

PHILLIPS, HARRIET LAUREN, M.A. A Landscape Analysis and Cultural Resource Inventory of Troublesome Creek Ironworks: A Geographical and Archaeological Approach. (2011)
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This thesis created a working cultural resource inventory and landscape analysis of Troublesome Creek Ironworks (TCI). TCI is located in Rockingham County and is owned by the Rockingham County Historical Society. The property is also on the National Register of Historic Places. Three archaeological sites at TCI were examined for this research: a 19th century farmhouse site, a 19th century cabin site, and the possible location of Revolutionary War entrenchments. Little is known regarding the histories of these sites and data obtained through archaeological survey investigations at TCI during 2005 and 2010 provided the basis for a geographical and archaeological assessment of these sites across this landscape.

Spatial analysis of archaeological material recovered from these sites provided insight into cultural patterns across the landscape. Dates for all three sites were derived from ceramic, flat window glass, and nail artifact analysis. Artifact patterns and dates were compared to the written site histories, where available, to improve overall site interpretation.

Analysis of data obtained from investigations of the farmhouse site correlated to many historical events at TCI and also revealed possible evidence of an earlier house location at TCI. Examination of the cabin site established relative dates for the structure, confirming an oral history of the site. The

entrenchment site survey did not produce evidence to support its association with events surrounding the Revolutionary war; however, this is most likely due to looting that has occurred at the site over the past several decades. Data obtained through these survey investigations at TCI were compared to similar sites in the North Carolina Piedmont to examine patterns between sites sharing similar temporal and functional contexts. Many similarities in artifact assemblages were found for these sites in the Piedmont.

Due to the size of the property and the numerous cultural resources, more extensive investigations are needed to begin tying all the sites and written histories together at TCI. Extensions to the existing survey grids as well as several test excavations across the sites at TCI will generate a more comprehensive analysis of the cultural resources across the landscape. While more research is needed to fully understand TCI's history, this research improved the site interpretation throughout the property.

A LANDSCAPE ANALYSIS AND CULTURAL RESOURCE INVENTORY OF
TROUBLESOME CREEK IRONWORKS: A GEOGRAPHICAL AND
ARCHAEOLOGICAL APPROACH

by

Harriet Lauren Phillips

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Approved by

Roy S. Stine, PhD.
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*To my Mother and Father
for their unyielding love and support
in all my endeavors
no matter how big or small*

APPROVAL PAGE

This thesis has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	vii
LIST OF FIGURES	viii
CHAPTER	
I. INTRODUCTION	1
History of Troublesome Creek Ironworks	3
Research Purpose and Questions.....	12
II. LITERATURE REVIEW	14
Assessment of Cultural Resources and Landscapes	14
Regional Studies of Nineteenth Century Farmsteads	18
Landscape Analysis and Scale	19
III. METHODS.....	21
Archaeological Investigations at TCI	22
Archaeological Lab Analysis	28
Spatial Data Management	30
Database Queries and Spatial Analysis Techniques	32
Artifact Dating	34
IV. RESULTS	36
Revolutionary War Entrenchment Site	36
Farmhouse Site	39
Architecture Artifacts	40
Kitchen Artifacts	47
Other Artifacts	50
Dating the Farmhouse Site	52
Mean Ceramic Dating	53
Window Glass Dating	53
Date Comparisons with Nails	54

Cabin Site	55
Artifacts	57
Dating the Cabin Site.....	60
V. DISCUSSION.....	61
Relating Farmhouse Site Data to TCI History	61
Regional Site Comparisons	68
Comparison of the TCI and Davis Cabins	69
Comparison of the TCI Farmhouse and Orange County Site Surveys	72
Future Work at Troublesome Creek Ironworks	77
VI. CONCLUSIONS	79
REFERENCES	81
APPENDIX A: DENSITY MAPS OF CERAMICS BY TYPE FOR THE FARMHOUSE SITE	84
APPENDIX B: TABLE OF OTHER ARTIFACTS FROM FARMHOUSE SITE.....	86
APPENDIX C: DENSITY MAPS OF FUNCTIONAL GROUPS FOR THE FARMHOUSE SITE	88
APPENDIX D: DENSITY MAPS OF ARTIFACTS FROM CABIN SITE.....	90

LIST OF TABLES

	Page
Table 4.1. Description of artifacts retrieved from metal survey of the entrenchment site	38
Table 4.2. Farmhouse surface collection artifacts (by count)	40
Table 4.3. Farmhouse surface collection artifacts (by weight)	40
Table 4.4. Ceramic artifact breakdown by type for the farmhouse site	48
Table 4.5. Ceramic artifact breakdown by type and decoration for the farmhouse site	49
Table 4.6. Ceramic dates for the farmhouse site	53
Table 4.7. Window glass calculations by thickness for the farmhouse site	54
Table 4.8. Breakdown of cabin site artifacts by functional group	57
Table 5.1. Artifact functional group comparison of the TCI and Davis cabins, Davis cabin data obtained from (Daniel & Ward, 1993)	71
Table 5.2. Artifact functional group comparison of the TCI farmhouse and Orange County surveys, Orange County survey data obtained from (Daniel, 1994)	73

LIST OF FIGURES

	Page
Figure 1.1. Troublesome Creek Ironworks reference map	2
Figure 1.2. Sketch of Troublesome Creek Ironworks and Speedwell Furnace complex (provided by Robert Carter, RHS)	6
Figure 1.3. 1970s photograph of 19 th century farmhouse (provided by Robert Carter, RHS)	8
Figure 1.4. 1900s photograph of the “Warming House” (provided by Robert Carter, RHS)	9
Figure 1.5. Sketch of 1919 mill, based on 1950s photograph (provided by Robert Carter, RHS)	10
Figure 3.1. Image comparison, showing the location of the farmhouse site	22
Figure 3.2. 2005 survey grid	24
Figure 3.3. Test units and surface features	25
Figure 3.4. Cabin survey map	28
Figure 3.5. Formula used to calculate MCD (Robinson, 2010)	34
Figure 3.6. Formula used to calculate window glass dates (Robinson, 2010)	35
Figure 4.1. Distribution of metal hits from metal survey of entrenchment site	37
Figure 4.2. Comparison of architecture functional group density by count and weight for the farmhouse site	41
Figure 4.3. 1970s photograph of farmhouse prior to fire; brick chimney visible behind tree trunk (provided by Robert Carter, RHS).....	42

Figure 4.4.	Artifact densities for window glass, cut nails, and wire nails at the farmhouse site	44
Figure 4.5.	Photograph from November 2, 1976 newspaper depicting farmhouse ruins (provided by Robert Carter, RHS)	46
Figure 4.6.	Artifact densities for all kitchen artifacts, ceramics, and kitchen glass from surface collections at the farmhouse site	47
Figure 4.7.	Photograph of the TCI cabin taken in November, 1977 (provided by Robert Carter, RHS)	56
Figure 4.8.	Current photograph of cabin site taken during surface collection	56
Figure 4.9.	Artifact density maps of architecture and kitchen functional groups for the cabin site.	58
Figure 5.1.	Distribution of the quantity of ceramic artifacts and corresponding median ceramic date	62
Figure 5.2.	Distribution of window glass and corresponding dates	64
Figure 5.3.	Density maps of farmhouse window glass by calculated dates	65
Figure 5.4.	Site survey map of the Davis cabin site (Daniel & Ward, 1993)	70
Figure 5.5.	Ceramic type comparisons by percent, for the TCI farmhouse and Orange County surveys, Orange County survey data obtained from (Daniel, 2004)	74
Figure 5.6.	Functional group comparisons by percent for the TCI and Davis cabins and the TCI farmhouse and Orange County surveys (Stine, Stine, Phillips, 2011)	76

CHAPTER I

INTRODUCTION

Landscapes constantly evolve, as they are modified naturally and culturally. No matter the changes made upon a landscape, evidence of past alterations often exists. Studying historical landscapes provides insight into an otherwise forgotten time, and requires an interdisciplinary approach in which geographical and archaeological theories, methods, and techniques are integrated to provide a comprehensive and accurate portrayal of the past.

This thesis examines the landscape and cultural resources of Troublesome Creek Ironworks (TCI), a series of archaeological sites, located on a fifty acre parcel on Monroeton Road, in Rockingham County, North Carolina. The sites are situated along Troublesome Creek, a tributary of the Haw River, which runs through the property (Figure 1.1).

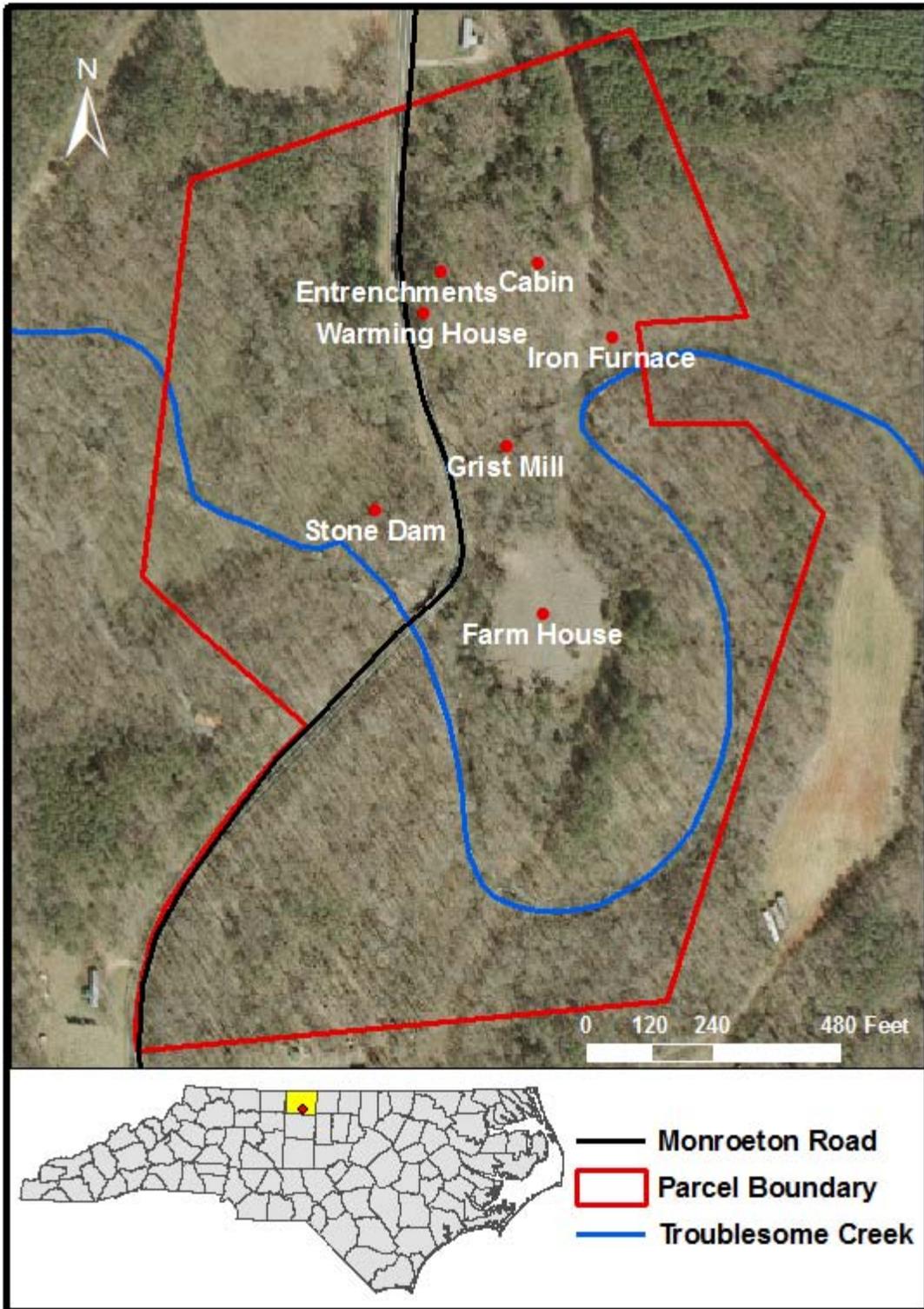


Figure 1.1. Troublesome Creek Ironworks reference map

History of Troublesome Creek Ironworks

Evidence suggests that TCI's cultural history began sometime between 5000BCE and 4500BCE with the movement of indigenous people into the area. This time frame falls under the archaeological cultural tradition known as the Middle Archaic period. This period is characterized by a hunting and gathering lifestyle that predates agriculture and pottery making (Petersen, 2008). Little is known about TCI prior to colonization. It is not until the 1700s that written accounts begin to provide insight into the history of the area.

A gravestone dated 1739 uncovered at Speedwell Presbyterian Cemetery suggests that the earliest settlement in present day Rockingham County may have been established in the Troublesome Creek Valley; however, it was not until 1759 that the Speedwell Presbyterian Church community was founded (Butler, 1982). In 1770, Joseph Buffington, an ironmaster from Pennsylvania, moved to North Carolina and upon learning of the titaniferous magnetite ore in the area built Speedwell Furnace at TCI. A deed to the Ironworks dated 1772 discusses a limited supply of ore near the furnace site, resulting in the transportation of ore by ox carts from what is present day Midway (Carter, 1978). Chemical analysis of the ore revealed high concentrations of titanium dioxide which requires extremely high heat to reduce into good quality iron. Furnaces during the colonial period could not generate this amount of heat; therefore, the quality of iron produced at Speedwell Furnace was poor (Butler, 1982). The process of making iron in colonial days required an enormous amount of wood as

well as a large labor force to cut, haul, and burn the wood into charcoal for fueling the furnace; it is no surprise that in 1772, two years after building the furnace, Joseph Buffington sold the Ironworks in search of better opportunities in South Carolina (Carter, 1978).

During the Revolutionary War, there was a need to develop an arms industry. In 1776, it was suggested by the state that the Ironworks be purchased and repaired. John Wilcox was hired, and given the option, he chose to cast weapons rather than repair Speedwell Furnace (Carter, 1978). While Speedwell Furnace may not have been used during the war, Troublesome Creek Ironworks became a tactical staging area for both British and American troops towards the latter portion of the Revolution.

In 1781 the American Army commanded by General Nathanael Greene retreated into what is now Rockingham County while being pursued by British forces under the command of Lord Charles Cornwallis during what is now known as the "Race to the Dan" (Hairr, 2002). On February 13, 1781, Greene and his men crossed the Dan River; the same night British cavalry, commanded by Colonel Banastre Tarleton, encamped at Troublesome Creek Ironworks (Butler, 1982). While Greene's army took refuge in Virginia, Cornwallis marched his army to Hillsborough to replenish his supplies (Buchanan, 1997). Greene repositioned his army at Troublesome Creek Ironworks, and it is suggested that he ordered his men to dig entrenchments there in the event of an attack by Cornwallis' army (Carter, 1978).

On March 15, 1781, Greene's troops were defeated at the Battle of Guilford Courthouse. Greene retreated with his men back to Troublesome Creek Ironworks and as Colonel Lee stated in his memoirs, "General Greene, after reaching Troublesome Creek, arrayed himself again for battle; so persuaded was he that the British General would follow his blow" (Butler, 1969, p.4). Cornwallis' troops suffered major casualties at the Battle of Guilford Courthouse and could not pursue Greene; instead Cornwallis marched his men to Wilmington, and then on to Virginia, eventually surrendering at Yorktown on October 19, 1781 (Babits & Howard, 2009).

During the war, the Ironworks tract reverted back to the state. In 1782, Archibald Lytle entered a claim for the land that was not granted until 1785, during which time, Peter Perkins was given permission to build a mill over Troublesome Creek. In 1786, Perkins purchased the property from Lytle (Carter, 1974). In 1788, the property was sold to George Hairston and John Marr, and in 1790, when Benjamin Jones was hired to manage the ironworks, 35 enslaved individuals were recorded as living on the property (Butler, 1982) (Figure 1.2).



Figure 1.2. Sketch of Troublesome Creek Ironworks and Speedwell Furnace complex (provided by Robert Carter, RHS).

In 1791 while traveling from Washington to Charlestown, Congressman William Loughton Smith of South Carolina kept a journal of his travels; one entry made on Wednesday, May 4th 1791 while he was in Rockingham County states:

Arrived at the Iron works about 3:00. My landlord, Jones, superintends them. After dinner he conducted me over them. They are situated at the head of a creek called 'Great Troublesome,' in a hollow surrounded by high hills covered with wood. The first appearance of the buildings, large reservoir of water, creek, and people at work, with the noise of the machinery of the mills and the rapid currents which work them, have a pleasing and singular appearance just as you ascent the hill which overlooks them, after traveling a number of miles through the woods. The ore is none of the best, and the furnace is not yet in order; they make less

iron here than there is demand for. The spot reckoned very unhealthy on account of the large reservoir and the creek, which is wide and stagnant...the common ore is got close by and the rock ore at about four miles distant; my conductor supposes there is silver in the ore (Carter, 2007).

One month later, on June 3, 1791, during his southern tour, President George Washington stopped at the Ironworks for breakfast with Jones and his family. A traditional local story tells of Washington's horse biting the top off of a young oak tree; a large forked oak that was still standing until the 1970s, was often pointed out as the same tree (Carter, 1974).

In 1806, James Patrick Sr. purchased the ironworks property and after moving to the ironworks in 1820, James Patrick's son, William, began operating an ordinary in his residence at the ironworks (Carter 1974). William Patrick died in 1832, and James Patrick Sr. died in 1835; the ironworks property was left to Patrick's grandson, James Dillon Patrick, a minor (Butler, 1969). In his will, James Patrick requested that the plantation and mills be rented out until his grandson was of age; the will also explains that Patrick used the money from the sale of his son William's estate to build a house for his grandson at the ironworks (Carter, 1974). This dates the house at TCI to 1833 or 1834 (Figure 1.3).



