places the water being even with the tops of the fence posts."²⁴⁹ Kent visited the office of the *Jewell Record* to give his own report of the situation. He said

The rainfall was as heavy as has ever been known. The inlets were never known to be so high but once before. Two storm clouds passed over the lake land, one going to the west, the other to the north. They then turned and joined and came back, producing a torrent of rain, which continued as if to make a test of the drainage system. The effect was to flood the land from a depth of six inches to three and one-half feet. At this point the outlet was filled about half full and showed sufficient capacity to prevent any further rise. It is evident that had the inside ditches been levied so as to have filled the outlet to its full capacity there would have been no flooding of the lands. The outflowing of the water was very rapid, being at the rate of about five miles per hour. It had been supposed by a great many that the banks of the outlet would cave with the first flood and fill the ditch, but on the contrary the wash has both deepened and widened the ditch, more than doubling its capacity at the bottom within two days time. It is still a question as to the damage that the growing crops will suffer. If favorable weather follows the floods will soon subside and there will still be opportunity for further planting.²⁵⁰

The outlet was incapable of taking the water off the fields as fast as it came down, and the rain

²⁴⁷ Jewell Record, May 7, 1896.

²⁴⁸ The Courier, May 14, 1896.

²⁴⁹ *The Algona Upper Des Moines*, May 20, 1896.; "Mud Lake Farm," *Sioux City Journal*, May 22, 1896.

²⁵⁰ "The Big Lake Cairo Farm," Webster City Freeman, May 27, 1896.

required Kent to re-seed portions of his fields after "many acres of promising crops [were] ruined."²⁵¹

By mid-summer, Kent believed the trouble behind him as he "brought a sack of new potatoes to the *Record* office on Monday. They were raised on his big Lake Cairo farm and are the finest we have ever seen. He has thirty-five acres equally as good as the sample and expects they will yield as least one hundred bushels to the acre."²⁵² Most newspaper reports credited Kent with the success of the farm. Occasionally, the reports told of Schee's successes on the south half of the lakebed. In July 1895, a rare report of Mrs. Kent and her work on the farm appeared in the press. The report stated

We have all heard of the "new woman" in divided skirts and the hideous bloomers, but there are few in Iowa who possess a Jewell in the form of a new woman upon the farm. When the floods washed the seeds from the bed of the big Lake Cairo farm last spring, everybody had about concluded that the drainage of the lake was an impossibility. Mrs. Kent, however, thought otherwise, and has just given a practical demonstration of her confidence in the professor's theory. Last Saturday Mrs. Kent commenced the seeding of a sixty acre tract, in the lake bed, driving the team herself, and at 4 o'clock in the afternoon had every foot of the ground planted in millet.

This is the woman we long have sought, and mourned because we found her not. --Jewell Record²⁵³

Up to the end of July 1896, Kent, Schee, and the big Lake Cairo Farm were progressing. The men, their farmhands, and Mrs. Kent were helping cultivate the fields that used to sit underwater. The crops were diverse and experimental. The harvest from the previous season was abundant. Success seemed to be in order. By August of 1896, the upward trajectory took a sharp dive as an

²⁵¹ "Mud Lake Farm," *Algona Courier*, May 8, 1896.

²⁵² Jewell Record, July 9, 1896.

²⁵³ "A 'New Woman' at Mud Lake," *Hamilton County Journal*, July 18, 1896.

unprecedented accumulation of rain fell. By the end of August 1896, the big Lake Cairo Farm resembled old Lake Cairo once again.

Should Have Planted Bullheads Instead of Potatoes

Heavy rain in May was a setback for Kent and the big Lake Cairo Farm. The amount of rain that fell during August and September of 1896 was unprecedented for recent times and catastrophic for the farm. By August 1, *The Courier* reported, "Professor Kent, who drained Mud lake in Hamilton county, finds his farm in the soup. About twelve feet of water stands on most of his farm and he has been obliged to abandon operations altogether. The several thousand dollars invested is an entire loss."²⁵⁴ The exact amount of water sitting in the lakebed differs among the various newspapers that reported about it. What does not differ is the opinion that Kent's drainage system was not large enough to accommodate a heavy, sustained rainfall. "Kent, of Mud Lake, should have planted bullheads instead of potatoes this year. His outlets to the lake are too small. They should be larger and deeper."²⁵⁵ Kent's field experiment was not drained "with regard to the proper regulation which should exist between the spigot and the bung hole. The best crop which he will raise this year will be bullheads, which should be planted in the full of the moon in May."²⁵⁶

Property owners of drained lakes seemed to be having a hard time across the entire state during the fall of 1896, which caused "woe in their hearts as a consequence."²⁵⁷ Lakes that had been dry for years were restored by the spring and late summer rains.²⁵⁸ Admitting that the

²⁵⁴ *The Courier*, August 1, 1896.

²⁵⁵ The Humboldt Republican, June 25, 1896.

²⁵⁶ "Experiment in Farming," *The Gazette*, June 2, 1896.

²⁵⁷ "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," *Des Moines Register*, August 6, 1896.

²⁵⁸ "Lake Draining, Present Season Has Not Been Satisfactory One for the Speculators," *Cedar Rapids Evening Gazette*, August 14, 1896.

drained lakes "raised the best crops in their respective locality," The *Des Moines Register* wrote, "They were the best kind of dry year land. But, this year it is different. Spring rains made it almost impossible to seed them, and the summer rains have in many cases restored the lakes that had been dry for years."²⁵⁹ Kent denied the drainage failure at Lake Cairo and provided a statement about the situation for the *Register*. Frustrated by reports that stated his farm was under twelve feet of water, Kent wrote to the Register, "...since the dawn of the morning when the calving of the glacier which scooped out the basin was first washed away. The waters of Mud lake were usually from two to three feet deep."²⁶⁰ He felt that there needed "a little boiling down to get out the truth" as he explained that the basin of Lake Cairo "drained four large sloughs and an area of 7,000 acres of prairie."²⁶¹ During the summer, the sloughs were mostly dry, but "during excessive floods the water pours in pretty fast," so much so that "about 8,000 gallons of water flowed in per second for fifteen hours following the great water spout which fell about the middle of May."²⁶² The drainage ditches could not keep up with the excess of water.

Despite Kent's attempt at clearing the reputation of his submerged farm, he mused about another future that Lake Cairo might have had prior to his purchase of it. He wrote, "If some farseeing gentleman had taken the Mud lake basin in hand before its low watershed had been converted into farms he could have made easily, the most sublime spectacle of land and water

 ²⁵⁹ "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," August 6, 1896.

²⁶⁰ "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," August 6, 1896.

²⁶¹ "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," August 6, 1896.

²⁶² "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," August 6, 1896.

anywhere and in any country."²⁶³ The natural outlet of the lakebed cut through a low hill on the east side of the lake. The cut was 200 feet wide and thirty feet deep, according to Kent. He noted

...it will therefore be seen that in the beginning of things the whole basin might have been stopped up for a very small sum of money. The submerged territory would have amounted to about 9,000 acres. The little knolls that now undulate the prairie would have been islets of beauty and grandeur which would have made the duck quack and the hunter smack.²⁶⁴

Alas, "the time has past to realize on such imagination. It would require a half million dollars to condemn and pay for the land."²⁶⁵ Kent remained convinced that the prime use of Lake Cairo was a farm field. The *Register* concluded the article noting the improved outlook of those wishing to preserve Iowa lakes, "about which there has been so much concern." They editorialized, "Governor Jackson was greatly exercised over the prospect that all the water in the state would be drained off and there would be no lakes left. But nature is taking better care of the lakes than the state possibly could."²⁶⁶ By the end of August 1896, Kent's farm was in shambles and underwater.

By May of 1897, the *Daily Leader* reported that "no attempt is being made this year to utilize the several thousand acres" at the Lake Cairo Farm.²⁶⁷ While the ditches had finally carried most of the water off the lakebed of "the miniature midland sea," the land "remains soft and saggy, and after putting about \$7,000 into Lake Cairo it will probably be allowed not to go

²⁶³ "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," August 6, 1896.

 ²⁶⁴ "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," August 6, 1896.

²⁶⁵ "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," August 6, 1896.

 ²⁶⁶ "The Lake Draining Business, Present Season Has Not Been a Satisfactory One for the Speculators," August 6, 1896.

²⁶⁷ Daily Leader, May 28, 1897.

back into the stagnant pool of water and marsh it always has been.^{"268} Kent's situation seemed dire by mid-summer, and by the fall he worked with Schee, as a last resort, to obtain more money for bigger ditches by officially transferring the deed to Schee one half of the farm "provided he will go ahead with the improvements and place it in a position so it can be cultivated."²⁶⁹ This last ditch effort did not work, and Kent's three years of effort were not enough to make the Lake Cairo Farm a success. By January 1898, Kent and Schee were released from their agreement with Hamilton County. The *Webster City Freeman* reported, "On motion ordered that the bond given by Nathan Schee and D.A. Kent to Hamilton county in the sum of \$5,000 for the faithful performance of a certain contract to drain Lake Cairo and grade roads through the same from east to west and north to south, the work having been completed, said bond is hereby released."²⁷⁰ This legal action was just the beginning of Kent's failure at the big Lake Cairo Farm.

After Kent procured the quit claim deed from Hamilton County back in 1894, he did not have enough financial capital to afford the dredging, grading, roadbuilding, and field cultivating necessary to make the farm a success. The business partnership with Schee provided Kent with the necessary capital to start his experimental farm and drainage project in the lakebed. Whereas the draining of Owl Lake, by George Parsons, was completed entirely with private funding, Kent required capital from both public and private means outside his own for Lake Cairo. The partnership also put the failed farm and the financial situations of the two men in front of Judge Weaver in April 1898. As Schee owned half interest in the lakebed due to his financial investment, it appeared that Kent was "going to lose the immense tract of land that he reclaimed"

²⁶⁸ *Daily Leader*, May 28, 1897. While the newspaper stated that Kent and Schee invested \$7,000 in the farm, the actual amount of investment was closer to \$22,000.

²⁶⁹ Algona Courier, October 29, 1897.

²⁷⁰ "County Legislation," Webster City Freeman, January 26, 1898.
as he had "a mortgage on his half for the \$19,000 still necessary on the celebrated Mud Lake farm, [which was] becoming a cause celebre."²⁷¹ Foreclosure on Kent's portion of the farm was imminent. He also owed Schee money for the land improvements. The *Webster City Tribune* reported, "It is hoped that Mr. Kent will come out of this matter all right, as he has placed four or five of the best years of his life, and every dollar he had in the world in reclaiming the waste land of Mud Lake."²⁷²

Ever the advocate of Kent, and his big Lake Cairo Farm, the Webster City press detailed Kent's foreclosure in June 1898. The newspaper wrote that "the famous Mud Lake farm was lost to D.A. Kent forever" as "it is the old story of a man 'biting off more than he can chew." ²⁷³ Kent spent all the money he had, plus more, to reclaim the land "from a swampy waste and a body of water which was worthless, and now that his full possession of the hundreds and hundreds of acres has dwindled down until he only owns an undivided half, he finds unless some unforeseen thing turns up he is going to lose that."²⁷⁴ While the newspaper noted that Kent was not a wealthy man, he "was comfortably fixed in this world's goods. He knew it was a big understanding he had on his hands, but he was a man of energy and ability and was not afraid to commence it."²⁷⁵

"The sheriff has levied an attachment upon Mr. Kent's undivided half and will sell it at public sale."²⁷⁶ It sold to Nathan Schee in July for \$22,000. "The largest tract of reclaimed swamp land in Iowa," upon which Kent "sunk a fortune," was sold under a judgement.²⁷⁷ The

- ²⁷³ "Will Lose His Mud Lake Farm," Sioux City Journal, June 16, 1898.
- ²⁷⁴ "Will Lose His Mud Lake Farm," *Sioux City Journal*, June 16, 1898.

