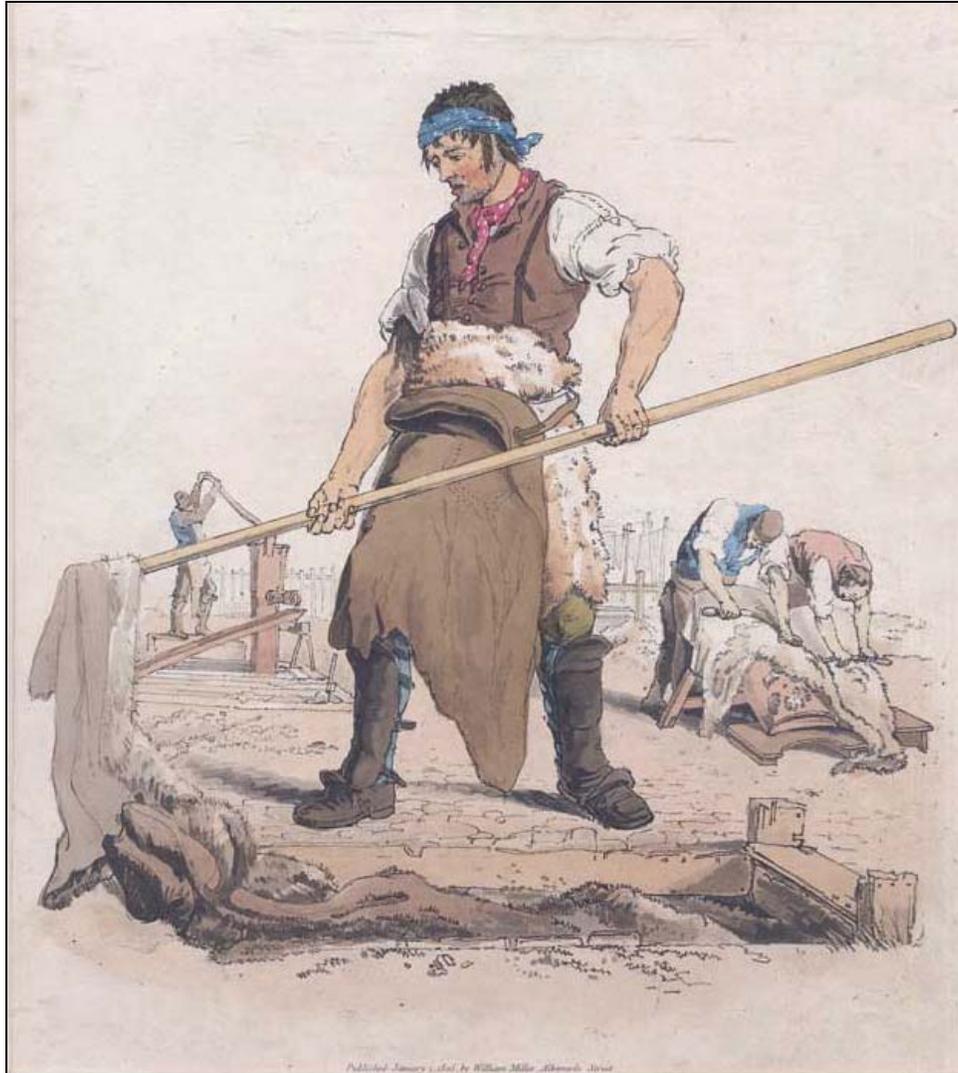


***THE EARLY VEGETABLE TANNING INDUSTRY IN  
GEORGIA: ARCHAEOLOGICAL TESTING AT THE  
CLINTON TANNERY (09JO282), JONES COUNTY,  
GEORGIA***

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# Preface

In 1991 Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA), beginning a new era in federal transportation legislation. This act introduced the Transportation Enhancement Program, requiring each state to set aside ten percent of its Surface Transportation Program funds for transportation enhancement projects.

This program continued with enactment of the Transportation Equity Act for the 21st Century (TEA-21) in 1998 and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005. SAFETEA-LU stresses mobility and protection of the environment, community preservation, sustainability and livability. Transportation Enhancement projects provide opportunities to improve the transportation experience in local communities.

TE federal funds cannot be used for traditional highway projects or roadway improvements. They are for activities that go above and beyond common transportation practice and include, among other things, environmental stewardship and streamlining, historic preservation and archaeological planning and research, as long as they are related to the surface transportation system. This can include such things as pedestrian trail systems and bicycle paths.

In Georgia, local communities submit applications electronically for TE funding during a web-based Call for Projects. Applications are reviewed internally to ensure project eligibility for funding and an Advisory Panel of diverse, external experts work in teams to provide recommendation levels of high, medium, and low for each of the submitted projects. Finally, Georgia Department of Transportation Board Members representing each Congressional District make the final TE project selections and determine the funding amounts for each project awarded in their Congressional District.

The current report details the results of a study submitted by the Jones County Commission for archaeological and historical research of a tract of land owned by the Clinton Historical Society and where future educational and interpretative initiatives are planned. The present report documents the work on the 19<sup>th</sup> century Clinton Tannery. This report is important in that it provides the first study of an early tannery in Georgia and should provide the foundation for future research in this area. The Georgia Department of Transportation is happy to publish *The Early Vegetable Tanning Industry in Georgia: Archaeological Testing at the Clinton Tannery (09JO282)*, Jones County, Georgia as Report Number 13 in its Occasional Papers in Cultural Resource Management series.

William R. Bowen  
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February 2008



# Project Summary

This project was conducted under a transportation enhancement grant provided by the Jones County Commission and the Georgia Department of Transportation. The project included mapping, ground penetrating radar (GPR), historic research, and limited archaeological testing at 09JO282, the Clinton Tannery and Bark Mill in Clinton, Georgia. The project area lies 21km. (13 miles) northeast of Macon in Jones County, Georgia (Figure 1). The Clinton Historical Society currently owns the 5.25 ha. (13 acre) tract that includes 09JO282, as well as 09JO280 and 09JO281, both historic house sites (Figure 2). These sites were initially recorded during a survey of the tract by Cypress Cultural Consultants as part of a transportation grant provided by the Jones County Commission and the Georgia Department of Transportation in 2001. Fieldwork for the project survey was conducted over several months primarily from May 5 to December 7, 2006.

Today the Clinton Tanyard exists relatively unaltered from its condition in November 1864 after it was destroyed by the Federal Army. It is a product of the changes in ownership, management, and technology that occurred over its fifty years in operation tracing an early vegetable leather industry through the formative years of Georgia history. The layout includes a bark mill, a system of tanning vats, and at least one enclosed structure, all of which were tested during the present study. A likely tanning process utilized at the Clinton Tannery was formulated following this study and is based on close examination of similar tanneries as well the archaeological testing of this site. The site is in remarkably good condition and currently enjoys the protection of ownership by the Clinton Historical Society who plans on utilizing the site for educational and interpretative purposes. Future use and development of the site should be conducted carefully so as not to adversely impact the important site of the Clinton Tannery as well as other historic resources on the tract.



# Acknowledgements

The study of the Clinton Tannery was made possible by the efforts of many individuals and groups. First, the Jones County Commissioners and the Georgia Department of Transportation's Enhancement Program provided the necessary funding for the study. Jack Burnside, transportation planner, was instrumental in obtaining funds for the 2001 grant that allowed Cypress Cultural Consultants to record sites 09JO280, 09JO281, and 09JO282 and subsequently saw the importance in helping us obtain the 2007 grant for the present study. Earlene Hamilton and Richard Durham worked endlessly to coordinate the activities associated with the present study including site cleanup and obtaining fieldwork volunteers, and provided valuable advice during our study. Other members of the Clinton Historical Society helped clean up the site and included the donated services of a stump grinder to open a road to the site. Several individuals volunteered their services during the fieldwork including Daniel T. Elliott, Michael Benton, Donald and Carol Krom, Art Slocumb, Bucky Davis, Max Davis Byron Farley, Sam Grantham, Echo Burrell, Judy Smith, and John Simmons. Elliott allowed us the use of his GPR and total station during the fieldwork. Donald and Carol Krom generously entertained the crew during a delicious dinner. Echo Burrell rewarded us with her famous pound cake. Numerous other members of the community extended us a warm welcome with countless tidbits of valuable information and encouraging words. We appreciate the efforts of William Lucado who recognized the value of the site and made an offer to allow the Clinton Historical Society to purchase the property. We also acknowledge the invaluable contributions of David Rotenstein; Dr. Joe Joseph, New South Associates; Daniel Elliott, Lamar Institute; Chad Braley, Southeastern Archeological Services; Dr. Chris Murphy, Augusta State University; Dr. Sue Moore, Georgia Southern University; and Dr. Charles Ives, Union Mills Homestead.



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# Introduction

This project was conducted under a transportation enhancement grant provided by the Jones County Commission and the Georgia Department of Transportation. The project included mapping, ground penetrating radar (GPR), historic research, and limited archaeological testing at 09JO282, the Clinton Tannery and Bark Mill in Clinton, Georgia. The project area lies 21km (13 miles) northeast of Macon in Jones County, Georgia (Figure 1). The Clinton Historical Society currently owns the 5.25 ha. (13 acre) tract that includes 09JO282, as well as 09JO280 and 09JO281, both historic house sites (Figure 2). These sites were initially recorded during a survey of the tract by Cypress Cultural Consultants as part of a transportation grant provided by the Jones County Commission and the Georgia Department of Transportation in 2001.

Fieldwork for the project survey was conducted over several months. The GPR was conducted on May 5-7, 2006 following site cleanup by friends and members of the Clinton Historical Society. The GPR survey was conducted as a joint effort between the Lamar Institute and Cypress Cultural Consultants. The mapping and testing was conducted from October 23-29, 2006 and December 7, 2006. Daniel Battle served as the field director while Daphne Owens Battle served as the Principal Investigator. Crew members included Daniel T. Elliott, Michael Benton, Donald and Carol Krom, Art Slocumb, Byron Farley, Sam Grantham, Echo Burrell, Judy Smith, and John Simmons. Daniel Battle conducted the historic research over an extended period of time beginning during the previous survey in 2001 and ongoing to the present time.

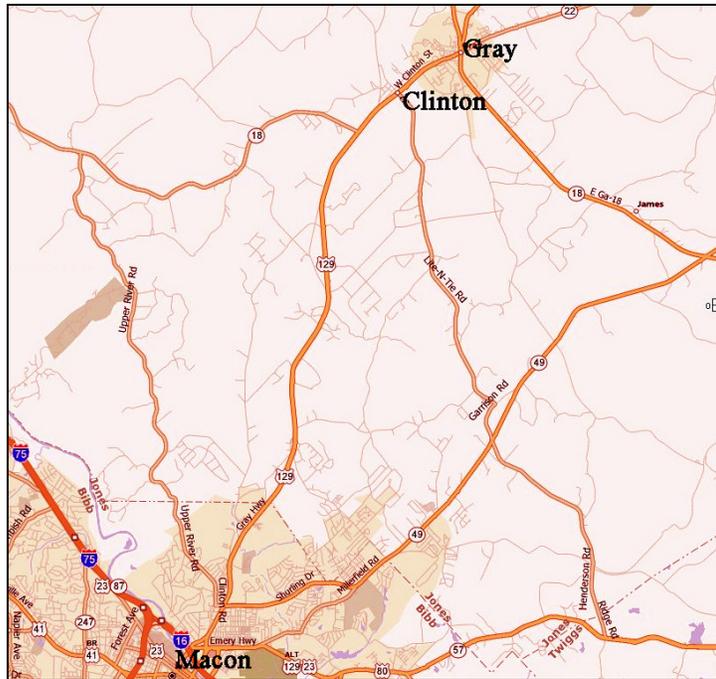


Figure 1. Map of the area showing the location of Clinton and Macon.

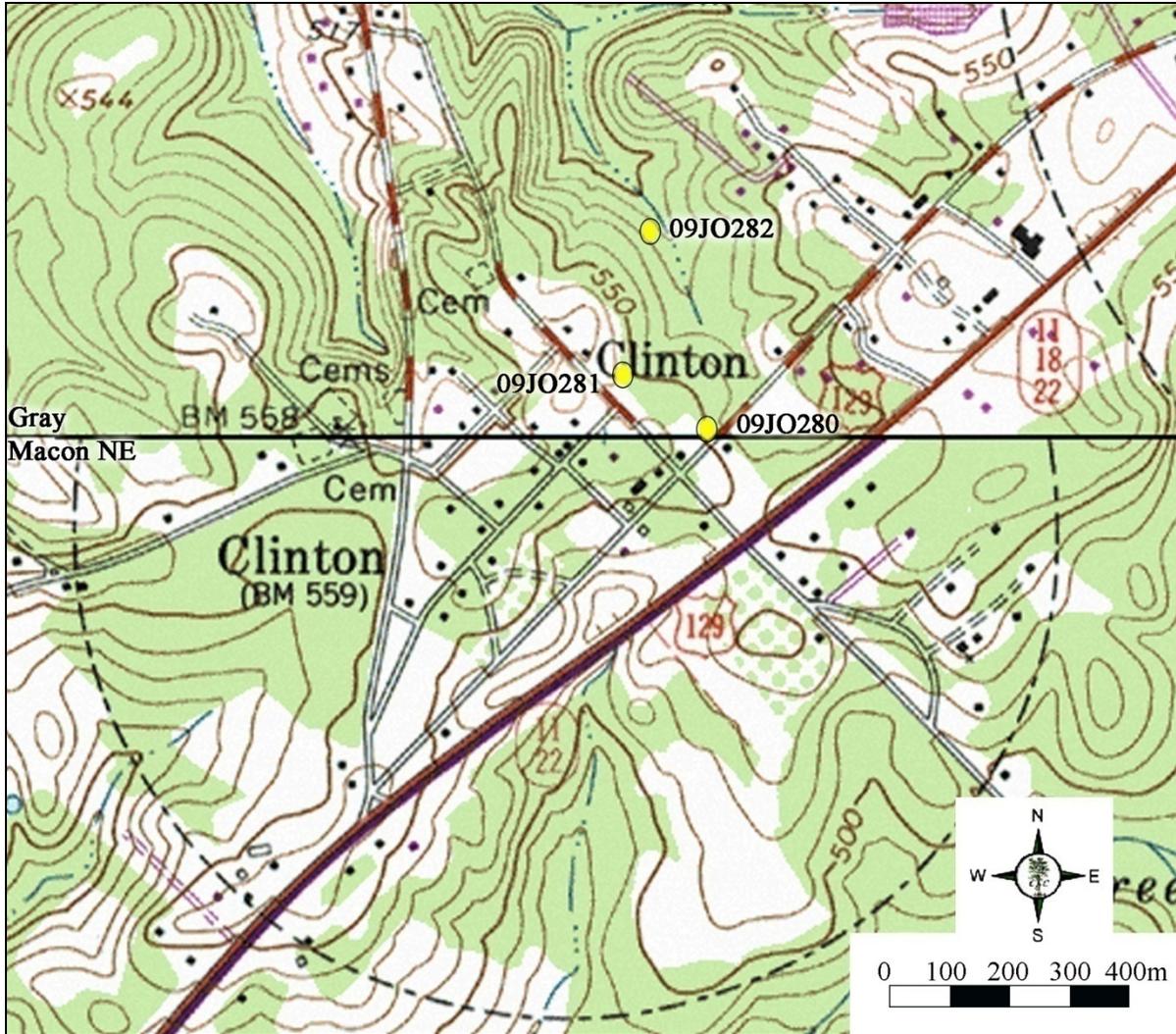
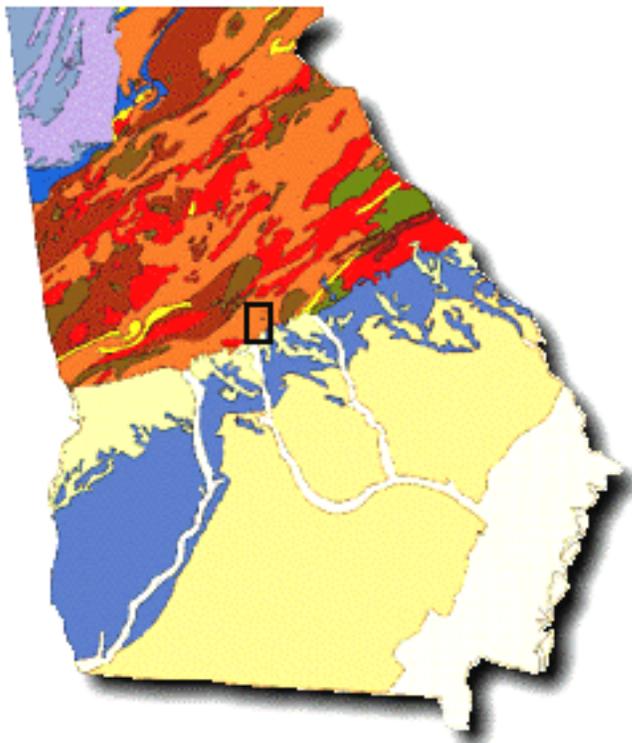


Figure 2. USGS 7.5 minute topographic maps, Gray (1964, revised 1984) and Macon NE (1973, revised 1985) indicating the location of 09JO280, 09JO281, 09JO282.

# Environmental Setting

Clinton is located northeast of Macon, Georgia along Highway 129. The project area straddles the lower Piedmont and the Fall Line Sandhills of the upper Coastal Plain (Figure 3). The Piedmont is composed of hard crystalline rock formed by orogenic events that built the Appalachian Mountains. The Coastal Plain is composed of Cretaceous and Cenozoic sediments that dip toward the Atlantic Ocean. The sediments originated from the erosion of the igneous and metamorphic rocks of the Piedmont and from oceanic processes and marine life. Many of the creeks and rivers in the area change from narrow channels to wide, meandering channels at the Fall Line. Jones County terrain consists of gently rolling ridges and creek bottoms. Elevations across the project areas range from 150-175 meters (500 to 575 feet) above sea level.



**Figure 3. Geologic map of Georgia indicating the location of the project area on the end of the Piedmont.**

Soils in most of the project area consist of Davidson-Wilkes soils which occur on gentle and steep slopes respectively. The soils are well-drained with loam at the surface becoming increasingly clayey with depth. Davidson soils are easily eroded while Wilkes soils are naturally shallow. Both soils are low in natural fertility and contain low organic material content (Payne 1976).

The climate of the Jones County area is temperate with mild short winters and long warm summers. The average high temperature in winter is 14°C (57.2°F) while the average high temperature in summer is 32.5°C (90.5°F). The mean average precipitation is 46 inches which falls predominately in the winter and late spring/early summer (Payne 1976).

The native forests in Jones County hosted pine and oak on the ridges with yellow poplar, sweetgum, and oaks in the low areas. Today, the vegetation has been severely disturbed due to farming, construction, and clearcutting. The native fauna that inhabit Jones County include deer, turkey, squirrel, gray fox, raccoon, opossum, skunk, and bobcat. Many types of snakes are also found in the area including poisonous varieties such as rattlesnakes and copperheads.