Figure 1.3. 1970s photograph of 19th century farmhouse (provided by Robert Carter, RHS)

The Ironworks is known to have been rented because in 1840, a license to sell “spirituous liquor” was granted to John M. Moore, a tenant at the Ironworks. By 1846, due to some debt that young James Dillon Patrick had accumulated, the property was sold at auction to John Adams Gilmer and James Turner Morehead (brother of Governor, John Motley Morehead), Patrick’s legal guardian and distinguished lawyer, congressman, and senator. Gilmer later sold his portion of the ironworks to Morehead (Carter, 1974). Between 1850 and 1870 the ironworks complexes continued to operate under the management of Preisly Heith, during which time wheat and corn were being ground by stone at the grist mill and lumber was being milled at the sawmill. At some point after 1882, while the ironworks property was owned by Michael P. Cummings, the mill was converted

to a roller mill, as is described in the 1905 deed to John R. Shreve,. Shreve and his son often kept the mill operating twenty-four hours a day, six days a week for the better part of a decade. Their office, a small brick building known as the “warming house” across the race from the mill served not only as a polling place for the Ironworks Precinct but as a gathering place for community barbeques (Carter, 1974) (Figure 1.4).



Figure 1.4. 1900s photograph of the “Warming House” (provided by Robert Carter, RHS)

In 1916, the Ironworks mill burned down. Shreve purchased a nearby mill, disassembled the mill structure, and rebuilt it on the old Ironworks mill site (Figure 1.5). Three years later the Ironworks property was sold to Zilmon Griffin. By World War II, there was often not enough water to operate the mills at Troublesome Creek, and a large motor was installed. Shortly after the war, milling at the Ironworks stopped completely, and in 1954, due to a drought, the City of Reidsville broke the dam at TCI to obtain drinking water (Carter 1974).

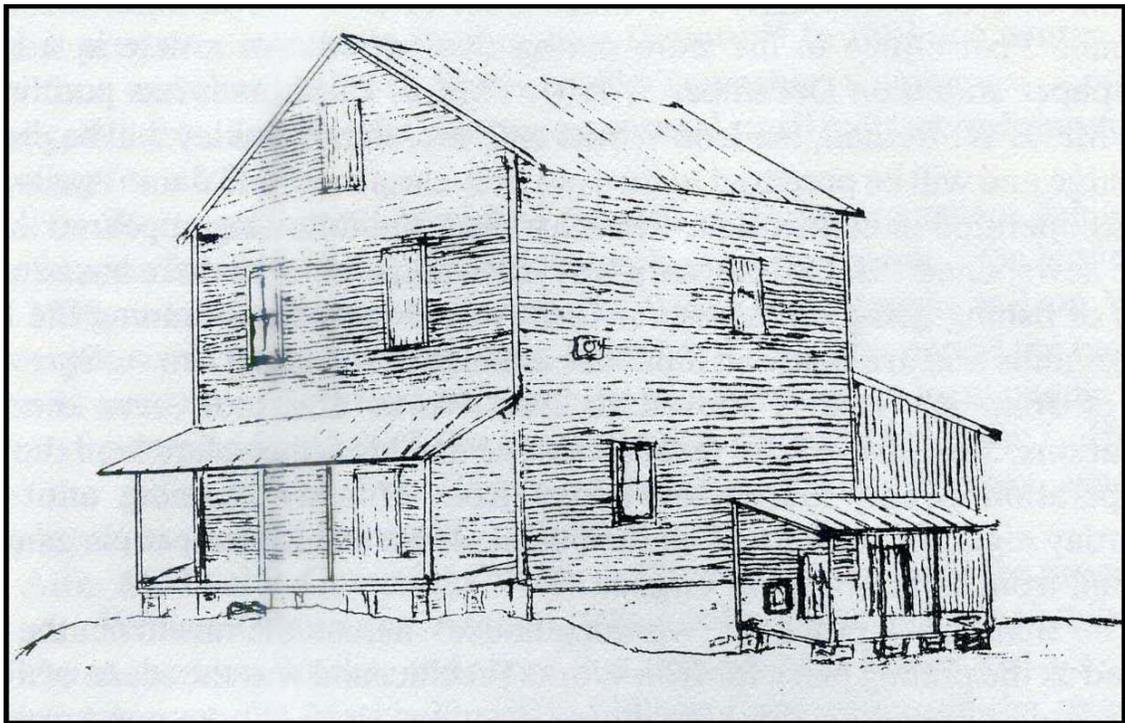


Figure 1.5. Sketch of 1919 mill, based on 1950s photograph (provided by Robert Carter, RHS)

On October 1986, the Ironworks property was sold at auction to James G.W. MacLamroc, and in December of 1968, the mill burned down. Troublesome

Creek Ironworks was placed on the National Register of Historic Places in 1972. On Halloween Day, 1976, the last standing structure on the site, the farm house, burned to the ground. Finally, in 1984, the site was donated to the Rockingham County Historical Society (RHS). According to personal communications with Mr. Robert Carter of the Rockingham Historical Society, the site was bulldozed following the fire, and debris was pushed into what had been the cellar of the house. Between 1976 and 1984, the open land on which the house was once situated was plowed and used as an agricultural field; by 1984 when RHS assumed ownership of the property, the field was fallow, and covered in dense kudzu.

Today, the only landmark for Troublesome Creek Ironworks is an historic marker on the roadside of Highway 158 in Reidsville, NC, that briefly discusses the significance of the site as a military staging area surrounding the events of the Battle of Guilford Court House. Due to the lack of extant historic structures at TCI, it is difficult for people to look beyond this to learn more about TCI's rich history; a history that extends past a Revolutionary War military camp.

In May and June of 2005, an archaeological investigation of Troublesome Creek ironworks was conducted through a field school at the University of North Carolina at Greensboro (UNCG) under the supervision of Dr. Linda F. Stine. Funding for the project was provided by the Rockingham County Historical Society, the Rockingham County Planning Office, and UNCG's Anthropology Department. Investigations primarily focused on the nineteenth century farm

house site. Over the past couple of years smaller survey investigations of two other sites at TCI, a cabin site, and the possible military entrenchment site, have also contributed to this research.

Research Purpose and Questions

The purpose of this research is to establish a working cultural resource inventory and landscape assessment of Troublesome Creek Ironworks. Several of the sites at TCI have well documented histories, while others remain somewhat of a mystery. This research examines three such areas: the possible location of Revolutionary War entrenchments, the farm house site, purportedly built in the 1830s, and a small cabin site that is not mentioned in any known historical documents. Data obtained through archaeological survey investigations of these sites will provide the basis for a geographical assessment of cultural resources, and it is hoped that such an analysis may provide a more accurate portrayal of the activities that have taken place across the landscape over time.

This research seeks to answer a series of questions related to each of the three sites examined. Does archaeological evidence substantiate local folklore of a Revolutionary War skirmish at TCI? In the case of the farm house site, do the dates derived from archaeological investigations coincide with dates discussed in the historic literature? What do artifact patterns reveal about cultural activities within the historic farmstead landscape? Do activity patterns relate to any other sites on the property? How does the surface survey of the TCI farmhouse site compare to similar surveys in the region? The cabin site, due to the lack of

historical documentation, poses many questions: based on the archaeological findings, can a date for the cabin site be established? Do artifact patterns reveal insight into the function of the cabin? Do activity patterns indicate and relationship to the furnace site or mill sites? How may this cabin site compare to similar sites within the North Carolina Piedmont? Answers to these questions may improve site interpretation throughout the property, as well as establish a starting point for future site protection.

CHAPTER II

LITERATURE REVIEW

Over the past several decades, nature has gradually repossessed the physical landscape of Troublesome Creek Ironworks. The majority of the property is now forested, while a smaller area that was once cleared is blanketed by kudzu most of the year. This dense vegetation makes it difficult to see and appreciate the sites that contribute to TCI's significant history. While TCI is on the National Register, it is not open to the public. There is potential for establishing a historical park at TCI in the future; however, steps must be taken to provide a starting point for such endeavors. Establishing a cultural resource inventory and landscape analysis is essential for both the protection of TCI as well as any future plans of opening the property to the public.

Assessment of Cultural Resources and Landscapes

In the 1990s the United States Department of the Interior developed guidelines to assist in the preservation of *cultural landscapes*; "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural aesthetic values" (Birnbaum & Peters, 1996, p. 4). While the

Department of the Interior does not describe one single way to inventory a landscape, Birnbaum and Peters state:

The goal of documentation is to provide a record of the landscape as it exists at the present time, thus providing a baseline from which to operate. All component landscapes and features... that contribute to the landscape's historic character should be recorded. The level of documentation needed depends on the nature and the significance of the resource (1996, p.4).

In 2003, the National Park Service (NPS) published a cultural landscape inventory of the Guilford Court House National Military Park (GUCO). This inventory explores four major topics: the history of the site; existing conditions of the park; an analysis of the integrity of the site; and recommendations for the future treatment and management of the park as a whole. Due to the national significance of the Battle of Guilford Court House, extensive historical and archaeological research surrounding the events of the battle contributed to the final publication. The history of Troublesome Creek Ironworks, as discussed previously, provides a starting point for creating an inventory that follows a similar outline as that of GUCO; however, all historical events, not only those concerning the Revolutionary War, will be evaluated.

Guilford Court House National Military Park encompasses 220 acres in a heavily developed area of Greensboro, North Carolina; two watercourses and three roads cut through the park at different locations and roughly 200 acres are covered in forest (Hiatt, 2003). TCI exhibits similar conditions; Troublesome Creek flows through the southern half of the property. Monroeton Road bisects

the parcel, and the majority of the landscape is forested. Unlike GUCO, TCI covers a smaller area and is situated in a rural part of Rockingham County.

To establish the integrity of GUCO, site history was compared to existing conditions to identify which characteristics had historical significance; this approach is similar to NHRP site evaluation, and was based on four qualities: location, setting, feeling, and association. Guilford Court House Military Park constitutes the central portion of the March 15, 1781 Battlefield, and although no evidence of this event exists above ground today, integrity of the location remains high due to the preservation of the core battlefield (Hiatt, 2003). Urban development has significantly altered the physical landscape surrounding GUCO. Nineteenth century deforestation of first growth forest in the area (although later replanted), along with the inability to locate the exact location of the historic courthouse, obscure the historical setting; however, on a larger scale, the park as a whole maintains much of the integrity of setting with regard to the historical landscape. Hiatt states that “a property that possesses integrity of feeling conveys a sense of the aesthetic or historical character that typified its landscape during the selected period of significance” (Hiatt, 2003, p. 81). The forested landscape at GUCO evokes an appreciation for the tactical advantages that such vegetation provided American defenders during battle and the difficulties that British soldiers faced as they attacked. There is no question of the connection between major historical events and GUCO. The battle that took place at Guilford Courthouse on March 15, 1781, may have been one of the most pivotal events of

the war (Hiatt, 2003). While no battle was fought at TCI during the Revolution, TCI does play an important role in the events surrounding the Battle, thus supporting the integrity of association at Troublesome Creek Ironworks.

While TCI has been on the National Register of Historic places since 1972, several structures assessed at the time of inclusion are no longer standing. As such, a current analysis of integrity is essential to creating an accurate cultural resource inventory and landscape assessment. The NRHP lists four criteria for evaluation of historic sites: criterion A, association with a significant event in history; criterion B, association with a significant person in the past; criterion C, embodiment of distinctive characteristics of a type, period, or method of construction; criterion D, likeliness to yield information important to history or prehistory (36CFR800.1, 2004). The original justification for TCI's listing on the NHRP was the role the Ironworks played as a staging area before and after the Battle of Guilford (Butler, 1969). The NHRP nomination form for TCI does not list the specific criteria under which the site was submitted, but the property may have been nominated under all four criteria described above. TCI is associated with the following: early industrial development, the Revolutionary War, George Washington and his visit to the Ironworks during his Southern Tour, ownership by James Turner Morehead, the eighteenth century furnace and ironworks site, the eighteenth and nineteenth century mill complexes, the nineteenth century farmhouse, and archaeological investigations over the past five years (Petersen, 2008; Carter 1978; Butler 1969). These associations are what make

Troublesome Creek Ironworks more than just a Revolutionary War encampment. In actuality, more is known about TCI's history following the Revolution. It is in the nineteenth century that TCI flourished, and evidence of this once bustling rural farmstead remains scattered across the property today.

Regional Studies of Nineteenth Century Farmsteads

Nineteenth century farmstead sites are ubiquitous throughout the United States, and while these sites are identified regularly through cultural resource management studies and other smaller research projects, there have been few attempts to compare these sites within a broader regional context (Wilson, 1990). In 1994, Research Laboratories of Anthropology at the University of North Carolina at Chapel Hill published a report of an archaeological survey of prehistoric and historic sites throughout Orange County. A stratified random sample based on environmental criteria, specifically watersheds, was used to select locations for survey throughout the Little River and Cedar Grove Townships; areas of the county where virtually no sites had been previously recorded (Daniel, 1994). Twenty-seven sites found within the study area produced historic components. Ceramic evidence dates the majority of sites to the mid nineteenth to early twentieth centuries while only five sites yielded ceramics dating to the eighteenth century. The sites identified in the survey were characterized by light artifact scatters; assuming the artifact scatters found were all that remain of these historic sites, none would be eligible for the National

Historic Register. A comparison of artifact patterns from the 1994 survey and those obtained from excavations of the nearby nineteenth century Davis site suggests differences between surface-collected and excavated artifact assemblages (Daniel, 1994).

The Davis Cabin site, located in Hillsborough, North Carolina, was excavated by the Research Labs of Anthropology at the University of North Carolina at Chapel Hill, in 1993. The original 15ft by 15ft single-pen cabin was built in the 1880s by Robert Davis, and several years later, a 24ft by 15ft addition was added onto the western wall. Archaeological investigations at the Davis site included a systematic surface survey of the cabin remains, as well as an excavation of a single test unit to the south of the 24ft by 15ft addition; survey and excavation combined revealed over two-hundred artifacts dating to the late nineteenth century (Daniel & Ward, 1993).

The two above survey projects in Orange County share similarities with the farmhouse and cabin sites at TCI; comparisons of these sites will be discussed in chapter 5 to establish a broader understanding of nineteenth century farmsteads in the North Carolina Piedmont.

Landscape Analysis and Scale

The concept of landscape is an important aspect in geographical and archaeological studies and has been widely debated since Carl Sauer first defined landscape in 1925 as the imprint of humans on the surface of the earth (Winberry, 1997). Over the past several decades, the concept of landscape has

evolved, but there has yet to be a single definition agreed upon by all. What is clear is that “landscape theory seeks to make connections between material remains, social institutions, natural resources, and human perceptions” (Stine & Stine, 1997, p. 190). Landscape investigations at TCI attempt to make these connections within both historical and modern contexts.

Scale is an important component to all geographical and archaeological investigations. Scale may generally be defined as “the ratio between the size of something and a representation of it” (Zimmerman & Artz, 2006 p. 129). While the definition of scale may be straightforward, applying the concept of scale to a place like TCI becomes more complicated due to the number of different sites across the landscape and the temporal scale associated with each site. There is not a single scale at which all patterns may be observed; as such, it is important to define the scale used at each junction of a multiscale study, and not assume that a pattern obtained at one scale may automatically be valid at another (Harris, 2006). These concepts, as they relate to TCI, will be discussed in more detail in chapter 3.

CHAPTER III

METHODS

Due to the nature of this research, a wide range of techniques were used to acquire and analyze the data needed to create an accurate assessment of Troublesome Creek Ironworks. The history of TCI, as discussed in chapter 1, was compiled largely from the research conducted by two historians and natives of Rockingham County, Mr. Robert W. Carter, Jr. and Dr. Lindley S. Butler, while the remaining archaeological and spatial data were obtained through investigations at TCI over the past five years.

Datasets from the author's research as well as from investigations in 2005 provided the basis for this analysis. Two sites within TCI provided the majority of cultural resources; 1, the nineteenth century farm house site; 2, a smaller cabin site located north of the farm house location. No extant features associated with the first site exist; however, a brick chimney and rock foundation of the cabin still remain. The methods discussed in this chapter relate specifically to the archaeology, survey, and spatial data management and analysis at TCI.

Archaeological Investigations at TCI

As mentioned in chapter 1, 2005 field investigations of TCI focused on identifying and examining the archaeological deposits associated with the nineteenth century farmhouse site. Prior to field work, remotely sensed imagery was used to establish the boundaries of the survey grid as well as to determine areas for test excavations. A 1974 aerial photograph of the property taken prior to the house fire was scanned and geo-rectified using ERDAS Imagine 9.3. This image was then compared to a 2003 digital orthophotograph of the site to identify the location of the 1800s farmhouse (Figure 3.1).

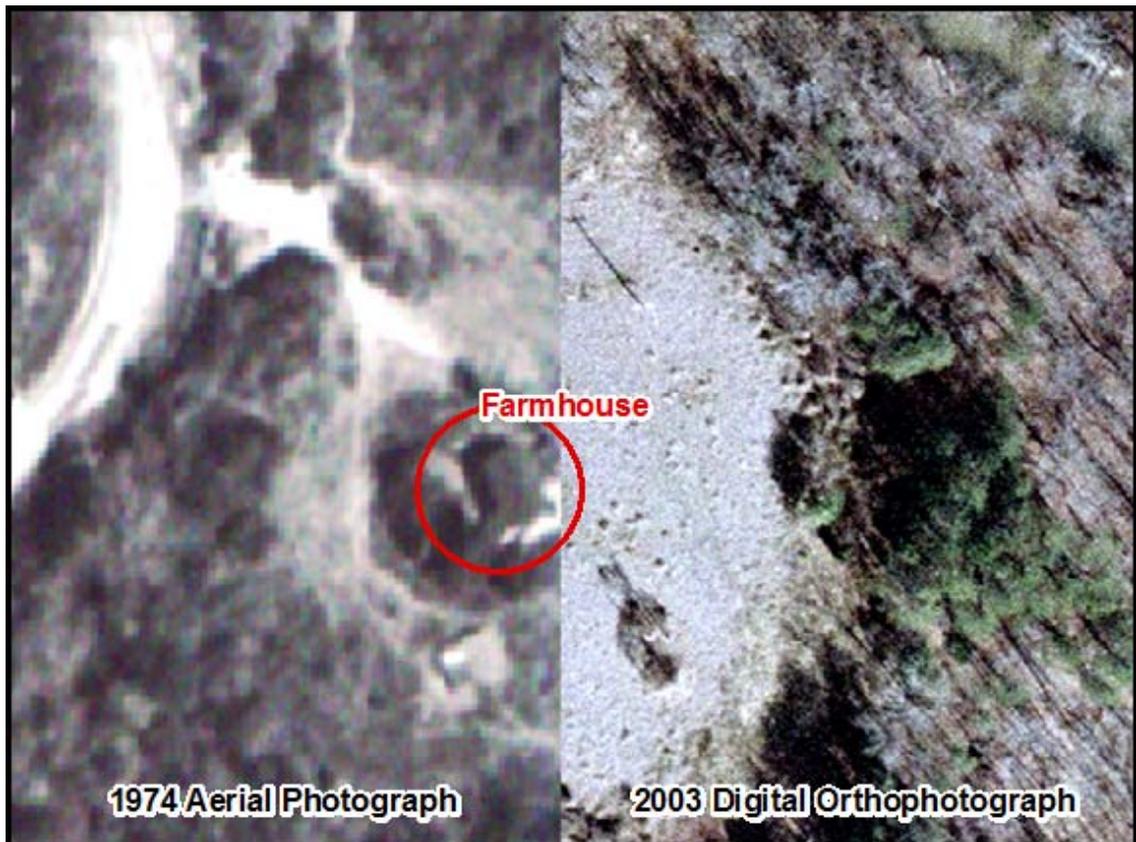


Figure 3.1. Image comparison, showing the location of the farmhouse site

The open field on which the farm house once stood was completely covered in kudzu that was removed prior to excavation. A datum was placed twenty feet south from the telephone pole located on the north side of the field from which a 100ft by 100ft grid was established, aligning to magnetic north, across the site. The grid was later extended for survey purposes. On the south side of the grid, a 100ft by 50ft area was added, on the east and west sides, a 100ft by 20ft area was added. A transit was used to place markers at ten-foot intervals across the grid, and each square was assigned an individual field sample (FS) number as well as a surface collection (SC) number (Figure 3.2).