²⁷¹ "Suit Over Mud Lake Farm," *Estherville Daily News*, May 4, 1898.

²⁷² "The Celebrated Mud Lake Farm," Ames Intelligencer, May 5, 1898.

²⁷⁵ "Will Lose His Mud Lake Farm," *Sioux City Journal*, June 16, 1898.

²⁷⁶ "Will Lose His Mud Lake Farm," *Sioux City Journal*, June 16, 1898.

²⁷⁷ "Sold Under a Judgment," *Sioux City Journal*, July 10, 1898.

newspaper reported the amount of land comprised 8,000 acres.²⁷⁸ Kent lost the land in the foreclosure, and his lakebed experiment officially ended. *The Graphic* reported that "Mr. Schee will carry on the experiment" and "continue the work of reclaiming the lake bottom."²⁷⁹ By July 21, 1898, the ownership of the lakebed legally changed hands from Kent to Schee. The *Webster City Freeman* reported, "We notice by the transfers filed in the recorder's office yesterday that D.A. Kent has transferred the Mud Lake farm to Nathan Schee. Mr. Kent tried hard to make of the lake bed a productive and remunerative farm, and would have succeeded had he had the means to carry on the undertaking. His numerous friends throughout Hamilton county will regret to hear of his inability to carry out his original plans, and to remunerate himself for the labor and money expended."²⁸⁰ The *Sioux City Journal* lamented, "The friends of Mr. Kent sympathize with him very much in what has proven to be such an unfortunate investment."²⁸¹

Kent saw value in the soil quality and large acreage of unused space with Lake Cairo. He thought it could be easily drained and converted into a farm field. He wanted to test his ideas of drainage and vegetable production, and he wanted to make a living as a farmer. As a businessperson, Schee saw the value to make a profit from the vast vegetable farm on the lake. The Hamilton County Board of Supervisors valued the transaction for the \$4,000 as well as the improvements required in the terms of the deal, the roads, bridges, and grading improvements the drainage ditches would provide to other wet farm fields in the watershed. All involved saw the lakebed for its potential as something different, not for the natural ecosystem that people valued it for in the 1860s and 1870s. After Kent failed to drain the lakebed, Schee and Hamilton

²⁷⁸ "Sold Under a Judgment," July 10, 1898. While the newspaper reported this large amount, it was more likely a total of 1,800 acres.

²⁷⁹ "Experiment Failed," *The Graphic*, July 21, 1898. "Litigation Over Lake Bed," *Audubon County Journal*, July 21, 1898.

²⁸⁰ *The Humboldt Republican*, July 21, 1898.

²⁸¹ "Will Lose His Mud Lake Farm," *Sioux City Journal*, June 16, 1898.

County had options. They chose to continue with the drainage of the lake, and even though Kent lost ownership, he maintained an interest in the project.

CHAPTER 5. MUD LAKE IS DOOMED

For Better Drainage

The first decade of the twentieth century was filled with activity around drainage and the formation of drainage laws and districts in Iowa. Kent lost the lakebed of Cairo due to foreclosure in 1898, but that did not stop his interest in the idea of better drainage across the landscape of northern Iowa. Despite his fiasco with Lake Cairo, he continued to advocate for the drainage of the lake. In October 1900, just two years after Kent's foreclosure, the Hamilton County Journal reported, "Work will soon begin for the completion of the drainage system of Mud Lake. The waters of the August floods have subsided and left the fields with a richer dress of nature's green than has been seen for many a year."²⁸² Following this report, the years 1900 and 1901 saw a flurry of real estate transfers. In March 1900, Nathan Schee sold the bulk of Lake Cairo to the Charles W. Rand estate of Burlington, Iowa for \$30,000.²⁸³ He sold other parts of the land in December to various new owners.²⁸⁴ By June 1901, parts of the lake changed hands again.²⁸⁵ As the ownership of the lake changed, the use of the lake seemed to return to a semblance of what it was before Kent purchased it in 1894. Area hunters were using the lake for recreation again as "the lake was a real lake all summer" in 1902.²⁸⁶ The Evening Times-Republican noted, "Duck shooting has been extra good lately at the lakes and those who have taken out licenses are making good use of the time. Some of them got nearly the limit."287

²⁸² "Mud Lake," *Hamilton County Journal*, October 26, 1900.

²⁸³ "Mud Lake Farm Sold. Professor Kent's Famous Farm Disposed of for \$30,000," *Evening Times-Republican*, March 5, 1900.

²⁸⁴ "Real Estate Transfers," *Daily Freeman Tribune*, December 4, 1900.

²⁸⁵ "Real Estate Transfers," *Daily Freeman Tribune*, June 12, 1901.

²⁸⁶ "May Drain Mud Lake, Drainage Ditch Contemplated for Professor Kent's Abandoned Farm Project, County Asked to do Work," *Evening-Times Republican*, April 7, 1903.

²⁸⁷ "Jottings From Jewell," *Evening-Times Republican*, October 14, 1909.

By 1903, Kent was circling a petition, "getting signatures...asking that the old Mud Lake bed located north of Jewell be drained by the county and that the costs be taxed to the abutting property owners."²⁸⁸ After he "sunk a small fortune in the venture," he now believed that "[this] method [of taxing the abutting property owners] would put the most of the cost upon the owners of the lake it is likely to be adopted, inasmuch as all to whom costs are taxed must be direct beneficiaries to the work."²⁸⁹ The *Evening Times-Republican* reported a few details of Kent's plan. They wrote

The new plan for the drainage of the property contemplates the building of a large ditch and putting it in nearer the head of the lake. Placing the work in the hands of the county insures a satisfactory job and one, too, where the cost will practically fall up on the lake bed owners. The petition circulated by Mr. Kent is required by law to contain 100 signatures. It is understood that Mr. Kent secured the required number. He is carrying out the proceedings under section 1,952 of the code. Professor Kent asks that the county undertake the work on the ground that the public convenience will be subserved. His success with his petition indicates that the board of supervisors will probably be induced to make a drainage district of the lake.²⁹⁰

Kent's persistence, and wide social network in Hamilton County, paid off. He gathered approximately 360 signatures "of the legal voters of the county" to prompt the Board of Supervisors to drain the lake for good.²⁹¹

In response to Kent's petition, Hamilton County hired engineer Edward E. Fox to survey the lake and create a drainage proposal in May. One of his proposed ditches, the Hassebrock ditch, would start "at the northwest part of Mud Lake and runs in a northwesterly direction, taking in the McFarland and Alex Groves ditches, thence north and northeast thru the Studley

²⁸⁸ "May Drain Mud Lake, Drainage Ditch Contemplated for Professor Kent's Abandoned Farm Project, County Asked to do Work," April 7, 1903.

²⁸⁹ "May Drain Mud Lake, Drainage Ditch Contemplated for Professor Kent's Abandoned Farm Project, County Asked to do Work," April 7, 1903.

²⁹⁰ "May Drain Mud Lake, Drainage Ditch Contemplated for Professor Kent's Abandoned Farm Project, County Asked to do Work," April 7, 1903.

²⁹¹ "Mud Lake Is Doomed," *Evening-Times Republican*, October 21, 1903.

farm to the present terminus at the second bridge east of the town of Kamrar."²⁹² Fox also noted that the ditch would drain an estimated 14,000 acres at a length of four miles and a cost of \$9,500. "The town of Kamrar lies inside of this district and the ditch will drain portions of Blairsburg, Liberty, Independence, and Hamilton townships."²⁹³ His report was extensive. "To make the necessary surveys it was necessary to run over 75 miles of levels and to drive over 180 miles of territory in looking up the various sub-districts of the main district."²⁹⁴ Fox filed his report with the county auditor.

By the end of October 1903, an *Evening Times-Republican* headline rang out, "Mud Lake Is Doomed: Big Prairie Swamp is to Be Converted Into Finest Farming Land. Drainage Ditch to Cost \$54,760. Much Money Has Been Spent in Former Attempts to Drain This Lake, Resulting Only in Failure, But the Present Enterprise Seems Assured of Success -- The Plans."²⁹⁵ The next day, the *Webster City Journal* reported, "Old Mud Lake To Go: Monster Ditch Will Drain Famous Lake and Convert its 1,600 Acres into Farm Land. Ditch Will Cost \$56,700. Will be 33 Feet Wide at Bottom and 6 1/2 Miles Long -- Report Just Made to Auditor."²⁹⁶ The articles detailed Fox's report to their audiences, but the reporter's thoughts seemed disparate. In one paragraph, the newspaper reported,

The report...is an exceedingly interesting one as the contemplated ditch is far ahead of anything in this vicinity and will cost a large amount of money. It is especially interesting on account of the fact that the contemplated ditch will put out of existence for all time a land mark familiar to many thousands of people. One effort to drain the lake has proved a failure but there is no chance for this one to do likewise.²⁹⁷

²⁹² "Hamilton County Ditch," *Evening-Times Republican*, October 17, 1903.

²⁹³ "Hamilton County Ditch," *Evening-Times Republican*, October 17, 1903.

²⁹⁴ "Mud Lake Is Doomed," October 21, 1903.

²⁹⁵ "Mud Lake Is Doomed," October 21, 1903.

²⁹⁶ "Old Mud Lake To Go," *Webster City Journal*, October 22, 1903.

²⁹⁷ "Mud Lake Is Doomed," October 21, 1903.

Later on, the newspaper stated, "Old Mud Lake is to go for sure next spring and in its place will be one of the finest farms in the state of Iowa which means in the United States."²⁹⁸

Despite the newspaper's decree that failure seemed unlikely this time, the project was massive. The lakebed of Lake Cairo was approximately 1,800 acres depending on the water level, and it was the basin for 42,395 acres in the vicinity. The report noted, "This watershed is 10 miles wide on the south end, sixteen miles long north and south and drains portions of Blairsburg, Liberty, Independence, and Hamilton, Lyon, and Clear Lake townships. It drains all the town of Kamrar and the north part of the town of Jewell Junction."299 The main ditch, approximately six and a half miles long, would have four lateral ditches running to the edge of the lake. The bottom of the main ditch would be thirty-three feet wide at the outlet and nine feet wide at the inlet. "The main ditch will have a water velocity of two and six-tenths miles per hour and will discharge at its outlet 3,240,000 gallons of water per hour. The distance around the territory to be drained, following the water divide, is 50 miles."³⁰⁰ The required grading and dredging work would take a lot of time, and the cost was great. Estimated at \$56,700, the benefit of the drainage was more difficult to ascertain. The current value per acre was \$20, but the estimation was that it would grow to \$100 per acre with the drainage. The Evening Times-Republican thought the risk was worth it. The article noted, "In years such as the last one the lake is worth nothing at all," and with the drainage, "the value of the lake will be \$160,000."³⁰¹ The Board of Supervisors were to vote on the project in November, starting with the creation of a drainage district followed by dredging work to start after the spring thaw in 1904.

²⁹⁸ "Mud Lake Is Doomed," October 21, 1903.