# Cultural Setting

## The Early History of the Leather Tanning Industry in America

Shortly after the Revolutionary War, the newly established American government attempted to gain an understanding of the condition of the American industrial infrastructure. A 1791 “Report of Manufactures” compiled by Alexander Hamilton of accounts submitted from around the new country described that there were “scarcely any manufactures of greater importance” than tanneries (Cole 1928). This hints at a firmly established trade, scattered far and wide throughout the United States. How then could one of the most important early manufactures also become one of the most poorly understood and documented industries?

Doubtless, the first tanners in the New World were Native Americans (Figure 4). In the early stages of the deerskin trade, American Indians had large deerskin camps on Indian lands that produced the highly desired “dressed” deerskins (Braund 1993). A letter dated July 11th, 1786 between two traders describes the basic tanning process used by the Indians. The letter explains that deerskins were scraped clean of fat and tissue and stretched by the women onto wood frames to dry in the sun. After drying, the skins were then soaked in a solution of water and deer brains (Braund 1993:172). The soaking process may have occurred in hollowed logs or, if available, hogshead barrels likely sunk into holes in the ground or even pools of standing water made in creek beds. Although American Indians did not use the same methods of tanning used by the settlers, they did seem to be at least curious about these



**Figure 4. Sketch of an Indian wearing a leather cape and moccasins.**

methods. After his capture by Indians in 1812, Thomas Ensor, a tanner in Washington County, Tennessee, was spared his life when his captors learned of his occupation. During the days of his captivity he toiled at his trade under strict guard while teaching the women of the village the art of tanning hides using the bark of trees. His work resulted in new leather garments for the men of the village who zealously guarded Ensor, “lest he should escape before the women had fully mastered the art” (*Little Rock Gazette* 1928).

When considering the tanning industry in America, its foundation in the skin trade with the American Indians must not be overlooked. The deerskin trade and the process of leather manufacturing are intertwined in the Colonies for over 150 years before the American Revolution. European powers learned that the skin trade was the key factor in gaining and maintaining control of the Native Americans. In addition, European trade with Native Americans was one of the earliest and greatest factors influencing frontier growth, politics, and financial policy especially for the English. Although many Indians were insisting on trading only green skins by the 1760s, they were critically needed by England (Kappler 1903). With the spread of cattle diseases all around Europe and, in some cases America, English tanners found themselves in great need of deer skin

from the Colonies throughout the span of the 18th Century (Jones 1988 and Braund 1993). By the 1770s, dealers selling American leathers had already incorporated themselves and were well entrenched in the markets in London (Kappler 1903).

As early towns established themselves, knowledge concerning the production of leather was brought to America by the settlers from Europe. The tanner, often involved even in the production of goods made from his leather, provided skills essential to the early settlements. Shoes were such an important commodity in Jamestown that the punishment for anyone caught stealing them was death. Shoemaking was listed as one of the fifteen critical trades needed at this new settlement in Virginia (Suguto 2000). Tradesmen were offered generous bounties to establish their business in America. Two shoemakers, William Brown and Robert Barker, were wealthy enough to be listed among the shareholders of the Virginia Company, investors in the Jamestown settlement in 1609. Despite the early establishment of the tanning industry, tanners were hard pressed to keep up with the demand for leather in the expanding frontiers of the colonies. In the mid-17th Century, Royal Governors of New Sweden consistently indicated the need for more tanners and curriers in America. William Penn listed hides as one of the resources and commodities needing exploitation and that the Colony of Pennsylvania could likely produce this commodity in great number (Welsh 1963).

Trade across the Colonies allowed settlers easy access to deer skins. Some of these skins were likely finding their way to American tanners for processing into goods that were being used in settlements on the frontier well into the early 1800s. These early Colonial deer skin tanyards likely laid the foundation for the well-established American tanyards later documented by Hamilton. The business opportunities afforded Colonial tanners located in the small communities along the skin trade routes, however, is not well understood. Nonetheless, sometime during this trade, tanners established themselves throughout the Colonies.

Colonial records indicate that by the mid-17th Century tanneries were established at Salem, Boston, Charleston, Watertown (CT), Newbury (CT), and other locations. During this period, town residents were already complaining about the unpleasant smells associated with dead animal parts processed at the tanneries as well as the depletion of trees near the towns from bark gathering for the tanning process (Welsh 1963 and Trumbull 1850). Many townspeople felt that the bark treatments, foul smells, and rotting animal parts were a source of diseases (Rotenstein 1996a). As a result, tanyards were usually located at the outer edge of town and, understandably, "downwind." This trend of steady growth in the tanning industry and the problems associated with tanyards spread from the New England Colonies to the Southern Colonies. Many early towns passed ordinances to govern how and where in the town tanners operated, thus, indirectly indicating the presence of tanning operations in these areas. In addition, early town plats identify special industrial areas (Trumbull 1850 and Rotenstein 1996a). Some of these industrial blocks, like the one located in Edenton, N.C., had a tannery as the first formally incorporated business in town. Known as "William Jackson and Company," this tannery was constructed in 1757. The early growth of Edenton, however, necessitated building over the site, a practice that became common. Some towns planned for such growth such as Milledgeville, Georgia. In 1812 it allowed tanners only a limited number of years to operate the tanyards, likely in anticipation of the town's expansion (State of Georgia 1812). The sites of former tanyards being destroyed, built over, and

sometimes migrating to new locations with the growth of towns was likely a common occurrence.

The colonies to the north like New Jersey, Pennsylvania, and New York, eventually established themselves as the leading Colonial leather manufacturers. A 1731 account from South Carolina, however indicates a slow growing leather industry. The observer mentions the Colony's lack of skilled tanners in marked contrast to the great opportunities afforded by the natural abundance of tanning resources. "They make very good lime with Oyster-Shells, and the Bark of Oak-trees is so plentiful that it costs nothing but the trouble of gathering" (Commons 1958:175). The observer further states that "a sufficient number of good tanners and shoemakers" was not found in the Colony. Similarly, the lands of Georgia had an abundance of natural resources. Reuben King, a tanner by trade, kept a detailed journal of his life and travels through New England to Baltimore. Eventually settling on the Georgia coast in 1801, he wrote many letters to friends and family stressing the abundance of cheap raw materials available for anyone in the tanning or leather business that might move to the area (Wood and Wood 1971).

Some of the nicer finished leather products were likely still being imported from England during this time. But as America grew, so did this critical industry, as indicated by the previously discussed *Report of Manufactures*. An 1840 census lists 8,229 tanneries in the United States. This number is somewhat in conflict with an article titled "Tanneries in the United States" that appeared in the February 2nd, 1858 *Augusta Chronicle*.

According to official statistics, there are 6,263 tanneries in the United States, of which the South has about one-third. Pennsylvania alone has nearly one-sixth part of the whole number, or 1,039. The Southern States rank in the following order: Tennessee has 897; Virginia, 811; Kentucky, 275; North Carolina, 151; Alabama, 149; Missouri, 148; Georgia, 140, Maryland, 116; Mississippi, 92; South Carolina, 91; Arkansas, 51; and the other Southern States a less number each. The entire capital invested in the tanneries in the land is \$18,900,557.00, the number of sides of skins in them being 2,658,065, and the number of sides of leather counting 12,257,940.

This growth would continue up until the Civil War.

### **Manufacture Methods Prior to 1865.**

American tanners were usually a product of an apprenticeship or training gained from working in the family tanning business. Reuben King writes in his journal on Saturday, August 25, 1804,

John Hale came to live with me as an Apprentice and the indentures were drawn after following manner-----This Indenture made the twenty-fifth Day of August in the year of our Lord one thousand eight Hundred and four between William Ray as guardian for John Hale of McIntosh County and State of Georgia one the one part and Reuben King of the Same State and County on

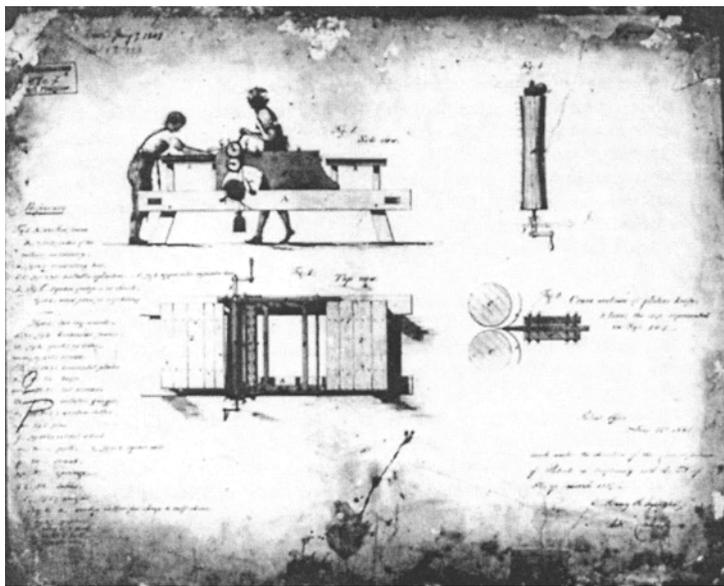
the other part Witnesseth that the aforesaid William Ray as Guardian for the said John Hale with his advise and voluntary consent have put and placed the said John Hale an apprentice to the said Reuben King with him to dwell and serve from the Date of the presents for and during and unto the full end and term of Six years and Six Months during all which term the said Apprintice his Master faithfully Shall Serve in all lawful business according to his power and wit and ability – Honestly orderly and obediently and in all things well and truly conduct and demean himself his heirs executors and Administrators doath covenant promise and agree to and with the Said William Ray for the time being that he the Said Reuben King and Said apprentice in the art and mystery of a tanner and currier which he now useth Shall and will teach and instruct or cause to be taught and instructed in the best manner he can and shall and will during all the term aforesaid find provid[e] and allow unto the said apprentice good and sufficient ment drink and apparel lodging and washing and all other things fit and nessary for an apprentice during the said term and at the end or expiration thereof will supply furnish and diliver unto the said John Hale Thirty Dollars Cash or to that amount in Cloathing I am also bound to give the said John Hale learning that is to lern him to read an write ... (Wood and Wood 1971: 451-452).

For the individual considering tanning prior to the mid 1800's, however, the secrets and details of the craft were also being revealed in trade journals. Thomas Martin's *Circle of the Mechanical Arts* (1813), and Andrew Ure's *Dictionary of Arts, Manufactures, and Mines* are examples of these technical journals. The journals even presented some of the more advanced techniques and chemical formulas. The effects of this type of instruction on the growth of the American tanning industry remains unknown (Welsh 1963).

While the profits of the tanning business were alluring to some, the initial investment, as well as the length of time before monetary returns, remained a concern to the first time tanner. One skilled tradesman in Georgia wrote to reassure an entrepreneur considering investment in the tanning industry; "I can complete a tannery on the cheapest and most convenient laid plan. It is not so expensive as some ignorant men say. A proposed carpenter is not required. Nothing more than ruff plank is necessary. A building composed of longlogs I first \_\_\_ to make planks forming an Angle" (Jones County Reference Manuscript 154 1832). If a tanner's finances survived the delay in returns and his operation was located in an area where leather was "in reasonable good demand", the profits of the business were undeniable. From New England south to Georgia, tanners generally made a comfortable life for themselves and their families as evident in several of their wills. Samuel Lane (death in 1803) of Stratham, New Hampshire; James Robinson (death in 1790) of Wilmington, Delaware; Reuben King (death in 1865) of Darien, Georgia; and David and Andrew Shiver of Union Mills, Maryland are just a few of the wealthy tanners whose wills indicate the wealth they gained from being in the tannery business.

The leather industry stands apart from many other types of American manufactures. "It is an Industry that in the first 200 years of American Life exhibited little change" (Gallatin, 1832:425). While most industries found ways to improve manufacturing techniques in order to

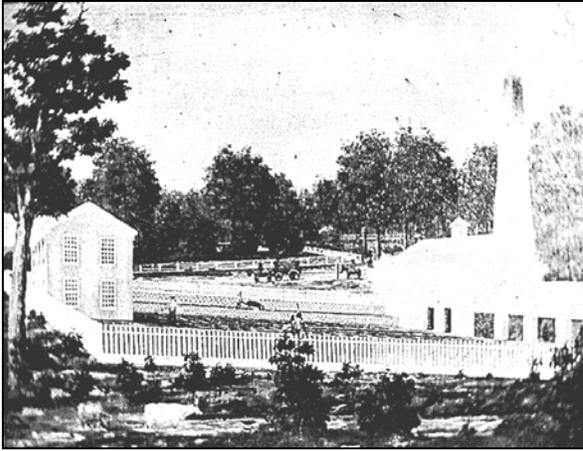
increase profits and offset the increasing costs of labor and materials, tanneries largely remained a static industry until the latter part of the 19th century. Tanning was “generally a manufacture by hand and not machinery” (Coxe, 1814: 15). An 1880 report states that tanners largely shunned any attempt to replace manual labor with machinery. As labor and raw materials increased most manufacturing costs during the mid-1800s, tanneries, unlike many other industries, simply did not pursue or apply significant labor-saving techniques on a wide scale. The “old-time” tanners were resistant to abandoning their proven methods for newer methods. In addition, many tanners refused to avail themselves of the new techniques pioneered in England and France in favor of the methods handed down through generations (Houghton 1902). Introductions of new tanning techniques were usually introduced slowly by immigrating tradesmen from Europe. When some American entrepreneurs did try to introduce improved techniques, their potential investors were skeptical and unwilling to fund the venture.



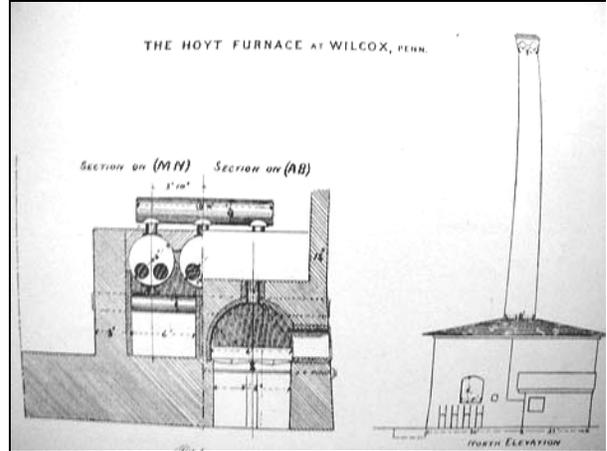
**Figure 5. Sketch of Boyden’s leather splitting machine from the United States Patent Office.**

Despite the introduction of new time-saving machines such as Thomas Pryor’s Bark Mill in 1805 and Seth Boyden’s’s Leather Splitting machine in 1809 (Figure 5), the real improvement necessary to increase profits was in accelerating the speed of the tanning process taking place during soaking leather in the vats. Technological improvements applied during this step could have meant much larger profits. The high quality, heavy leathers referred to as “sole leather” often took a year or two to soak using the old tanning method. Some accelerated methods, such as those that heated the tanning liquors (Figures 6 and 7) or provided a more acidic tanning solution, were found to

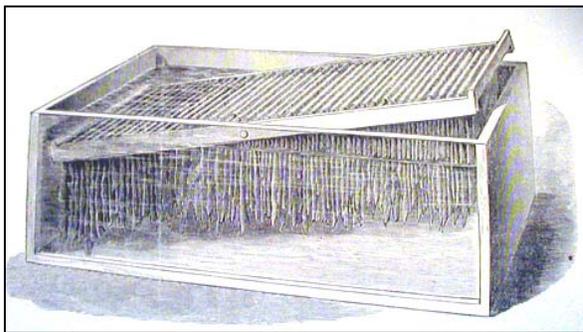
tan the same material in less than half the time. At the Worlds first great fair in the early 1800s, several Americans tried to introduce “new” accelerated tanning techniques. However, these innovations proved to be procedures previously tried and published abroad by Europeans years earlier. Numerous patents were filed at the United States Patent Office for accelerating the tanning processes and for innovative machinery meant to advance the trade (Figures 8-10). When American tanners did use technological innovations, however, they were generally not in the application of the most tedious and laborious tasks but in some less significant labor saving method such as powering the bark mill. (Welsh 1963).



**Figure 6. Daguerreotype of a painting of the Glover Tannery that was built by John H. Glover in 1848. (Note: the tannery features a furnace to heat the tannin solution. Similar to Denham's Tannery, only the smokestack remained following burning of the tannery by Sherman's troops months prior to the burning of the Clinton Tannery.)**



**Figure 7. Sketch of the interior of a tannery furnace.**



**Figure 8. A tanning vat innovation using a rack to hold the hides that could be rocked in the tanning solution.**

American tanyards were not impressive to many Europeans who felt they had attained little advancement especially considering the availability of natural resources around the young country. Tench Coxe, an American Lobbyist for manufacturing, pointed to the wastefulness and inefficient use of the resources and stated that better use could result in better profits. He felt that Americans often took quality bark, lime, water sources, and other resources for granted (Coxe 1814).

Europeans were also guilty of slow progress in the application of technology in their leather industry, however, as pointed out by David McBride who presented the situation to the Royal Society in London in 1778.

It is this tediousness of the process which enhances the value of leather; and the returns being so slow, the trade of tanning never can be carried on to advantage, but by persons possessed of a large capital; therefore, one sure way of increasing the number of tanners, and of course of bringing down the price of their manufacture, is to shorten the process; and if at the same time we can improve the quality of the leather, and save somewhat in the expense of tanning materials, the public will be essentially benefited in respect to one of the necessary articles of life. All this, I will venture to say, can be done by pursuing the method which is laid down in the inclosed paper, and which may

# IMPROVEMENT IN THE ART OF TANNING.

## Improvements in the manufacture of

Leather have not heretofore resulted in much real advantage to the community, as more attention has been paid to the appearance than to the value of the article; and it is a common saying that leather is not generally as good as it was many years ago. This has been owing to a wish to save capital, and to hurry the process by acids, alkalies, and sensible heat, all of which tend to *destroy* the unctious matter of the hide, and to *injure* the fibres, which then often resemble a wool hat. In our improvement, on sole leather, founded on twenty years experience, we reject acids, alkalies, and a high temperature, and insure the following advantages:

1. *Hides can be prepared ready for the bark with one half the labor usually performed by liming, and they tan full as fast.*
2. *Hides yield more leather than by the old methods.*
3. *The leather is of a superior quality, wearing much longer, as the following certificates will show.*

### Dated Sempronius.

E. SHOVE, }  
T. HUNT, } *Patentees.*

*Extract from a statement of Thomas Uptegraff, published in the York, (Pennsylvania), Gazette:*

"I have become acquainted with the patent of Hunt & Shove, and have proved it to be a valuable improvement. The tanners of this and adjoining counties as far as my knowledge goes it and agreed with me that the cold sweating process of Messrs. Hunt & Shove is a greater facility and safety than in any other method of sweating and without heating or producing any disagreeable smell or the least blemish. It has not a tendency to taint the hides as in the old process which renders it a safe method and adds to the durability of the Leather, and I think it offers to be a useful improvement in the art."