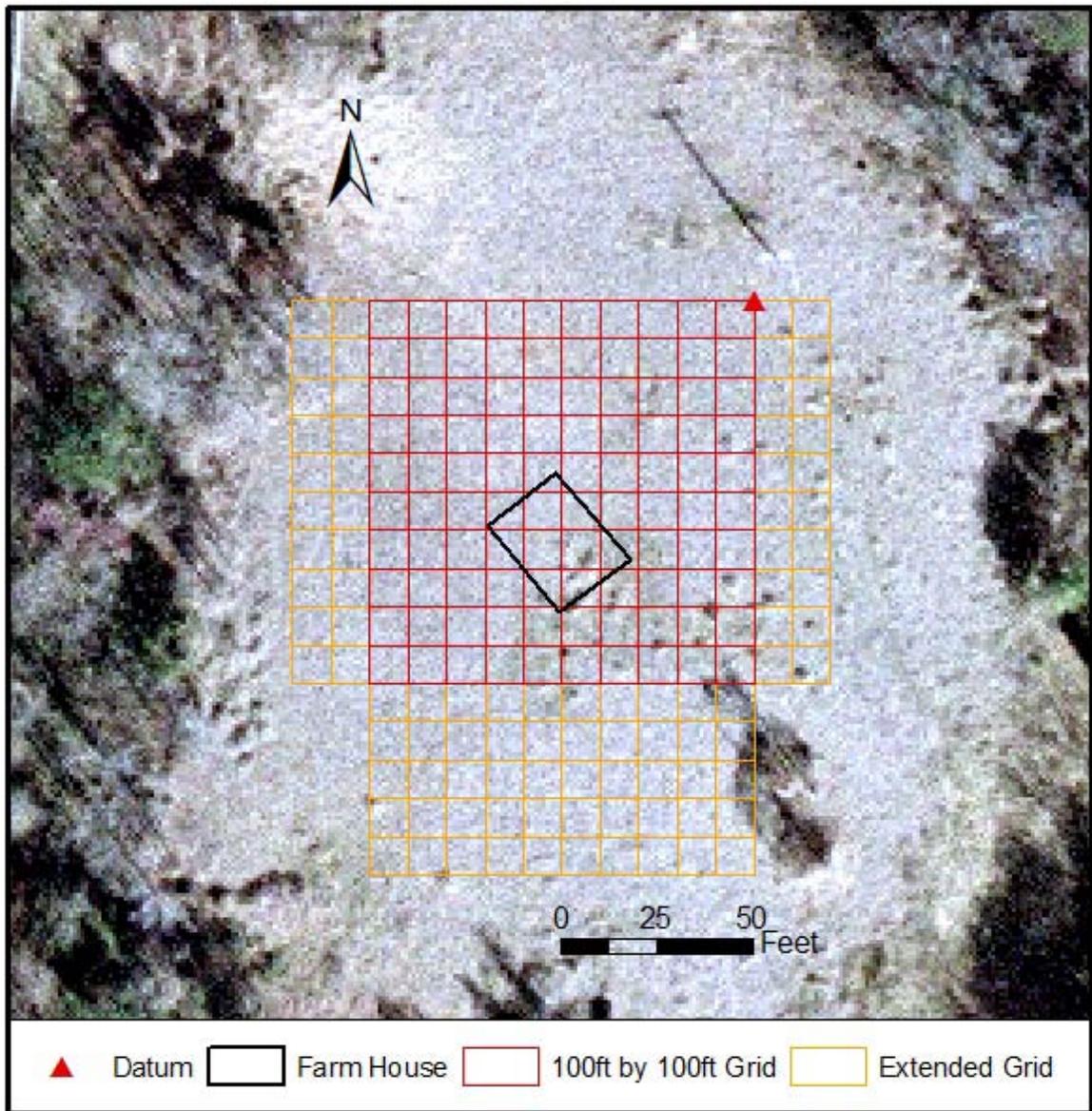


Figure 3.2. 2005 survey grid

A systematic surface collection was conducted across the entire gridded area. All artifacts present on the surface of each 10ft by 10ft square were collected and the samples were labeled with the corresponding FS and SC numbers; all above ground features were mapped using the transit. Three 5ft by

5ft test units were placed in locations thought to be associated with various archaeological deposits related to the farm house (Figure 3.3). These units were then excavated by hand following the natural stratigraphy of the soil layers and each soil layer or feature was assigned an FS number. All soil from each layer was sifted using quarter-inch screen, and all artifacts were collected and labeled according to layer and FS number.

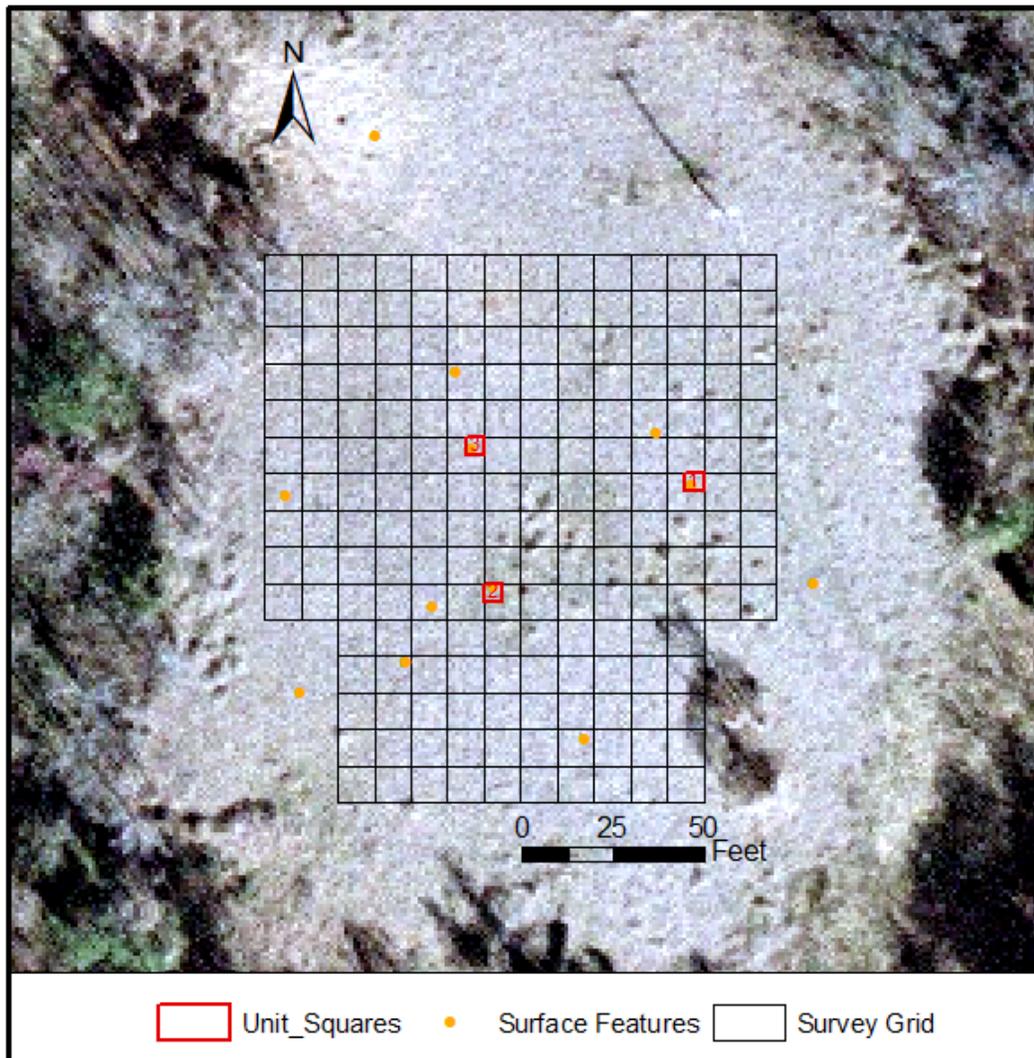


Figure 3.3. Test units and surface features

While 2005 field investigations of TCI focused on the farm house site, a broad survey of the entire landscape was also conducted to locate other historic features associated with the house. With the help of Robert Carter, the majority of sites mentioned throughout TCI's history were located. Several of these sites are visible from the roadside, such as the rock dam, the mill race, and remnants of the old grist mill, while others, like the area thought to be Revolutionary War entrenchments, the warming house, and the furnace site, are tucked away in the woods or hidden under foliage. During this survey, a cabin site was also located on the property. Interestingly, there is no specific reference in the historic literature to the cabin that is situated approximately 600 feet from the farmhouse site and even closer to sites like the furnace and mill. Time did not permit for a closer examination of the cabin site during investigations of 2005.

At various points throughout the spring semester of 2010, the author, with the help of several others, conducted two surveys at TCI. The first of these was a metal survey of the area thought to be the Revolutionary War entrenchments dug by Nathanael Greene's men in 1781. Two metal detectors were used to survey an area roughly 130ft by 110ft. The location of each metal hit was marked with a survey flag. The individual hits were excavated and soil was sifted using a quarter-inch screen until the metal object was found. Each artifact was bagged and labeled with its own FS number, and the soil layer and soil color, described using Munsell values, was recorded. A Topcon Laser Total Station was used to record the location and depth of each metal hit. Due to the location of the metal

survey and the tree cover surrounding it, the 2005 datum could not be used. A second datum was established just to the south of the metal survey and within view of the cabin site.

The second survey conducted during this time was a surface collection survey of the cabin site, located to the east of the entrenchment site, and also in a heavily wooded area. The Total Station was used to establish four corners of a 100ft by 75ft grid surrounding the cabin site, as well as to map the extant cabin features. Originally, it was hoped that the surface collection would include the entire 100ft by 75 ft area; however, limited time and assistance prevented the large scale survey, and only a 30ft by 35ft area encompassing the cabin site was surveyed. A 30ft by 35ft grid was established, aligned to magnetic north, and a compass and survey tape were used to place survey flags at five-foot intervals across the cabin site (Figure 3.4). Prior to the surface collection survey, forest undergrowth and leaf litter was systematically cleared away from the site. Each 5ft by 5ft square was then given an FS number and all artifacts within each square were collected.

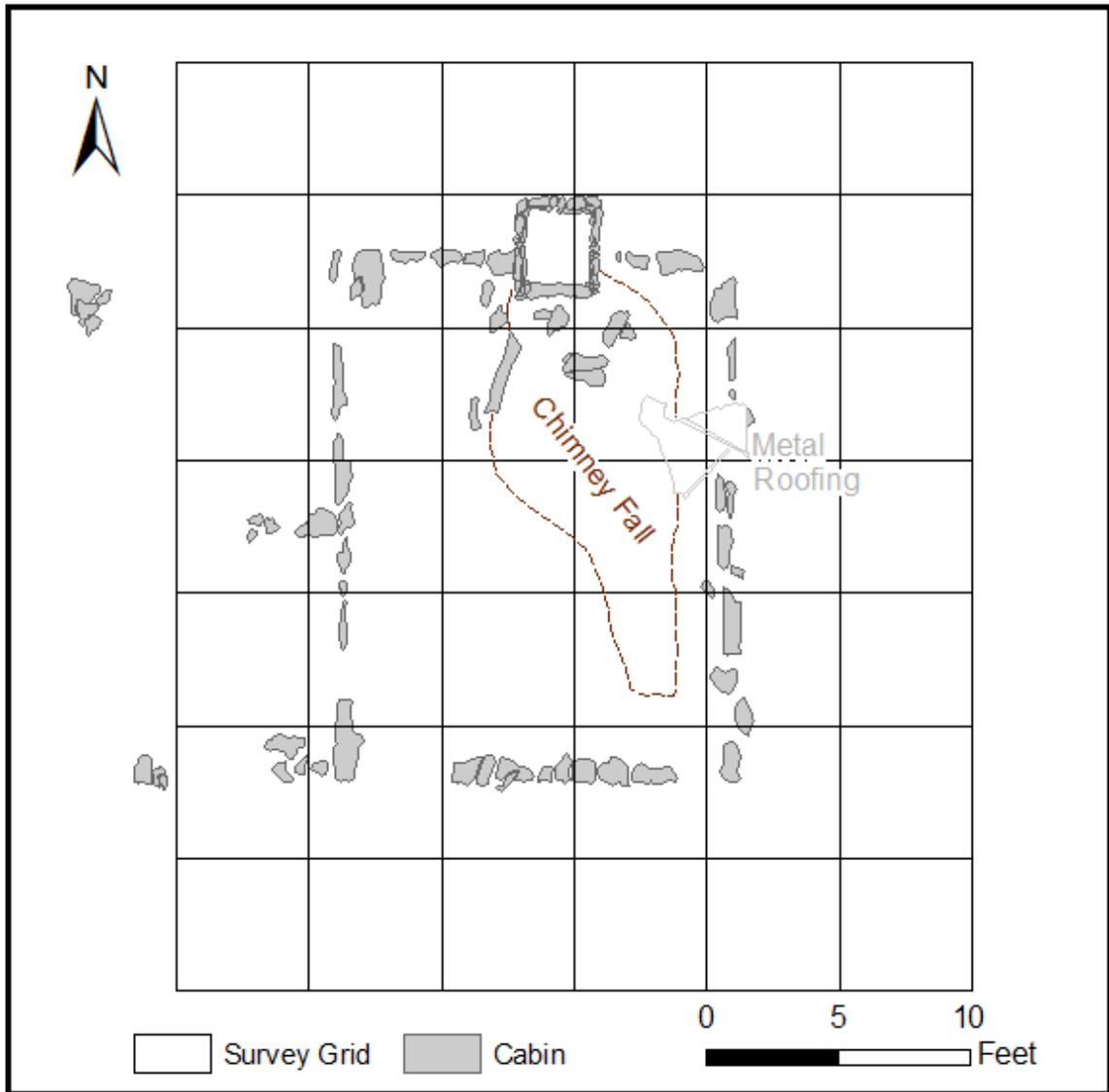


Figure 3.4. Cabin survey map

Archaeological Lab Analysis

All artifacts recovered from the 2005 and 2010 investigations at TCI were brought back to the Archaeology Lab at UNCG for analysis. All artifacts were washed, and cataloged following Stanley South's 1977 description of artifact assemblages based on functional groups; this technique is common in historical

archaeological analyses throughout the United States (South, 1977). The grouping of artifacts based on functionality (e.g. kitchen, faunal, architectural, furniture, arms, clothing, personal, activities, food, etc...) allows archaeologists to study concentrations of artifacts within a site to better explain the function of the site as a whole (South, 1977). This cataloging technique starts with a broad description of an artifact and works its way down to extremely specific attributes. The Functional group is the first of these descriptions followed by the category (e.g. bone, ceramic, glass, masonry, metal, etc.), quantity and/ or weight, material, completeness, manufacturing technique, etc. until each catalog entry contains as much diagnostic information about each artifact as possible, thus providing detailed and accurate documentation of cultural resources retrieved from archaeological field investigations.

Due to the quantity of artifacts being cataloged and the number of student volunteers aiding in the process, cataloging of all artifacts was done by hand on catalog sheets. Unfortunately, spatial analysis of artifacts proves more difficult as the volume of artifact entries increases dramatically. Therefore, the author scanned all catalog sheets for both the 2005 and 2010 investigations of TCI and compiled them into a portable document format (PDF). During the spring semester of 2010 the author entered each individual artifact into a Microsoft Access relational database designed for the organization and analysis of historical archaeological data and followed the cataloging method discussed above (Robinson, 2010). This process is described in more detail later in this

chapter. While all artifacts collected at TCI were entered into the database, only surface collection artifacts were used in analysis for this project.

Spatial Data Management

Due to the size of TCI and the large amount of spatial information acquired for this analysis, a Geographic Information System (GIS) was created to serve not only as a spatial control but also as a way of recording and managing all spatial data associated with the site. The GIS for TCI was created using *ArcGIS 9.3* software, provided by the UNCG Geography Department. The geographical coordinate system (GCS) selected for the GIS of TCI was *North American Datum (NAD) 1983 State Plane North Carolina Federal Information Processing Standards (FIPS) 3200 Feet*, based on a Lambert Conformal Conic projection, chosen for its regional accuracy and adaptability. For the purposes of this research it was important to establish real world coordinates for all data within the GIS. Global Positioning System (GPS) data for the datum points at TCI was acquired using a high powered GPS receiver, courtesy of Timothy Ingold, Survey Manager and Geospatial Consultant for the Timmons Group in Greensboro, NC. The coordinates for the datum established in 2005 were North 931640.9675, East 1782859.8684; the 2010 datum coordinates were North 932219.0130, East 1782619.9870. While GPS coordinates were not obtained for every feature and site at TCI, the datum point coordinates were used to assign real world coordinates to all arbitrary points taken with the Total Station.