²⁹⁹ "Mud Lake Is Doomed," October 21, 1903.

³⁰⁰ "Mud Lake Is Doomed," October 21, 1903.

³⁰¹ "Mud Lake Is Doomed," October 21, 1903.

While the survey work and report writing were taking place, Kent was busied himself in founding the Iowa Drainage Association, a lobbying organization that advocated for better drainage laws in Iowa. The *Des Moines Register* reported that farmers across northern and northwestern Iowa were demanding better drainage laws. "The entire northwestern District of the state is apparently girding on its armor in preparation to demand the passage of a bill which will mitigate the evil existing at the present time."³⁰² The current laws allowed for ditching for sanitary purposes only. This likely had to do with the control of pests in wetland areas, such as mosquitoes or unwanted bird species, but it kept farmers from using all the land they owned due to excess moisture. The farmers "say the main object which they have in view is to till the land and they have no desire to start out with a false representation."³⁰³ *The Register* wrote

The claim of the northern and northwest Iowans who are principally interested in ditch legislation is, that the end in view warrants the expenditure. They insist that the amount of ground reclaimed to cultivation will more then repay the expenditure of money that would be required and would warrant the state in enforcing drastic legislation in making the drainage of land possible. No one seems to have worked the system out, the plan is still being in a chaotic state, but the fact that no man from that section of the country comes to Des Moines without mentioning ditch legislation is a fair guarantee that it will take form.³⁰⁴

The farmers justified the cost with the expected end result even though a plan did not exist on how exactly this massive drainage effort would happen and be paid for.

Kent, and the Iowa Drainage Association, played a large role in the push for better drainage laws. Kent's former employer, Iowa State College of Agriculture and the Mechanic Arts, also got involved in the quest for better drainage across the state by hosting the annual Iowa

³⁰² "Drainage Laws Are Demanded," *Des Moines Register*, November 28, 1903.

³⁰³ "Drainage Laws Are Demanded," November 28, 1903.

³⁰⁴ "Drainage Laws Are Demanded," November 28, 1903.

Drainage Convention, starting in 1904. The Evening Times-Republican printed the College's request for farmer participation. They wrote

These men urge that the convention be called for the purpose of discussing the drainage problems of the state and for collecting and publishing such facts and data as will most effectively lead landowners to take an active interest in the subject of drainage. It is believed when their interests are aroused farmers will take steps to drain their lands and that they will demand that their representatives in the Legislature passed drainage laws which will be for the best interest of all sections of the state. The authorities of the Iowa State College at Ames favor every movement which gives promise of improving the agricultural conditions of Iowa. Four months and years there has existed in Iowa a public sentiment which has constantly been growing stronger in favor of new drainage laws.³⁰⁵

The leading faculty at the Iowa State College noted that there were thousands of acres of land in Iowa that were unproductive because they were too wet for cultivation. Farmers reported that between twenty and eighty percent of their land needed to be tiled for drainage, and many others stated that "they have no adequate outlet, were they to tile their land."³⁰⁶

The first Iowa Drainage Convention took place on January 5 and 6, 1904. Kent delivered an address titled, "The Drainage Problem," and declared that 500,000 acres of land could be "redeemed by drainage."³⁰⁷ Kent also noted "that if the 500,000 acres, which under existing circumstances are practically worthless, were drained and reclaimed, it would increase the corn output over 200,000,000 bushels yearly, and if this were sold at 25 cents a bushel it would net \$50,000,000."³⁰⁸ He also called for the formation of drainage districts. His "plan for better drainage provides for the division of the state into districts, including from 5,000 to 30,000 acres,

³⁰⁵ "Request of Farmers," *Evening-Times Republican*, November 13, 1903.

³⁰⁶ "Request of Farmers," November 13, 1903.

³⁰⁷ "Good Roads Men In State Meeting," *Des Moines Register*, February 25, 1904.

³⁰⁸ "Good Roads Men In State Meeting," February 25, 1904.

and each district to be drained into one common outlet or channel."³⁰⁹ On April 29, 1904, the state legislature approved a bill for better drainage. It stated

AN ACT to promote the public health, convenience and welfare, by leveeing, ditching and draining the lands of the state, and providing for the establishment of levees, drainage districts, or for the changing or [of] natural water courses to secure better drainage, and providing for the construction of ditches, drains and water courses and prescribing the method for so doing, and providing for the assessment and collection of the costs and expenses of the same, and issuing improvement certificates, or issuing and selling bonds therefor, additional to title ten (X), chapter two (2) of the code and code supplement.³¹⁰

In response to the new law, another lake in Hamilton County, approximately 1,000 acres, sold for \$57,000 as J.H. Moore, the owner, saw the profitability of the new law for his lakebed.³¹¹ Discussion of drainage continued into 1905 and 1906 with successive Iowa Drainage Conventions hosted by the Iowa State College. The hosts urged "every owner of wet land, every county supervisor, county auditor and county engineer in Iowa should make definite plans to attend the state drainage convention.^{"312} Although the work for better drainage laws continued, Kent faded from the newspaper reports, and the effort to drain Lake Cairo did not start in the spring of 1904.

Bitter Fight Is On

The activity at the state policy level did not leave Lake Cairo untouched. Kent's petition and the report by engineer Fox prompted the Hamilton County Board of Supervisors to vote on the formation of a drainage district for Lake Cairo. The opposition was fierce. The Supervisors met to hear both sides of the argument. Someone filed a remonstrance against the proceeding, stating it would cost \$300,000 to drain the lake, not the \$57,600 estimated in Fox's report. Farm

³⁰⁹ "Good Roads Men In State Meeting," February 25, 1904.

³¹⁰ "Chapter 68: Levees, Ditches, Drains and Water Courses," *Law of the Thirtieth General Assembly* (Iowa Legislature: April 29, 1904), 61.

³¹¹ "Lake Bed Sold," *Evening Times-Republican*, October 29, 1904.

³¹² "Convention at Ames," Evening-Times Republican, December 12, 1904.

owners "in the proposed district deem as iniquitous the proceedings of the lake owners to extort money from them to aid in the drainage of this big lakebed."³¹³ The farmers feared "that a creation of a drainage District of the Lake and the surrounding watershed will be of such an enormous cost to them that they will have to mortgage their farms in order to pay for the big drain which it is proposed to build."³¹⁴ While the owners of the lakebed asserted "that they cannot drain the lake bed otherwise as they cannot purchase an outlet for a ditch should they attempt to make private drain."³¹⁵ Much of the indignation was directed at Kent for continuing to meddle in the affairs of Lake Cairo after his foreclosure. The *Evening Times-Republican* reported, "[The farmers] look with indignation upon what seems to them to be a most iniquitous scheme to extort from them money for the benefit of the lake bed owners, who desires to change it from a lake to fertile fields, largely at the expense of the people."³¹⁶

Opposition did not only come from the farmers of Hamilton County. It also appeared in other forms. An editorial in the *Evening Times-Republican*, written by E.B. Howard of Ames, Iowa, asked the question, "If [the extent of tile lines and great drainage ditches] caused such heavy and continued overflows the past two years, then indeed it is time to ask, what will become of towns and cities, partly and bridges, road dikes and rich valley lands that are wholly within valleys draining those flat counties of northern and western Iowa?"³¹⁷ Howard, an extensive Iowa landowner, candidate for Congress, and ardent supporter of the drainage law, attended the Iowa Drainage Convention a couple weeks prior to writing the editorial and came away with great concerns that "the state drainage convention [was] giving encouragement to the

³¹³ "Bitter Fight Is On," *Evening-Times Republican*, November 20, 1903.

³¹⁴ "Bitter Fight Is On," November 20, 1903.

³¹⁵ "Bitter Fight Is On," November 20, 1903.

³¹⁶ "Bitter Fight Is On," November 20, 1903.

³¹⁷ "A Drainage Danger," Evening Times-Republican, January 23, 1904.

inhabitants of the flat counties of Iowa to proceed in the greatest haste to throw the waters of those great flat areas to the valleys below them in a single day."³¹⁸ Howard's concern stemmed from the placement of tile lines and ditches before rivers and streams could be cut wider and straighter to accommodate the added water flow. They noted

...that by compelling the water to flow in a straight stream bed that the game in velocity would be two to four times that of the old crooked streambed in distance, much more in the rain of fall and even more than that as the water would be deeper in the new ditch and its velocity thereby increased. But the coefficient of roughness or washing of and budding of banks of streams, together with the retarding of the old stream by roots and drift, is all, or nearly all, overcome in the new straight stream, because its velocity is so great that it sweeps away all obstructions.³¹⁹

As the farmers of Hamilton County questioned the cost of drainage districts, others, like Howard, questioned the science behind a quick adoption of tile drainage and drainage ditches. After an eleven-day session, the Board of Supervisors adjourned, denying the petitions for drainage districts for Lake Cairo and four other districts. The newspaper stated, "The owners of Mud Lake Farms will have to drain their own land or raise bullheads."³²⁰

In 1908, after trying and failing to form a drainage district for Lake Cairo in Hamilton County, "a petition has just been filed asking that the board of supervisors make a drainage district out of Mud Lake, and as this old lake is the largest in the county, containing within its meandered lines about four sections, and as at least eleven sections will be included in the watershed, much trouble and possible litigation is likely to result."³²¹ The *Des Moines Register* reported

³¹⁸ "A Drainage Danger," January 23, 1904.

³¹⁹ "A Drainage Danger," January 23, 1904.

³²⁰ "Ditch Petition Denied," *Evening-Times Republican*, November 21, 1903.

³²¹ "Mud Lake May Be Drained," Des Moines Register, October 10, 1908.

Other attempts have been made to make a drainage district of this large lake bed, but without result. Mud lake is known to huntsmen all over this section of the state. It is now the property of the Rand estate. For many years it has been a favorite rendezvous for ducks and other game. Years ago the owners of the big basin attempted to drain it, but the ditch they cut, although it cost many thousands of dollars, was all too small. Portions of it have been under cultivation in dry seasons, but as a general proposition cultivation of the lake bed has been a failure. The natural watershed of this lake runs from north of Blairsburg to a point below Jewell, a stretch of some twenty miles in length. The unusual size of this caused so many objections to a county drainage district that heretofore the board had refused to establish a district there. In the petition now on file, however, only about 7,000 acres have been included in the watershed. In this are the farms adjacent to the lake which will be immediately benefited by draining the big pond.³²²

Five years after the first attempt to form a drainage district, the estimated cost to drain Lake Cairo went from \$57,600 to \$66,164, and the newspaper noted that the majority of farmers were still against it. Despite this, in late-March 1909, "the board of supervisors established the Mud Lake drainage district. It will be known as district No. 71. The district embraces about 12,000 acres of land."³²³

As the *Des Moines Register* anticipated in the article "Mud Lake May Be Drained," the opposition and litigation continued after the formation of the drainage district. The "controversy over drainage of Mud Lake in Hamilton County promises to be long drawn out; the county will fight the case thru the supreme court if necessary."³²⁴ A railroad existed alongside the lake for decades prior to 1909. The C. & N.W. Railway Company owned the railroad and refused "to slide down Hamilton county's cellar door, to say nothing of assisting in the construction of a ditch to drain the largest lake in this immediate section of the state."³²⁵ The railway claimed \$37,700 in damages after the Supervisors announced the new drainage district, but the Board

³²² "Mud Lake May Be Drained," October 10, 1908.