We, the undersigned, have tried Shove & Hunt's improvement and do believe it will answer every purpose recommended, as we have only tried it on sole leather. It has not a tendency to taint the hides, which renders it a safe process and consequently adds to the utility of the improvement and durability of the leather—it raises well in the handler, saves the laborious process of breaking the hides, and facilitates the operation of preparing them for tanning. We think it offers to be a useful improvement in the art.

*Lebanigh, Union county, Pa.*  
HENRY BECK,  
RALPH & PETER NEVIUS,  
JOHN NEVIUS, Milton, Northumberland county, Pennsylvania.  
HAWLEY & THOMAS, Huncy.  
ROBERT PURSELL, Haysville, Lycoming county, Pennsylvania.

*Extract of a Letter from George Smith, dated Washington, Columbia county, Pennsylvania, March 10, 1829.*

"I think when they [the tanners in that section] begin to work in this spring, by showing a few the process, they will find so much advantage in it, they will generally adopt it. I have tried upper leather this winter and find it answers remarkably well. Newcomers have tried upper leather, and are well satisfied with it."

*Extract of a Letter from Timothy Maynard, dated Easton, Washington county, New-York, June 20, 1829.*

"Mr. Cozen's took a right. I have the care of Mr. Cozen's yard, and work in it; and I concluded thoughtfully to try the experiment. I took thirteen hides and split them, and tried half of them on the improved plan, and the other in lime. I must say that the new method is not half the work. The leather looks solid and very handsome. I think it a great improvement."

This may certify that I commenced using Hunt & Shove's improvement in tanning last spring, and since that time, I have used it in all kinds of leather, and can safely say, that I can work in with one half the labour usually done by liming; and the leather appears every way preferable to limed leather, and I am satisfied it is worthy the attention of every person engaged in the manufacturing of leather.

*Groton, August 25th, 1829.*  
URI FINNEY.

This may certify that having seen Thomas Hunt work in some hides, after Hunt and Shove's improved plan of liming, I am induced to think that it may be useful to those who may understand and prepare themselves with proper apparatus for the process.

*Seneca Falls, May 30, 1829.*  
WARREN HEOX,  
HENRY V. BAIRD.

This may certify that we, the undersigned, have tried Shove & Hunt's improvement in tanning, and can safely say and recommend it, as a valuable improvement in making sole leather, both in saving of labour and the utility of the same.

*Locke, August 25, 1829.*  
S. B. LOVE,  
ALONZO BRIDGE.

This may certify that I have worn leather some time since, of Ebenezer Shove's manufacture, and that he said the leather was tanned without lime, and it wore far superior to any that I ever wore or saw in my life.

*Sempronius, March 21, 1829.*  
BENJAMIN R. SAYLES.

### DIRECTIONS for using *Shove & Hunt's* improvement in unhairing hides by the cold sweating process.

Dig a pit 8 feet deep, 11 feet long, and 10 feet wide. Make a door way at one end; and a drain from the pit, extending at least 4 rods under ground, and not less than 4 feet below the surface. This serves both for a ventiduct, and for discharging the water which may settle in the pit. It should be 12 inches square.

The ridge of the roof may be even with the surface of the ground. On the ridge, and extending its whole length, set up 2 planks, edge-wise, 2 inches apart. This space between is to be left open; but cover all the rest of the roof with earth not less than 3 feet deep. Make a tight door in the end, and also an outward door, double and filled in with tan bark, to prevent the passage of warm, or dry air.

This deep covering of earth for the pit and drain is to preserve a low temperature for the hides, so that they may unhair without tainting; and this may be effected at or below the natural temperature of the earth at 1 feet below the surface.

To suspend the hides in the pit, place 3 bars across it at equal distances with iron hooks 2 or 3 inches apart. Put the hides in water, (or which is better) a very weak brine, till they become a little softened or soak them as long as usual before breaking. Split them and hang and hang them by the other edge till they easily unhair. The hides should not be broke till they are taken from the vault and ready to unhair. In a good vault, when the thermometer ranges from 44 to 56 degs. and where there is a free circulation of damp air, hides generally degs. the hides should be drenched with cold water.

To prevent the current of air from striking directly on the hides suspended near the lower ventiduct, lay a plank 2 feet square, 2 inches above it.

When hides are unhaird, and softened, we recommend the method of handling them in a good strong sweet liquor, increasing the strength till they are sufficiently raised; then lay them away in strong liquor, with plenty of bark, and let the liquor run into the acetous fermentation as sour liquor destroys the unctious nature of the hide, diminishes the quantity, and injures its quality.

This may certify that I have worn leather some time since of Ebenezer Shove's manufacture, and that he said the leather was tanned without lime, and that I believe the said Ebenezer Shove to be a man of truth and veracity, and that the leather wore extremely well, and I believe it an advantage both to the venter and consumer.

*Sempronius, March 27, 1829.*  
JAMES KINYON,  
L. EWER, Inspector of  
Side Leather for the county of Cayuga.

I have worked some of E. Shove's sole leather, that he says was his sweat leather, which I can say I think is a great improvement in the wear and durability of it.

*Aurora, 3d month, 1829.*  
This may certify that in the year 1816, I purchased a side of sole leather of Thomas Hunt, one of the Patentees, which was then stated to me, had not been put into time in the that I ever made use of in my family by one half.

*Sempronius, March 16, 1829.*  
This may certify that I have tried Shove & Hunt's improvement in tanning, which I find to answer a valuable purpose, and it which I can say I think is a great improvement in the wear and durability of it.

*Danby, April 20, 1829.*  
This may certify that we, the subscribers, residents of said town, have been acquainted with Thomas Hunt and Ebenezer Shove, for many years, and esteem them as honest and also acquainted with Messrs. Kinyon, Sayles, and Russell, and esteem them as gentlemen of strict honour and integrity, and whose words would be taken wherever known.

*Sempronius, N. Y. March 30, 1829.*  
GERSHOM MORSE, Esq. One of the Judges of the Court of Common Pleas in and for the County of Cayuga.  
R. DAY, Jr. M. Sempronius.  
EBEN SMITH.

This may certify that I have partially tried Shove & Hunt's patent for sweating Hides, and have no hesitation in saying it is an important improvement.

*Auburn, Sept. 30, 1829.*  
I certify, that I am acquainted with Ezekiel Williams of the town of Auburn, in the county of Cayuga, that he has known him for about twelve years. He is by trade a Tanner and Currier, and has carried on that business on a large scale since my acquaintance with him. He is considered a superior workman in that business and is well known as an intelligent man; a man of good judgement and of the highest respectability.

*Dated Auburn, December 18, 1829.*  
M. S. MYERS, Clerk of Cayuga County.

This may certify, that I have for several years past worked at the Tanning and Currying business; that two years ago I sold my Tannery to Samuel R. Love and Alonzo Bridge. The last spring they, Love and Bridge commenced working by unhairing hides by a process invented by Shove & Hunt. I have frequently examined their hides and tanning, as this process is safe, facilitates the process of tanning, in the art of adding to the durability of the leather; I am well acquainted with James Kinyon, and James Russell, of Sempronius, and Uri Finney of Groton, and know them to be men whose sentiments may be relied on. I am also acquainted with the patentees Shove & Hunt and did not believe beneficial.

*Locke, September 25, 1829.*  
SOLOMON LOVE.

I certify that I am acquainted with Solomon L. v. Esq. of Locke, in the county of Cayuga—that he is one of the Members elect of the Legislature of the State of New-York, from Cayuga county, and a gentleman of very respectable standing.

*Dated Auburn, December 18, 1829.*  
M. S. MYERS, Clerk of Cayuga County.

Figure 9. An 1829 advertisement for tanning method patent (Library of Congress, Ephemera Collection).

be introduced into any common tan-yard.

With respect to time it is possible, in the way that I have found out, to finish leather in a fourth part of what is required in the ordinary process; for I have repeatedly had calf-skins tanned in a fortnight or four weeks, which in the common way could not be done in less than from two to four months.

I shall not pretend, however, to affirm, that business can be carried on in the large way with such expedition; because a great deal of this abridgement of time was probably owing to frequent handling and working of the leather; but I am confident, and know if from four years experience, that in the ordinary course of business, and in a common tan-yard, the tanner may save at least four months out of twelve, produce better leather, and find his bark go much farther than in the old way of tanning (Welsh 1963:310-311).

An exception to this resistance to unorthodox tanyard operations was found in a description of a tannery in Massachusetts. In 1790, one businessman in Northampton tried several revolutionary approaches to tanning problems. William Edwards first learned the tanning trade as a journeyman for a tanyard at a wage of \$30 annually and board. Later, he converted a saw mill operation into a tanyard and radically departed from traditional tanyard practices. A description of his tannery was described by D. E. Hoxie.

Below the dam on the north of the brook was a "beam house" of two stories with two water wheels, north and east of which was a tan and curry house of two stories, and still north and east, after 1835, another two story building for finishing and storing leather. Some 75 to 80 vats were south and east of these buildings with two or three leaches. These last above ground, the vats below. A leach has a tank some 12 feet square and 8 feet high, and was filled with ground bark and water, which water was pumped by power from the brook. This pump was operated from the beam house wheel by a rod running on supports from the second floor, these supports being of such height as made it easy for a boy to straddle and ride, as it were, 'horseback' in and out as the crank revolved and the rod going with it. On the south side of the brook was a two story bark mill and possibly other buildings....A shed 100 feet long near the road stored the bark (Hannay, 1936: 27-28).

Edward's bark mill was operated by water power as early as 1795 instead of animal power like other tanners at the time. In fact, he is believed to be the first in America to harness water power for this use. He also constructed special containers underground to retrieve his tanning liquors and redistribute them to other areas of the tanyard with the aid of a suction pump. His patented copper heater and a beating or rolling mill he invented was utilized by many tanners years afterward (Hannay 1936).

Most tanyard operations incorporated the entire leather process beginning with the tanning of the hides and ending with the crafting and selling of the finished leather product such as leggings and harnesses. At the beginning of the 1800s, however, a new trend had begun with independent craftsman buying the finished leather from the tanyards and then producing leather products for sale. These new "middleman" of the leather industry



MUNTZ'S TANNIN-TESTING APPARATUS.

**Figure 10. Apparatus for testing the tannin solution (Scientific America 1875).**

independent journeyman may have relied on higher quality products or had to find locations removed from the tanyards.

The tanneries would have capitalized on the skills of anyone willing or able to manufacture shoes or other finished leather products for them. In some situations, slaves may have provided much of the labor required to meet the demand for leather products by local customers. Oppositely, some tanyards employed journeymen to craft and sell their leather goods as indicated in some surviving ledger books and newspaper advertisements (Figures 11 and 12) (Jones County Reference Manuscript 154 1832).

Some tanyards would barter their services on "halves," meaning the tanner would keep half the leather produced from the raw hides provided by a customer in lieu of payment. The tanner would then use this finished leather to produce goods or sell, trade, or barter for more hide, thus building his inventory (Figure 13). Despite the "halves" option, the initial investment to begin a tannery was still enormous considering the long duration of the tanning process after which finished leather would finally be available for sell.

As the leather industry approached the mid 1800s, thousands of tanyards were scattered around America. As early as the 1840s, however, a new type of competition was on the horizon for the small traditional tanners. The growth of big industrial complexes had begun. Corporations with multiple owners planned and laid out mills that could produce just

address

Mr - with humble reference to you I beg leave  
to come to understand that it is your intention  
to commence the tanning and currying business  
providing that you can meet with a competent  
person to carry it on it will not be forerunner  
of one to state to you that I am a proposed  
of - & le for a penny de the for the fine best  
and show matter for the fair saddle and  
greated harness matter for the coach and  
of matter in all the varieties he may require  
and the Bookbinder the very flattening of  
the etc for the business in your neighborhood  
requires no comment I am capable of buying  
selling and exchanging well knowing the  
source had from the demand on from long  
experience in Europe and the business of  
cities of the North we should defeat all  
competition in this country I have intrinsica  
a most extraordinary way of work and then  
you can say nothing but the worst thing of  
leather you see in the event that you  
and of agree - I will make you a all  
I have want or require no compensation  
I will also state to you that as is told for  
any pretence of - & C to find fault with  
the head skins and bark of the country  
there his in capability - this is your word  
but I can prove to the contrary time also  
can only succeed I can complete a tanning  
on the cheapest and most convenient  
late plan it is not so expensive as some  
ignorant men say a proposed carpenter is not  
more a nothing more than the ruff plant  
the missionary building composed of long logs  
of firs from the cills to the wall plate  
forming an Angle thus I will have  
business well a the about days and then  
I will call on you in that a personal  
understanding on the subject

Figure 11. Letter found in the Clinton ledger from a tanner applying for employment.

about anything while building self-sufficient towns for their workers in the process. Large mills were set up near major transportation routes along railroads and waterways. The mills utilized not only water power but steam and any new source that was available and produced large amounts of leather. Some mills even continued the tradition of producing finished leather products. Machines, like the leather splitting machines invented by Seth Boyden and later Alpha Richardson, became standard components in many of these tanneries and were recognized as great advancements in the tannery business by judges at national exhibitions (Welsh 1963). Many of these mill complexes also included large gins to process cotton and flour, as well as large storage facilities. The large manufacturing facilities often monopolized the raw materials once enjoyed in plentiful and inexpensive supply by small local craftsmen. Although many of the large industrial tanneries had a smaller profit margin than the small tanyards, the great scale of these operations may have been responsible for the closure of many local tanners.

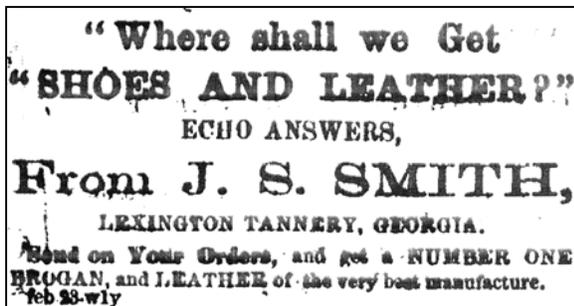


Figure 12. Advertisement for leather goods in the *Augusta Chronicle*, June 11, 1861.

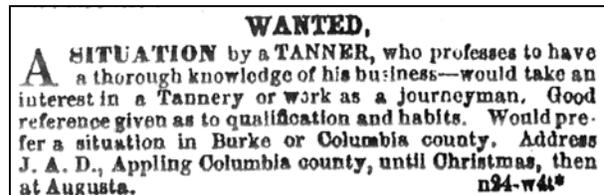


Figure 13. Advertisement for employment in the *Augusta Chronicle*, November 5, 1853.

## Leather Manufacturing in Georgia Prior to 1865

At its founding in 1733, the Colony of Georgia had already served for many years as a passageway for much of the European trade with the American Indians. Trade paths stretched for miles from the coast to the interior of the colony and beyond into the Creek and Cherokee lands. The most important trade commodity during those years was deerskins. For over 100 years, thousands of pounds of deerskins and other trade goods made their way to the port of Charles Town, South Carolina and to a lesser extent Savannah, Georgia. From the colonial ports, the skins were shipped to English cities like London and bought by English tanneries (Braund 1993). The Colonial towns like Charles Town, Savannah, and Augusta became successful settlements predominantly because of the deerskin trade opportunities.

The lack of preserved documentation or structures associated with tanyards is common in the South. A tanyard existed at the Quaker settlement of Wrightsboro prior to the American Revolution although little detailed documentation has been found (Moore 2007). Other briefly noted Colonial tanyards include one at the site of the Mary Musgrove Trading Post along the Savannah River in Chatham County, Georgia. In 1757, William Francis purchased property at the location of the old trading post. During this time, documentation shows a tanyard was in existence on the site although its date of construction remains unknown. Francis also had a cowpen near Ft. Argyle on the Ogeechee River that may have included another tanyard (Braley 2007). At the original town site of Ebenezer further up the Savannah River in Effingham County, a family of tanners was part of the original settlers (Jones 1988). A 1749 account at Ebenezer lists a number of deerskins that were intercepted en route to Mary Musgrove's trading post and brought to the cowkeeper at the town. The reference further states that the Indians would camp in the area for two to three weeks in order to work on the skins (Braley 2007).

Mary Musgrove claims to have taken in over 12,000 pounds of deerskins during the first years of her trading post (Braley 2007 and Braund 1993). This amount equals one sixth of Charles Town's annual skin exports for that same period. Thus, the Savannah area became increasingly attractive to traders wanting to make their fortunes in the deerskin trade. Difficulties in taking advantage of the export opportunities arose, however, since deerskins were not heavy enough to serve as ballast for ships headed out of port. During these early years, Savannah did not have enough other goods to export to provide the necessary weight for the ships. Conversely, Charles Town had many other exports as well as a well-established trade network by this time. Although Ft. Moore and the nearby settlement of Augusta along the Savannah River had become a point of trade for the Georgia colony during the mid-1700s, Savannah was not able to take advantage of this. Most of the skins continued on to Charles Town in the Colony of South Carolina. Georgia Governor Wright wrote that the Colony of Georgia exported "2800 Hydres [Hides] (Cow) of Tann'd [Tanned] Leather for the year 1761-62", but did not specify how many undressed deerskins were shipped that same year (Wright 1762).

Georgia shipped out much less leather than Charleston in 1754 with 3,250lbs. as compared to Charleston's estimated 30,000 to 40,000 lbs. (using average weights of 8 lbs. per hide to the 4,196 tanned hides). This disparity in export volume supports Georgia's

claim that South Carolina merchants were using the Georgia territory to garner deer skins. A decline in Georgia's skin and leather export is indicated in 1762 when only 1,602 sides of tanned hides and 9,633 lbs. of deer skins are reported (Anderson 1801:7-8\* or 78). A low population as well as the small numbers of tanners in Georgia likely resulted in a large export of the harvested skins rather than local consumption.

The term "hide" is defined as the skin of a large animal such as a cow or ox. The term "skin" is used to describe the skin of smaller animals such as deer or goat. The terms are greatly interchanged by many historians and writers adding confusion to the record of the skin and hide trade. Therefore, the term deer hide is technically incorrect. Unprocessed, untanned, and salted dry deer skins were still just deer "skins" to the tanner purchasing them for processing. Leather, however, refers to either skin or hide once they have entered the tanning process. Discussions concerning the volume of untanned skins recorded as being shipped out versus the shipment of tanned leather, therefore, might serve to complicate an understanding of export records. Most likely, the distinctions between skin and hide were not made in the descriptions of shipping records. Hides were significantly more valuable than skins.

The Creek Indians resisted the raising of cattle for many years since they viewed cattle as damaging to their natural resources. By the end of the 18<sup>th</sup> century, however,

Cattle are owned in large numbers by the Indians. Several of them have herds amounting to 100, 500, 1000, and even 2000 heads. They had become very much attached to this kind of stock, and took great pains to procure them. These creatures are computed to double their numbers every three years. Their owners exchange them with the Georgians for cloths. Butter and cheese have been made at more than an hundred places. In 1804, these arts were rapidly increasing. The men had also become acquainted with the tanning of hides into leather; and the making of the latter into saddles (Latham 1818:7).