Once the spatial reference was established for the GIS, a dataset of general geographic information of the study area was collected. 1959 and 1974 photographs were scanned into the database, and a 2003 digital orthophotograph was also acquired to provide a base on which other layers of spatial data were added. Layers for major roads, rivers and streams in Rockingham County were obtained from the UNCG Geography Department data archives as well as State and County layers for regional reference. The remaining layers used throughout this research were created by the author using ArcGIS and several software extensions for ArcMap. The 1974 scanned photograph revealed several features that no longer exist on the landscape today. Outlines of two of these features, a driveway and the farmhouse, were digitized to provide more general layers for site mapping. A layer for the property boundary was generated based on a 1984 land survey conducted by the previous owner, James MacLamroc.

Digital survey grids of both the farm house and cabin sites were created in ArcGIS using *Hawth's Analysis Tools*, a free software extension that provides the user with a variety of scientific sampling techniques for spatial data. The coordinates for the corners of both grids were used to define sampling extent. The spacing of the survey squares was based on the spacing of squares created in the field; the farm house grid spacing was set at ten-foot intervals, and the cabin grid, at five-foot intervals. As discussed above, field sampling methods for both sites combined all artifacts found within each surface collection square; that

is to say, that each artifact's exact location was not plotted. Because of this choice in sampling technique, a central point for each square within the gridded area was created to provide a point at which the artifact data could be displayed. Due to the large amount of data assembled for this study, all geographic datasets were placed in a geodatabase to prevent file corruption and maintain continuity throughout the analysis process. Once the basic dataset was established for the GIS, field data was examined.

Database Queries and Spatial Analysis Techniques

The Microsoft Access artifact database briefly described above enabled the author to sort artifact data collected during investigations at TCI in a variety of ways and provided an accurate spatial analysis of cultural resources across the landscape. All artifacts sharing similar attributes found across the entire site were accessed through database queries. A query allows the user to select specific categories of data which are then used to display a table of all information within the parameters of the search (Robinson, 2010). This function was extremely useful in producing tables of artifact types and categories for a broader spatial analysis of artifact patterns across the cabin and farm house sites.

Tables of artifact functional groups were created, containing only surface collection data for both the farm house and cabin sites. The total number of artifacts within each functional group for each site provided a starting point for assessing cultural patterns at TCI. It is important to note that while many artifacts were counted, such as ceramics, nails, glass, etc., other artifacts such as brick,

charcoal, slag, etc., were weighed. This will be discussed in more detail in chapter 4 with regard to density patterns. From here, more specific queries were created to include information about artifact categories, as well as dates associated with certain types of artifacts. Because both the attribute data from the tables created in the database and the layer files created in ArcGIS share a common context field, the author was able to join the artifact attribute data to the spatial layer features in ArcGIS. This enabled the artifact attribute data to be viewed spatially through the creation of density maps. In the context of this research, density maps simply display the number of artifacts within a certain area to provide a visual interpretation of the cultural activities that may have taken place across TCI.

Artifact densities were created using the kernel function in the Spatial Analyst extension of ArcGIS. For both the cabin and farm house sites, the artifact density was measured as the amount of artifacts found per square foot. The search radius for the farm house site was set at 13 square feet, while the cabin site radius was set at 5.5 square feet. The search radius for each site was chosen to include adjacent artifact quantities, without creating over generalized results. Because the artifacts were tied to a central point for each square in the surface collection grid, the resulting maps show density distribution as a circle around each point, unless skewed by adjacent artifacts within the search radius (Robinson, 2010).

Artifact Dating

To establish an accurate temporal context of the sites investigated, several artifact dating methods were implemented. Two of these dating methods provide more specific dates but require two specific types of artifacts: ceramics and window glass. The other dating technique utilizes nails but provides a much broader date range. The database calculated median dates for ceramics by comparing the beginning and ending manufacture dates for an artifact, and selecting the date at which production peaked. From here, the database calculated Mean Ceramic Dates (MCD) for general ceramic types, a dating technique developed by Stanley South in the 1970s; figure 3.5 shows the formula used to calculate MCD.

$$Y = \frac{\sum_{i=1} X_i f_i}{\sum_{i=1} f_i}$$

Figure 3.5. Formula used to calculate MCD (Robinson, 2010)

Architecture flat glass dating models compare the thickness of window glass to manufacturing dates to provide a relative date of production. Over the 18th and 19th centuries, window glass became thicker due to the manufacturing techniques implemented, thus, older window glass is thinner than more recent window glass. The archaeological database calculates window glass dates using Moir's model derived from a linear regression equation comparing window glass thickness to an approximate date, based on a large window glass sample

compiled from over 23 farmstead sites (Robinson, 2010). Figure 4.6 shows the formula used in the database to calculate dates based on window glass thickness.

$$D = 84.22 * M + 1712.7$$

Figure 3.6. Formula used to calculate window glass dates (Robinson, 2010)

While the above dating techniques are extremely useful for the analysis of historical archaeological sites, the data needed is not always present in the field sample. Nail assemblages do provide some insight into the relative date of construction for 18th and 19th century structures. As manufacturing techniques for ceramics and window glass have changed over time, so have techniques for nail production. Hand-wrought nails were used throughout the 17th and early 18th centuries, and in some cases into the 19th century, but by the 1830s machine-cut nails were common, and by the 1870s, wire nails were widespread (Noel Hume, 1970). While nails may not provide an exact date, they do provide an idea of when a structure may have been built. Artifact dates will be compared to artifact densities in the next chapter to provide a better temporal context for the landscape at TCI.

CHAPTER IV

RESULTS

There is a surprising amount of information to be gained from investigating cultural deposits on the surface of a landscape. Over 2000 artifacts were collected from the surface investigations of the three sites examined for this project. Geographic and archaeological analysis of these data reveals insight into parts of TCI's history that is less well known. This chapter explores the findings from each of the three site surveys, to better understand the cultural impacts on the landscape over time.

Revolutionary War Entrenchment Site

While there is historical reference to Nathanael Greene's army digging entrenchments at TCI, there is no historical reference to local folklore about a skirmish taking place there. The purpose of investigations at this site was largely to determine if any evidence existed to support either of these events. The location of the site, situated on a hill overlooking Troublesome Creek, does correlate with historical accounts. Visual examination of the site reveals shallow trench-like areas; however, without conducting a test excavation, it is not possible to identify whether the change in terrain is cultural or natural in origin.

A metal detector survey provided the most direct assessment of war related materials, as the majority of such items are made of, or contain metal. Figure 4.1 shows the distribution of the metal hits from the survey over the entrenchment site, while Table 4.1 provides a description of artifacts found at each location.

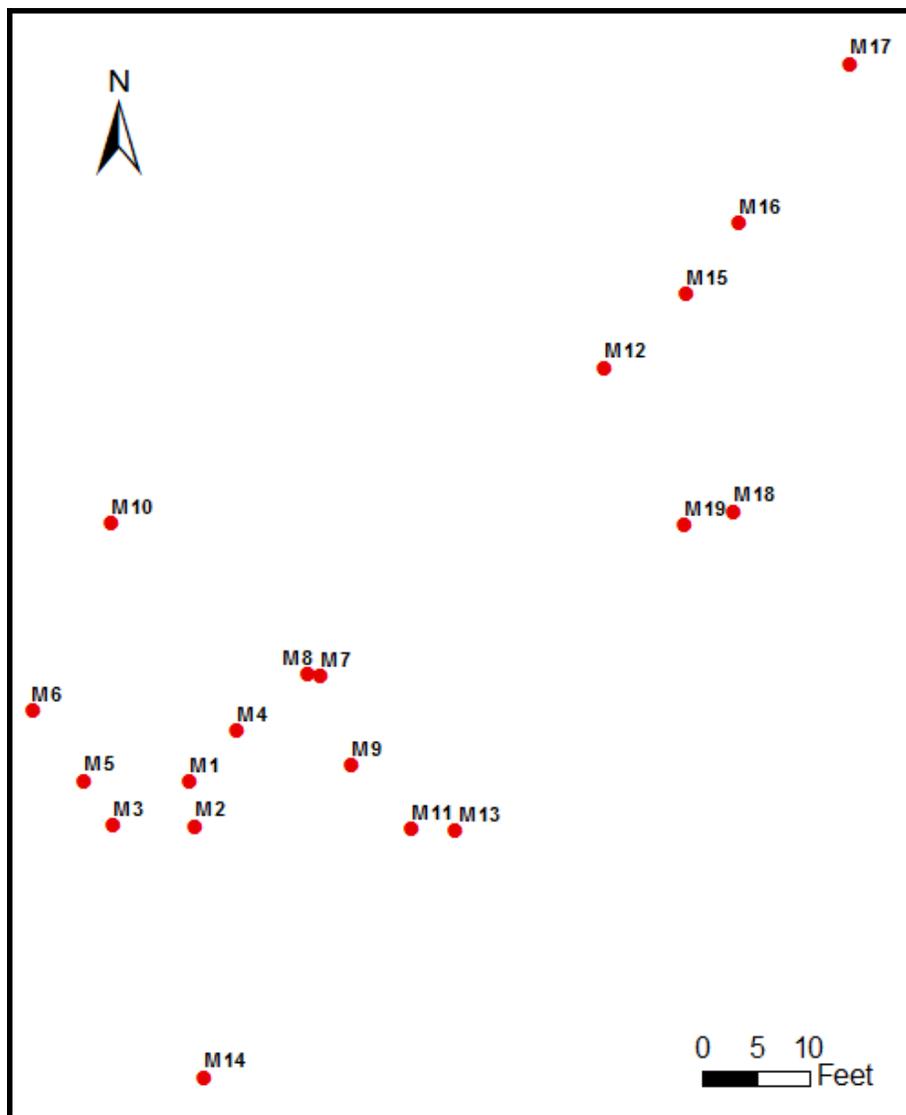


Figure 4.1. Distribution of metal hits from metal survey of entrenchment site

Provenience		Description
MD 1	~	1 iron part, possible tool?
MD 2	~	1 iron Screw, 1 burned glass sherd
MD 3	~	1 silver dime, 1972
MD 4	~	1 nail, 1 amethyst glass sherd
MD 5	~	1 cut nail
MD 6	~	1 nail, 1 base of glass container, 30g brick
MD 7	~	1 wire nail
MD 8	~	1 crown bottle cap
MD 9	~	1 cut nail
MD 10	~	1 iron object, gun part?
MD 11	~	1 wire fragment, 1g brick
MD 12	~	1 circular iron object
MD 13	~	1 aluminum can
MD 14	~	1 iron mower blade, 1 glass sherd
MD 15	~	1 nail, 1 iron pipe, 1 iron fragment
MD 16	~	1 cut nail
MD 17	~	1 solid iron rod
MD 18	~	1 barbed wire fragment
MD 19	~	1 wire fragment

Table 4.1. Description of artifacts retrieved from metal survey of the entrenchment site

The majority of artifacts collected from the metal survey, are associated with the 19th and early 20th centuries. Some artifacts collected such as the aluminum can, bottle cap, and glass fragments, appear to be litter, while other artifacts are associated with 20th century farming. Remnants of barbed wire fencing still exist around portions of the site. One metal artifact found may be a part of a firearm; however, no date was derived during artifact analysis.

Through personal correspondence with Robert Carter following the survey, it was learned that over the past several decades, the site has been

looted by people in search of Revolutionary War era artifacts. For the purpose of site protection, the exact locations of the metal hits were not displayed in the map above. Looting may help to explain the lack of cultural deposits associated with this time period. Barbed wire fencing also suggests that livestock may have been kept within the boundaries of the site, and easily could have contributed to the disturbance of the historical context. The cultural evidence found from the metal survey neither suggests nor disproves the purported events that took place at TCI during the Revolutionary war. Archaeological excavations may provide more conclusive findings; however, such investigations were beyond the scope of this research.

Farmhouse Site

A total of 2194 artifacts, not including those cataloged by weight, were recovered from the surface survey of the farmhouse site. As mentioned in chapter 1, the site was used as an agricultural field, and according to Robert Carter, the field was plowed only once, sometime between the 1970s and 1980s. Plowing the field churned up cultural layers, and as soil washed away, artifacts were brought to the surface of the site. While plowing tends to disrupt stratigraphy, it provided a fairly quick and detailed overview of cultural resources across the landscape, a task that usually requires test excavations.

A total of 87 percent of the material falls into either the architecture or kitchen functional groups. Tables 4.2 and 4.3 provide a breakdown of artifact

functional groups by count and by weight, respectively, for the entire surface collection survey of the farmhouse site.

Functional Group	Artifact Count
Activities	22
Architecture	584
Arms	5
Clothing	22
Faunal	85
Furniture	1
Kitchen	1318
Lighting	10
Personal	21
Miscellaneous	121
Unknown	6
Total	2195

Table 4.2. Farmhouse surface collection artifacts (by count)

Functional Group	Class	Total Weight (Grams)
Activities	Slag	61
Architecture	Masonry	16511
Fuel/ Fuel Byproducts	Coal/ Charcoal	915

Table 4.3. Farmhouse surface collection artifacts (by weight)

Architecture Artifacts

Architecture artifacts collected from the farmhouse site were largely composed of masonry materials, window glass, and nails. Density maps for architecture totals by count and by weight were created to assess any patterns that may exist across the site (Figure 4.2).

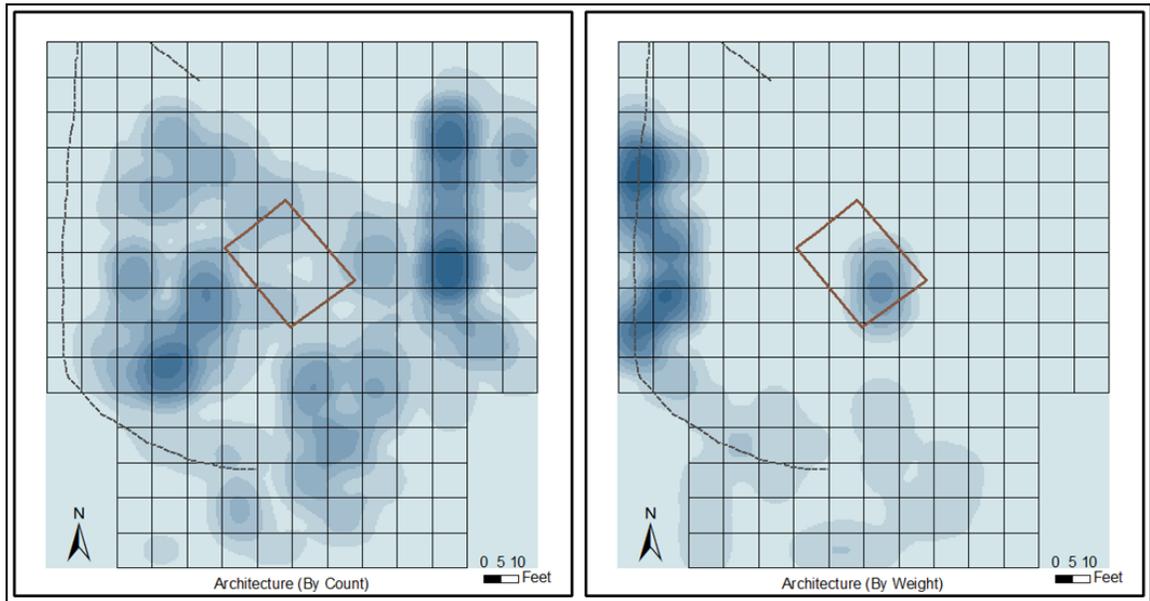


Figure 4.2. Comparison of architecture functional group density by count and weight for the farmhouse site

As discussed in Chapter 1, the farmhouse burned down in the late 1970s, and the charred remains were bulldozed into what had been the cellar of the house. The density map to the right in figure 4.2 depicts Architecture artifacts by weight; the majority of artifacts that were weighed consisted of masonry items, specifically brick. A photograph of the farmhouse prior to the fire reveals a timber-framed house with a brick chimney (Figure 4.3).

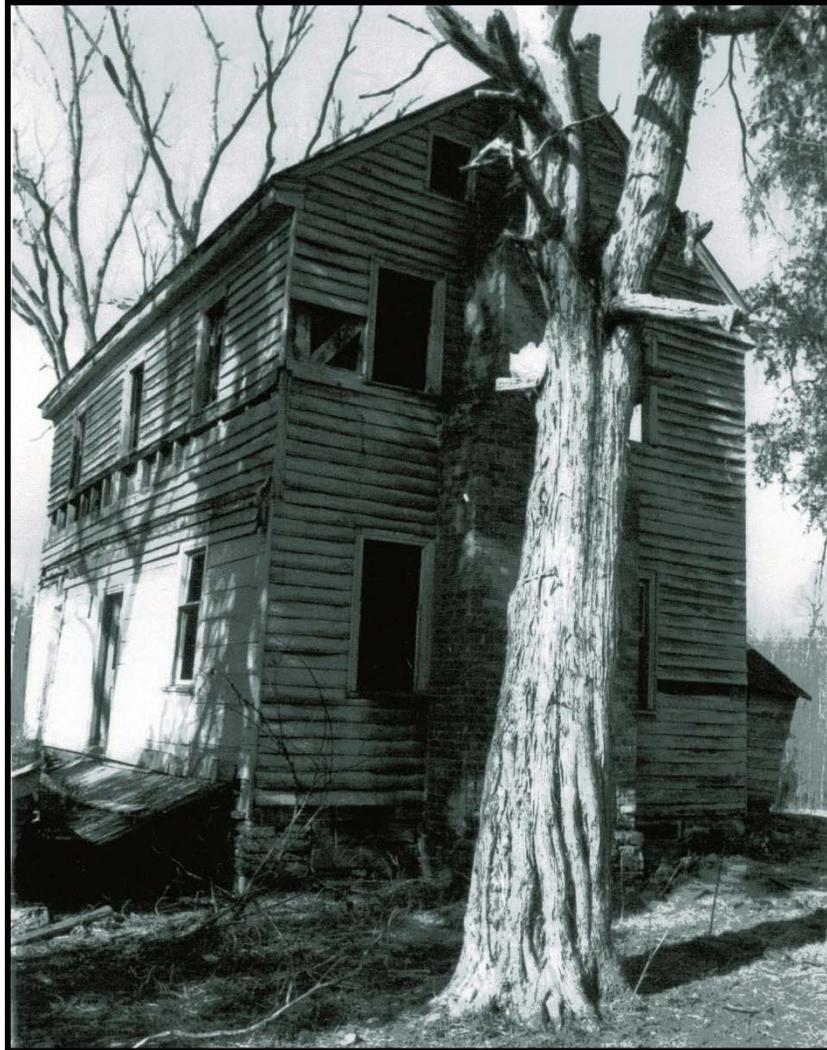


Figure 4.3. 1970s photograph of farmhouse prior to fire; brick chimney visible behind tree trunk (provided by Robert Carter, RHS)

According to personal recollection of Robert Carter, the farmhouse faced the road at a southwest angle. This places the chimney on the southeast side of the house; the density map in Figure 4.2, exhibits a concentrated amount of brick in that area. The larger density of architecture artifacts (by weight) on the western edge of the survey grid is not associated with any known brick structures in that

specific location, and a chimney fall would have created a different spatial pattern within a smaller area. The artifact scatter does appear to faintly follow the old driveway bed, suggesting that the rubble from the chimney could have been used as fill. Further assessment is needed to fully understand this specific artifact concentration.