³²³ "Drainage District Formed. Mud Lake District Established in Hamilton County," *Evening Times-Republican*, April 2, 1909.

³²⁴ "C. & N.W. Appeals. Railway Company Objects to Paying \$36,800 Drainage Assessment," *Evening Times-Republican*, May 14, 1909.

³²⁵ "C. & N.W. Appeals. Railway Company Objects to Paying \$36,800 Drainage Assessment," May 14, 1909.

allowed only \$920 to be awarded. The railway filed two appeals; first to appeal "the establishment of the district and the other is against the damage assessment allowed them."³²⁶ *The Register* noted, "Mud lake lies between Kamrar and Jewell and the ditch draining it would run along the Northwestern right-of-way some five miles, in the course of which distance it would cross the railroad twice. There are already small bridges at these points, but \$37,700 would, of course, construct fine iron structures and leave a goodly sum besides to put upon road bed improvements."³²⁷ Neither the Railway nor the Board of Supervisors would reverse their decisions, so the appeal against the drainage district ended up in the courts.

Judge Albrook, the jurist for the first appeal, sided with the Supervisors. As for the appeal against the award for damages, "negotiations are now pending for the settlement of this latter matter," but "a late ruling of this latter court, however, holds that where drainage ditches cross railroad rights-of-way, the railroad companies and not the drainage districts must construct the bridges.³²⁸ This ruling would materially cut down any claim the Northwestern might make in the Mud Lake district."³²⁹ With this last obstacle concluded for the drainage district, the Board of Supervisors sought bids for the project. In June 1909, the *Evening Times-Republican* reported, "A drainage ditch contract...for the Mud Lake district was let to the Northern Construction Company of Elkhart, Ind., at 6.65 cents per cubic yard. There are 651,000 yards to be moved. Eleven bids were received on the Mud Lake ditch..."³³⁰ Over a year later, the newspapers reported that the draining of Lake Cairo seemed imminent. The *Evening Times-Republican*

 ³²⁶ "C. & N.W. Appeals. Railway Company Objects to Paying \$36,800 Drainage Assessment," May 14, 1909.
³²⁷ "C. & N.W. Appeals. Railway Company Objects to Paying \$36,800 Drainage Assessment," May 14, 1909.
³²⁸ "Supervisors Score. Judge Albrook Rules Regarding Establishment of Mud Lake Drainage District," *Evening Times-Republican*, June 1, 1909.

³²⁹ "Supervisors Score. Judge Albrook Rules Regarding Establishment of Mud Lake Drainage District," June 1, 1909.

³³⁰ "Ditch Contracts Awarded. Hamilton County Board Accepts Only Two of Several Bids," *Evening Times-Republican*, June 23, 1909.

wrote, "They already have large dredge boats ditching into Mud Lake and it will be drained if possible."³³¹



Figure 4. Photo of a dredging machine used to dredge ditches for Lake Cairo from *History of Hamilton County, Iowa*.

The days of Lake Cairo, as a lake, a place of recreation, and a wayfinding feature on the landscape, came to an end in late-September 1911. "Even though now drained," there was still aggressive opposition to the project, and "the fear even yet expressed is that the ditch, bringing the water down from the thousands of acres that it will drain, will carry a volume too heavy in flight times for the crooked stream beyond to carry off, and the farmlands below the ditch will be flooded."³³² The task to dig the ditches was a gigantic one and was seen as "one of the largest and most important drainage enterprises in Central Iowa."³³³ The advocates of the project anticipated

³³¹ "Jottings From Jewell," October 14, 1909.

³³² "Big Ditch Finished. Mud Lake Drain Will Be Completed Within Few Days," October 2, 1911.

³³³ "Big Ditch Finished. Mud Lake Drain Will Be Completed Within Few Days," October 2, 1911.

that a "tremendous amount of water will come rushing down that channel at certain wet seasons of the year" to drain "nearly 15,000 acres of Hamilton County lands."³³⁴ On October 2, the

Evening Times-Republican wrote

Within about a week and a half the Northern Construction company's big dredge boat that has been working on the Mud Lake ditch project the past two years will rub its nose against the stone piers of the railroad bridge just east of the Depot in Jewell, and with that one of the biggest drainage Enterprises of Central Iowa, a project that was first proposed nearly 15 years ago, will finally be consummated.³³⁵

The newspapers did not report the actual draining of Lake Cairo a week and a half later, but it can be assumed to have been completed as the lake no longer exists as a body of water on the landscape. In 1916, the newspapers mentioned Lake Cairo, once again, when they reported that "one of the widest known men in Hamilton county and especially prominent in farmers' institutes and other rural activities," D.A. Kent, died on October 13 outside Donna, Texas, after a lingering illness with tuberculosis.³³⁶ The *Evening Times-Republican* wrote, "The drainage area has since been developed into fine farmland but the original plan netted the originator nothing."³³⁷

Building Ponds

The conservation movement started in Iowa as early as 1857 with wildlife conservation and the 1857 Game Law. Forest conservation started in 1866, and conservation for parks started circa 1890. Soil and water conservation did not start until 1909 when people saw the lakes and wetlands of a huge swath of northern Iowa disappear over the course of two decades. They feared Iowa would no longer have any lakes for recreation or beauty, so they built momentum to

³³⁴ "Big Ditch Finished. Mud Lake Drain Will Be Completed Within Few Days," October 2, 1911.

³³⁵ "Big Ditch Finished. Mud Lake Drain Will Be Completed Within Few Days," *Evening-Times Republican*, October 2, 1911.

³³⁶ The Maurice Times, July 15, 1916.

³³⁷ "Prof. D.A. Kent Dead. Original Iowa Drainage Advocate Victim of Tuberculosis," *Evening-Times Republican*, October 19, 1916.

protect meandered streams and lakes and to restore marshlands.³³⁸ Proper drainage was part of the conservation movement in Iowa, but priorities shifted from draining to large meandered lakes, like Lake Cairo, to protecting and restoring these places for recreational uses, wildlife habitat, and local tourism. Unfortunately, for Lake Cairo this momentum came too late.

After the formation of the Mud Lake drainage district in 1909, other states called for the creation of lakes and ponds instead of draining them. This call raised the myth that lakes and ponds minimized prolonged droughts. Articles published in the Webster City Freeman and the Des Moines Tribune, discussed a new initiative in Kansas "calling for a week of voluntary service all over Kansas in road building and pond digging."³³⁹ The Kansas governor believed "that the drying up of the ponds and little lakes in Kansas has been the cause of the drouth," and "he wants ponds made in every county capable of holding waters from the winter's snow and the spring rains."³⁴⁰ This myth was debunked by Dr. John Sage, of the Iowa Weather and Crop Bureau, a year prior in an effort to help people understand the effects of drainage on the Iowa landscape. At the time, Sage was responding to "Uncle Dick Clarkson, editor of The Des Moines Register, who fought Hamilton county many years ago for allowing Professor Kent to drain Mud lake."341 While the *Tribune* article admitted Clarkson was "weak theory," it said he was "correct in principle."³⁴² It added, "This season it will be noticed the best crops are raised in the neighborhood of lakes and ponds. The governor of Kansas is on the right track. Preserve the lakes and build more ponds."³⁴³ The Freeman article, on the other hand, stated, "The best

³³⁸ State Historical Society of Iowa, "The Conservation Movement in Iowa, 1857-1942," National Register of Historic Places (United States Department of the Interior, December 23, 1991).

³³⁹ "Building Ponds," *Des Moines Tribune*, September 4, 1913.; "Lakes and Ponds," *Webster City Freeman*, September 9, 1913.

³⁴⁰ "Building Ponds," September 4, 1913.; "Lakes and Ponds," September 9, 1913.

³⁴¹ "Building Ponds," September 4, 1913.

³⁴² "Building Ponds," September 4, 1913.

³⁴³ "Building Ponds," September 4, 1913.

authorities now admit that local conditions have nothing to do with rainfall. The moisture comes from the gulf and from the oceans and if the winds are right there will be an abundance of precipitation."³⁴⁴

In 1913, more lake drainage in Hamilton County prompted opposition to speak out. Just southeast of Jewell sat Little Wall Lake, which was smaller than Lake Cairo, and until this point in its history had managed to escape a major drainage project. Governor Clarke visited the lake with his executive council, describing it as

...not a lake...it is just a swamp. True, there were a few teal, but wild ducks were by no means plentiful enough to warrant wasting 2,000 or more acres of land. The worse feature is that there are thousands of blackbirds near the lake. Farmers told us that from \$500 to \$1,000 damage is done the crops on every farm near the lake every year. The sheaves on grain shocks are ruined. Hundreds of bushels of corn are destroyed. The waste is large and a worry to the farmers. In twenty years from now this swamp will be a tract of land worth more than \$100,000 to the state...and this value will be realized without one cent of expense to the state. The bed has been leased for twenty years at 25 cents an acre. In that time it is to be drained without expense to the state.³⁴⁵

This statement was met with an outcry, notably from The Des Moines Register, which stated

Lake Cairo has gone through the same history as is proposed in the case of Wall Lake. There was once a considerable body of water there and lots of wild game and fish, trees surrounded the banks at one side. Since it has been drained there have been practically no crops raised on it, in the spring it is largely flooded and there are just as many blackbirds as there was before. With a little work Lake Cairo could have been made a permanent body of water.

The newspaper also noted that there were only a few lakes like Little Wall Lake left in the area, and that these bodies of water were important breeding grounds for a variety of waterfowl. The newspaper was adamant that these lakes should remain a part of the public domain in Iowa. It wrote, "The government gave them to the state in trust for the entire people of the state; not to

³⁴⁴ "Lakes and Ponds," September 9, 1913.

³⁴⁵ "Governor Clarke Visits Wall Lake," *The Webster City Herald*, October 2, 1913.

dispose of for commercial purposes but to hold forever in trust; they cost the state nothing and they should be kept in perpetuity. Why not have a vote of the people on the disposal of these lakes?"³⁴⁶

More opposition was voiced in the Jewell Record by W.S. Hoon, a mail carrier from Ames, Iowa, who was "not only interested in Little Wall Lake south of town, which is so widely cussed and discussed of late, but in all lakes and natural beauty spots."³⁴⁷ Similar to *The Register*, Hoon questioned who had a right to make decisions about these lakes. He wrote, "As the lake is at present it belongs to the people. Rich, poor, and all alike. Like the air it is ours to use. Drain it and it belongs to the few. There are about 125,000 sportsmen in Iowa and equally as many more who are nature lovers."³⁴⁸ Hoon questioned the leadership of Iowa and their priorities for the state. He hoped that an injunction could be put in place until "we can have the right kind of State officials who have something in them besides a knowledge of getting more land to raise more corn to raise more hogs to buy more land, etc."³⁴⁹ He questioned why states like Kansas were "spending thousands of dollars in making artificial lakes and Iowa is spending vast sums in trying to destroy them.³⁵⁰ He wrote of the importance of the lakes as recreational areas as "the good people of the grand state of Iowa need playgrounds for the grownups just as much as they need playgrounds for the children."³⁵¹ Hoon acknowledged the importance of recreation, beauty, and wildlife habitat in these natural places, and also, that these places were "growing the big corn crops" for "greedy land grabbers."³⁵² He ended his appeal with a question: "Improve Little Wall

³⁴⁶ "Governor Clarke Visits Wall Lake," *The Webster City Herald*, October 2, 1913.

³⁴⁷ "Communication," *Jewell Record*, September 11, 1913.