An 1833 tanyard in the Cherokee territory in North Georgia was described as having "16 vats, a Stonetable (8'x4'x4"thick), a rock for grinding bark, with 1 framed shed covering the grinding wheel, a bark shed, 1 house for curring and dressing leather 30'x20' hewed oak logs, chimney & shed, 1 shed over the vats, and troughs for convering the water 400yrds valued at 2,414.25" (GALILEO 2007). This description indicates that the Indians were now practicing leather tanning using techniques introduced by the settlers.

The American Revolution did not spell the end to the Indian skin trade with Europe, but deer populations had become heavily depleted. According to the American State Papers, one third of the hides in the United States around 1800 were imported hides. Much of these hides were imported from the Spanish colonies (Hannay 1936: 28). The United States, in an attempt to continue the policy of Indian control through trade, sought to "establish and continue a military post, and factory or trading house" (Kappler 1904:86) on the frontier of Georgia. One of the purposes for the "factory" located at the Ocmulgee Old Fields, near present day Macon, was to house the skins traded by the Indians (Elliott 2007). This policy

was to be short lived as Georgia's expansion continued rapidly westward. Following the Treaty of Washington in 1805, significant areas of land continued to open to Georgia settlers.

New settlers and entrepreneurs poured into the Georgia frontier. Among these were skilled tanners primarily from Virginia and New England who were eager to take advantage of low prices and the increasing availability of cattle hides. An increased demand for leather products resulted from the expansion of the frontier followed by the growth of the southern plantations. Just prior to the Revolutionary War and afterwards in the lower populous parts of the Carolinas and Georgia, a pair of shoes cost as much as an untanned ox or cow hide. This disparity in cost between the materials and the finished product no doubt encouraged plantation tanneries to develop while at the same time keeping imported leathers in high demand. In 1794, a society formed in South Carolina to encourage emigrants to learn this trade in order to meet the demand for finished leather (Bishop 1864:450). During the American Revolution, leather sources had become a critical concern for the new American Congress. Sources were sought everywhere to supply the military but the chief supply of skins was the territory of Georgia. These skins were used in the dress of several divisions of the American army (Bishop 1864:457-458).

Over time many individuals skilled in the art of leather manufacture moved into the area (Figure 14). This northern influx likely influenced the industrial designs and manufacturing techniques in the South. Tanners such as the Allen's, the King's, Bently, Gillison, Griswold, Lutes, Denham, Dyer, and Cooke were included among these settlers. These individuals possessed leather manufacturing skills or the funds to invest in the business and may have been located in Georgia prior to 1800. Derry Gillison, a wealthy Irish entrepreneur, came from New England around the 1780s and established a tannery and shoe factory in the Jasper County area of South Carolina. In fact, the town of Gillisonville still retains the family name. In addition, a marker listing the family exists on a stone fragment next to the railroad and may represent the remains of a bark mill stone used at his tanyard. The Allen's, believed to be from Virginia, was a family apparently with a long history in the leather business. Moving into the interior of Georgia from Edgefield, South Carolina, Edwin Harris Allen and his descendents settled in the Milledgeville area and eventually owned the Clinton Tanyard. Ancestors of these Allen's may be the ancestors of Washington Allen, known for operating one of Georgia's most successful tanneries at Buford, Georgia after the Civil War. Joseph Lutes moved from North Carolina to Georgia to start an unknown tanyard at an unknown location (The Generations Network, Inc. 2007). Information on these, and other tanners could be somewhat reassembled through genealogical research of families or by searching newspaper articles (Figures 15-16). A search of geographic names in Georgia resulted in some possible locations of leather tanneries (Table 1).

Georgia was not immune to the challenges and difficulties of the leather industry as well as the reluctance of tanners to "modernize" their tanning techniques. The need for high initial investment, compounded by the long wait on dividends, was sometimes very frustrating for investors. Many did not have the fortitude to wait two years to reap profits. "I am now almost discouraged", wrote Reuben King, who had hides soaking for several months with months to wait before they were completed and available for sale. "I am without money, without credit, and nothing to sell. Hides are bought for half their real value &c Brother Roswell has certainly used a flattering tongue to me. I have always depended on him for a

supply of money to carry on this tanning business and have yet some hopes of his assistance in this way. If he does not [continue to fund me] I must content myself with small gains”



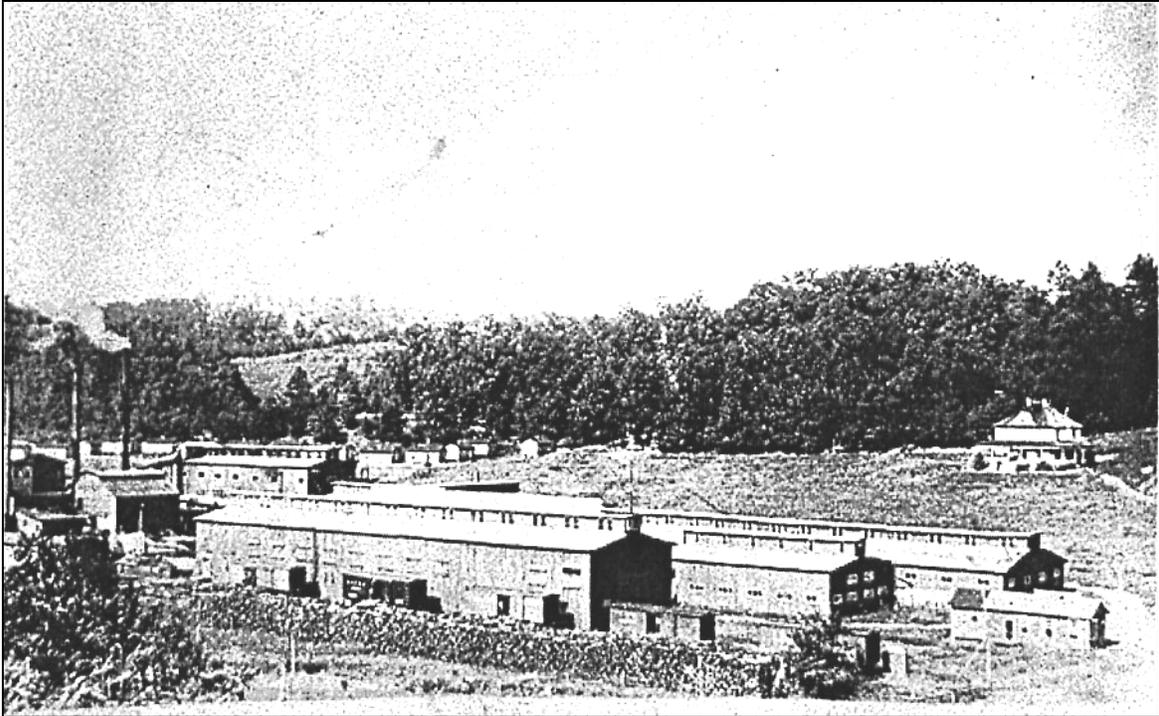
Figure 14. Photograph of Georgia tanners during the early 1900s.

(Wood and Wood 1971:327). At his death in 1865, King’s estate was valued at over \$40,000.00.

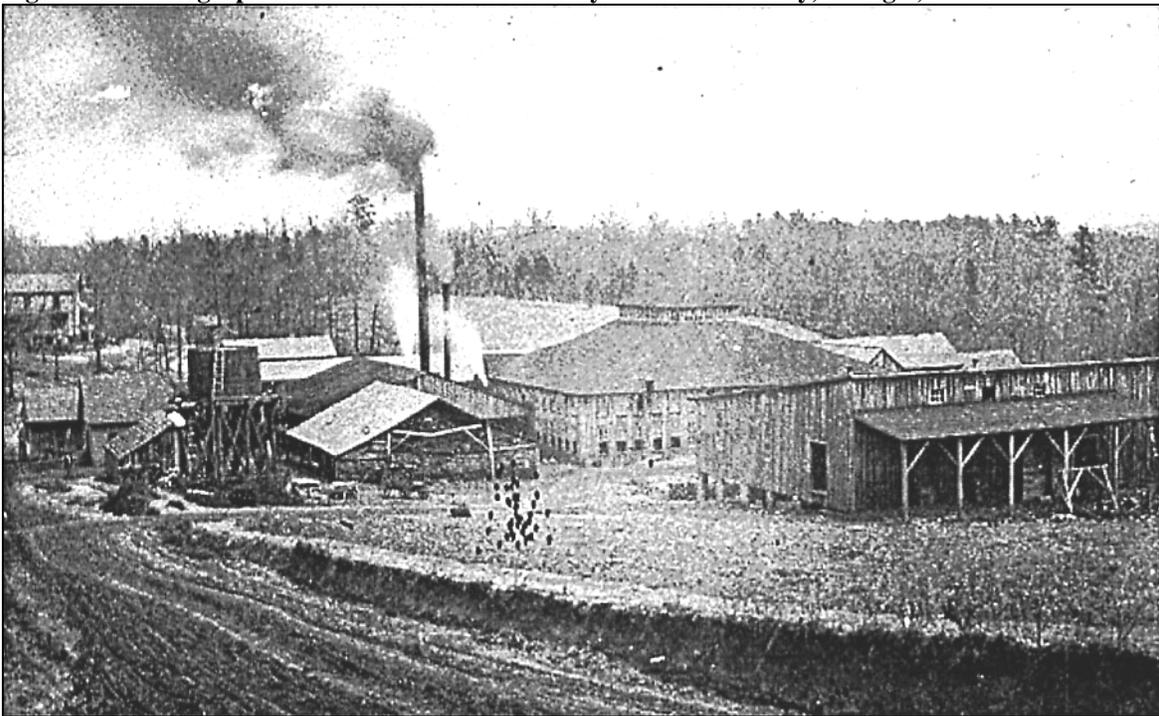
Regardless of the challenges faced by tanners, by the early 1840s Georgia is listed as having 102 manufactories of leather and saddles, \$123,701 worth of manufactured articles of leather, and a total of \$60,932 of capital invested in leather manufacture (Greeley 1843).

Many Georgia plantations took steps to satisfy their own demand for leather items. Plantations that included numerous slaves often constructed a tanyard on the grounds to produce leather they would then craft into items such as shoes, harnesses, and whips. A slave skilled in the tanning process could save his master a considerable amount of expense. In addition, some slaves may have been able to sell their wares for personal profit or to supplement the plantation income. Items were likely sold in the nearby local communities similar to journeyman. Slave narratives indicate that tanning leather was not an uncommon task. “They use to have tanning vats to make shoes with too. Old Master didn’t know what it was to buy shoes. Had a man there to make them” (Johnson 1936a). Another slave from Georgia stated that “the shoes were made out of harness leather. Tanned and made right by hand there at home. I have seen tanning vats and yards two blocks square” (Taylor 1936). Another narrative describes the tanning process used on a plantation.

Master taught pa to make shoes an the way he done, they killed a cow an took the hide an tanned it. The way they tanned it was to take red oak bark and put in vats made somethin' like troughs that held water. Firs' he would put in a layer of leather an a layer of oak ashes an a layer of leather an a layer of oak ashes till he got it all in an cover with water. After that he let it soak till the hair come off the hide. Then he would take the hide out an it was ready for tannin'. Then the hide was put to soak in with the red oak bark. It stayed in the water till the hide turned tan then pa took the hide out of the red oak dye an it was a purty tan. It didn' have to soak long. Then he would get his pattern an cut an make tan shoes out'n the tanned hides. We called 'em brogans (Graham 1936).



**Figure 15. Photograph of the Mineral Bluff Tannery in Fannin County, Georgia, 1914.**



**Figure 16. Photograph of the Buford Tannery in Gwinnett County, Georgia, 1897.**

Table 1. Possible tanneries in Georgia identified by a geographic name search of the USGS GNIS database (<http://geonames.usgs.gov/pls/gnispublic>).

<b>Feature Name</b>	<b>Class</b>	<b>County</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Map</b>	<b>Ele(ft)</b>
Tanyard Branch	Stream	Wilkes	335114N	0824758W	Celeste	440
Tanyard Branch	Stream	Washington	325946N	0825158W	Sandersville	292
Tanyard Branch	Stream	Warren	333043N	0823918W	Cadley	459
Tanyard Branch	Stream	Rockdale	333905N	0840157W	Conyers	771
Tanyard Branch	Stream	Putnam	332233N	0831925W	Harmony	505
Tanyard Branch	Stream	Newton	333219N	0834028W	Mansfield	587
Tanyard Branch	Stream	Lumpkin	343149N	0835742W	Dahlonega	1148
Tanyardd Creek Park	Park	Fulton	334830N	0842408W	Northwest Atlanta	797
Tanyard Branch	Stream	Douglas	334004N	0844436W	Campbellton	797
Tanyard Creek	Stream	Crawford	325200N	0840016W	Culloden	482
Tanyard Creek	Stream	Cobb	340454N	0844108W	Acworth	860
Tanyard Creek	Stream	Catoosa	345045N	0850347W	Tunnel Hill	797
Tanyard Branch	Stream	Carroll	332852N	0851828W	Graham	919
Tanyard Creek Day Use Area	Locale	Bartow	340524N	0844131W	Acworth	856
Upper Tanyard Creek Swimming Beach	Beach	Bartow	340525N	0844126W	Acworth	840
Tan Yard Branch	Stream	Polk	340025N	0851552W	Cedartown West	761
Tannery Spring	Spring	Walker	345629N	0852147W	Fort Oglethorpe	840
Tannery Gulf	Valley	Walker	345630N	0852127W	Fort Oglethorpe	7
Tan Yard Branch	Stream	Polk	340025N	0851552W	Cedartown West	761
Tan Trough Creek	Stream	Pierce	312100N	0821358W	Blackshear East	79

Another slave addresses the crafting of shoes.

The tanning yard was not far from the house Doctor Miller. His own butcher shop was nearby. He had his cows butchered at intervals and when one died of unnatural causes it was skinned and the hide tanned on the place. Randall as a child delighted in stopping around the tanning yard and watching the men salt the hide. They, after salting it dug holes and buried it for a number of days. After the salting process was finished it was treated with a solution of water and oak bark. When the oak bark solution had done its work it was ready for use. Shoes made of leather were not dyed at that time but the natural color of the finished hide was thought very beautiful and those who were lucky enough to possess a pair were glad to get them in their natural color. To dye shoes various colors is a new thing when the number of years leather has been dyed is compared with the hundreds of years people knew nothing about it, especially American people. Randall's paternal grandparents were also owned by Doctor Miller and were not sold after he bought them. Levi Lee was his grandfather's name. He was a fine worker in the field but was taken out of it to be taught the shoe-makers trade. The master placed him under a white shoemaker who taught him all the fine points. If there were any, he knew about the trade. Dr. Miller had an eye for business who could make shoes was a great saving to him. Levi made all the shoes and boots the master, mistress and the Miller family wore. Besides, he made shoes for the slaves who wore them. Not all slaves owned a pair of shoes. Boys and girls under eighteen went bare-footed except in winter. Doctor Miller had compassion for them and did not allow them to suffer from the cold by going bare-footed in winter (Muse 1936).

Further details are provided by Patience Cambell of Sparta, Georgia.

Patience's father was not only a capable field worker but also a finished shoemaker. After tanning and curing his hides by placing them in water with oak bark for several days and then exposing them to the sun to dry, he would cut out the uppers and the soles after measuring the foot to be shod. There would be an inside sole as well as an outside sole tacked together by means of small tacks made of maple wood. Sewing was done on the shoes by means of flax thread (Johnson 1936b).

Slave narratives such as these clearly show that tanning and crafting leather on plantations was not uncommon. But how common was the selling of the leather goods outside of the plantation community? The extent that these local operations affected the viability of the commercial tanyards is not fully understood. In addition, little information was found to indicate how the growth of these plantation tanyards was reflected in the official statistics on tanneries in the South. Did these plantation tanneries create enough competition to prevent a rapid growth in the leather industry in some areas of Georgia? In addition, were the plantation tanneries included in the statistics on the number of leather

production facilities in the South. The following statement by census takers support the confusion over the number of tanneries that existed in Georgia in the early years.

In respect to the tanneries in three counties in Georgia-the correctors of the census state in notes, "From the above number of tanneries reported, and the very small quantity of hides tanned, it is probable that the assistant marshal has returned plantation tanneries, where one or more vats are used. They are therefore rejected in the general aggregate" (Hunt 1845:138).

Were plantation tanneries that exceeded a certain number of vats included in the census data? What criteria were used to determine which tanneries would be included as a manufacturing facility? Doubtless other census data and government records vary in the extent to which these plantation tanneries were included in the data. Similar inconsistencies were noted not only in Georgia but in other locations. Small farm and family tanning operations were included in earlier statistics,

...a few sheep skins, and two or three cow hides tanned for the use of the family; this the Collectors appointed by Congress call "a tannery"; and also mark down every pair of shoes they make for their own use. In this way, Tench Coxes' lists of the manufacturers of the United States are swelled, and appeared so conspicuous to the people of Britain (Taylor 1816:665).

Adding to the confusion, some leather craftsmen bought raw material to produce saddles and shoes without actually tanning their own leather. Statistics appear to include these businesses with true tanyards skewing the numbers further. All of these factors make an accurate number of tanneries operating in Georgia and other areas difficult to understand.

The South enjoyed relatively inexpensive labor in the form of slaves as compared to manufacturers in the North. This disparity is reflected in the cost of leather. George C. Davis and Joseph Hunt of the Committee on Leather and Shoes reports,

It is estimated that the cost of Leather is about three times the cost of the raw material, and when manufactured into the articles for which it is used, labor, at present prices, forms about five-sixths of the value. When a duty of only twenty per cent, in favor of American labor, which is to take place under the present compromise act, manufacturers will be wholly unable to compete with foreign articles, unless wages are so reduced, as to compare with the pauper labor of Europe" (Greeley 1843:82-83).

The effect that labor cost had on the production of leather and leather goods in the North and the growth of the industry in South including Northern investment remains unclear but was likely significant. By 1843, the tanning industry in the South had begun to show significant growth. Cheap slave labor available in the South was an attraction to Northern entrepreneurs. The Civil War, however, would bring this new Industrial growth in the South to a rapid halt.

Georgia also used prison labor in tannery operations. “In Georgia, tanning leather seems to be the principle business of their state prison” (State of Michigan 1849:13). At least one of these tanyards was located at the State Prison in Milledgeville. The Civil War prison at Andersonville also featured a tanning operation conducted by Union prisoners to supply themselves with leather. Similarly, Mississippi appears to have used prison labor to produce brogan shoes (DeBow 1849:456).