The density map of Architecture artifacts by count, to the left in Figure 4.2, shows a widespread scatter across the site, with virtually no concentration in the location of original farmhouse. This may be due to plowing. It might also be that some of the artifacts collected are associated with smaller outbuildings on the farmstead. To examine these types of architecture artifacts, density maps were created for window glass and nails; two of the largest categories of architecture artifacts in the survey sample (Figure 4.4).

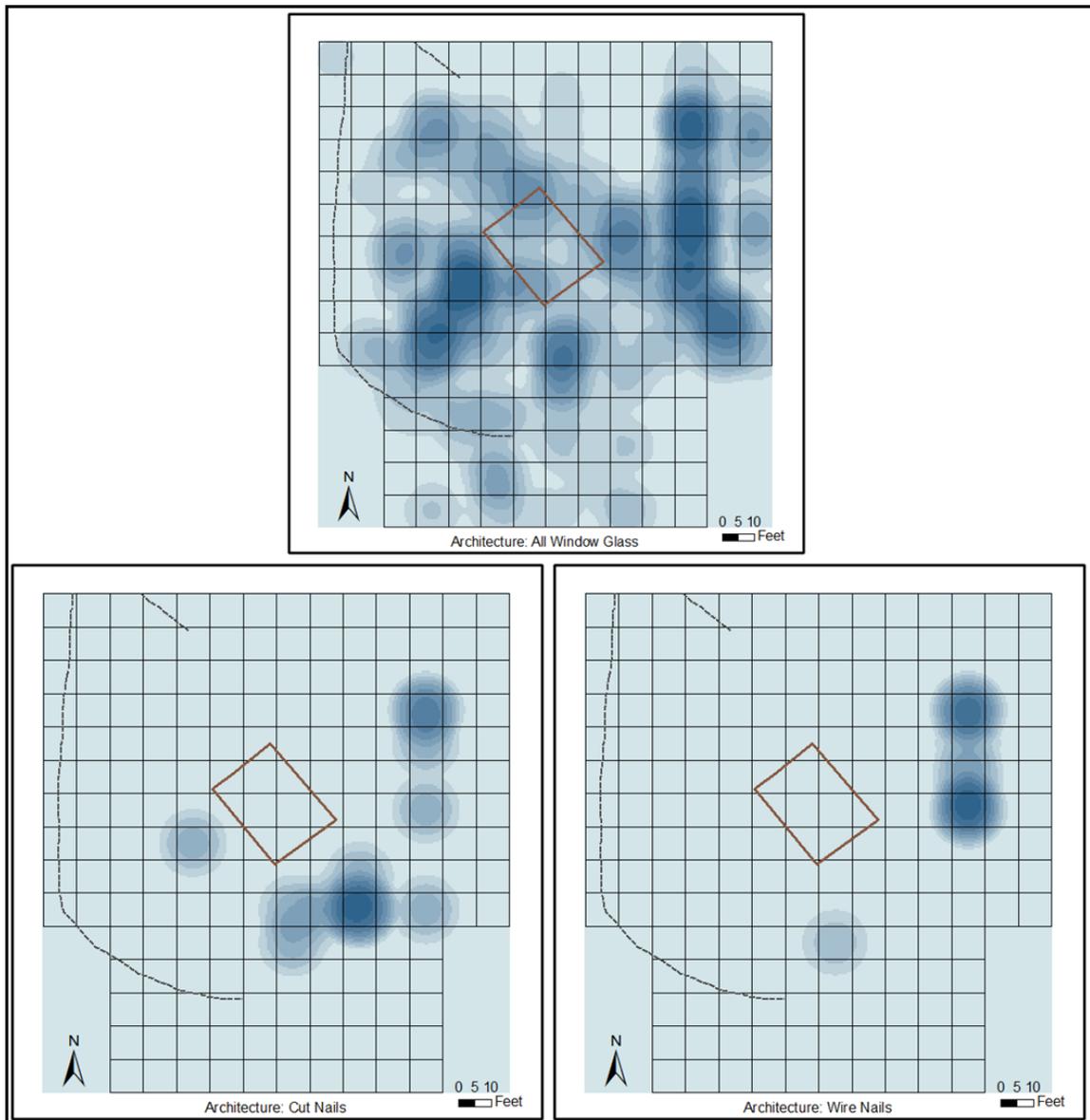


Figure 4.4. Artifact densities for window glass, cut nails, and wire nails at the farmhouse site

There were a total of 361 window glass fragments and only 37 nails collected during the surface survey. Approximately half the nails collected were cut nails, and the other half were wire nails. The distribution of window glass in

Figure 4.4 shows a scatter of glass across the site, with concentrations on the eastern side of the grid, as well as in front of where the house stood. The concentrations of window glass around the house are consistent with patterns expected from the house burning down; glass more than likely would have shattered and spread out as the house collapsed. The heavier concentrations of window glass behind the house, (along the eastern side of the grid) appear to be more associated with the nail distributions than with the house location.

The relatively small number of nails on the surface of the site, particularly surrounding the house, supports the apparent bulldozing of the site following the fire. A picture from a newspaper dated November 2, 1976, 2 days after the fire, shows only the chimney standing, and the roof and rafters on top of the foundation of the house (Figure 4.5). This suggests the house collapsed in on itself; if the charred remains were later bulldozed into the cellar, the nails would have most likely been incorporated with the remnants of the structure, and not scattered across the site.



Figure 4.5. Photograph from November 2, 1976 newspaper depicting farmhouse ruins (provided by Robert Carter, RHS)

This does not explain the nail distributions to the east of the survey grid, which appear to correlate with the higher concentrations of window glass. The locations of outbuildings are unclear; however, these artifact patterns suggest that a structure may have been located in this area. The following comparisons of the Kitchen and other artifact functional groups will reveal more detail.

Kitchen Artifacts

Of the total Kitchen artifacts collected (n=1318) from the surface survey, kitchen glass (n=891) and ceramics (n=372) constituted the majority of the findings. Density maps provide an overview of kitchen artifact patterns across the site (Figure 4.6).

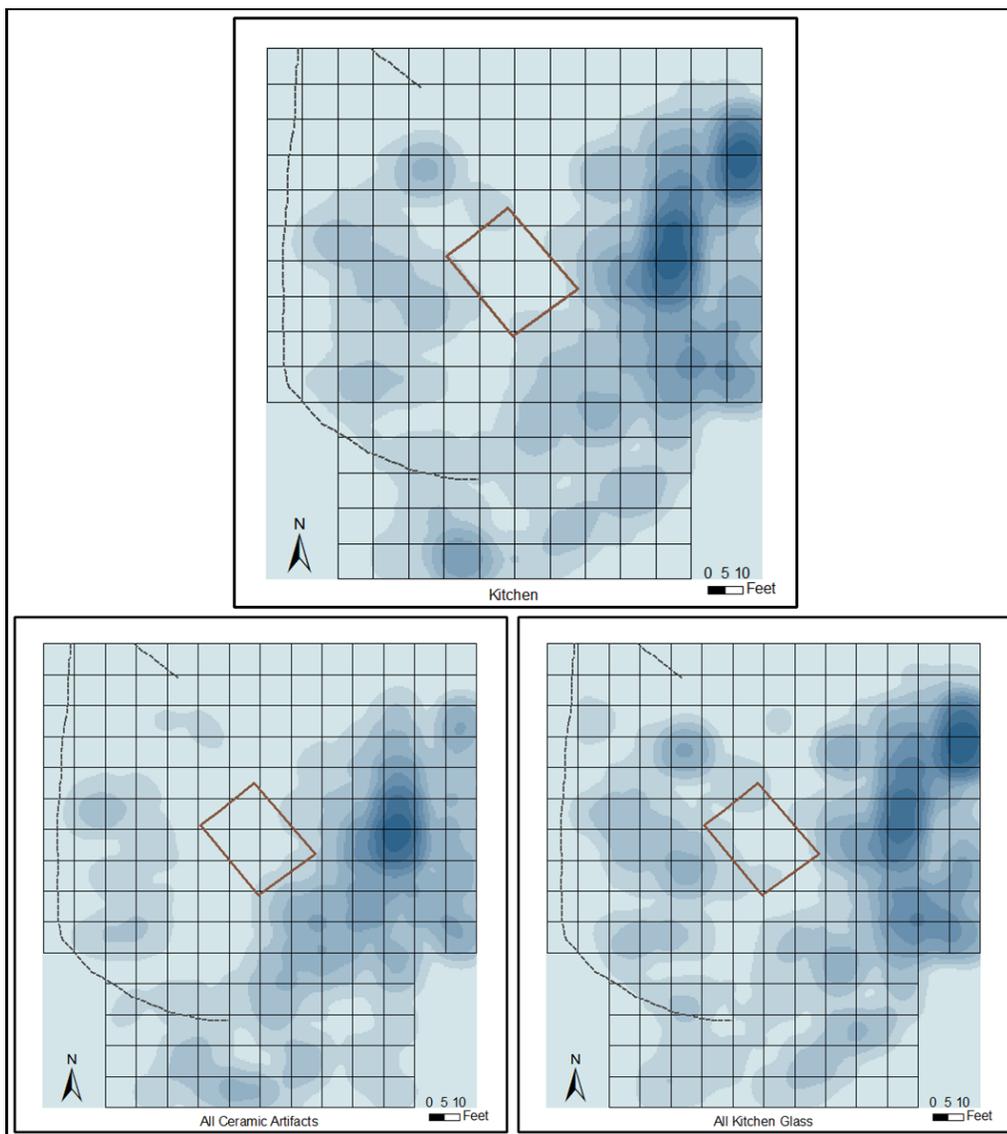


Figure 4.6. Artifact densities for all kitchen artifacts, ceramics, and kitchen glass from surface collections at the farmhouse site

While there are some scatters of both ceramics and kitchen glass around the location of the house, the highest concentrations appear to be on the east side of the grid, similar to the densities of the Architecture artifacts discussed above. This correlation supports the possibility of the presence of a second structure on the site. The majority of kitchen glass artifacts did not contain elements required for dating; however, ceramics provided more detail. Table 4.4 provides a breakdown of ceramics by type. Table 4.5 is a subset of table 4.4, and shows a breakdown of decorated ceramics only.

Ceramic Type	Artifact Count
Coarse Earthenware	20
Creamware	5
Fiestaware	1
Ironstone	23
Pearlware	9
Porcelain	22
Redware	2
Refined Earthenware, Unidentifiable	12
Stoneware	37
Whiteware	239
Yellowware	2
Total	372

Table 4.4. Ceramic artifact breakdown by type for the farmhouse site

Ceramic Type	Decoration	Artifact Count
Creamware	Hand Painted	2
Pearlware	Hand Painted	4
Porcelain	Flow Blue	2
	Hand Painted	3
	Luster Decoration	2
	Transfer Print	1
Stoneware	Albany Slip	2
Whiteware	Band	2
	Blue, Transfer Print	1
	Decalcomania	2
	Green, Transfer Print	1
	Hand Painted	9
	Plain, Raised	10
	Raised, Shell Edge	1
	Sponge	1
Stencil	3	
Total		46

Table 4.5. Ceramic artifact breakdown by type and decoration for the farmhouse site

Of all the ceramics collected from the surface survey, whiteware was the most prevalent (n=239), and was commonly used throughout the 19th and 20th centuries. The majority of this ceramic type was concentrated on the eastern side of the grid. Density maps for whiteware and all other ceramic types may be found in Appendix A. 12 percent of the total number of ceramics collected, retained some of their original decoration, and proved useful in deriving more precise dates for the site, while the remaining ceramic types provided a more general timeline. The temporal context of the farmhouse site will be discussed in greater detail in chapter 5.

Other Artifacts

The remaining 13 percent of the total artifacts recovered from the surface survey were associated with functional groups that revealed a more personal portrayal of life ways at TCI. Each of these functional groups will be discussed in this section; a table of artifacts for each functional group may be found in Appendix B and density maps for each functional group may be found in Appendix C.

The Activities functional group generally contains a wide variety of artifacts that, as the name indicates, relate to activities that have taken place on a site through time. Surface survey of the farmhouse site revealed several pieces of barbed wire, fragments of garden hose, a vehicle windshield wiper blade, an inner tube for a tire, and a red glass vehicle light cover. While the barbed wire relates mostly to farming activities that took place on the farmstead, the remaining artifacts are less associated with the early history of the site; these items relate more to activities that occurred most likely during the 20th century. The remainder of activities artifacts included 2 machine-made marbles (one lavender and blue, the other yellow and white), the leather covering of a ball, a water gun, several plastic toy figurines, a plastic toy tire, and the lower body and arm of a porcelain doll. Artifacts such as these serve as a reminder of the individuals who lived, and may have grown up at TCI.

The Clothing functional group yielded several interesting artifacts: ten pieces of leather shoe sole, two of which contained iron shoe tacks; two iron

buckles; a thread spool; a four-hole plastic pearl colored button; a black glass button; a two-hole white shell button, dated to around 1885 (Peacock, 1989). The Personal functional group contained several cosmetic milk-glass containers as well as perfume/ cologne bottles manufactured between the early and mid 20th century.

Only five artifacts were associated with the Arms functional group: a bullet casing, commonly used between 1910 and 1934 (Logan, 1959; Miller, et al., 2000), two shotgun shells, a knife handle, and a hand knife. The Lighting functional group contained several fragments of light bulb glass, as well as an aluminum light bulb base, indicating access to electricity at the site some point after 1895 (Scoville, 1948; Miller, et al., 2000).

Over thirty shell fragments, predominantly oyster and clam, were found on the surface of the site and may be associated with food ways at TCI. Fifty-two bone fragments were collected, and several species were identified; squirrel, rodent, woodchuck, and white-tail deer were among the most common. These species are common to the region and did not show any evidence of butcher marks, therefore associating these remains with natural wildlife in the area. Bone fragments and a tooth from a domestic cow were also found on the site with no evidence of butcher marks, most likely confirming the presence of livestock at TCI (Gilbert, 1980).

Dating the Farmhouse Site

Not all artifacts collected from the surface contained enough information for date extrapolation; however, as discussed in Chapter 3, there are several relative dating techniques that yield fairly accurate results. Two of the most common techniques used are mean ceramic dating (MCD), and Moir's model for flat window glass dating. Both the MCD and window glass techniques provide somewhat of a timeline for a site and they utilize artifacts from two different functional groups. Kitchen artifacts, more specifically ceramics, like many household items, change with the introduction of new people or new styles. This is one reason why dates across a temporal period may be inferred from the analysis of ceramic types. Similarly, architectural artifacts, such window glass, may be associated with new structures or alterations to existing structures. These comparisons, along with relative dates of nail types, provide a general timeline of events across a site. These dating techniques can be used to assign a date range to individual cultural layers; however, due to the disturbance of cultural materials at the TCI farmhouse site, these dating techniques were applied to the surface collections. The following sections discuss the results of these analyses and comparisons.

Mean Ceramic Dating

Many of the ceramic artifacts recovered from the surface collection survey yielded enough information to establish an overall date range from which the MCD was calculated. While some ceramics contained more definitive characteristics that provided a more accurate date, the majority of ceramic types generated a fairly broad site timeline. The following table shows the overall dates recovered from ceramic analysis at the farmhouse site (Table 4.6).

General Ceramic Type	Manufacturing Dates		Median Ceramic Date
	Begin	End	
Creamware	1762	1820	1791
Ironstone	1842	1930	1886
Pearlware	1780	1830	1805
Porcelain	1745	1950	1848
Redware	1700	1900	1800
Stoneware	1705	1930	1817
Whiteware	1820	1910	1865
Yellowware	1830	1940	1885
Mean Ceramic Date			1855

Table 4.6. Ceramic dates for the farmhouse site

Window Glass Dating

As discussed in chapter 3, Moir's model for dating flat window glass was used to derive dates based on the thickness of each piece of glass collected from the surface survey of the farmhouse site. This model, unlike the MCD calculations for the site, provided a more concise timeline. Table 4.7 below

provides the quantity of window glass fragments collected and the corresponding dates based on glass thickness.