³⁴⁸ "Communication," September 11, 1913.

³⁴⁹ "Communication," September 11, 1913.

³⁵⁰ "Communication," September 11, 1913.

³⁵¹ "Communication," September 11, 1913.

³⁵² "Communication," September 11, 1913.

Lake, fill it full of game fish, and make it a park for the public and it will be ours, drain it and whose will it be?"³⁵³

By 1921, Little Wall Lake was the last remaining lake in Hamilton County. In a newspaper article titled, "Hamilton County Has Only One Lake," the author bemoaned the draining of Lake Cairo ten years earlier. They wrote, "[Lake Cairo] was the largest lake, and a great rendez-vous for wild fowl."³⁵⁴ Among descriptions of the flora and fauna around Little Wall Lake, the author also issued a warning for the lake that the draining of Lake Cairo

...has been a failure. In wet weather the corn field is covered with water. It was a great mistake to drain that area of the lake. Hamilton county needs a few such places and if she is not careful the ruling spirit of the ages—commercialism—will flood her corn land also, and she will be forced to realize that there are more important things than acres of corn land.³⁵⁵

Conservationists continued their onslaught in the effort to keep the lake from being drained. In the early 1900s, the Iowa State College faculty supported the drainage of Iowa lakes for fertile farm fields. In a reversal of this position, Louis H. Pammel, professor of botany, led a public meeting to propose and gain support for a state park at Little Wall Lake. The author of this newspaper article that was published in the *Webster City Daily News* in 1924 did not mince words when comparing the situation at Little Wall Lake to Lake Cairo. They wrote

Mud Lake was lost to the people of the county and adjoining counties in one of the greatest outrages ever perpetuated in the state, whereby naturally beautiful resources, God-given playgrounds, were converted into private gain. As it turned out, there was little private gain about it, in the end, but the harm was already done and the lake was gone. Half of this tract is now caked mud and rushes. Little Wall Lake, while not

³⁵³ "Communication," September 11, 1913.

³⁵⁴ "Hamilton County Has Only One Lake," Webster City Daily News, August 18, 1921.

³⁵⁵ "Hamilton County Has Only One Lake," August 18, 1921.

comparing to the beauty of old Lake Cairo, or Mud Lake, will nevertheless be a spot of extraordinary beauty at any season of the year...³⁵⁶

The interests between public and private as well as conservation and capitalism were taking sides in the fight for Little Wall Lake. People in Central Iowa were determined to keep Little Wall Lake from becoming another version of Lake Cairo.

More support for the designation of Little Wall Lake as a park came from the Izaak Walton League, and Mrs. F.E. Whitley, at a conference in 1926. Mrs. Whitley was a champion for outdoor recreation, pollution control, and wildlife preservation. The main goals of the conference were "checking pollution of waters, opposing unnecessary drainage, protecting wildlife, and preserving natural scenery."³⁵⁷ Mrs. Whitley "told how streams and lakes have been drained to the great detriment of wildlife and natural scenery. In this respect, she cited Lake Cairo, north of Jewell, which was drained years ago to save land which had never proven profitable for farming."³⁵⁸ She continued, "...if the present disregard for nature continues within the state as well as the entire country. All states...are confronted with the conservation problem and all must consider the future."³⁵⁹ She made an appeal not to ignore the conservation of Iowa's natural beauties and pointed out what losses have been suffered in Hamilton County by the passing of Lake Cairo near Kamrar.³⁶⁰ Her talk was "one of the best the local league has ever listened to and that it was deeply appreciated was evident by the spontaneous and long applause

³⁵⁶ "Proposed State Park Out of Little Wall Lake," Webster City Daily News, October 24, 1924.

³⁵⁷ "Many Waltonians and Wives Attend Annual Meeting and Pigeon Pie Supper," *Daily Freeman Journal*, January 30, 1926.

³⁵⁸ "Many Waltonians and Wives Attend Annual Meeting and Pigeon Pie Supper," January 30, 1926.

³⁵⁹ "Appeals for Conservation: Kiwanians Are Addressed by Mrs. F.E. Whitley on Conservation Problem," *Daily Freeman Journal*, November 13, 1926.

³⁶⁰ "Appeals for Conservation: Kiwanians Are Addressed by Mrs. F.E. Whitley on Conservation Problem," November 13, 1926.

given her.^{"361} In the end, Little Wall Lake did not meet the same fate as Lake Cairo. It was dredged, restored in 1961, and designated a county park.

The Future Looks Mighty Rosy

For twelve years, Lake Cairo was not mentioned in the press. In 1938, the *Estherville Daily News* reported that members of the Conservation League and others interested in conservation were considering 160 acres of submarginal land, near Lake Cairo, for purchase as a game preserve. The group that toured the land was accompanied by Senator L.G. Chrystal and Representative E.J. Maniece. Senator Chrystal assured the group that "it was in the state conservation program to buy marginal land in northern Iowa as rapidly as it could be procured."³⁶² The Senator noted that the northern part of the state had been neglected within the conservation program, and the imbalance was being remedied as quickly as possible. The state conservation program owned three dredges, which were being used to restore lakes that had filled in with silt as that was "much cheaper than 'made' lakes."³⁶³ He continued, "The naturalness of the lake situation in [the northern] part of the state is the main reason for the commission's anxiety to get hold of the swamp land as soon as possible, and the plot [near Lake Cairo] is the most likely place in Iowa for a restored lake."³⁶⁴

The last instances of Lake Cairo in the Central Iowa press appeared in the 1960s, almost one hundred years after the lake was first mentioned as the ideal picnic location "on the pebbled shore in the beautiful grove."³⁶⁵ In 1960, the Hamilton County Conservation Board issued a ten-

³⁶¹ "Many Waltonians and Wives Attend Annual Meeting and Pigeon Pie Supper," January 30, 1926.

³⁶² "Senator Finds Project Best in the State: Conservation Officer Looks Over Mud Lake Farm With View to Purchase as Game Preserve," *Estherville Daily News*, November 3, 1938.

³⁶³ "Senator Finds Project Best in the State: Conservation Officer Looks Over Mud Lake Farm With View to Purchase as Game Preserve," November 3, 1938.

³⁶⁴ "Senator Finds Project Best in the State: Conservation Officer Looks Over Mud Lake Farm With View to Purchase as Game Preserve," November 3, 1938.

³⁶⁵ "Pic-nic Celebration," Hamilton Freeman, July 15, 1868.

year plan that presented ideas for more public green space in the county. Goal three consisted of contacting landowners, seeking unproductive land for parks, forests, and game management

areas. The Daily Freeman Journal noted

The report points out that there are a great many old gravel pits, sloughs, bottom lands, and timber trails that can be acquired by the board through gifts or at a nominal purchase prize. Members of the county conservation board believe that the county could acquire several hundred acres of this type of land in the next 10 years for planting of shrubs and trees to provide better habitat for game and wildlife in the county.³⁶⁶

The report also listed long-range projects, one of which urged "the State Conservation Commission to seek federal development of the Lake Cairo area as a public hunting ground and waterfowl area" as well as "development of several small wetlands as wildlife preserves."³⁶⁷ The report also stated

The county conservation board has requested the State Conservation Commission to investigate Lake Cairo (Mud lake) south of Kamrar as a possible site for a national waterfowl area. If developed with federal Pittman-Robertson Act funds, it could provide 1,200 to 1,600 acres of water with a depth of up to 16 feet. The lake was drained many years ago. The land in the old lake bed is privately owned and is being farmed at the present time. Earlier this year, the county was ordered by the district court "to restore to its original condition the drainage system in the Lake Cairo area.³⁶⁸

At this point in its history, Lake Cairo was a corn field, and yet, one hundred years later, people valued Cairo for its potential to be a beautiful place within the landscape for wildlife habitat and recreation once again. "The future, as pictured by Hamilton county's bustling conservation board, looks mighty rosy for Hamilton county residents who enjoy outdoor events such as picnics, water sports, fishing, and many other recreational activities."³⁶⁹

³⁶⁶ "Conservation Board Announces 10-Year Development Program, *Daily Freeman Journal*, December 31, 1960.

³⁶⁷ "Conservation Board Announces 10-Year Development Program, December 31, 1960.

³⁶⁸ "Conservation Board Announces 10-Year Development Program, December 31, 1960.

³⁶⁹ "Future Looks Good," *Daily Freeman Journal*, January 5, 1961.

Momentum within the conservation movement, in Iowa, changed the way people valued Lake Cairo, yet again. Even as Hamilton County forged ahead with the creation of the Mud Lake drainage district and the draining of Lake Cairo in the early 1900s, people questioned what was most important. Only after the county drained Lake Cairo did the newspapers report strong opinions against the draining. The ecosystem of northern Iowa was changing across the state. Lakes, and prairie potholes, were being drained all over, and people realized that this drained landscape may not be what they wanted for the future of Iowa. The value placed on the natural ecosystem that Lake Cairo once was came full circle only after the lake became a farm field.

Despite the calls for conservation in the early 1960s, Lake Cairo disappeared from the newspapers except for one brief mention in an editorial from 2011. The absence of news about the lake speaks to yet another change to the value of Lake Cairo. Lake Cairo, as a lake, a body of water, a feature upon the landscape, disappeared by 1911. One hundred and nine years later, the people involved in the drainage process are long gone. The people who lived around the lake, or generally in Hamilton County who may have known about the lake, at the time are long gone. The sportsman who hunted around and fished upon the lake are long gone. The farther Lake Cairo, as a lake, is removed from time, it is removed from memory as well. Evidence of the lakebed still exists. As long as the landscape upon which Lake Cairo, the body of water existed, the place continues to exist.

CHAPTER 6. CONCLUSION

The history of Lake Cairo is one example of how the value of a place can change over time. The way people perceive a place, and the value people hold for a place, does not stay static. For Lake Cairo, these implications meant that starting from the first mention in an Iowa newspaper in 1868, the lake was perceived as a beautiful place for recreational uses. In the summertime, people picnicked on the lakeshore and sailed boats across the water. In early winter, they hunted the waterfowl that migrated overhead. They fished year-round and sold the fish in local towns. People, and the newspapers, used the lake as a wayfinding device to describe the location of something according to its proximity to Lake Cairo. By the 1880s, these perceptions changed. While it seems that locals always viewed the lake with a bit of annoyance, especially during the wet season when the marshes made roads impassable, by the 1880s, people viewed the lake as a menace. Pests, such as insects and unwanted birds, used the lake for habitat and a food source. The prolonged drought of the late-1880s and early-1890s made the condition of the lake in the case of mosquitos worse. Lake Cairo, as a lake, no longer held the same value as before.

News of the drainage of other lakes and marshes around the region reached Hamilton County, and locals deemed Lake Cairo a worthless swampland. The drought, paired with this perception, gave D.A. Kent the opportunity to test his grand drainage and vegetable farm experiment. He circumvented the early human-made obstacles of financing the operation and obtaining the patent only to be trounced by natural forces of unusual heavy precipitation in the late summer and fall of 1896. As Kent faded from the narrative, the Board of Supervisors of Hamilton County took up the cause. Amid opposition, for various reasons, by early-winter of 1911 Lake Cairo was drained. After the lake was gone, the opposition mounted in 1921, 1938,

and the early-1960s. People questioned why Lake Cairo was drained and how it came to be that someone allowed the draining to happen. People were angry and upset, because the perception of what Lake Cairo was, and what Hamilton County lost with the draining, shifted once again. Conservation took on new meaning. From drainage as land conservation, natural places gained value once again. The conservation of natural places on the landscape became an important part of the public domain to be used by the people of Iowa. Many bemoaned the loss of this natural place after it was too late to save it. Perceptions of value changed.