Similar to the pattern seen around the country, at least some entrepreneurs attempted to improve the slow addition of technology in the leather industry near the mid-19th Century. The following article in the *Augusta Chronicle* from October 3, 1861 states:

“The Quick Process of Tanning Leather.—We paid a visit on Sat. to the tannery of Messrs. Boothgy, Salvage & Co., on the Canal at the foot of Pine Street. (Augusta, Ga.). This establishment has been in existence about eight months, but the proprietors have not attracted public attention to their new process of tanning, preferring to wait until they could introduce their leather in the market, that the public might have an opportunity of testing its qualities. By their patent process they are enabled to tan and finish leather, from the lime, in from fifteen to sixty days, according to the size and weight of the skins. In their vats and in the process of finishing, we saw sole and harness leather, kip, calf, sheep, goat and Alligator skins. The finished calf skins, sheep skins and other upper-leather, submitted to our inspection, appeared to be well and thoroughly tanned, being remarkably smooth, soft and pliable. Shoemakers who have made up the leather speak very favorable-of it, and is far as an opportunity has been afforded here to test its wearing qualities, it has proved very satisfactory.

The new process of tanning, besides being very quick and economical, is very simple in its operation. The cost of putting a tannery in operation is much less than is required by the old system, and the process is so simple that with a little instruction in tanning and dressing leather, plantation hands could carry on a tannery in all departments, and produce good leather.

Messrs. Boothby & Salvage informs us that their leather is in such request that, with their present works, they are scarcely able to supply the demand, and that although their prices are only about one-half the present prices of leather in this market, they make a good profit on their sales.

We understand that an extensive tannery is carried on in Texas by parties who purchased the patent right for that state. It has been in operation nearly two years, and is turning out large quantities of excellent leather tanned by the process.

Specimens of the leather from the tannery in this city may be seen at the office of Alderman Wylly, Agent of the Company, and who will sell rights for countries and States. Savannah News, 28<sup>th</sup>.

The old methods were still practiced, however, since advertisements for the sale of a variety of “Tanner’s Tools” can still be found from this period. Listings for the sale of a number of leathers that were obviously not manufactured in Georgia can also be found.

Several different advertisements in Savannah and Augusta papers list “Hemlock Sole Leathers, French and German Calf Skins, Goat, Sheep, and Morocco Skins.” The author’s great grandfather, John F. Battle, operated a leather harness shop in Augusta (Figure 17). Upon his death after being struck by a bus on Central Avenue, Battle’s obituary appeared in the *Augusta Chronicle* on January 5, 1942.

A Well-Loved Citizen

Mr. John F. Battle Sr., who met his death tragically Saturday night, was a man of unusual qualities because he represented that staunch, indomitable, solid type of American citizen, whose innate spirit of independence enabled him to stand firm in the face of the shifting winds of time and fortune.

He refused to retire from a trade which went out with the passing of the horse and buggy age. He was a harness maker by trade and by hard and patient work he made his trade pay him a living until the day of his death. His shop was a relic of the past, but in it each day gathered many of Mr. Battle’s friends to swap yarns and, in friendly fashion, discuss the topics of the day with his amiable, sprightly man, whose delightful Irish wit never failed to charm those who knew him and called him their friend.

A host of friends are sad today because of the tragic death of Mr. Battle.

Regardless, some large tanning factories were successful in getting built in the South. A tannery and industrial complex started in Scottsboro, Alabama as early as 1837. The Tuscaloosa Manufacturing Company owned 3,000 acres of land with factory, hotel, stores, blacksmith, carpenter, wheelwright, boot and shoeshops, sawmill, gristmill, flourmill, church and many cottages (Betts 2006). The City of Columbus, Georgia also hosted such a factory. These “super” complexes had multiple investors and had the ability to purchase slaves for the company to provide at least a portion of the workforce.

<p><b>HARNESS MAKER REAL OLD TIMER</b></p> <p><b>John F. Battle, Sr., Operates Only Shop of Kind in This Section</b></p> <p>Among the old-timers in business in Augusta is John F. Battle Sr., owner of Battle's Harness Shop, the only harness maker in the city and probably in this entire section.</p> <p>He learned the trade at the old Day &amp; Tannehill company, which was located on the 700 block of</p>	<p>Reynolds street, before the fire of 1916. This place ranked with the finest buggy and saddlery concerns in the South. Mr. Battle was the head harness maker.</p> <p>After leaving this firm he went on the fire department as fireman-harness maker, those were in the days when the firemen rode to fires behind horses. The harness had to be good. For years he made every piece of harness used in the department by hand, also made the harness used by other departments in the city.</p> <p>The automobile has practically driven the horse and mule from the city, therefore, his business is now a combination of harness, trunks and other leather goods work.</p> <p><b>If You Want to Sell or Buy An Article Use a Classified Ad</b></p>
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Figure 17. Article in the *Augusta Chronicle* on February 28, 1941.

Many of these corporations would be short lived, however, due to the outbreak of the American Civil War. Large tanneries were advertised for sale in newspapers around the South probably by very nervous investors worried about the outcome of the War (Figure 18). During this time, leather production slowed considerably in Georgia. This was due in part to the seizure of leather from some tanneries to be used by the State of Georgia. An article

placed by Ira B. Foster, Quartermaster General for the State of Georgia, in numerous state newspapers between December and January 1863 states,

Tanneries in some cases have concealed leather and shoes for sale in speculation of high prices, and have represented that they can supply none to the people of their country because all has been seized. Therefore the Governor has instructed to release the Tannery or leather seized of any person in this State who will file his affidavit in the Office of the Clerk of the Superior Court of his County and send a copy to this office. We therefore invoke all good citizens of each county in inducing Tanners to conform to the above arrangements, [prices suggested for products], instead of holding back their leather for speculation. In case any refusal to sell to the needy at home and to the state at the above prices, I am directed to refuse to release of the leather seized, but to appropriate it to the public use under the resolutions of the General Assembly and the orders heretofore published... (State of Georgia 1863).

**Georgia Steam Tannery**  
**FOR SALE.**

SPLENDID LOCATION—PLENTY BARK—PLENTY  
HIDES—CONVENIENT FOR RAILROAD  
AND RIVER TRANSPORTATION.

It is now in full operation, turning out from one hundred  
and twenty to one hundred and thirty Sides Leather per  
week.  
In connection with which is a Shoe Manufactory, turning  
out over 200 pairs Shoes per week.  
The hands and Shoemakers will be hired for the balance of  
the year.  
For particulars, address **W. C. BUTLER,**  
mh 24 12d Savannah, Ga.

Figure 18. Advertisement in the *Augusta Chronicle*, April 2, 1863.

This order allowed tanners to take the leathers they had already produced or were in the process of tanning to sell for a set price. The order appears to represent an attempt to not only keep down inflation on the already high prices, but to ease the shortage of this resource during the war. (Records of the tanneries that responded to the announcement to regain some of their seized leather would be a valuable resource for identifying tanneries operating during this time in Georgia.) A further indication of the shortage of leather is found in an article that attempts to educate citizens on how to meet their leather needs during the desperate war years. In the *Southern Banner of Athens, Georgia* (1862). The article states:

#### Tanning.

We are indebted to Mr. William Crutchfield, of Goochland Court House for the following details and receipt for tanning leather. If, in any particular, not perfectly intelligible, Mr. C. will take great pleasure in affording any additional information.

The true mode for farmers to adopt is for each neighborhood, consisting of from three to six, to combine, construct the vats and divide the labor among themselves. They will make as good leather as they get, if not better, and they will get double the quantity they now receive from tanners:

TANNING LEATHER.--Pure water vat six feet square, four feet deep. Lime water vat--same.

Vat for bark four feet wide, four deep, and eight long. Soak hides till soft in pure water--from five to seven days--then flesh on beam.

Beam for breaking the hides six feet long--a log, two feet in diameter, split in two--underneath hollowed out for prop, to raise or depress. In the process of breaking, use a knife two feet long with shanks for handles--knife little rounding.

As soon as the flesh is taken off, (one hand will flesh a dozen hides a day,) the hides are put in the lime vat--weak solution--one bushel lime--first slacked. The vat not quite full of water. Hides to be taken out every other day to air, and replaced smooth. Plunge or stir vat every time the hides are drawn. An iron hook, like icehooks, to draw the hides.

As soon as hair will slip, throw hides over beam, hair side up, and rub with fleshing knife. The hair off, the hides are put back in vat of pure water, and to remain there a day or two--then throw across the beam again, and with same fleshing knife, work out all the lime and remaining flesh. One hand will flesh 50 hides a day.

The process of bating [?] may be omitted in tanning coarse leather.

Take the hides as clean as possible to the bark vat. At first one bushel of bark, pounded or ground--this weak solution to continue two days--and gradually strengthened by addition of bark, say one bushel daily. Keep it in two weeks; handling and strengthening liquor.

Then clean out vat, taking out all the bark. Throw in pounded bark--put down one hide--cover that inch thick with bark, and so on each hide. Let in water and let it remain a month. Again clean out vat, reverse hides and repeat operation--and let this remain a month. Again clean out vat and repeat operation--and remain another month.

(Chestnut oak bark the best--tho' the spanish or black oak good.)

After 3d month, the hide being tanned, is taken out and hung upon poles. This is sole leather without further labor.

That intended for upper leather, half day, is oiled on the grain or hair side with a mop. Reverse side, and grease heavily on flesh side, half pound tallow and half pint train oil to a side mixed. This mixture is prepared thus: melt the tallow slowly and take same quantity of oil mixed and stirred in--after it becomes cool, is ready for use. Then hang the hides in shade till dry.--

Richmond Whig.

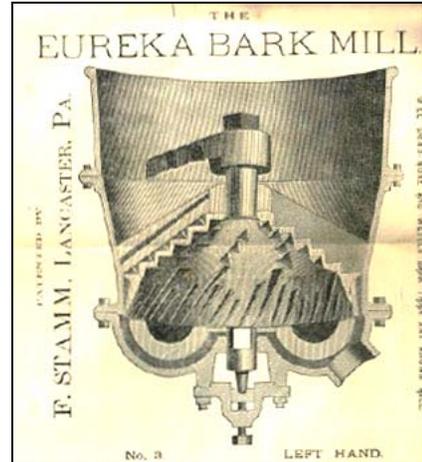
(*Southern Banner* 1862)

An advertisement that appeared during the Civil War claimed that the Athens Foundry and Machine Works was offering a “very superior Bark Mill” for sale. “With our [southern states] increased demand for leather, this is a very important matter, and we are pleased to learn that those in operation have given perfect satisfaction. They are put up in the latest and best style and can be furnished to any extent demanded” (Betts 2006). The Bark Mill, likely an iron spear-head type device (Figures 19 and 20) somewhat like an oil drilling rig head, was a complete change from the old horse and stone device shown in Thomas Pryor’s U.S. patent. The device could be turned with steam or water power. This advertisement for a new type of bark mill indicates that Georgia, and some of the other

southern states, was beginning to shift into a new era of industrialization. The war would delay this progress for the next several years. Other foundries also advertised the manufacturing of bark mills including Nesbet & Levy's Ocmulgee Foundry and Machine Shop and James L. Dunning & Co.'s Atlanta Machine Works (White 1854:272 and Campbell 1854)



**Figure 19. Iron bark mill grinding head from the Shriver Mill in Union Mills, Maryland.**



**Figure 20. Advertisement for the Eureka Bark Mill grinder, late 1800s.**

### Examples of Tanyard Layouts

No historical description has been found to date to describe the tanyard at Clinton. The only name even found associated with its operation occurred during the Civil War when it was referred to as Morgan's Tanyard. Earlier references may have been similar, such as Allen's Tanyard or Jones' Tannery or simply the Clinton Tannery<sup>1</sup>. The lack of specific names associated with the tannery may reflect its uncelebrated existence. The malodorous tannery provided a necessary service to a mostly local population. These local inhabitants "knew" where to go to get leather they needed. The tanyard was not pleasant. It was a smelly, dirty, foul place similar to a slaughter house. If they did not need to go there, they would probably avoid it.

The Clinton Tanyard was an industrial site with a layout that was most likely typical of small American tanneries during the first half of the 19<sup>th</sup> Century. The tanyard may have also been altered, expanded or rebuilt more than one time by the various owners over the 50 years it was in operation. Tanyard layouts were laid out with a practical arrangement of consecutive stations similar to a production line. The design would have allowed for the efficient movement of leather through the process in a manner that saved time and labor and, thus, money. The typical tanyard layout was the product of the many years tanners spent refining a system to best fit an industrial process.

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<sup>1</sup>The absence of a specific name for the business has made researching the tannery difficult.

Each tanyard would also have had its own unique environmental factors to consider such as topography and water availability that would have created some minor variations in the layout. However, the environmental factors did not change what was essential in conducting a successful tanning operation. First, the tanner would have been very careful in his choice for the location of his tanyard in order to minimize the amount of variation necessary to the tanyard design of which he was most familiar. Since the choice of a town site was likely out of his control, however, he would have to expect some necessary variations.

In researching known tanyard designs prior to 1865, the authors found a very limited number of examples available for comparison. Almost all documented tanyards of this period were located in the northern United States. In Georgia, only the modern non-vegetable tannery located at Buford, Georgia may have received some limited archeological testing although this information was not readily available. To understand the design of the tannery at Clinton, the site was compared to three other known tanyard layouts in addition to written accounts describing the layouts of others. The William Jackson & Co. Tanyard at Edenton, North Carolina was archaeologically tested by SSI, Earth Systems Division, of Marietta, Georgia in 1977 (Foss et al 1979). The sites known as the Kiokee Tannery (09CB629) located near Appling, Georgia and the Shiver Tannery in Union Mills, Maryland, were visited by the authors. Some limited archaeological investigations of the 18<sup>th</sup> Century tanyard in Edenton, North Carolina, documented a simple but consistent design pattern noted at the other tanneries (Figure 21). The layout included a water source, lime kiln, a grouping of tanning vats, and a drying shed. The locations of the bark shed and bark mill were not indicated. The Edenton design is similar to the Shriver Tanyard located in Maryland. This mill complex includes a number of commercial enterprises. Initially, David and Andrew Shriver built a grist mill and a saw mill at the site in 1797. Later they constructed a blacksmith shop, cooper shop, and a tannery (Figures 22-29) that continued operation even after the Civil War. The tanyard includes a water source, bark shed and mill, tanning vats, and a drying shed.

The author visited the Kiokee Tannery in Columbia County, Georgia. Augusta State University is currently planning a limited archaeological study of the site (Murphy 2007). The tanyard included a water source and a number of tanning vats of various sizes (Figures 30-34). A possible tannery labor community was also noted in vicinity of the mill (Figures 35-37). A sketch of the tannery features visible on the ground surface was made during this visit (Figure 38). A sketch of the Clinton Tannery is shown in Figure 39 for comparison purposes. The millstones found at the two sites are shown in Figure 40. One of the millstones found at Kiokee features a beveled edge, a characteristic noted at other bark mills (Morfit 1852:114). A description of the Kiokee Tannery is provided in an advertisement in the *Augusta Chronicle* for the sale of the Kiokee Plantation in 1859. The article describes, “a Tan Yard of 37 Vats, besides Leaches, Pools, etc, Curryng Shop, [and] Bark Shed recently built.... It has a shoe shop....It has been established about fifteen years, and does from seven to nine thousand dollars.”

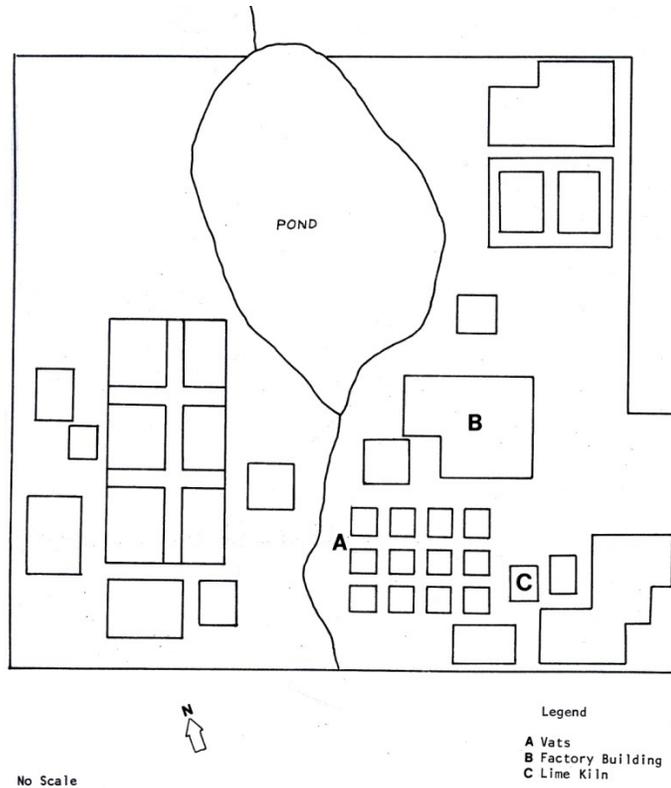


Figure 21. Map of the tanyard in Edenton, North Carolina (modified from Foss et al 1979: 13).