Quantity	Thickness (mm)	Calculated Date	Quantity	Thickness (mm)	Calculated Date
1	0.4	1746	1	2.1	1890
2	0.94	1792	5	2.2	1898
26	1	1797	2	2.25	1902
4	1.2	1814	5	2.3	1906
2	1.25	1818	1	2.4	1915
4	1.3	1822	53	2.5	1923
16	1.5	1839	3	2.6	1932
1	1.5	1847	1	2.7	1940
6	1.7	1856	2	2.75	1944
1	1.75	1860	40	3	1965
2	1.8	1864	1	3.1	1974
148	2	1881			

Table 4.7. Window glass calculations by thickness for the farmhouse site

Date Comparisons With Nails

While MCD and flat window glass dating provide more concise dates, nail types often provide insight into the progression of a site and the structures that existed. The distribution of nail types across a site often indicates different architectural phases. Few nails were recovered from the surface collection of the farmhouse site; however, if it is assumed that the majority of the farmhouse was built with cut nails, common in the 1830s, then any concentrations of earlier or later nails may indicate the presence of different structures on the landscape. This appears to be the case with the distribution of cut nails and wire nails

discussed in the Architecture Artifacts section of this chapter. The density map of the nails showed a concentration of wire nails behind the house and to the eastern side of the grid as was seen in Figure 4.4. Wire nails are most commonly found in the latter portion of the 19th century up to present day. While there were also some concentrations of cut nails in the same location, wire nails were only found there, and not across the site, suggesting the possibility of a later addition or smaller outbuilding in the area.

As stated earlier, it appears that a structure may have existed along the eastern edge of the survey grid. Comparisons of ceramic and window glass distributions by date support this possibility. The majority of artifacts appear to be associated with the architecture and kitchen functional groups; based on these concentrations, it is possible that an earlier structure, such as a house, may have existed on the site. Further archaeological investigations are needed to fully understand the distribution of cultural resources across the farmhouse site.

Cabin Site

Unlike the two sites above, there is no historical reference to a cabin structure at TCI. Upon discussing the cabin site with local historian Robert Carter, he provided a picture of the standing structure taken in November of 1977 (Figure 4.9), and recalled that a King family lived in the dwelling up until the late 1940's. The structure, as with many of the sites at TCI, burned down some time in the 1980s; only the chimney and rock foundation remain extant today. Figure 4.10 shows the condition of the site at the time of the surface collection.



Figure 4.7. Photograph of the TCI cabin taken in November, 1977 (provided by Robert Carter, RHS)



Figure 4.8. Current photograph of cabin site taken during surface collection

Artifacts

A total of 151 artifacts were collected from the surface collection of the cabin site. Seventy-five percent of all artifacts collected were related to architecture. Table 4.7 below shows a breakdown of artifacts by functional group for the cabin site.

Functional Group	Artifact Count
Activities	4
Architecture	113
Arms	1
Furniture	4
Kitchen	24
Personal	1
Miscellaneous	4
Total	151

Table 4.8. Breakdown of cabin site artifacts by functional group

No artifacts were cataloged by weight at the cabin site simply because artifacts such as brick, mortar, slag, etc. were not collected. Figure 4.11 provides a comparison of artifact density for the Architecture and Kitchen groups. Density maps were created for several of the other functional groups and some of the artifact types at the cabin site and may be found in Appendix D.

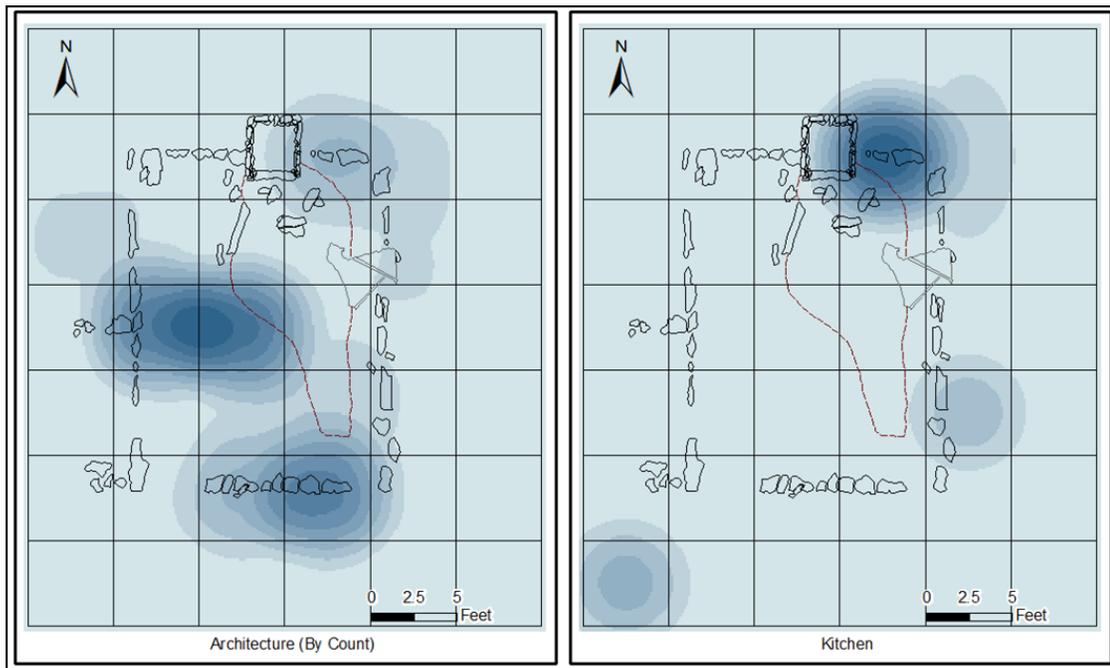


Figure 4.9. Artifact density maps of architecture and kitchen functional groups for the cabin site.

The majority of architecture artifacts consisted of nails ($n=80$) and flat window glass ($n=12$). Two 19th century door hinges and a door lock box were found within the area containing the highest concentration of architecture artifacts. A few smaller pieces of metal roofing were collected and cataloged; two large sheets of roofing were left at the site. The chimney, like the foundation, is rock; however, the chimney fall contains some brick which made up the top most portion of the chimney. Evidence of this is seen in Figures 4.9 and 4.10 above.

The distribution of architecture artifacts indicates the presence of doorways and/ or windows at the cabin. Based on the 1974 photograph and artifact concentrations a doorway existed in the middle of the eastern side of the

cabin. A window or a doorway may have existed on the south side of the cabin because an opening is seen through the doorway of the 1974 image and a higher concentration of nails and window glass were found in this area as seen in Figure 4.11. Based on the rock foundation, a porch appears to have existed on the western side of the cabin, and most likely a doorway existed on that side as well; however, it cannot be seen in the photograph. The distribution of artifacts suggests that as the cabin burned down. It may have leaned and collapsed toward the western side of the grid and not directly on top of the rock foundation.

The Kitchen artifacts contained a few ceramics (n=6), and glass fragments (n=18). A cast iron foot and several other fragments of a cooking stove were also found in the area of highest concentration for kitchen artifacts. Interestingly, the stove fragments were located in the northeast corner of the cabin, next to the chimney. The stove may have been vented through the chimney, and the presence of kitchen glass, specifically storage containers such as mason jars in this same location, appears to indicate division of space within the cabin.

The metal springs of a mattress were found on the western side of the grid; several smaller fragments were collected and cataloged. A piece of a leather shoe is the only personal artifact collected on the surface. Several fragments of barbed wire and a plow blade made up the remainder of Activities artifacts.

Dating the Cabin Site

The few artifacts collected from the surface survey of the cabin site yielded enough information from which to derive dates. A few ceramics and window glass fragments provided an extremely small sample for dating. Of the total ceramics collected (n=6), four types were identified: ironstone, stoneware, creamware and whiteware. These artifact types are common between the latter portion of the 18th century and throughout the 19th century. The window glass (n=10) dates coincide with the first half of the 20th century. Of the 80 nails collected at the site, 41 were cut, most prevalent between the 1830s and 1870s, and 39 were wire, common after the 1870s. Interestingly, it appears that roughly half the artifacts date to the 19th century while the other half dates to the 20th century. While surface collections suggest that the cabin may have been used over a two-hundred year period, little was found to associate the cabin to other sites at TCI.

CHAPTER V

DISCUSSION

Site interpretation is greatly improved when cultural deposits across a landscape may be associated with specific events throughout at site's history. While these connections do not always exist, oftentimes comparisons between similar sites provide insight into cultural patterns. To more completely understand the sites investigated for this research, both of these techniques were applied to the data acquired from TCI.

Relating Farmhouse Site Data to TCI History

Of three sites examined at TCI, the farmhouse site provided the largest collection of datable artifacts. The ceramic and window glass artifact analysis provided a timeline to which written history could be compared. The following graph depicts the distribution of the quantity of ceramics based on the calculated MCD at the farmhouse site and the correlations with specific site history (Figure 5.1).

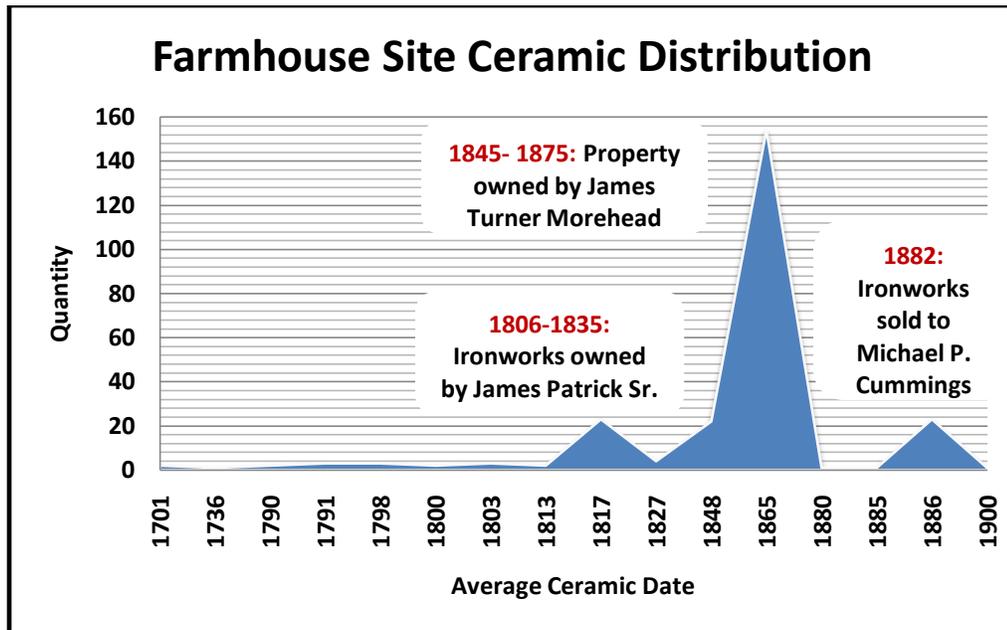


Figure 5.1. Distribution of the quantity of ceramic artifacts and corresponding median ceramic date

Figure 4.7 is based on the median ceramic dates derived from ceramic types in Table 4.6 and the number of ceramics associated with each date. While the date ranges acquired from these calculations are broad, the distribution does appear to correspond with some of the dates discussed in the written history of TCI. James Patrick Sr. purchased the Ironworks property in 1806; by 1820 William Patrick, James Patrick’s son, was overseeing the Ironworks and by 1826 he was running a store in his residence there. During his trip from Salem, NC to Pennsylvania in 1826, Moravian minister, Charles A. Van Vleck with his wife and two children, spent a night at “Patrick’s Troublesome Creek” and described the experience in his journal, dated October 9, 1826 (Carter, 1978). This suggests that a home existed at TCI prior to the farmhouse built in the 1830s.

After William Patrick's death, James Patrick Sr. used the funds acquired from his son's estate to build a house at TCI for his grandson James Dillon Patrick between 1833 and 1834. Historical reference and dates derived from the ceramic analysis suggest an earlier house existed at TCI prior to James Dillon Patrick's circa 1830 plantation house.

As discussed in Chapter 1, James Dillon Patrick accrued a rather large gambling debt and was forced to sell the property; his legal guardian James Turner Morehead purchased the Ironworks property in 1846. Morehead, a distinguished lawyer, congressman, and senator, had a law practice in Greensboro, North Carolina where he and his brother, Governor John Motley Morehead established homes. According to his daughter, James Turner Morehead spent his leisure time at the Ironworks for recreation, not profit (Carter, 1978). Interestingly, the largest quantity of ceramics collected from the surface survey date to the period that Morehead owned the Ironworks Property. For a 5 to 7 year period after Morehead's death in 1875, the home appears to have sat vacant until 1882 when Michael P. Cummings purchased the property. The ceramic distribution appears to support such events. Figure 5.2 shows the distribution of window glass by the calculated dates discussed in Chapter 4. To better examine the distribution of window glass by date across the farmhouse site, density maps for the five periods in Figure 5.2 were created (Figure 5.3).

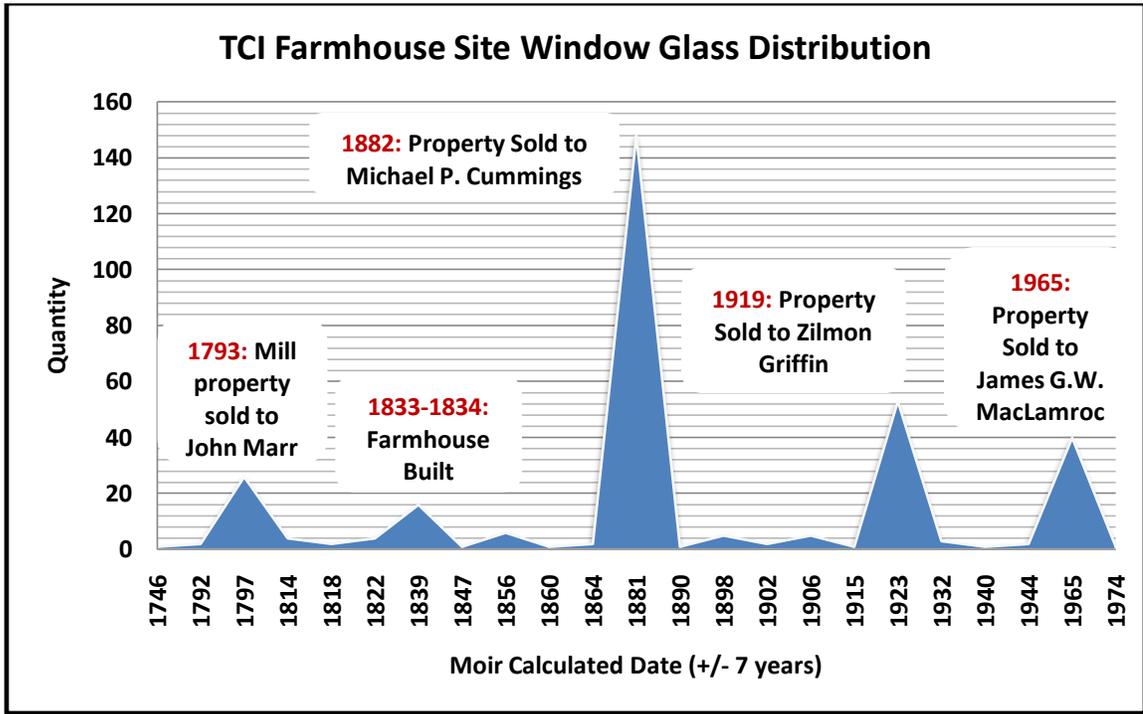


Figure 5.2. Distribution of window glass and corresponding dates

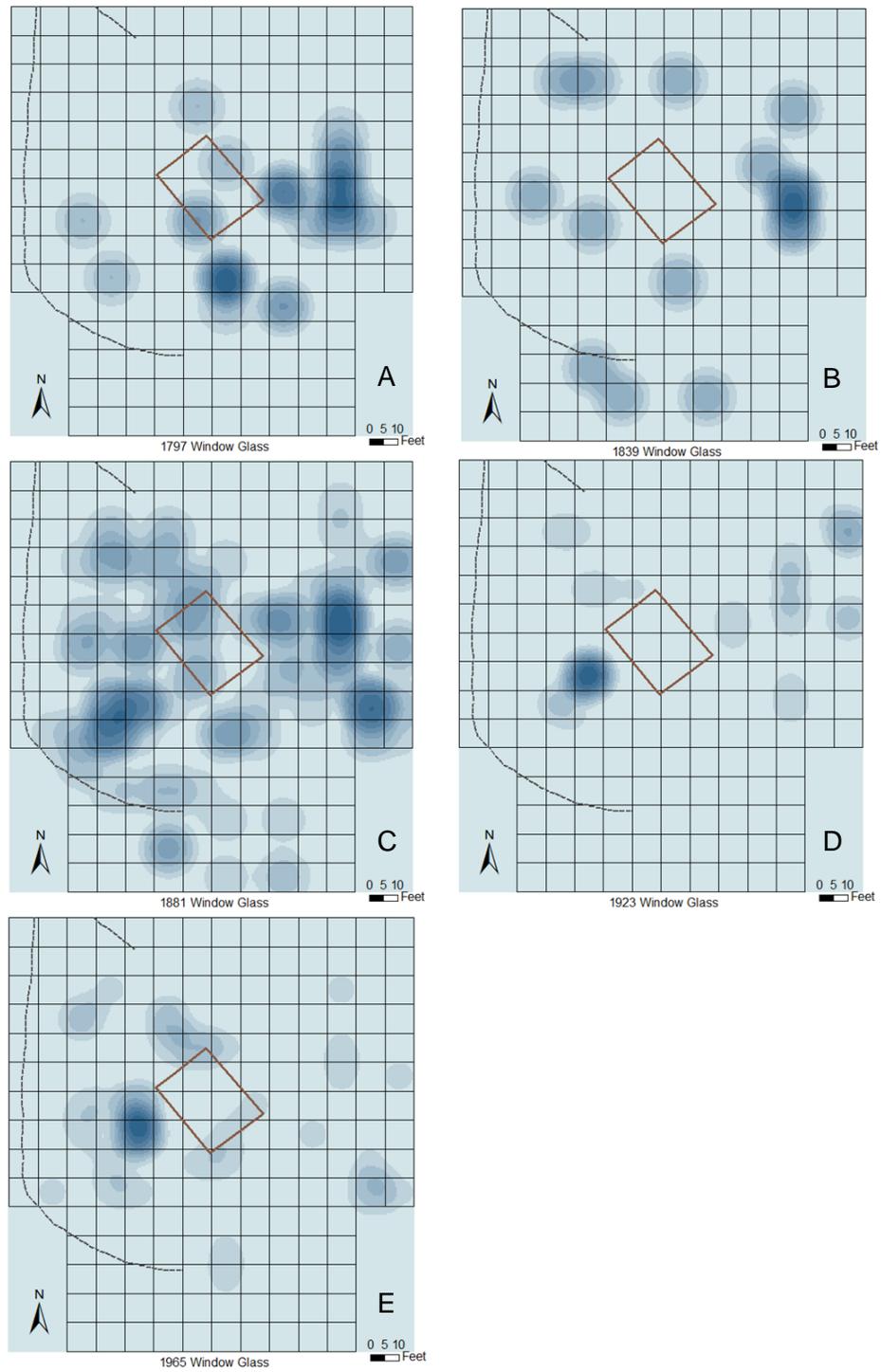


Figure 5.3. Density maps of farmhouse window glass by calculated dates

Some of the window glass recovered from the surface collections date to the turn of the 19th century. This is around the same time that the Ironworks property was sold to John Marr in 1793; the peak in window glass (Figure 5.2) dates to 1797. Generally the dates of window glass would predate the structure because of the time needed for manufacturing and distributing; however, the calculated date falls within the seven year error margin of Moir's model. Between 1790 and 1792 Benjamin Jones was hired to manage the ironworks operation. An excerpt from the personal journal of Congressman William Loughton Smith during his stay at the Ironworks in 1791, makes reference to the ironworks complex and to Jones, but does not mention a specific house (Carter, 2007). The distribution of window glass dating to this period appears most concentrated to the back side of the house, along the eastern edge of the survey grid, as well as around the southern side of the farmhouse (Figure 5.3 a). This distribution, like that of the ceramic dates, suggests the presence of a second home at the Ironworks sometime prior to the 1830's; however, this area of artifact concentration may not indicate the specific location of the earlier home, but rather an earlier trash dump associated with the earlier structure.