While Lake Cairo, one lake in the land of one thousand lakes, no longer exists as a feature of the landscape in Hamilton County, Iowa, it still exists as a place. It exists within the record. It exists within memories. It exists within the soil type. Even though the value of the lake and the use of the lake changed over time, evidence of the lake exists. This thesis presented an example of how and why the ways people value a place changes over time. Simply, prairie was conducive to agricultural conversion due to the high-quality soils and flat landscape features. For Lake Cairo, the value of the lake changed as drainage technology, knowledge of agricultural practices, and societal attitudes about land use and the public domain shifted toward a more intensive agricultural system. Lake Cairo, the quality of the soil paired with the vast open land, once drained, proved an enticing opportunity for Kent and later landowners to convert the lakebed to a farm field. A more-defined conservation movement and public outcry over the loss of lakes throughout northern Iowa, shifted the value of Lake Cairo once more after it was already drained. How and why people valued Lake Cairo is clear. What remains to be answered is why does some nature hold more value than other nature? Why were areas like Yosemite Valley protected at the outset of the conservation movement, while Lake Cairo was drained to become a

farm field? Why do people think one type of nature is more valuable and more worth conserving and protecting than the other?

Finally, why does this narrative about a lake in Hamilton County, Iowa matter? History is important simply because it is history. Cultural anthropologist Marshall Sahlins believed that by telling stories, historians not only "reflect a culture, they shape it, too."³⁷⁰ Historical analysis is reflective, but also performative. Stories have agency that persuade people to act and think differently, and the act of storytelling legitimizes change and redefinition of history. Through these acts of legitimizing and redefining, history can also add value and understanding to the present. Those who work within natural and built environments, today, can use history as a tool to help communicate what they observe and to present knowledge they acquire from the places they work within. As Richard White wrote in his book, *Organic Machine*, "Americans are impatient with history. But human actions on the Columbia [River] have produced a long history, and history has consequences. Human history and the history of the river have merged...it is an organic machine and has to be dealt with as such. To call for a return to nature is posturing...history does not go away."³⁷¹

When presenting a history, how can the narrative be used to frame issues within the present? By telling a local history, like Lake Cairo, in a broader series of spatial frameworks, it can begin to speak to regional or global issues within ecosystems just as the changes on the Columbia River affected ecosystems well beyond its banks. These histories can help bring understanding about systems that were shaped a long time ago. This narrative of Lake Cairo is useful for understanding how land is used to create places or take them away, which affected

³⁷⁰ Sarah Maza, "Stories in History: Cultural Narratives in Recent Works in European History," *The American Historical Review 101*, 5, p. 1493-1515 (December 1996), 1501.

³⁷¹ Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995) 112.

ecosystems in the past and will continue to in the future. Lake Cairo has been forever changed. Most of the other lakes and marshes in northern Iowa have been forever changed. The biodiverse ecosystem of the prairie pothole region exists only in tiny remnants. These places continue to exist in altered forms. This does not mean that the organic machine of the lakes and marshes / farm fields could not be retooled to be ecologically responsible and regenerative. Local, rural histories within a larger framework can help those who work within the natural and built environments do their work better. These histories can help people understand their places better. And these histories can help people make their places better.

BIBLIOGRAPHY

Primary Sources

- "A Drainage Danger." Evening Times-Republican, January 23, 1904.
- "A Mammoth Hay Ranch." Jewell Record, October 24, 1895.
- "A 'New Woman' at Mud Lake." Hamilton County Journal, July 18, 1896.

"A Patent Issued for Mud-Lake." Webster City Freeman, October 2, 1895.

"Accident." Hamilton Freeman, August 7, 1872.

"Accidents by Lightning." Hamilton Freeman, August 6, 1879.

Algona Courier, October 29, 1897.

Ames Intelligencer, August 22, 1895.

Ames Times, October 4, 1894.

Ames Times, January 10, 1895.

Ames Times, May 30, 1895.

"Appeals for Conservation: Kiwanians Are Addressed by Mrs. F.E. Whitley on Conservation Problem." *Daily Freeman Journal*, November 13, 1926.

"Big Ditch Finished. Mud Lake Drain Will Be Completed Within Few Days." *Evening Times-Republican*, October 2, 1911.

"Bitter Fight Is On." Evening Times-Republican, November 20, 1903.

"Board of Supervisors; Proceedings of the Board of Supervisors of Hamilton County, Iowa, at Their Special Session, Jan, 2, 1895." *Graphic Herald*, January 15, 1895.

"Board of Supervisors; Proceedings of Their Adjourned September Session." *Hamilton County Journal*, October 1, 1894.

"Brains Produce Money." Ames Intelligencer, October 4, 1894.

Brown, H.E. "Pic-Nic Celebration." Hamilton Freeman, July 15, 1868.

"Building Ponds." Des Moines Tribune, September 4, 1913.

Bureau of Land Management General Land Office. Accessed October 20, 2020 https://glorecords.blm.gov/search/default.aspx.

"C. & N.W. Appeals. Railway Company Objects to Paying \$36,800 Drainage Assessment." *Evening Times-Republican*, May 14, 1909.

"Captured." Hamilton Freeman, November 13, 1878.

Charlevoix. Letters to the Dutchess of Les Diguieres, Giving an Account of a Voyage to Canada, and Travels through the vast Country, and Louisiana, to the Gulf of Mexico. London: R. Goadby, 1763.

"Coming." Hamilton Freeman, February 28, 1872.

Congressional Globe, 31 Congress, 1 session, 2: 1826-1827, 1831-1832, 1848-1850; 31 Congress, 1 session, House of Representatives, Journal, 474, 584, 1476-1478.

"Conservation Board Announces 10-Year Development Program." *Daily Freeman Journal*, December 31, 1960.

"Convention at Ames." Evening Times-Republican, December 12, 1904.

"County Legislation." Webster City Tribune, June 15, 1894.

"County Legislation." Jewell Record, January 23, 1896.

"County Legislation." Webster City Freeman, January 26, 1898.

"County Legislation, Proceedings Board of Supervisors, June Session, 1883." *Hamilton Freeman*, June 13, 1883.

"Court Action Sought on Drainage District." Daily Freeman Journal, April 27, 1960.

Daily Freeman Tribune, November 11, 1902.

Daily Leader, May 28, 1897.

"Dates of Iowa Drainage Conventions Announced." *The Des Moines Register*, January 3, 1906.

"Dead." Hamilton Freeman, November 2, 1881.

"Destruction of Iowa Lakes." *The Annals of Iowa 2*, no. 1 (April 1895): 57–60. https://doi.org/10.17077/0003-4827.2011.

"Ditch Contracts Awarded. Hamilton County Board Accepts Only Two of Several Bids." *Evening Times-Republican*, June 23, 1909.

"Ditch Petition Denied." Evening Times-Republican, November 21, 1903.

"Drainage District Formed. Mud Lake District Established in Hamilton County." *Evening Times-Republican*, April 2, 1909.

"Drainage Doesn't Cause Droughts." Webster City Freeman, March 6, 1895.

"Drainage Laws Are Demanded." The Des Moines Register, November 28, 1903.

"Ducking to Some Purpose." Hamilton Freeman, December 1, 1880.

"Early History." Hamilton Freeman, January 2, 1878.

"Ed Shaw's Escape." Hamilton Freeman, July 17, 1872.

"Editor Tribune." Webster City Freeman, July 30, 1886.

Espe, Knute, and Lawrence E. Lindley. *Soil Survey of Hamilton County, Iowa*. U.S. Department of Agriculture, 1920. <u>http://hdl.handle.net/2027/iau.31858048190015</u>.

"Excursion to Lake Cairo." Hamilton Freeman, August 2, 1882.

"Experiment Failed." The Graphic, July 21, 1898.

"Experiment in Farming." The Gazette, June 2, 1896.

"Favor Primary Law." Evening Times-Republican, January 12, 1906.

"Fenced It In." Hamilton County Journal, March 18, 1895.

"Fine." Hamilton Freeman, November 27, 1872.

"Fires." Hamilton Freeman, January 8, 1879.

"For Better Drainage." Evening Times-Republican, September 10, 1903.

"Future Looks Good." Daily Freeman Journal, January 5, 1961.

"Gone." Hamilton Freeman, May 29, 1872.

"Good Roads Men In State Meeting." The Des Moines Register, February 25, 1904.

"Gored by a Bull." *Hamilton Freeman*, July 3, 1878.

"Governor Clarke Visits Wall Lake." The Webster City Herald, October 2, 1913.

Graphic Herald, July 23, 1895.

Graphic Herald, September 10, 1895.

"Green Goods." Hamilton County Journal, March 18, 1895.

Grund, Francis J. *The Americans in Their Moral, Social, and Political Relations*. Boston: Marsh, Capen and Lyon, 1837. Accessed October 20, 2020 https://www.encyclopedia.com/history/dictionaries-thesauruses-pictures-and-pressreleases/americans-their-moral-social-and-political-relations-1837-francis-j-grund.

"Hamilton County Ditch." Evening Times-Republican, October 17, 1903.

"Hamilton County Has Only One Lake." Webster City Daily News, August 18, 1921.

Hamilton County Journal, April 8, 1895.

Hamilton Freeman, May 20, 1874.

Hamilton Freeman, August 11, 1875.

Hamilton Freeman, August 25, 1875.

Hamilton Freeman, April 18, 1877.

Hamilton Freeman, August 1, 1877.

Hamilton Freeman, October 31, 1877.

Hamilton Freeman, March 6, 1878.

Hamilton Freeman, August 21, 1878.

Hamilton Freeman, December 10, 1879.

Hamilton Freeman, March 31, 1880.

Hamilton Freeman, August 9, 1882.

Hamilton Freeman, August 9, 1882.

Hamilton Freeman, December 27, 1882.

Haswell, A. "Hamilton County." Webster City Freeman, May 8, 1889.

"Hearing Underway on Drainage Ditch." Daily Freeman Journal, June 8, 1960.

Hoon, W.S. "Communication." Jewell Record, September 11, 1913.

"Independence Gleanings." Webster City Freeman, August 27, 1884.

"Jewell." Webster City Freeman, January 14, 1887.

"Jewell." Webster City Freeman, July 11, 1894.

"Jewell." Webster City Freeman, July 25, 1894.

"Jewell." Evening Times-Republican, November 7, 1903.

"Jewell and Vicinity." Jewell Record, September 26, 1895.

"Jewell Jottings." Hamilton Freeman, July 6, 1881.

"Jewell Jottings." Hamilton Freeman, January 17, 1883.

"Jewell Jottings." Hamilton Freeman, April 4, 1883.

"Jewell Junction, A Pen Picture and Brief Review of the Thriving and Sprightly Town Bearing the above Name." *Jewell Record*, April 20, 1887.

"Jewell News." Evening Times-Republican, February 27, 1906.

Jewell Record, April 20, 1887.

Jewell Record, July 4, 1895.

Jewell Record, October 24, 1895.

Jewell Record, October 31, 1895.

Jewell Record, December 19, 1895.

Jewell Record, April 23, 1896.

Jewell Record, May 7, 1896.

Jewell Record, July 9, 1896.