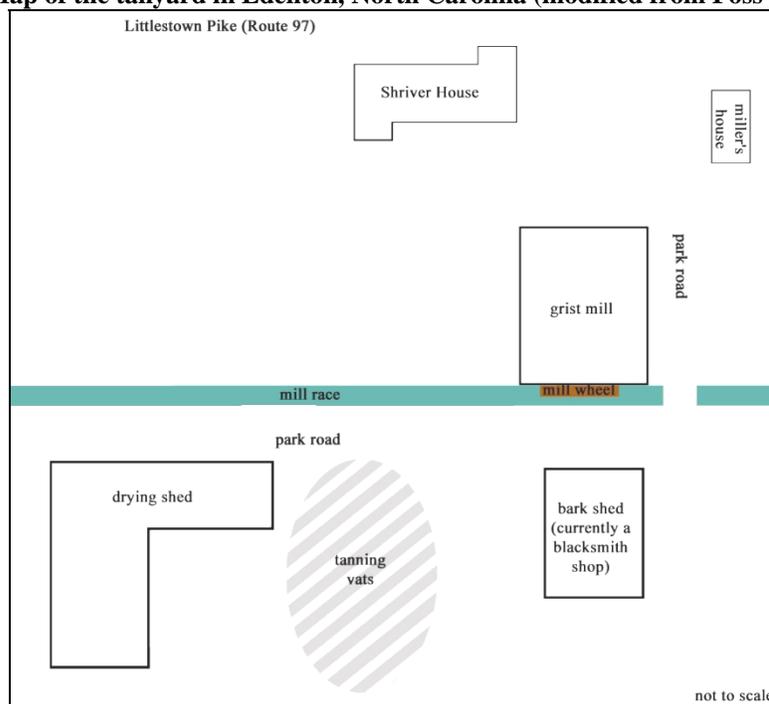


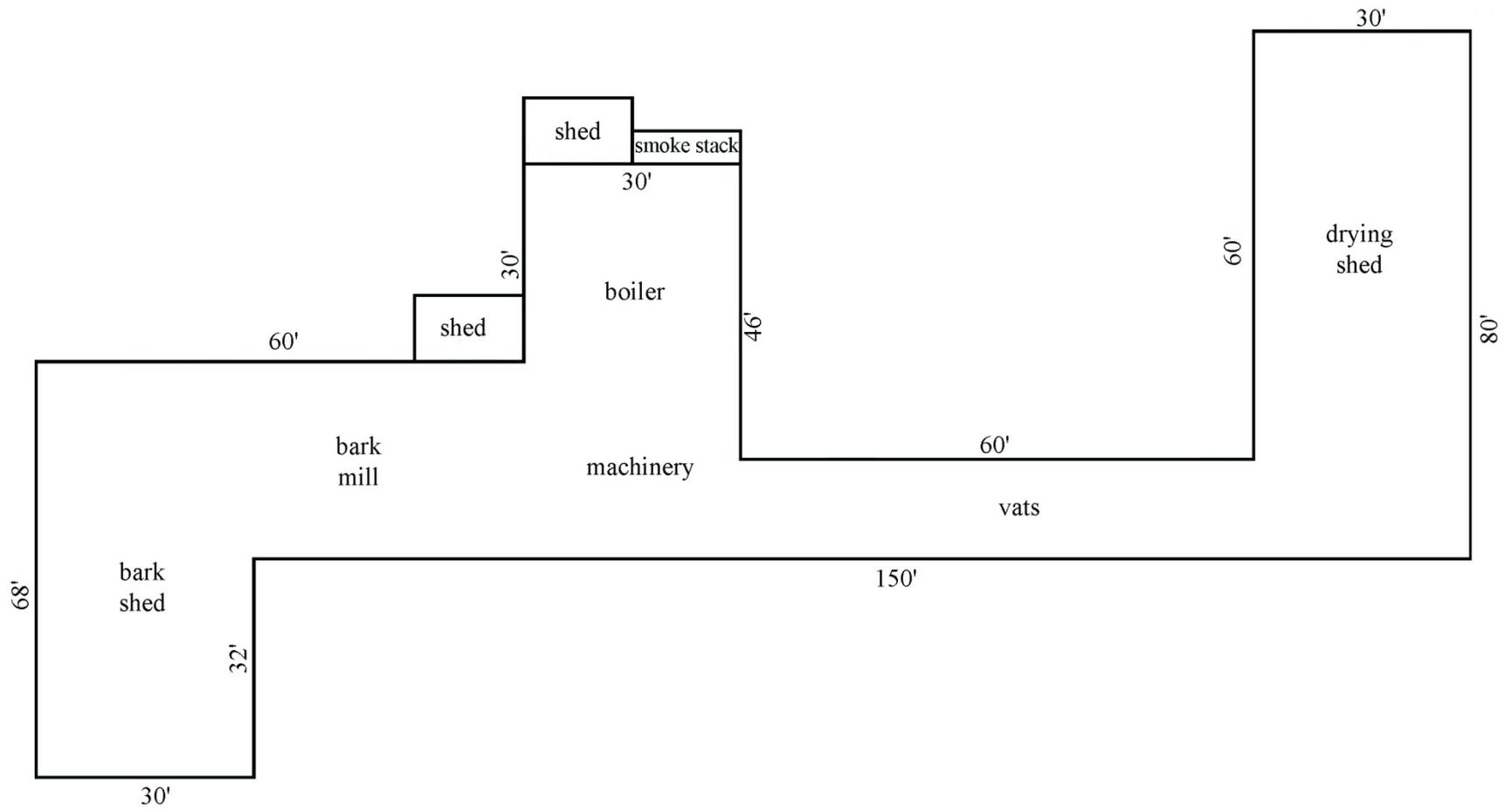
Figure 22. Map of the Shriver homestead showing the tanning operation south of the mill race.



**Figure 23. Panoramic view of the Shriver Homestead as seen from Big Pipe Creek. (Note: left to right: drying shed, tanning vat area, Shriver residence in background behind grist mill with bark shed in foreground, miller house, and second Shriver home across street.)**



**Figure 24. Old photograph of bark and drying shed at the Shriver Tannery before it burned during the late 20th Century.**



**Figure 25. Sketch of the bark and drying shed at the Shriver Tannery before it burned during the late 20th Century.**



**Figure 26. Bark shed at the Shriver Tannery.**



**Figure 27. Reproduction of the drying shed at the Shriver Tannery.**



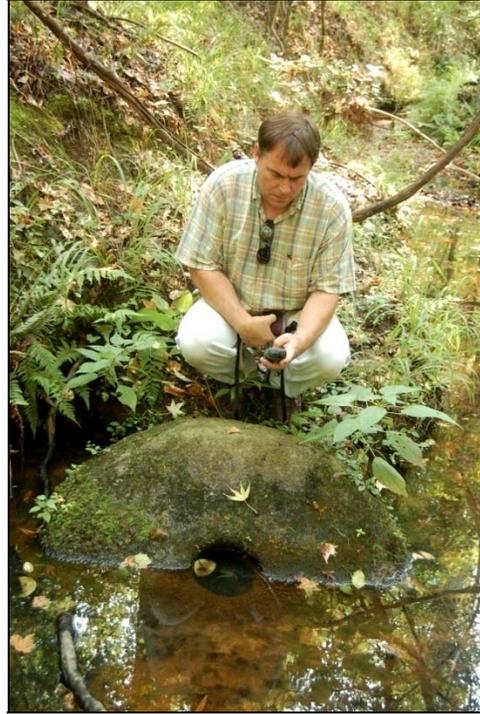
**Figure 28. View of the Shriver Homestead showing the Shriver residence on the left and the grist mill on the right.**



**Figure 29. View of the Shriver Homestead showing the grist mill on the left and the miller's house on the right.**



**Figure 30. Mill stone located at Kiokee Tannery.**



**Figure 31. Second mill stone located in the stream at Kiokee Tannery.**



**Figure 32. Battle standing between two vats at Kiokee Tannery.**



**Figure 33. A vat at Kiokee Tannery.**



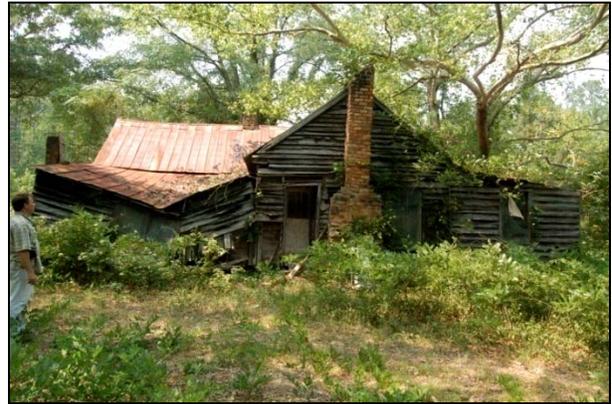
**Figure 34.** The stone well that provided water to the Kiokee Tannery. (Note: stone cap has been broken and removed.)



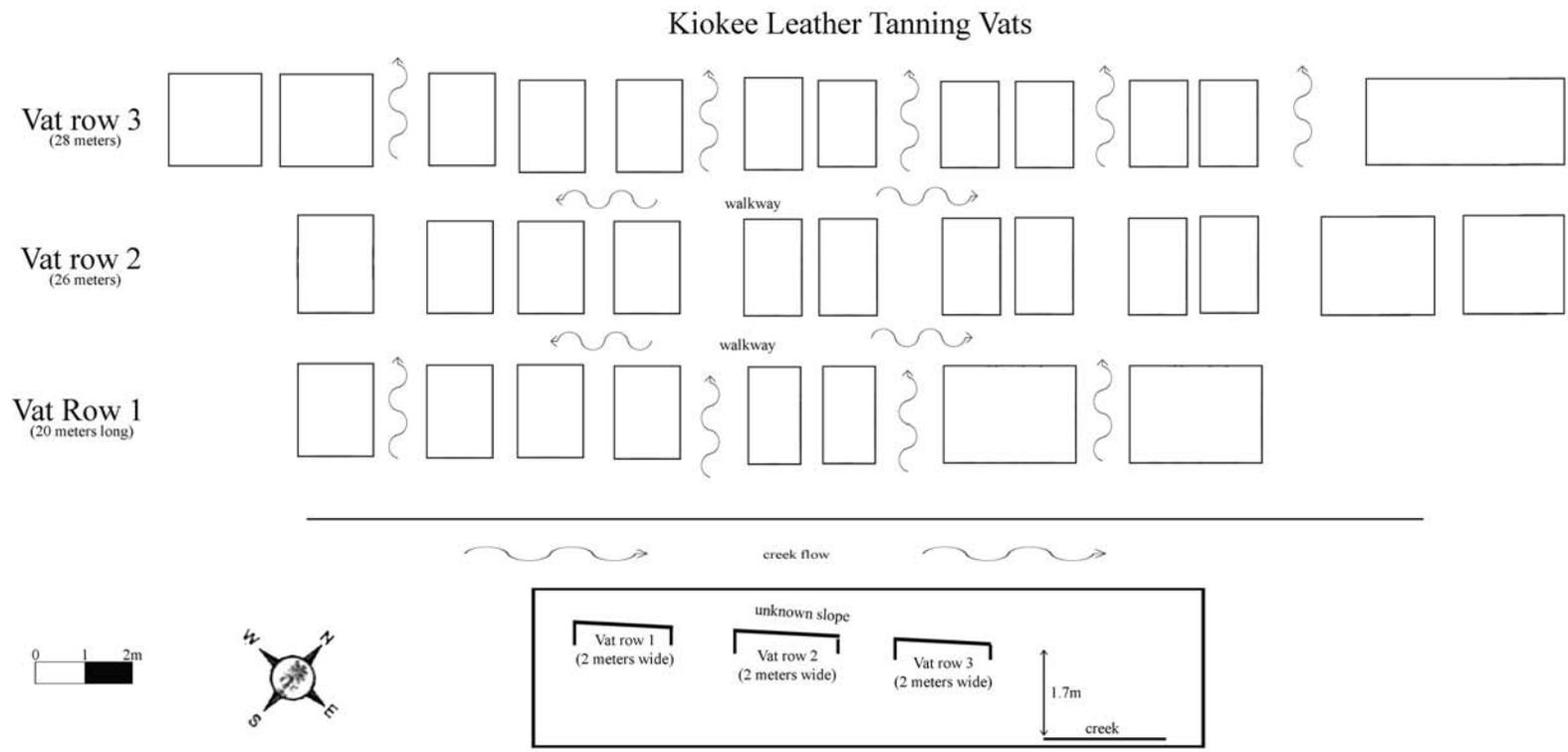
**Figure 35.** Residential structure located near Kiokee Tannery.



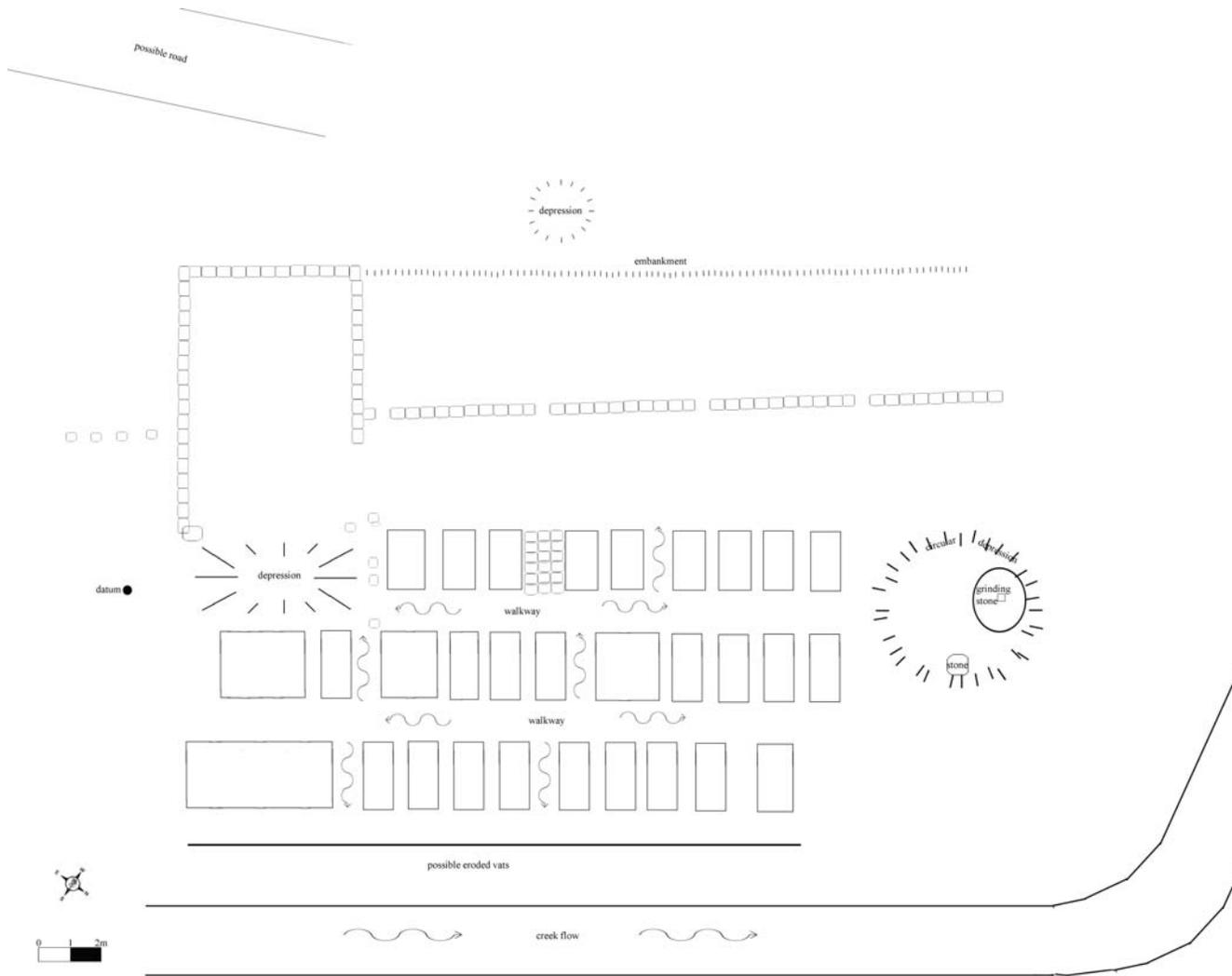
**Figure 36.** Another residential structure located near Kiokee Tannery.



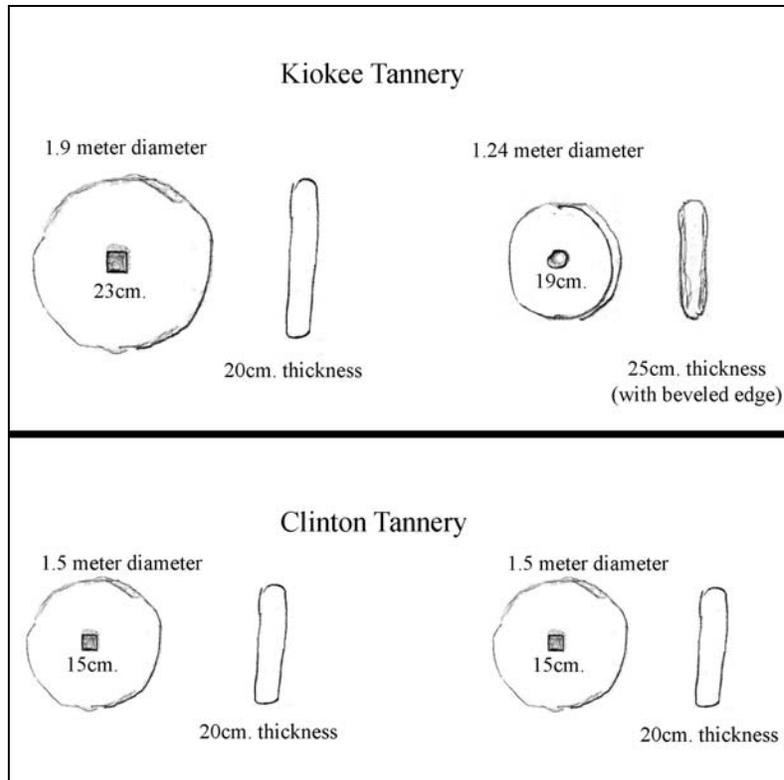
**Figure 37.** Another view of the residential structure near Kiokee Tannery.



**Figure 38. Sketch of the Kiokee Tanning Vats.**



**Figure 39. Sketch of the Clinton Tanyard site.**



**Figure 40. Bark mill stones found at the Kiokee Tannery and the Clinton Tannery.**

Reuben King (1779-1867) moved to the Georgia coast as a young man in 1801 from New England. A leather tanner by trade, he kept a detailed journal of his travels and business from New England to Georgia. While these type records are perhaps some of Georgia's earliest, they are also some of Pennsylvania's earliest tanning records (Rotenstein 2001). His journal encompasses some of the most descriptive and possibly only tannery records available in early Georgia history. His journal entries include comments about the weather, illnesses and treatments, business, social life, and conditions on the Georgia coast after the American Revolution. His documentation of persons and events in the McIntosh County area are, in many cases, the sole source of information of them.

Although King had little money upon his arrival in Darien, he had the experience of working in the successful tanyards of New England. New England and Virginia tanners settled in many places in the South during this period. Many, like King, headed to the Georgia frontier for the financial opportunities it presented. King's determination and hard work in leather tanning and other business pursuits eventually provided him with a comfortable financial situation. King, in turn, provided the people around him with knowledge of tanning and leather crafting, including an unknown number of apprentices.

Upon his arrival, King found ample opportunity waiting in the leather industry due to cheap and available natural resources as well as labor. Rueben King provides a detailed description of building his tannery in his journal.

We made aplan for a tanyard containing 20 vats for bark and four handlers....We framed the rafters to the tan house....We worked at the tan house putting on laths....We be gan to Shingle the tanhouse....I made some utensils for the tan yard....I Sawed Some blox to put under the tan house....We raised up the tanhouse....We wedged up the house....We wheeled Sand into the tan house....We filled up the tan house with Sand....I worked at lathing a little room up Stair....I made a gangway to the tan house....Pours began upon an other vat and put it to gether....I got timber for the barck mill floor....I began to git lumber for a barck Wheel up Cathead Creek....We began to lay the bark millfloor put the timber for the wheel into the tanhouse....We finished laying the floor-and made Some cogs for the bark wheel....We daded over the bark mill floor and made Some cogs....Roach worked at the barck wheel[.] We put it up....I began a gangway into the tan house loft....I began to dig a hole to put Down a waterpool....I began a Rim for the barck mill....I korked the flat and made preparations to burn a lime kill....I returned laid the bottom of the kill....We finished the lime kill and Sot it on fire....We sunk a tan vat that Erastus Park made [.] it leaked....Corked one of the tan vats with ocum [Figure 41]...(Wood and Wood 1971:304-324).