There is a small peak in the amount of window glass collected (Figure 5.2), that coincides with the dates of the farmhouse being built. Figure 5.3b, shows a circular distribution of window glass around the farmhouse and slightly higher concentrations behind the house, in a similar location as that of the 1797 map. The largest quantity of window glass dates to the time of the property being

sold to Michael Cummings in 1882; similar to the ceramic date distribution. Also at this time, the ironworks mill was quite productive, aided by the conversion from a stone mill to a roller mill. In 1884 the ironworks mill (Cummings' mill) was one of only four merchant mills in the entire township (Carter, 1978). Figure 5.3c shows a scatter of glass across the site, and several areas of concentration. Prior to Cummings' purchasing the property in 1882, production appears to stop at the Ironworks mill for about seven years following the death of James Turner Morehead in 1875; evidence of this was also seen in the ceramic date distribution above. If the farmhouse during this time was rented out or sat vacant, replacement or remodeling of some architectural features may have been necessary around the time Cummings' purchased the property.

There is some window glass that dates to the period during which John R. Shreve owned the property, but significantly less than that of the ceramics distribution. Zilmon Griffin purchased the Ironworks property from Shreve in 1919 and built a store at the Ironworks not long after. The mill complex and the general store continued to operate under the Griffin family well into the 1950s. Figure 5.3d does not show particularly high concentrations of window glass during this time period. There is light scatter across the site, slightly concentrated in front of the house; however, nothing to suggest the presence of a new building or additions during this period. The last spike in window glass dates to around the time that James G.W. MacLamroc purchased the Ironworks in 1968. Figure 3.5e

closely resembles that of the 1923 map, and may simply be a result of window glass obtained from two different manufacturers during the same time period.

Flat window glass dating derived from the surface collections at the Farmhouse site does correspond with the majority of the written history of TCI, and provides a more detailed timeline than the MCD technique. Some discrepancies do exist, and further archaeological investigation is needed to fully understand the cultural patterns and associated time periods across the farmhouse site.

Regional Site Comparisons

Cultural patterns across an historic landscape are often discussed only within the context of a specific site. Comparisons of sites that share similar temporal and functional contexts provide insight into more regionally based studies. As part of this research, comparisons between the survey data collected at TCI and two other surface surveys in the North Carolina Piedmont were conducted.

Daniel (1994), conducted archaeological surface surveys of several historic sites across portions of Orange County as well as at the Robert Davis site in Hillsborough, NC (Daniel and Ward, 1993). The following discussion compares the data obtained through these investigations with those from the research at TCI to assess any similarities that may exist (Stine, Stine, & Phillips, 2011).

Comparisons of the TCI and Davis Cabins

As mentioned previously, there is no known written history of the cabin at TCI, making it difficult to draw conclusions as to the function and temporal context of the site. Some history of the Davis cabin site did exist, providing a basis on which investigations were conducted. The Davis cabin was built sometime in the 1880s by Robert Davis, and is located roughly 880 yards from the Davis homestead built sometime prior to 1861. The first 3 of his 8 children were born in the original 15ft by 15ft single pen structure; a later 24ft by 5ft extension was built on the west side of the cabin. In 1895, following the death of his father, Robert Davis and his family moved back to the homeplace (Daniel & Ward, 1993). Interestingly, both the TCI and Davis cabins are located fairly close to larger homesteads. At TCI, the cabin site is approximately 600 yards away from the farmhouse site. While there is no evidence to suggest that the cabin was related to the farmhouse, the association should not be completely ruled out.

Similar methods for surface survey and collection were applied at the two cabin sites. A 5ft by 5ft survey grid was used in both investigations, eliminating the need to adjust for differences in spatial scales during site comparison. Figure 5.4 is a map of the Davis cabin site; the exact location of each artifact found on the surface of the site was mapped prior to collection, a slightly different approach than that used for surface collections at TCI.

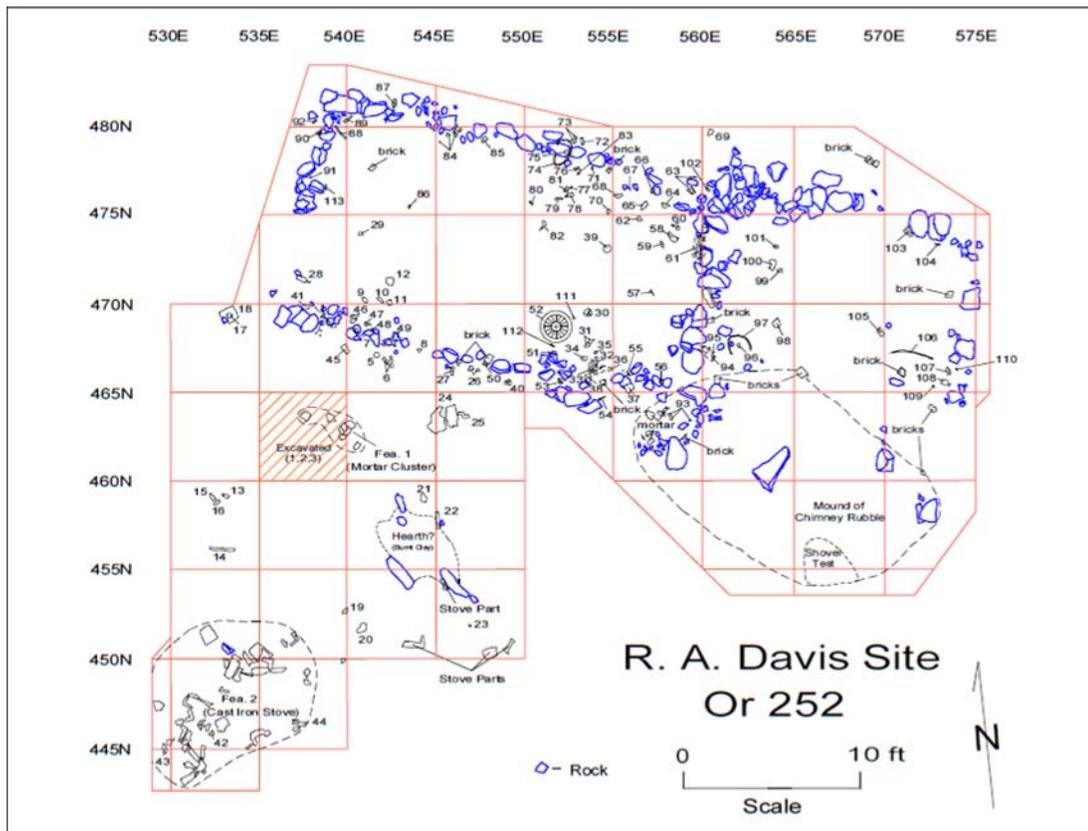


Figure 5.4. Site survey map of the Davis cabin site (Daniel & Ward, 1993)

Unlike archaeological investigations of the TCI cabin site, a test unit was excavated at the Davis site; these artifacts were included in the total artifact counts. The following table provides a comparison of artifact functional groups from the two cabin sites (Table 5.1).

TCI Cabin		Davis Cabin	
Functional Group	Percent	Functional Group	Percent
Activities	2.7	Activities	2.9
Architecture	76.9	Architecture	34.0
Arms	0.7	Arms	0.2
Furniture	2.7	Furniture	9.0
Kitchen	16.3	Kitchen	52.3
Personal	0.7	Personal	1.6
Total	100	Total	100

Table 5.1. Artifact functional group comparison of the TCI and Davis cabins, Davis cabin data obtained from (Daniel & Ward, 1993)

For the purposes of site comparison, functional groups were matched as closely as possible and categories that did not match were eliminated. While the Davis cabin site yielded more total artifacts than the TCI cabin site, the distributions are similar. The Architecture and Kitchen groups contain the largest amount of artifacts, although the Davis cabin produced a larger percentage of Kitchen than Architecture artifacts.

While the total number of ceramics obtained from the Davis cabin (n=115) greatly exceeded the number found at the TCI Cabin (n=6), the ceramic types were similar and generally consisted of stoneware, whiteware, and porcelain. The overall date range of the ceramics collected at the Davis site was between 1870 and 1894; correlating with the dates of occupation (Daniel & Ward, 1993). These dates are also similar to the dates associated with the TCI cabin. While the Davis cabin yielded larger quantities of kitchen glass artifacts (n=210) than did the TCI cabin (n=18), only 1 flat window glass fragment was found at the

Davis cabin site compared to a total of 9 fragments found on the surface of the TCI cabin site. The Davis and TCI cabin sites yielded more nails than almost any other artifact type; all nails recovered from the Davis cabin site (n=176) were cut nails, unlike the TCI cabin nails that were roughly half cut and half wire. This suggests that, unlike the Davis cabin site which was occupied for a short period in the mid to late 1800s, the TCI cabin site was in use from the 1800s through the mid-1900s; also concurrent with the general historical context of Troublesome Creek Ironworks.

Other artifacts retrieved from the Davis cabin site included a marble, a ceramic doll head, construction tools, harness rings, a horseshoe, and several pieces of hardware (Daniel & Ward, 1993). The TCI cabin yielded a marble and a few artifacts associated with farming; however, the artifact collections from the Davis cabin more closely resemble artifacts recovered from the TCI farmhouse site.

Comparisons of the TCI Farmhouse and Orange County Site Surveys

The archaeological survey in Orange County sought to locate sites that were previously not recorded (Daniel, 1994). Due to the large study area, a survey grid system was not used; instead, existing cultural and natural features provided the basis from which sample boundaries were drawn. A total of 27 historic sites were identified during this survey; however, only one site retained structural components (Daniel, 1994). While the methods for survey differed slightly between the TCI farmhouse surface survey and the Orange County

survey, the results were fairly similar. Table 5.2 provides a comparison of artifact functional groups for the TCI farmhouse and Orange County Surveys.

TCI Farmstead		Survey Farmsteads	
Functional Group	Percent	Functional Group	Percent
Activities	1.1	Activities	3.1
Architecture	30.0	Architecture	8.4
Furniture	0.1	Furniture	0.8
Kitchen	67.7	Kitchen	86.9
Personal	1.1	Personal	0.8
Total	100	Total	100

Table 5.2. Artifact functional group comparison of the TCI farmhouse and Orange County surveys, Orange County survey data obtained from (Daniel, 1994)

As with the cabin site comparisons, any functional groups that did not match were eliminated. Overall, the total sample of artifacts collected was greater at the TCI farmhouse than the combined surface collections of the 27 sites in the Orange County survey. This may be due to more prolonged disturbance from farming or natural processes in the Orange County study area, as the majority of these sites were previously unknown. The farmstead site at TCI has an advantage in that the site and the surrounding property have been protected for the past several decades. Regardless of these differences, the surface collection artifacts for both sites show a similar distribution. The majority of artifacts belong to the Kitchen and Architecture groups as well as Activities. The Kitchen artifact group for both surveys yielded similar types of artifacts, especially with regard to

ceramic type. A comparison of ceramic type percentages for each survey is displayed in the graph below (Figure 5.5).

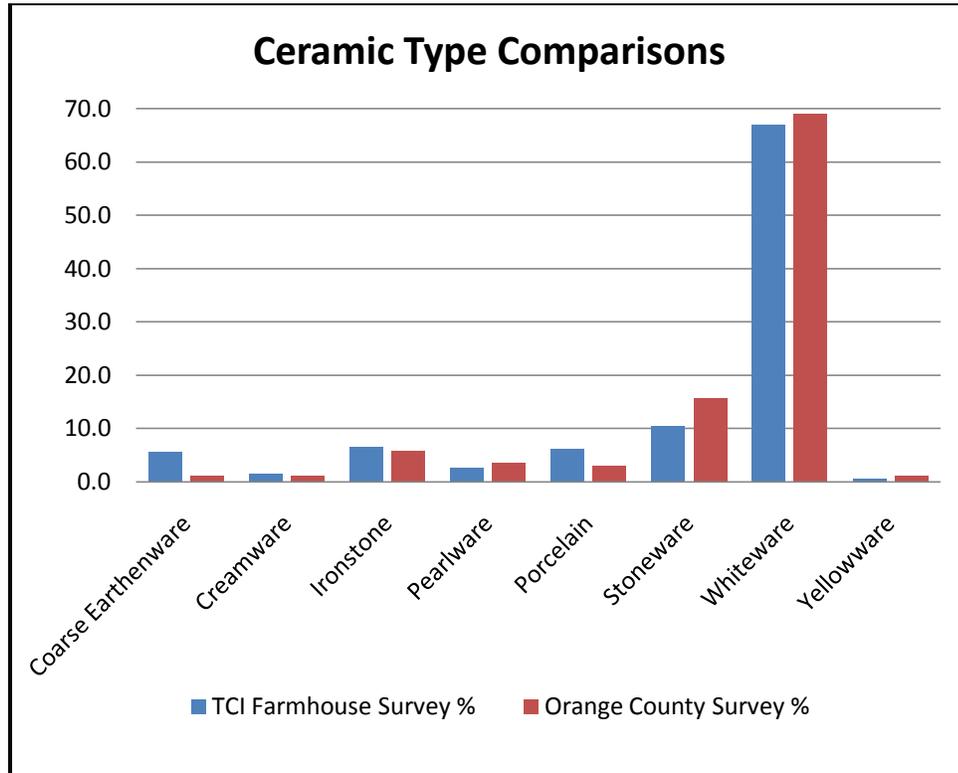


Figure 5.5. Ceramic type comparisons by percent, for the TCI farmhouse and Orange County surveys, Orange County survey data obtained from (Daniel, 2004)

The overall distributions of ceramic types are extremely similar for both survey investigations. The largest percentage of ceramics for both studies was made up of whiteware, with smaller percentages distributed to the remaining ceramic types. Ceramic artifact analysis of the Orange County survey dates the sites to the mid 19th to early 20th centuries, as is the case with the majority of ceramic evidence from the TCI farmhouse site. Kitchen glass fragments collected

from the Orange County survey (n=159) resembled the kitchen glass recovered from the TCI farmhouse survey (n=891) in that the majority were small, uncharacteristic fragments that did not prove useful in extrapolating site dates.

The Architecture group for both surveys contained similar artifact types, consisting mostly of window glass, nails, and brick; however, the Orange County survey report does not discuss the details or dates of such artifacts, thus eliminating the possibility of more in depth survey comparisons. The Activities functional group for the Orange County survey revealed toys (a marble, a fragment of a porcelain doll's head, and a toy tire) and several artifacts related to farming (Daniel, 1994). These artifacts closely resemble the artifacts recovered from the TCI farmhouse site as well as the Davis cabin site. The following chart shows the overall distribution by artifact functional group for the TCI and Davis cabin sites as well as the TCI farmhouse and Orange County surveys (Figure 5.6).

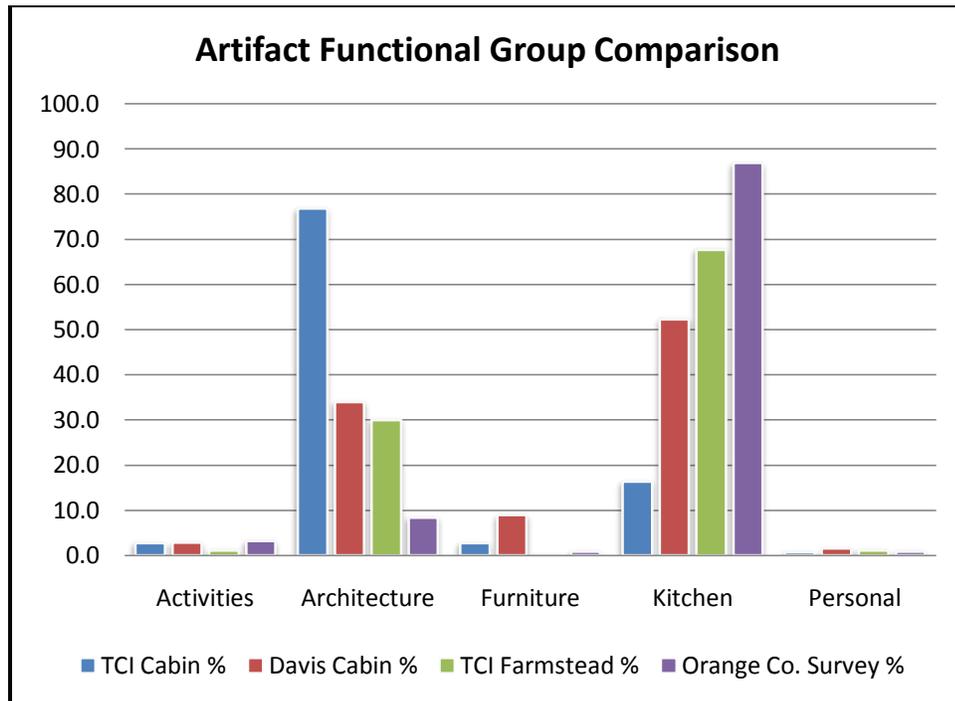


Figure 5.6. Functional group comparisons by percent, for the TCI and Davis cabins and the TCI farmhouse and Orange County surveys (Stine, Stine, Phillips, 2011)

While the percentages are artifact functional groups vary by survey, the overall distribution is similar for all studies. The areas of highest concentration are within the Architecture and Kitchen groups with fewer artifact concentrations in the Activities, Furniture, and Personal groups. All the site surveys included in this analysis appear to have been in use between the 19th to mid 20th centuries, and predominantly functioned as dwellings situated on small farmsteads.