"Jottings From Jewell." Evening Times-Republican, October 14, 1909.

"Judge Rules for Plaintiff in Drainage Ditch Dispute." *Daily Freeman Journal*, June 28, 1960.

"Kent a Plague Victim. Former Iowan Dies in Texas of Tuberculosis." *The Des Moines Register*, October 18, 1916.

Kent, D. A. "Corn meal and grass with stock steers.," *Bulletin 3* (2017). Available http://lib.dr.iastate.edu/bulletin/vol3/iss25/7.

Kent, D. A. "Crop report of the farm department," *Bulletin 2* (2017). Available <u>http://lib.dr.iastate.edu/bulletin/vol2/iss16/3</u>.

Kent, D. A. and O.C. Van Houten. "Experiments feeding butter-milk," Bulletin 2 (2017).

Available http://lib.dr.iastate.edu/bulletin/vol2/iss19/10.

Kent, D. A. "Iowa State agricultural college creamery," *Bulletin 2* (2017). Available <u>http://lib.dr.iastate.edu/bulletin/vol2/iss18/9</u>.

Kent, D. A., G.E. Patrick, E.N. Eaton, and W.H. Heileman. "When to cut corn," *Bulletin* 2 (2017). Available <u>http://lib.dr.iastate.edu/bulletin/vol2/iss21/5</u>.

"Lake Bed Sold." Evening Times-Republican, October 29, 1904.

"Lake Cairo." Hamilton Freeman, June 15, 1870.

"Lake Cairo Bed." Hamilton County Journal, March 4, 1895.

"Lake Cairo. It Belongs to the Riparian Owners. Full Text of the Decision as Handed Down from the Department of the Interior. It Looks Like Trouble for Mr. Kent." *Hamilton County Journal*, March 4, 1895.

"Lake Cairo Open to Squatters." Hawarden Independent, March 7, 1895.

"Lake Draining, Present Season Has Not Been Satisfactory One for the Speculators." *Cedar Rapids Evening Gazette*, August 14, 1896.

"List of Publications of the Agricultural Experiment Stations in the United States," U.S. Department of Agriculture Office of Experiment Stations. Government Printing Office, 1907.

"Litigation Over Lake Bed." Audubon County Journal, July 21, 1898.

"Local Items." Hamilton County Journal, February 25, 1895.

"Loss by Fire." Hamilton Freeman, March 19, 1873.

"Many Waltonians and Wives Attend Annual Meeting and Pigeon Pie Supper." *Daily Freeman Journal*, January 30, 1926.

"May Drain Mud Lake, Drainage Ditch Contemplated for Professor Kent's Abandoned Farm Project, County Asked to Do Work." *Evening Times-Republican*, April 7, 1903.

McFarland, W.M. "The Meandered Lakes." *Report of the Secretary of State of the Transactions of the Land Department*. Des Moines, 1895.

Milton Remley to Frank Jackson, June 22, 1895, Attorney General Correspondence: Lands, Islands, and Lake Beds, 1889-1924. Box 1. DM RG 080. State Archives of Iowa, State Historical Society of Iowa. Des Moines, Iowa.

"Minor State News." Hamilton County Journal, May 16, 1896.

"Mud Lake." Hamilton County Journal, October 26, 1900.

"Mud Lake Farm." Algona Courier, May 8, 1896.

"Mud Lake Farm." Sioux City Journal, May 22, 1896.

"Mud Lake Farm Sold. Professor Kent's Famous Farm Disposed of for \$30,000." *Evening Times-Republican*, March 5, 1900.

"Mud Lake Flooded." Ames Intelligencer, May 7, 1896.

"Mud Lake Is Doomed." Evening Times-Republican, October 21, 1903.

"Mud Lake May Be Drained." The Des Moines Register, October 10, 1908.

Native American Land Cession in Iowa. Library of Congress. Available URL: http://memory.loc.gov/cgi-bin/query/d?hlaw:0:./temp/~ammem Vm9B:.

"News From Lake Cairo Farm." Webster City Tribune, June 28, 1895.

Office of the State Archaeologist. *Iowa Archaeological Forms*. State Site Nos.: 13HM45, 13HM46, 13HM47, 13HM48, 13HM49, 13HM50, 13HM76, 13HM136, 13HM137, 13HM138.

"Our Lakes." Webster City Freeman, April 1, 1885.

Pammel, L.H. "Old Lake Vegetation in Hamilton County, Iowa." *The Plant World 2*, no. 3 (December 1898): 42–45.

"Patent to Lake Cairo Refused." Webster City Tribune, March 1, 1895.

"Patent to Mud Lake Finally Issued." Jewell Record, December 12, 1895.

"Pic-Nic at the Lake." Hamilton Freeman, August 16, 1882.

"Postpone Drainage Meeting." Davenport Morning Star, December 12, 1904.

"Proceedings of the Board of Supervisors of Hamilton County, Iowa, at Their Regular January, 1896, Session." *Webster City Freeman*, January 22, 1896.

"Proceedings of the Board of Supervisors of Hamilton County, Iowa at Their Regular January, 1896, Session." *Graphic Herald*, January 28, 1896.

"Prof. D.A. Kent Dead. Original Iowa Drainage Advocate Victim of Tuberculosis." *Evening Times-Republican*, October 19, 1916.

"Prof. Kent's Title All Right." Jewell Record, October 10, 1895.

"Professor Kent Will Get a Deed to Lake Cairo in Hamilton County, Des Moines News." *Webster City Freeman*, July 17, 1895.

"Proposals for Building Bridges." Hamilton Freeman, January 31, 1883.

"Proposed State Park Out of Little Wall Lake." *Webster City Daily News*, October 24, 1924.

Quick, Herbert. Vandemark's Folly (New York, 1921) 111-113.

"Real Estate Transfers." Daily Freeman Tribune, December 4, 1900.

"Real Estate Transfers." Webster City Freeman, December 4, 1900.

"Real Estate Transfers." Daily Freeman Tribune, June 12, 1901.

"Real Estate Transfers." Stratford Courier, June 20, 1901.

"Record of Climatological Observations." National Oceanic & Atmospheric, Administration National Centers for Environmental Information. Asheville: National Environmental Satellite, Data, and Information Service. Generated August 7, 2020.

"Request of Farmers." Evening Times-Republican, November 13, 1903.

"R.R. Meeting at Red Cedar." Hamilton Freeman, February 20, 1878.

Saturday Mail, November 30, 1895.

"Senator Finds Project Best in the State: Conservation Officer Looks Over Mud Lake Farm With View to Purchase as Game Preserve." *Estherville Daily News*, November 3, 1938.

Sioux City Journal, May 26, 1881.

"Sold Under a Judgement." Emmet County Republican, July 21, 1898.

"Sold Under a Judgment." Sioux City Journal, July 10, 1898.

State Historical Society of Iowa. "The Conservation Movement in Iowa, 1857-1942." *National Register of Historic Places*. United States Department of the Interior, 1991.

"State Owns Lakes, Attorney General Puts a Damper on Various Attempts to Drain Iowa Lakes." *Evening Times-Republican*, August 9, 1899.

"Stray Calf." Hamilton Freeman, November 10, 1875.

"Stray Steers." Hamilton Freeman, August 28, 1878.
"Sudden Death." Hamilton Freeman, February 25, 1874.

"Suit Over Mud Lake Farm." Estherville Daily News, May 4, 1898.

"Supervisors Score. Judge Albrook Rules Regarding Establishment of Mud Lake Drainage District." *Evening Times-Republican*, June 1, 1909.

The Courier, May 14, 1896.

The Courier, August 1, 1896.

The Algona Republican, May 13, 1896.

The Algona Upper Des Moines, October 14, 1891.

The Algona Upper Des Moines, May 20, 1896.

The Bomb. Iowa State University Library Special Collections and University Archives, 1894.

The Gazette, October 9, 1891.

The Humboldt Republican, June 25, 1896.

The Humboldt Republican, July 21, 1898.

The Maurice Times, July 15, 1916.

Webster City Freeman, December 3, 1884.

Webster City Tribune, March 1, 1895.

Webster City Tribune, March 8, 1895.

Webster City Tribune, April 12, 1895.

Wilson, James, G.E. Patrick, C.F. Curtiss, E.N. Eaton, and D.A. Kent. "A feeding experiment for milk," *Bulletin 2* (2017). Available http://lib.dr.iastate.edu/bulletin/vol2/iss14/4.

Wilson, James, C. F.Curtiss, and D. A. Kent. "Best varieties of oats," *Bulletin 2* (2017). Available at: http://lib.dr.iastate.edu/bulletin/vol2/iss15/9.

Wilson, James, G. E. Patrick, C.F. Curtiss, and D. A. Kent. "Calf feeding experiments," *Bulletin 2* (2017). Available http://lib.dr.iastate.edu/bulletin/vol2/iss14/3.

Wilson, James, G.E. Patrick, D.A. Kent, and C.F. Curtiss. "Effect of feed upon the quality of milk," *Bulletin 2* (2017). Available

http://lib.dr.iastate.edu/bulletin/vol2/iss14/2.

Wilson, James, G.E. Patrick, C.F. Curtiss, E.N. Eaton, and D.A. Kent. "Experiment in feeding for milk," *Bulletin 2* (2017). Available http://lib.dr.iastate.edu/bulletin/vol2/iss13/2.

Wilson, James, C.F. Curtiss, and D.A. Kent. "Flax seed meal and oil meal," *Bulletin 2* (2017). Available http://lib.dr.iastate.edu/bulletin/vol2/iss16/2.

Wilson, James, G.E. Patrick, C.F. Curtiss, and D.A. Kent. "Hog experiment No. 1," *Bulletin 2* (2017). Available <u>http://lib.dr.iastate.edu/bulletin/vol2/iss14/5</u>.

Wilson, James, G.E. Patrick, C.F. Curtis, and D.A. Kent. "Soiling experiment," *Bulletin 2* (2017). Available http://lib.dr.iastate.edu/bulletin/vol2/iss15/6.

Wilson, James, G.E. Patrick, C.F. Curtiss, and D.A. Kent. "Sugar beet growing," *Bulletin* 2 (2017). Available http://lib.dr.iastate.edu/bulletin/vol2/iss15/2.

Wilson, James, C.F. Curtis, and D.A. Kent. "Time of sowing grass seed," *Bulletin 2* (2017). Available <u>http://lib.dr.iastate.edu/bulletin/vol2/iss15/7</u>.

Wilson, James, C.F. Curtiss, and D.A. Kent. "Winter wheat," *Bulletin 2* (2017). Available http://lib.dr.iastate.edu/bulletin/vol2/iss15/8.

Secondary Sources

- Agnew, John A. *Place and Politics: The Geographical Mediation of State and Society*. Boston, MA: Allen & Unwin, 1987.
- Agnew, John A. and Jonathan M. Smith, *American Space/American Place: Geographies of the Contemporary United States.* New York, NY: Taylor and Francis Group, 2002.
- Bachelard, Gaston. *La Poétique de l'Espace*. Paris, France: Presses Universitaires de France, 1958; Translated to English, 1964.
- Bataille, Gretchen M., David M. Gradwohl, and Charles L.P. Silet. *The Worlds Between Two Rivers: Perspectives on American Indians in Iowa*. Ames: Iowa State University Press, 1978.

Bishop, Richard A. "Iowa's Wetlands," *Iowa Academy of the Sciences 88* (1981) 11-16. Available <u>http://publications.iowa.gov/30024/</u>.