While documentation concerning the process of tanning hides is relatively common, such detailed description of constructing a tannery and associated facilities in the South has not been found in any other resource to date.<sup>2</sup>

Reuben King’s journal offers important insights into a critical industry that has little surviving documentation. His materials help us understand what being a tanner was like in the early years of Georgia. His descriptions include clues about the construction of a tanyard, the cost of resources at that time, and the difficulties he faced in the business itself. King did not appear to prefer bargaining in “halves.” He states,



**Figure 41. Wooden vat plugs found at the Philipsburg Tannery in Pennsylvania.**

“I have resolved myself to trust no person this year on Book Account and not to tan on Shares. In my Opinion it is an imprudent thing for Merchants on Mecanicks to give Credit in this Country. Thare is a number of Sole vagabonds that git thare living by Swindling or rather by runing in Debt without an intention to pay &c- This Country differs from many others The inhabitants are generally liberal and a Man well dressed passes for a Gentleman with out further acquaintance-“ (Wood and Wood 1971:440).

<sup>2</sup> Some research facilities such as the Library of Congress and many state archives may hold such records but are often poorly indexed which makes searching for relevant information difficult.

His New England influence helps us understand the types of technology and skill that was being introduced to the Georgia frontier. King's description of building a bark mill, for instance, hints to a particular mechanical design that includes cogs and is rarely documented in Georgia. His journal also outlines his plan for the layout of his commercial buildings. King's notes affirm that his industrial plans were similar to other known Georgia tanners including those in Clinton. His journal also provides documentation on tanning processes and durations, tree bark harvesting and bark transportation, as well as leather tanning terms. The notes he maintains about buying hides at particular prices has helped historians with information on the costs and profits of the tanning industry. His references concerning the purchase and tanning of deerskins aids in the understanding that this commodity was still available to the frontier tanner despite the near dissolution of the deerskin trade. His reference to other plantation tanners and their need for leather to supply the slave workforce is an aid to historians struggling to understand this poorly documented industry. His description of bodily irritations experienced while tanning and the remedies that were available are unique. He even mentions "robbing" brick from Fort King George for use at his tanyard.

Ten hides required a cord of bark in order to be tanned. According to the State of Georgia (1894), a cord of bark weighed approximately 2,250 lbs. The effect of the tanning industry on the forests of Georgia is not fully understood but, doubtless, must have been considerable. By 1899 the State of Georgia had passed a law to protect timbers on the "uninclosed" lands of the State and made it unlawful "for any person or persons, or any company, firm or corporation to enter, or cut or remove from any uninclosed lands in this state, any timber or tan bark on such lands" (State of Georgia 1899). Individuals engaged in gathering tan bark often left the trees on the ground to rot. This practice was due to the logistics of moving the timber from the remote areas where the bark was often harvested. Reuben King's daily entries provide additional details about the process of bark harvesting as well as the laborious task and costs associated with its transportation (Figure 42).



**Figure 42. Load of bark being transported by sled to a tanyard.**

their placement. Additional examples of tanyards in Georgia from the early-to-mid 18<sup>th</sup> Century need to be identified and studied (Table 2). While historical references

While some typical features of a tanyard are found at all of the tanyards discussed above, some variations might also be expected. For example, some work stations at a tannery might appear missing. Instead of utilizing animal power to drive the bark mill stones, some tanneries utilized steam powered mills. Tanning vats may have been constructed above ground using plank wood, hollowed logs, or hogshead barrels, leaving little to no subsurface features to distinguish

Table 2. Tanneries located in Georgia prior to 1865.

Name	Location	Owner/Manager	Dates	References
Denham's Industrial Complex	Eatonton	James Carter Denham and Josiah Carter Denham	?-1864, 1865-1884	Official Records [Civil War], Series 1, Vol. 38(5), "The Atlanta Campaign," p.348, 1864, Emory University Library
Kiokee Tannery	Appling	Issac Ramsey?	1840s-1860s	Dr. Christopher Murphy, Augusta State University
Andersonville Prison Tannery	Andersonville	Union prisoners	1862-1865	
Petty's Tanyard	Covington	Thomas F. Beavers?, sold to Hugh B. Johnson	1863	
Messrs. Boothby, Savage & Co.	Augusta		1860	
Georgia Steam Tannery	Savannah	sold to W.C. Butler	1863	
Jessup & Hatch	Thomson		for sale in 1864	
Lexington Tannery	Lexington	J.S. Smith?	for sale in 1861	
Stewart Tannery	Lexington	Thos. Stewart	1850s	Campbell 1854
Milton Place Tannery	Louisville	L. C. Warren?		
Plantation Tannery	Louisville	William H. Battey?		
Unknown tannery	Oothealega Valley		for sale in 1859	
Sand Town Plantation Tanyard	Campbell County on Chattahoochee River	Joseph H. Coryell	for sale in 1859	
A. Anthony & Co.	Olneyville		burned in 1841	
Lawrenceville Steam Tannery	Lawrenceville		burned in 1852	

Unknown tannery	Milledgeville on Rocky Creek	Georgia Micklejohn	proposed 1812	
Dyer's Tanyard	Clarkesville		prior to 1847	
Sweet Water Manufacturing Company		Charles J. McDonald, James Rogers, and associates	circa 1851	
Dahlonge Tanning and Leather Manufacturing Company <sup>3</sup>	Lumpkin County	David H. Mason, John D. Field Jr., James J. Field, Benjamin F. Swanton, and Zelotes H. Mason	after 1841	
Mineral Bluff Tannery	Fannin County		1914 photo	
Glover Tannery <sup>4</sup>	Marietta on Garrison Road	John H. Glover	1848-1864	Georgia Archives and White 1854
Unknown tanyard	Milledgeville	George Root	after 1836	
Unknown tanyard	Bowden			
King's Tannery	Winder on Mulberry River	John or James William? King		
Wright and Company	Richmond County?		1839	Hoskins Special Collections, UT Knoxville, MS2058 William Holland Thomas Collection
Columbus (or Clapp's) Factory	Muscogee County north of Columbus			
Unknown tannery	near LaGrange	James and Sarah Lovelace		
Unknown tannery	Leathersville (near Lincolnton)			

<sup>3</sup> Consisted of a 24 vats with scrubbing, drying, and finishing rooms, a sawmill, planer, shingle and moulding machine all driven by a Hunt low-pressure wheel.

<sup>4</sup> Capitol employed: 50,000, 3 brick buildings: main building measures 30 by 54 ft and 2 stories tall with smoke stack measuring 85ft tall, finishing room measures 30 by 54 feet and 2 stories tall, and a worker residence building housing 15 hands. 700 cords of bark used annually. 7,000 hides tanned annually.

Unknown tannery	Clarke County	Thomas Sanson	1842-1859?	
Frammel & Merton	Clarke County	J. Kirkpatrick	1850s	Campbell 1854
Unknown tannery	near Augusta	Robert Goodwin	circa 1850	
Unknown tannery	near Louisville			
Unknown bark mill stone (09JF298)	Jefferson County			Sue Moore, Georgia State University
Unknown tannery	Darien	Ruben and Roswell King	1802-?	Wood and Wood 1971
Unknown tannery	Chatham County	William Francis	before 1757	Braley 2007
Unknown tannery	Wrightsboro	Quakers	1770s	
Unknown tannery	Jasper County	Jumina Cunard and possibly Elliot W. Baynes	operated during Civil War	Duke University Library
Unknown tannery	Jonesboro?	Peter Samuel Jaccard?		
Leet's Tavern and Tan Yard	Pea Vine Creek Ringgold, GA			Official Records [Civil War], Series 1, Vol. 38(5), "The Atlanta Campaign," Joseph Hook 1864
Roger's Tannery	Whitehall Street Near Atlanta			Official Records [Civil War], Series 1, Vol. 38(5), "The Atlanta Campaign," p.348, Ed Dnig 1864
Atlanta Tanning Company <sup>5</sup> (Alexander & Ormec)	DeKalb County		1854	White 1854

<sup>5</sup> Capitol Investment-20,000. Propelled by steam. Building measures 50 by 80 ft and two stories tall with a wing of 25 by 50 ft. Business employs 10 workers with machinery to handle the hides. Business also features a grist mill, circular saw, lathe and shingle machine.

Unknown tannery	Fairhope Plantation, Glynn or McIntosh County, Georgia			Official Records [Civil War], Series 1, Vol. 14(1):191, Lt. Col. O.T. Beard, 1862
Watkinsville Tanning & Co. <sup>6</sup>	Watkinsville		1854	White 1854
Helfenstein 's	Goshen	Jacob and Joshua Helfenstein (Salzburgers)	1700s	Strobel 1855
Newell and McHugh	Talbot County		1857	Campbell 1854
Unknown tannery	Chatham County	Levi Sheftall	1860	Campbell 1854
Walton Steam Mill, Wool Carding and Tannery	Monroe		1850s	Campbell 1854
W.A. Waugh & Co.	Whitfield County		1850s	Campbell 1854
John Dill Tannery	Fort Gaines (Early County)	D.E. Grahm Blakeley	1850s	Campbell 1854
Emerson's Tanyard		R. & W.S. Marrs		Campbell 1854
Eades Tanyard		Harris, Coffey & Co.	1850s	Campbell 1854
Unknown tannery	Monroe County	J.M. Thomas	1860s	

<sup>6</sup>Business includes 2 brick buildings. 1 building measures 40 by 50 feet and stands 3 stories tall. Operation is powered by a 25 horse powered engine. Business also includes a grist mill and saw mill. 7,000-8,000 pairs of shoes made annually.

consistently indicate that industrial designs for small tanneries varied little during this time period, the same cannot be said with any degree of certainty for tanneries located in large cities due to the influx of new ideas and influences. The city tanner would have been regularly exposed to the latest designs, information, and materials. The layout of tanneries located in the cities likely exhibited a greater variety of designs and mechanical improvements prior to 1865.

Records of tanneries can vary from different regions and time periods around the United States and abroad. A wide variety of processes, inventions, and techniques existed. Determining what process or technological innovations were used at individual tanneries remains a challenge unless clear documentation is found. Not all early tanyards or even small tanyards used the same technology. The Salzburger settlers at Ebenezer, Georgia, for instance, likely practiced a tanning process that varied from those used by their English counterparts in nearby Savannah during the early Eighteenth Century. In addition, many terms and phrases are used by individuals involved in the tanning industry, including some with only subtle differences, that must be learned by researchers prior to beginning a study of a tanning operation. Phrases such as “I broke the hides” and “I put the hides in soak” are examples. A green hide indicates a hide from a recently slaughtered animal. In contrast, a dry hide or salted hide originated from an animal likely slaughtered many days or weeks earlier. These types of hides would have been priced differently and provided a variety of leather qualities. In addition, this information may indicate the distance sources of hides and skins were from the tanyard. In addition, differences in the lingo used in historic records may reflect the nationality of the tanner, the regional location of the tanyard, or the tanning techniques used at individual tanyards. Although not complete, a good source of some tanning terms, technology, and techniques can be found in *the Arts of Tanning and Currying and Leather-Dressing* (Morfit 1852).

### The Operation of a Tannery Complex

The bark was usually removed from the trunks of the trees by prying it off with a narrow iron spudding tool (Figure 43). The stripped bark was then somewhat dried in the sun so that the cambium would dry out before the bark was cut into four foot lengths. Since large quantities of bark were often needed by the tanners, the hauling of the material back to the tanyard was a major task. Procuring bark was a costly undertaking, a fact often reflected in the surviving account records. A large wagon could carry only about a half a cord of bark. As a result, 18th and 19th Century tanneries were commonly located near the sources of the tan bark, rather than the leather markets or the sources for the hides.

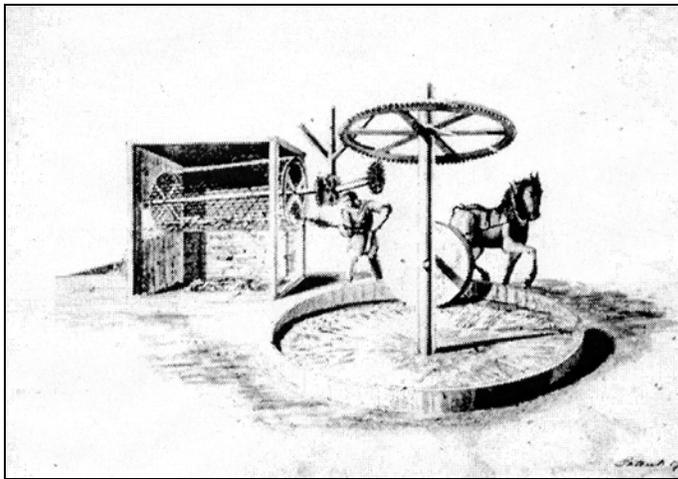
Many tanyards included bark sheds that consisted of simple barn type structures to house the carefully cut strips of tree bark. The bark was carefully stacked inside the structure allowing it to “breathe” while protecting it from rain and other types of moisture. Much labor and expense was invested by the tanner for this storage facility. The bark shed was usually located in a convenient place beside the bark mill. Some accounts indicate that the bark



Figure 43. Bark peeler.

was dried to a very brittle state, usually by use of an open fire or direct sun light, just prior to being placed in the path of the bark mill stone.

The first step of the tanning process included grinding various tree barks at the bark mill in order to pulverize the bark into a variety of grain sizes similar to coffee. In general,



the production of bark mill grinding stones is not well understood since a comprehensive description has not yet been compiled or identified. The stones may be commonly mistaken for grist mill stones even though they do not possess the burred surface of many of the grist stones. Bark mill stones, commonly called runner stones, are primarily made to roll like a wheel usually turned in a continual circuit around a circular trough (Figure 44). Only the amount of bark that was needed to produce the “ooze” or tanning liquor for a particular lot of skins was ground. A

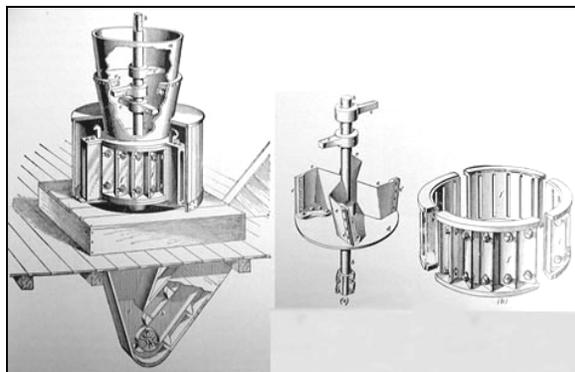
**Figure 44. View of an animal powered bark mill.**  
normal size bark mill operation would grind as much as ½ a cord of bark per day to be used, approximately 1,125 pounds (Bishop 1864:453). The dry tan bark was spread on the corrugated flooring of the trough to be broken up in fine pieces by the edge of the stone (Flory 1951). These stones, which were sometimes edged with large teeth to form a cog (Figure 44) (Wood and Wood 1971:317), seem to vary in size and manufacture. Their extra large size likely resulted in them being mined and cut close to the tanyard whenever possible. The mill was usually powered by animals as viewed in Thomas Pryor’s drawing registered in the United States Patent Office dated 1805 (Figure 45). This design appears to have been used at the Clinton Tannery and the Kiokee Tannery. Between the two sites, at least four mill stones were available for inspection representing three different diameters and thicknesses but all similar in their smooth edges and surfaces (Figure 40).

Other ways to grind bark were also used. One technique registered by a man named Diderot in 1842 looked like a kind of grinder with knives attached inside a mortar (Bigelow 1863), perhaps similar to the one shown in Figure 46. A small metal cone with sharp protrusions formed the head of a bark grinding apparatus at the Shriver Bark Mill in Union Mills, Maryland (Figure 19). With their typical adherence to tradition, however, most tanners retained the older and proven way of grinding bark with the stone wheels.



**Figure 45. Cogged mill stone from Clay County, Missouri that measures 55 inches in diameter and 8 inches thick.**

Bark mills are similar to grist mills in that they are designed to grind specific organic materials. Bark mills are used exclusively for the pulverizing of tree barks for the use in producing tannin for the tanning of animal skins or hides. Tannin is a natural chemical found in all plants. It is found in concentrated quantity in tree barks which is actively harvested for the treating and preserving of leathers. Tannin is called a large astringent, meaning it tightens pores and draws liquids out of skins or leathers, as well as transforming proteins into insoluble products that are resistant to decomposition. Thus, it is ideal for leather tanning. Although a bark mill is not needed in the process of removing tannin, some tanneries made the leaching of tannin more efficient by grinding tree materials to a very fine grade similar to corn meal. The more finely ground the bark is, the more potent the tanning solution produced from it (similar to fine ground coffee).



**Figure 46. An innovative bark mill design using blades.**

Liming vats were an essential part of the tanyard. These vats were not used for tanning but for preparing hides and skins for the tanning process. The skin of deer, sheep, and other small animals were known as skins whereas the skins of cattle and oxen were known as hides. Green skins and hides brought to the tanyard were usually filthy with soil and dried blood from being removed from the dead animal. These hides also included vestiges of muscle and fat tissue as well as hair. These had to be removed from the hides in order for the tannin solution to penetrate the skin pores freely and evenly tan the leather. Lime was found to be an effective agent for this removal process. A tannery required a ready supply of resources to make the lime. If aquatic shells were available, for instance, a lime kiln was usually found near the tanyard. Similar to the production of tabby, the kiln was used to heat the shells breaking them down into pure powdered lime. A strong caustic solution was created when the lime powder was mixed with water in the liming vats. The tanner placed the green skins in the liming vats for several days while being careful not to allow the solution to damage the skins. The caustic solution loosened the unwanted hair and fat tissue so that they could be easily scraped or buffed off by hand in the beaming shed. Unfortunately, the lime also stripped the skins of their natural oils, which had to be reapplied to the finished leather at the end of the tanning process (currying).

Following removal from the liming vats, the caustic lime solution remaining on the hides was neutralized in another vat. The bating vats contained a solution of water and salt usually mixed with potash, chicken droppings, dog feces, or fermented bran.

After a few days of soaking in the bating vats, the hides were taken to the nearby beaming shed. The beaming shed was often covered with open sides for good ventilation. During beaming, the skins were laid over a large slanted beam with a rounded top. A worker would straddle this beam while scraping the unwanted hair and fat tissue off the hides with a special curved knife called a beaming knife (Figure 47). This process was also referred to as

fleshing. Despite the rubbing and scraping of the hides, often flesh continued to cling to the hides.



**Figure 47. A 1972 painting by Mort Kunstler depicting an early 17th Century tanner in the process of beaming.**

The worked skins and hides were then thrown into the handler vats and were thereafter referred to as leather. The term handler is used because the leather was periodically agitated or “handled” with a tool known as a plunger. The tanning process was begun in these vats. The handler vat was filled with all the old tanning solution from the other tanning vats, creating a concentrated solution to aid in the final preparations of

the hides before the more refined tanning process. As the tanner removed the skins to check their progress, he often had to continue to scrape off remaining flesh and work them until they were judged ready to progress through the remaining tanning process. The finished skins were removed and distributed in the tanning (leaching) vats in layers separated by bark.