Post depositional processes are known to affect the artifact functional group patterns, and this is apparent in the graph above. It is known that the TCI cabin burned down but the Davis Cabin did not. Generally in the case of burning

there is a higher concentration of architecture than kitchen artifacts, while the opposite is true for structures that have fallen down or that have been taken down. This pattern is seen between the two cabin sites as well as the farmhouse site at TCI. As for the sites assessed during the Orange County survey, the post-depositional activities are unknown, and further investigation is needed to understand these artifact functional group patterns.

Future Work at Troublesome Creek Ironworks

Much information about the cultural resources across the landscape at TCI was gained from the three surveys conducted for this research. As with most survey investigations, features that were previously unknown oftentimes are identified, and new questions concerning cultural patterns arise. In many cases, further research is needed to provide more conclusive results and overall understanding of the cultural resources.

While the metal detector survey of the entrenchment site did not provide evidence of association with the Revolutionary War, many of the artifacts collected may have been related to the warming house site or the cabin site located short distances from the entrenchment area. Test excavations of the trench-like features are needed to provide a more definitive understanding to the origin of the site.

A larger scale surface collection of the landscape surrounding the cabin site would most likely improve site interpretation. There are several features around the cabin site that were not examined for this project; test excavations

within the cabin site and surrounding area may provide insight into the people who once lived there and possible associations with other sites across the property.

One of the major benefits to conducting such a large surface survey of the farmhouse site was the detailed artifact patterns that were revealed. Further investigation is needed to more fully understand the high concentrations of artifacts along the eastern boarder of the survey grid. Evidence obtained from this research suggests the possibility of an earlier structure in the area, and could possibly explain references in the written history of TCI to an earlier dwelling.

Due to the size of the property and the numerous cultural resources across the landscape, more extensive investigations are needed to begin tying all the sites and written histories together at Troublesome Creek Ironworks. Extensions to the existing survey grids as well as several test excavations across the sites at TCI will generate a more comprehensive analysis of the cultural resources across the landscape.

CHAPTER VI

CONCLUSIONS

The overall purpose of this research, to establish a working cultural resource inventory and landscape assessment of Troublesome Creek Ironworks, was largely accomplished. The data obtained through archaeological survey investigations of the entrenchment, farmhouse, and cabin sites at TCI provided answers to the majority of research questions posed at the beginning of this study.

With regard to the Revolutionary War era site at TCI, the archaeological evidence obtained during this research does not substantiate local folklore of revolutionary entrenchments at the site. Future research may provide more conclusive results.

Interestingly, the dates obtained through artifact analysis of the farmhouse site survey did coincide with the dates discussed in the written history of Troublesome Creek Ironworks. Artifact patterns and dates derived from specific artifact types suggest the presence of an earlier structure within the 1830s farmstead landscape. The relationship of the 1830s farmhouse and an earlier structure was not determined during this investigation. Artifact patterns on the surface of the farmhouse site do support the location of the house as identified by the image overlay and personal recollection of Robert Carter; analysis of

artifacts collected from test excavations in 2005 may provide more insight into the 1830s farmhouse at TCI. The artifact assemblages from the TCI farmhouse survey closely resembled those obtained from the regional survey in Orange County. This suggests that similar cultural patterns exist across historic sites within the North Carolina Piedmont during the 19th to mid 20th centuries.

Since there was no known history of the cabin site at TCI prior to the site survey, it was hoped that artifacts recovered from the site may provide a timeline for the cabin. A fairly broad date range was established for the cabin site at TCI, and it appears that the cabin may have been used over a two-hundred year period, possibly longer continuous use than any other site at TCI. While the cabin appears to have been used predominantly as a dwelling, associations to other sites at TCI were not established during this research. Like the regional comparison of the farmhouse site, the TCI cabin site shared many similarities with the Davis cabin in Orange County, as well as with other site surveys discussed in Chapter 5.

While there are still many unanswered questions about the sites at TCI and the people who once lived there, this research has accomplished the goals set forth at the beginning of this study. It is hoped the findings discussed throughout this thesis will contribute to the future analysis and protection of Troublesome Creek Ironworks.

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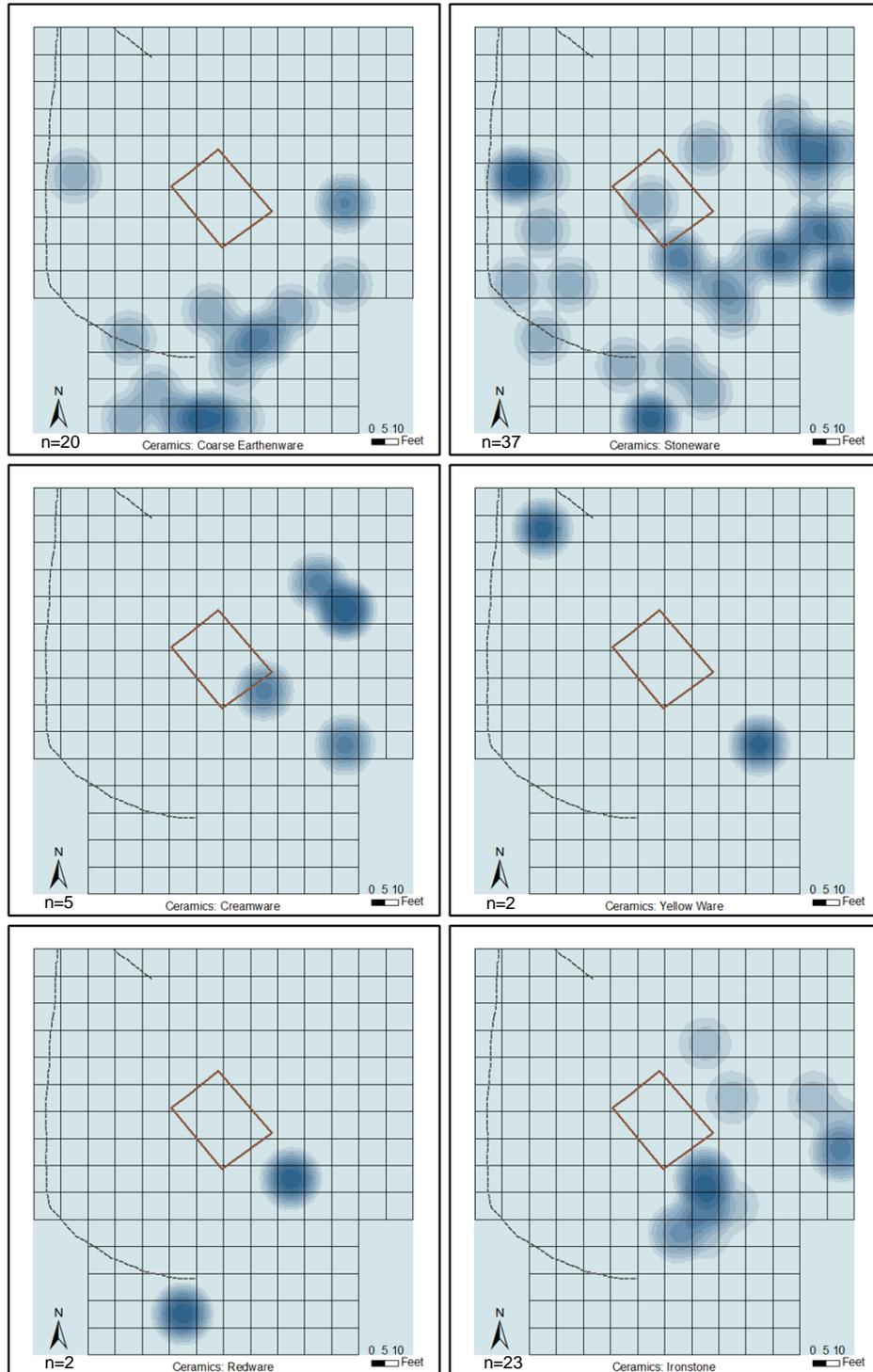
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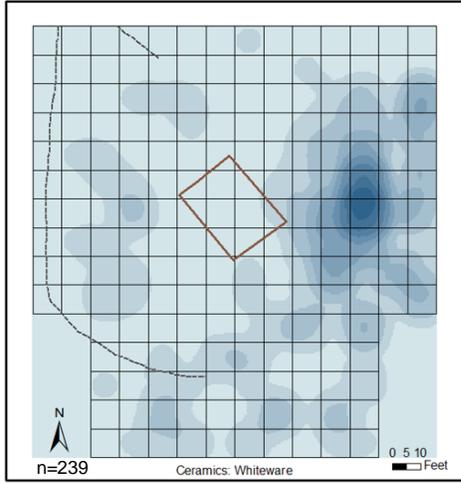
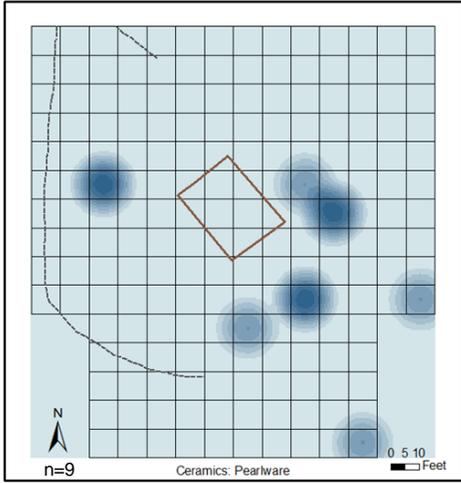
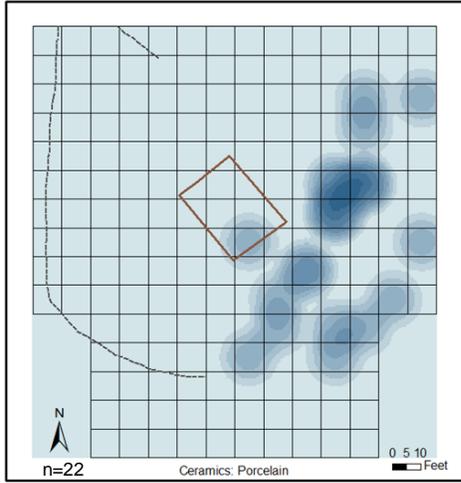
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APPENDIX A

DENSITY MAPS OF CERAMICS BY TYPE FOR THE FARMHOUSE SITE





APPENDIX B

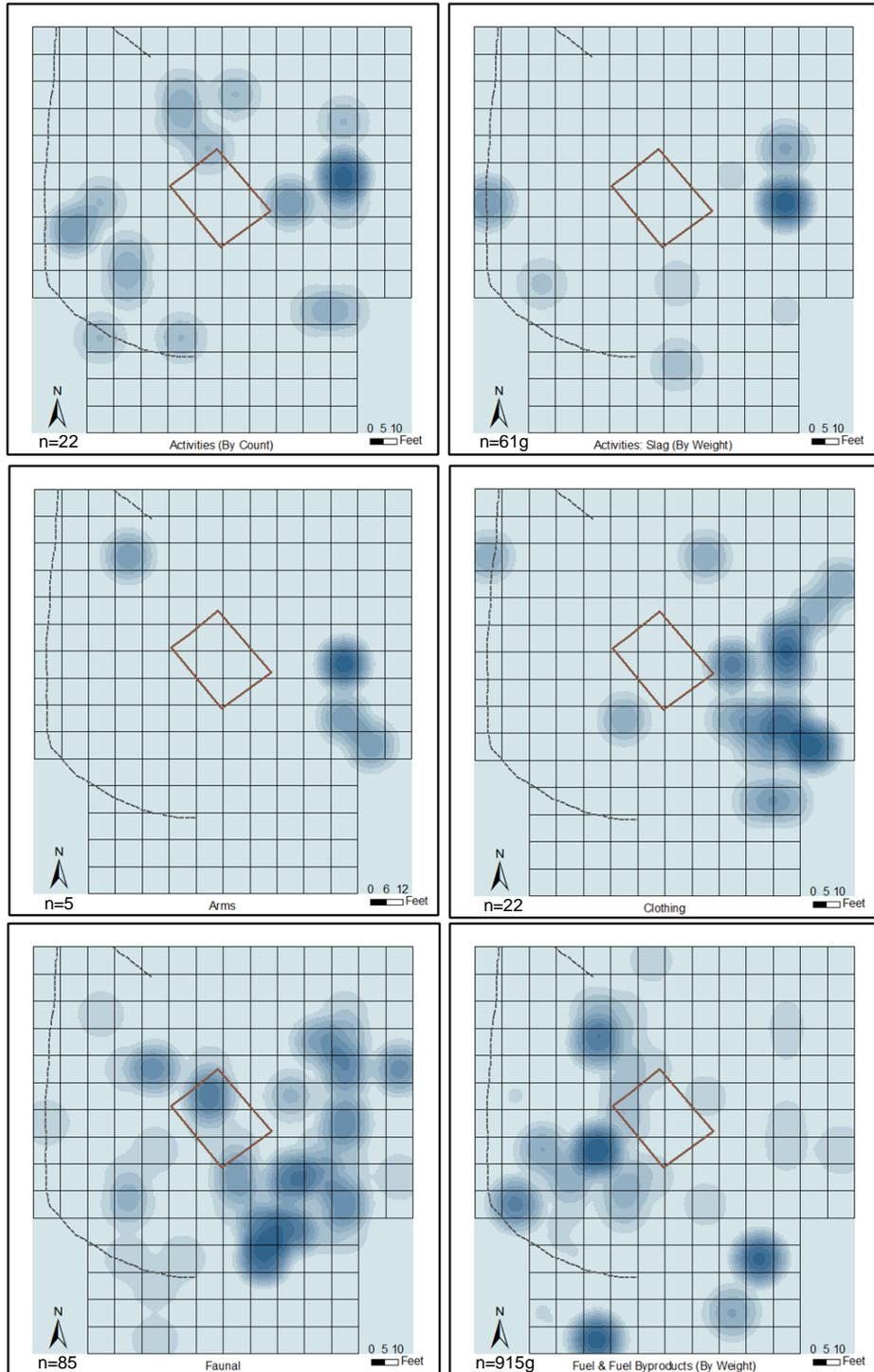
TABLE OF OTHER ARTIFACTS FROM FARMHOUSE SITE

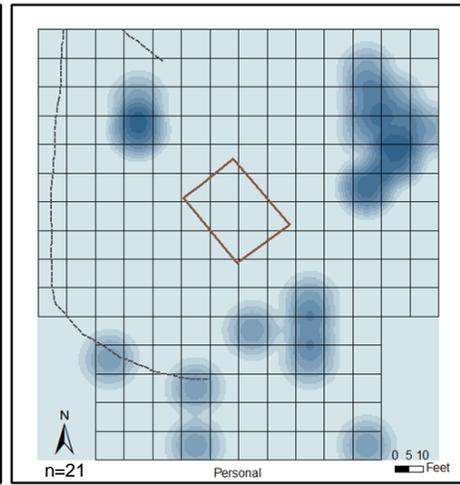
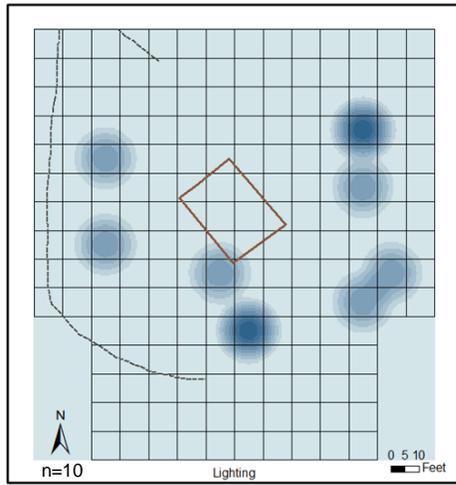
Function Group		Artifact Description
Activities	1	barbed wire fragment
	1	piece of garden hose
	1	piece of tire
	1	tire inner tube
	1	vehicle red signal light cover
	1	vehicle windshield wiper blade
	1	machine made lavender and blue marble
	1	machine made yellow and white marble
	1	part of vehicle windshield
Personal	2	lower body and arm of porcelain doll
	1	part of toy water gun
	1	plastic toy figure
	2	toy tire
	1	sewing tool, rip and pick
	1	thread spool
Arms	1	22 chamber cartridge bullet casing
	1	22 mm shotgun shell casing
	1	bullet Casing, 1910-1934
	1	Winchester bullet casing
	1	handle to hand knife
	1	knife
Clothing	1	black glass button
	1	shell button, 2 holes, 1885
	1	button- 4 holes
	1	white plastic button
	1	iron buckle
	9	leather shoe sole
	1	shoe fragment, holes for laces
	1	leather shoe sole with metal tack
	1	leather shoes sole, 7 metal tacks

Faunal	1	Domestic Cow
	1	Rodent
	1	Squirrel
	2	White-Tailed Deer
	1	Woodchuck
	3	clam shell fragment
	9	oyster shell fragment
Lighting	1	light bulb base, 1985
	4	Light bulb glass
Personal	1	glass cologne bottle
	3	cosmetic container fragment

APPENDIX C

DENSITY MAPS OF FUNCTIONAL GROUPS FOR THE FARMHOUSE SITE





APPENDIX D

DENSITY MAPS OF ARTIFACTS FROM CABIN SITE