"Blue Earth Series." National Cooperative Soil Survey, U.S. Department of Agriculture (2009). Available https://soilseries.sc.egov.usda.gov/OSD_Docs/B/BLUE_EARTH.html.

Bodenhamer, David J., John Corrigan, and Trevor M. Harris. *Deep Maps and Spatial Narratives*. Bloomington, IN: Indiana University Press, 2015.

Bogue, Margaret Beattie. "The Swamp Land Act and Wet Land Utilization in Illinois, 1850-1890." *Agricultural History 25*, no. 4 (October 1951): 169–80.

Brown, Kate. *Dispatches from Dystopia: Histories of Places Not Yet Forgotten*. Chicago: University of Chicago Press, 2015.

- Casey, Edward S. *Getting Back into Place: Toward a Renewed Understanding of the Place-World.* Bloomington, IN: Indiana University Press, 2009.
- Cresswell, Tim. *Place: An Introduction.* Chichester, United Kingdom: John Wiley & Sons Ltd, 2015.
- Cronon, William. "A Place for Stories: Nature, History, and Narrative." *The Journal of American History* 78 (1992) 1347–1376. Accessed August 18, 2020 https://doi.org/10.2307/2079346.
- Dinsmore, James J. A Country So Full of Game: The Story of Wildlife in Iowa. Iowa City: University of Iowa Press, 1994.
- Earley-Spadoni, Tiffany. "Spatial History, deep mapping and digital storytelling: archaeology's future imagined through an engagement with the Digital Humanities." *Journal of Archaeological Science*, 84. Amsterdam, Netherlands: Elsevier.
- Foster, Lance M. The Indians of Iowa. Iowa City: University of Iowa Press, 2009.
- Gaddis, John Lewis. *The Landscape of History: How Historians Map the Past*. New York, NY: Oxford University Press, 2002.
- Gates, Paul W. *History of Public Land Law Development*. Washington D.C.: United States Government Printing Office.
- Guldi, Jo. "The Spatial Turn in History." *Spatial Humanities*. Accessed February 4, 2019 http://spatial.scholarslab.org/spatial-turn/the-spatial-turn-in-history/index.html.
- Heidegger, Martin. *Sein und Zeit*. New York, NY: Harper Perennial Modern Thought, 2008. Indiana University Press. Retrieved on April 1, 2019 from <u>http://www.iupress.indiana.edu/product_info.php?products_id=807169</u>.
- Ingold, Tim. *The Perception of the Environment: Essays on Livelihood, Dwelling, and Skill.* New York, NY: Routledge, 2011.
- Johnson, Rex R., Fred T. Oslund, and Dan R. Hertel. "The Past, Present, and Future of Prairie Potholes in the United States." *Journal of Soil and Water Conservation 63* (2008) 84A-87A.
- Jones, Owain. "On Deep Mapping." *A Blog About the Environmental Arts & Humanities*. Retrieved on April 1, 2019 from

https://ecologicalhumanities.wordpress.com/on-deep-mapping/.

Klingle, Matthew W. *Emerald City: An Environmental History of Seattle*. New Haven: Yale University Press, 2009.

Least Heat Moon, William. Prairyerth: A Deep Map. Boston, MA: Mariner Books, 1999.

Lokken, Roscoe L. *Iowa Public Land Disposal*. Iowa City, Ia. :, 1942. http://hdl.handle.net/2027/uc1.\$b40218.

Maza, Sarah. "Stories in History: Cultural Narratives in Recent Works in European History." *The American Historical Review 101* (1996).

- McLucas, Clifford. *Deep Mapping*. Retrieved on April 1, 2019 through http://www.cliffordmclucas.info/deep-mapping.html.
- Merriam-Webster, Incorporated, 2019.
- Nass, Martin E. Hamilton County: Its Towns and Settlements. Webster City: Hahne Printing Co., 1976.
- Otto, Joseph W. "Subject to Overflow: The History of Drainage Districts in Jasper County, Iowa." Thesis, Appalachian State University, 2012.
- The Polis Center. "Deep Maps and Spatial Narratives." Accessed September 28, 2019 https://polis.iupui.edu/about/spatial-humanities/deep-maps-and-spatial-narratives/.
- Prince, Hugh. Wetlands of the American Midwest: A Historical Geography of Changing Attitudes. Chicago: The University of Chicago Press, 1997.
- Prior, Jean C. Landforms of Iowa. Iowa City: University of Iowa Press, 1991.
- Quade, Deborah J., James D. Giglierano, E. Arthur Bettis, and Robin J. Wisner. Surficial Geologic Map of the Des Moines Lobe of Iowa, Hamilton and Webster Counties. Geological Survey Bureau, Open File Map 2000-1 (2000).
- Relph, Edward. Place and Placelessness. London, United Kingdom: Pion, 1976.
- Relph, Edward. "Topophobia." *Placeness, Place, Placelessness*. Retrieved on April 1 from <u>http://www.placeness.com/topophobia/</u>.
- Riney-Kehrberg, Pamela, ed. *The Routledge History of Rural America*. New York: Routledge, 2016.
- Schwieder, Dorothy. Iowa: The Middle Land. Iowa City: University of Iowa Press, 1996.

Smith, Daryl. "Iowa Prairie: Original Extent and Loss, Preservation and Recovery Attempts." *Journal of the Iowa Academy of Science 105* (1998) 94–108.

Soil Series Explorer, University of California Davis, Accessed October 17, 2020.

- Tally Jr., Robert T. *Topophrenia: Place, Narrative, and the Spatial Imagination*. Bloomington: Indiana University Press, 2019.
- Tuan, Yi-Fu "Space and Place: Humanistic Perspective," Progress in Human Geography 6.

Tuan, Yi-Fu. Topophilia: A Study of Environmental Perception, Attitudes, and Values. New

York, NY: Columbia University Press Morningside Edition, 1974.

- Tuan, Yi-Fu. *Space and Place: The Perspective of Experience*. Minneapolis, MN: University of Minnesota Press, 1977.
- Weaver, J.E. *Prairie Plants and Their Environment: A Fifty-Year Study in the Midwest*. Lincoln: University of Nebraska, 1968.
- West, Elliot. *The Contested Plains: Indians, Goldseekers, and the Rush to Colorado*. Lawrence: University of Kansas Press, 1998.
- White, Richard. *The Organic Machine: The Remaking of the Columbia River*. New York: Hill and Wang, 1995.
- Wilson, Edward O. Half-Earth: Our Planet's Fight for Life. New York: Liveright Publishing Corp., 2017.

APPENDIX. LAKE CAIRO. IT BELONGS TO THE RIPARIAN OWNERS. FULL TEXT OF THE DECISION AS HANDED DOWN FROM THE DEPARTMENT OF THE INTERIOR. IT LOOKS LIKE TROUBLE FOR MR. KENT.

The following is the complete report and decision of the Department of the Interior at

Washington, D.C., in relation to the petition of the board of supervisors (through Gov. Jackson),

for a patent to the lands embraced in the bed of Lake Cairo. This decision will be of valuable

interest to many people in northwestern Iowa, and is of special significance to quite a number in

Hamilton county. Source: Hamilton County Journal, March 4, 1895. The following is the report:

Department of the Interior

General Land Office

Washington, D.C., Feb. 15, 1895.

Hon. Frank D. Jackson, Governor, Des Moines, Iowa.

Sir: I am in receipt of your letter of January 12, 1895, enclosing a copy of the petition of the board of supervisors of Hamilton county, Iowa, requesting you to ask the Land Department, at Washington, D.C., to accept an unofficial survey of a meandered lake, situate in said county, and to approve the lands embraced within the meander lines of said lake as swamp and inuring to the state of Iowa under the provisions of the Act of Congress, approved September 28, 1850; also that patent may issue to said state for the tracts of land as shown in said survey. Your letter encloses a diagram or map of Lake Cairo situate in Twp. 87 N., Rs. 24 and 25 W. 5th P.M., Iowa, the same purporting to represent the survey which was made within the meander lines of the lake and the sub-division of the lands into quarter-quarter sections and fractional lots.

The petition states that Lake Cairo has become nearly dry and an impassible marsh; that the adjacent land owners had petitioned for the drainage of said lake for sanitary reasons and for the purpose of improving adjoining lands and extending public highways and school districts. That the lake has been thoroughly drained and a complete survey thereof made, a map of which is appended: and that the Governor of the State of Iowa be requested to ask the Department at Washington to accept said survey and issue to Hamilton County, Iowa, a patent for the described parcels of land.

In reply I have the honor to inform you that there is no authority of law whereby this office is warranted or empowered to accept a private or unofficial survey of lands, and issue thereon a patent for the lands indicated on the plat or diagram of such survey.

The only news surveys in Iowa that can in any manner be recognized are those which may be executed under the supervision of the Commissioner of the General Land Office as ex-officio

surveyor general for Iowa.

The official plats of the original survey of Twp. 87 N., Rs. 24 and 25 W. 5th P.M., Iowa (approved March 19 and February 13, 1850), show a lake in said townships, mainly in T. 87 N., R. 24 W., and that said lake was duly meandered, and the lines of the public survey closed on the meanders. It has long been the policy of this office to decline to survey lands situate outside of the lines of meandered lakes, which lands have been uncovered by the recession of the waters of the lakes through natural or artificial causes.

The Supreme Court of the United States, in the cases of Hardin vs. Jordan and Mitchell vs. Smale (U.S. Reports, v. 140, pp. 371, 406), held that "by the common law, under a grant of lands bounded on a lake or pond which is not tide-water and is not navigable, that grantee takes to the centre of the lake or pond, ratably with other riparian proprietors if there be such; also that grants by the United States of its public lands bounded on streams or other waters, made without reservation or restriction, are to be construed as to their effect according to the law of the state in which the lands lie, and that it depends upon the laws of each state to what extent the prerogative of the State to Lands under water shall extend."

The Secretary of the Interior in the case of John P. Holl (13 L.D., 588), referring to the U.S. Supreme Court decisions of Hardin vs. Jordan and Mitchell vs. Smale, held that "an application for the survey of land covered by a non-navigable lake must be denied, where at appears that said lake has been meandered and the adjacent land disposed of by the government, as the land covered by such lake belongs to the adjoining proprietors and not to the United States."

The official records show that all of the fractional lots in sections ... bordering and closing on the meandered lines of Lake Cairo, have been disposed of by the government. Some of said fractional lots have been selected by the state as swamp, and others have inured to the Dubuque and Pacific Railroad Co., under their land grant.

Again referring to the decisions of the U.S. Supreme Court in the case of Hardin vs. Jordan (140 U.S. Reports, 401), wherein the question of the previous disposal of the land was acted upon, it was held by the court that "if the lands had been previously disposed of the executive department had no jurisdiction over them." This office is unable to inform you as to the laws of the State of Iowa relating to lands of the character in question. It is evident under the decisions quoted that the state is one of the riparian owners, and as such is entitled to take to the centre of the lake, ratably with the other riparian proprietors.

From the foregoing quotations from judicial and departmental decisions you will observe that the United States government has now no interest in the drained lands formerly embraced within the official meandered lines of Lake Cairo ... and that the application of the board of supervisors of Hamilton county, Iowa, for the issuance of a patent for the lands described in their petition, as also your request, per letter, as inuring to the State under the swamp land Act of September 28, 1850 can not be granted.

Very respectfully,

S.W. Lamereaux, Commissioner