Tanneries were traditionally located on rivers and streams because the leather treatment required so much water. Soft water was the most desirable because it lacked minerals that might otherwise react to the tanning solution, producing spots and blemishes on the leather. The ground bark or tree materials were then soaked in leaching vats for the time needed to extract the tannin. Different types of trees and plants were used to produce a variety of tanning solutions. Thus various colors and qualities of finished leathers could be produced. Some tannin might come from fir, certain willows, chestnut, sumac leaves, birch, hemlock, and other trees. Tannin from oak bark, for instance, produces very tight leather with a yellow-brown color. Bark types could also be mixed for various desired results. Experienced tanners would have known these variations and utilized them in the tanning process. The bark of certain species of trees had been found over the years to be especially effective in the tanning process. This was due to their high content of tannic acids. There are three main categories of tannins (Westbrook 2002):

1. Gallo-Tannins: examples include oak galls (*quercus infectoria*) with 50-60% tannin, sumac (*rhus coriaria*) with 26-30% tannin, Chestnut extract (*castanea chebula*) with 26-30% tannin,
2. Ellagic Tannins. An example is Oak Bark (*quercus rubra*) with 9-14%, and
3. Catechol Tannins: examples include Hemlock (*tsuga canadensis*) with 8-

20% tannin, Larch (*larix americana*) with 9-10% tannin, and quebracho extract with 62-68% tannin.

By understanding when to mix these together, the expert tanner created appropriate leather for any need: hard and firm, mellow and soft, light or heavy. Examples of leather tanned with different barks are shown in Figure 48.

This [tanning] Liquor, when of proper strength, should be of clear red color, and of an acid taste like good vinegar, and from this a number of baths may be made of different strengths. For instance, a series of eight baths may be made, the first containing one part liquor and seven parts water, and so on until the full strength is arrived at (Morfit 1852:193).

These baths were dispersed throughout the vat system and were periodically drained into each other or other vats connected as needed. The vegetable tanning process did not involve the use of polluting chemicals used by modern tanyards where traces of old tanyards are many times still a concern today.

J. Lender Bishop's description of the tanning vats includes the following: "the Rude appointments of a tannery.... embraced a greater or less number of oblong boxes of hogsheads sunk in the earth near a small stream, and without cover or outlet below, to serve as vats and leeches. A few similar boxes above ground for lime vats and pools, an open shed for a beam house, and a circular trough fifteen feet in diameter, in which the bark was crushed by alternate wooden and stone wheels, turned by two blind horses, at the rate of half a cord per day, completed in most cases the arrangements of a tanyard" (Bishop 1864:453). The vats were lined with either wood or brick since iron or metal linings would have reacted with the tanning solution. Two sketches of tannery operations are shown in Figures 49 and 50.



**Figure 48. Examples of leather tanned with oak bark and with hemlock bark.**

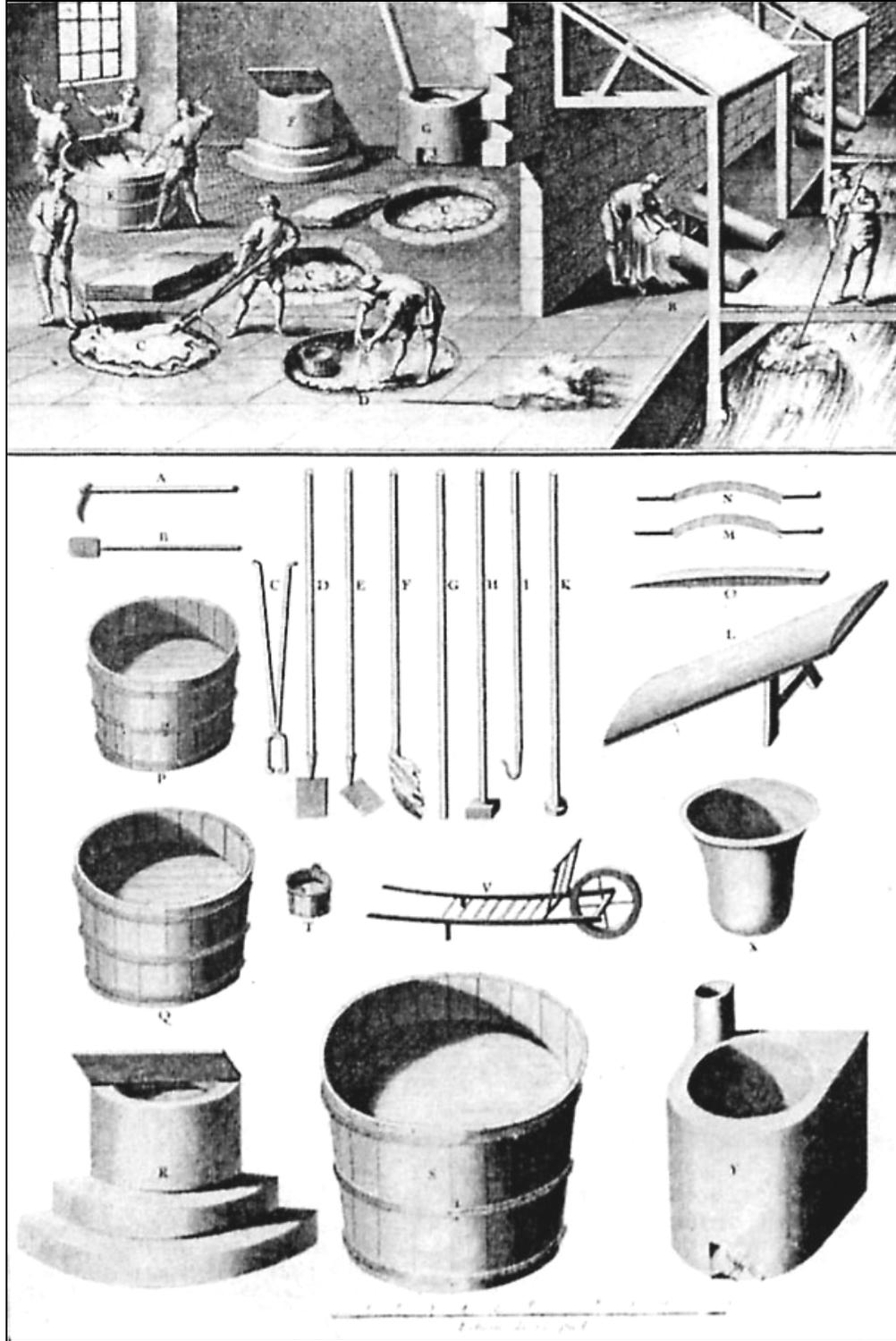
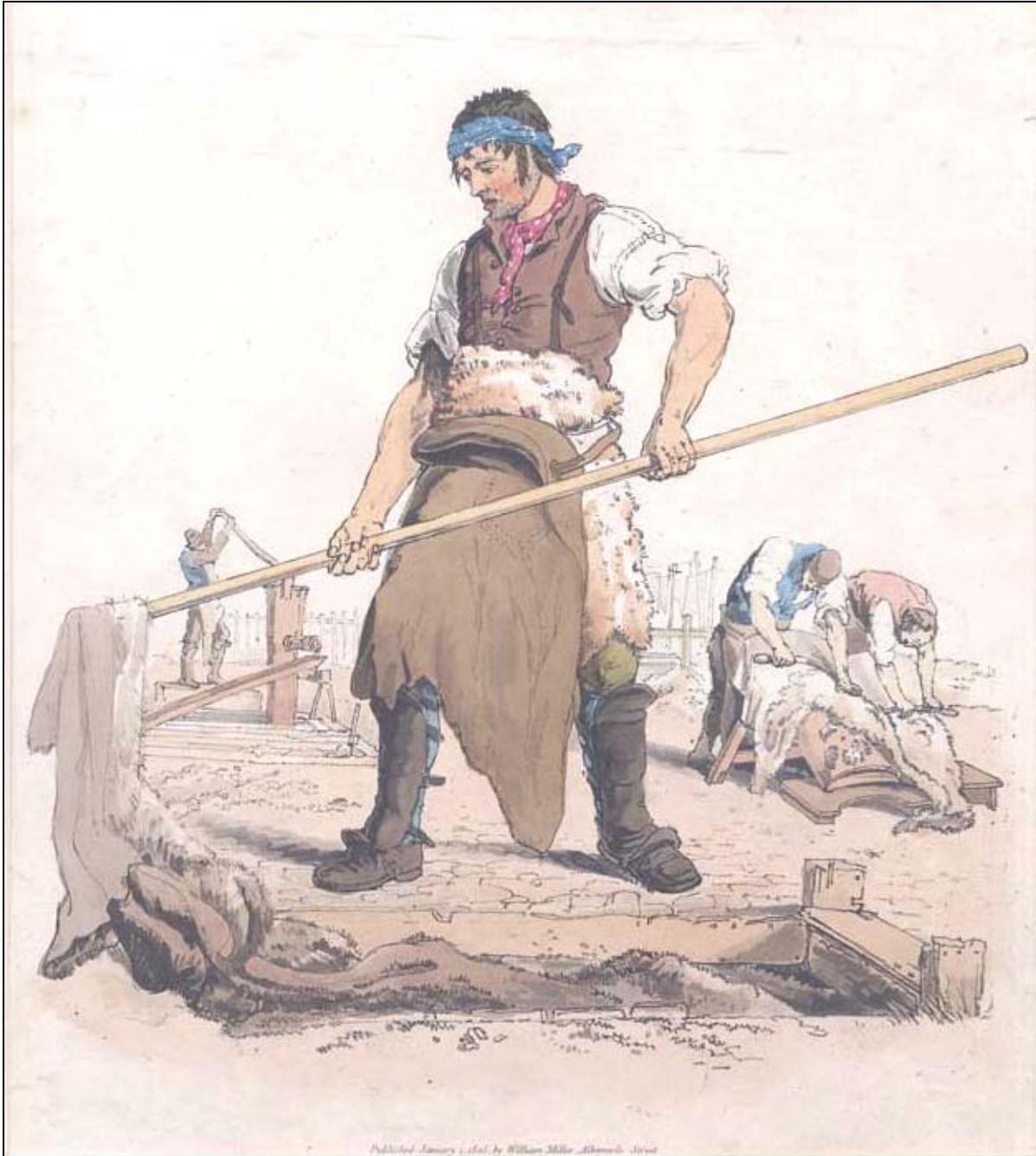


Figure 49. Engraving from Jerome Le Francois de Lalande, *Art du Tanneur*, Paris, 1764. (Above-A: washing, B: beaming, C/E: handlers, and D: preparation of the tan vats. Below-C: tongs, H/K: plungers, I: hoods, L: the beam, M/N: beaming knives, O: smoothing stone, P/Q/S: vats, Y: stove to warm tanning solution, and V: dolly used to transport the hides to the drying shed.)



**Figure 50. An 1805 sketch of the tanning process showing the removal of muscle and fat on the right, tanning vats being filled with water to the left, and a laborer in protective gear is shown working the skins in a liming vat in the foreground while drying hides are shown dimly in the background.**

David McBride, a Dublin physician, gives a detailed account of the tanning process in a paper presented to the Royal Society in London in 1778.

The tanners prepare their bark by gently drying it on a kiln, and grinding it into a very coarse powder. They then either use it in the way of infusion, which is called ooze, or they strew the dry powder between the layers of hides and skins, when these are laid away in the tan-pits.

The ooze is made by macerating the bark in common water, in a particular set of holes or pits, which to distinguish them from the other holes in the tan-yard, are termed letches.

The first operation of the tanner is to cleanse the hides from all extraneous filth, and remove any remains of flesh or fat which may have been left by the butcher.

The hair is next to be taken off, and this is accomplished either by steeping the hides for a short time in a mixture of lime and water, which is termed liming; or by rolling them up close, and piling them in heaps, where they quickly begin to heat and putrefy. The hair being loosened is scraped off, and the tanner proceeds to the operation called fleshing, which consists in a further scraping, with a particular kind of knife contrived for the purpose, and cutting away the jagged extremities and offal parts, such as the ears and nostrils.

The raw leather is then put into an alkaline ley, in order to discharge the oil, and render its pores more capable of imbibing the ooze. The tanners of this country generally make their ley of pigeon's dung...or pot-ash.

The oil being sufficiently discharged, the leather is ready for the ooze, and at first is thrown into smaller holes, which are termed handlers; because the hides or skins, during this part of the process, are taken up, from time to time, and allowed to drain; they continue to work the leather in these handlers, ever now and then stirring it up with the utensil called a plunger, which is nothing more than a piole with a knob at the end of it, until they think proper to lay it away in the vats. In these holes, which are the largest in the tan-yard, the leather is spread out smooth, whereas they toss it into the handlers at random, and between each layer of leather they sprinkle on some powdered bark, until the pit is filled by the leather and bark thus laid in stratum

superstratum: ooze is then poured on, to fill up interstices; and the whole crowned with a sprinkling of bark, which the tanners call a heading.

In this manner the leather is allowed to macerate, until the tanner sees that it is completely penetrated by the ooze: when this is accomplished (which he knows by cutting out a bit of the thickest part of the hide) the manufacture is finished, so far as relates to tanning, since nothing now remains but to dry the goods thoroughly, by hanging them up in airy lofts built for that purpose.

Such in general is the process for tanning calf-skins, and those lighter sorts of hides which are called butts; but the large, thick, heavy hides, of which the strongest and most durable kin of sole-leather is made, require to have their pores more thoroughly opened before the ooze can sufficiently penetrate them. For this

purpose,... they are thrown into a sour liquor, generally brewed from rye, in order that the effervescence which necessarily ensues may open the pores.

The tanners term this operation raising, as the leather is considerably swelled, in consequence of the conflict between the acid and alkali. This is an English invention; for it appears from M. De la Lande, who was employed by the Royal Academy of Sciences to write on the art of tanning, that the foreign tanners know nothing of this branch of the business: indeed, their whole process, according to his account, is slovenly, and even more tedious than our common method, and must make but very different leather.

When the raising is accomplished, the leather is put into the handlers, and worked in them for the requisite time; then laid away in the vatts, and there left to macerate until the tanning is found to be completely finished, which, for the heaviest kind of leather, such as this of which I am now speaking, requires from first to last full two years (Welsh 1963: 309-310).

This method of soaking hides in the various tannin solutions is the actual tanning process. The hides were allowed to soak in the vats for several weeks and sometimes transferred to another using a hook or fork (Figure 51). Oppositely, the leather may have remained in the same vat and the tannin solution itself was changed. Different steps in the process contained a different composition of tannin solution. This process was very sophisticated and required years of experience to master. The tanner used his judgment to choose the process to be used for each type of leather he produced. In all cases, the tanning process converted the animal hides into a material that lasted for a long period of time and was supple and crack-resistant if properly maintained.

Following the tanning process, the hides were transferred to the drying shed. These structures were often the largest feature of the tanyard and would allow the hides to be spread out. The leathers were then treated with oils, such Seneca oil or fish oil, and worked into the suppleness expected from finished leather. While this step marked the end of the tanning process, some tannery complexes included leather shops on site that would have crafted the material into shoes, saddles, and whips. “Leather has been described as a material for which not one substitute has been invented that can equal it in combining beauty, strength, durability, and a wide range of applications” (Westbrook 2002:1).



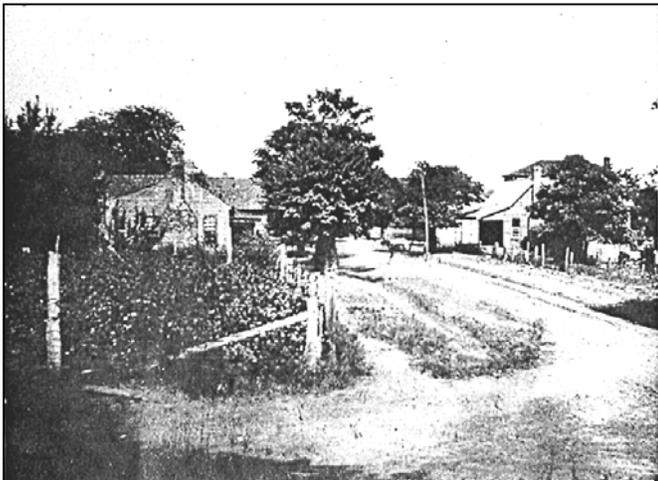
Figure 51. Leather hook found at the Philipsburg Tannery in Pennsylvania.

## Land Use History

### The Town of Clinton

In 1805 the Treaty of Washington provided for large land cessions to the United States by the Creek Nation. This opened new lands and opportunities for settlers moving into Georgia. Many families had begun to crowd onto the lands just east of the Oconee River, eagerly awaiting this opening of additional Indian lands. Fort Wilkinson, one of a series of forts placed along the frontier, had served as the “flag ship” for the new Federal Government’s treaty agreements and obligations. Upon the signing of the new treaty, the fort’s garrison would relocate near the Ocmulgee River and construct Fort Hawkins (Elliott 2007). From this location the Federal Road extended westward into the heart of the Creek Nation. The new fort offered not only protection to settlers but also the possibility of new business opportunities with little to no competition during the early years. Located on the Federal Road, the town of Albany was planned, although the name was quickly changed to Clinton. Clinton represented the furthest western outpost of white settlement in Georgia during the very early 1800s. The town enjoyed prosperity as the center of political, educational, and industrial growth on the frontier (Figure 52). Consequently, it was an ideal location for a leather producing facility.

Perhaps the large profits traders had enjoyed years earlier encouraged some speculators to cast their attention to the new markets provided by the frontier. The overseas deerskin trade had all but dissolved by this time along with the big profits previously enjoyed by the traders. The economic landscape had changed. Trade with the Creeks was no longer essential to the leather industry nor did it continue to be important to the American government. Although deer skins would trickle in for a few more years, the more desirable cow hides were increasingly available and cheap. In contrast, leather production was in as high a demand as ever.



**Figure 52. Photograph of Clinton during the early 1900s.**

By 1840, Jones County reportedly had 8,248 neat cattle, 4,219 sheep, 19,853 swine, 7 stores, 5 furnaces, 29 forges, 2 tanneries, 11 distilleries, 3 flour mills, 8 grist mills, 9 saw mills, and 3 oil mills. The county also had a population that included 4,417 whites, 5,619 slaves, and 29 free colored people (Haskel and Smith 1843:316).

### The Clinton Tannery

A tanyard section was laid out at Clinton to encompass four and one half acres fronting Pinckney Street and following the meanders of the Spring Branch (Figure 53). As in many cases, the spring fed creek along the tract took on the name Tanyard Branch (Cawthon 1984: 36).

Also typical, the tanyard was planned for the edge of town. Jacob Earnest (Earnest Jacob?) was the first to acquire the tract. However, no further records were located in order to give any evidence that he built or operated a tannery. The tract was then sold to John G. Cook(e) of the Edgefield District of South Carolina in 1810, although he also may never have utilized or built a

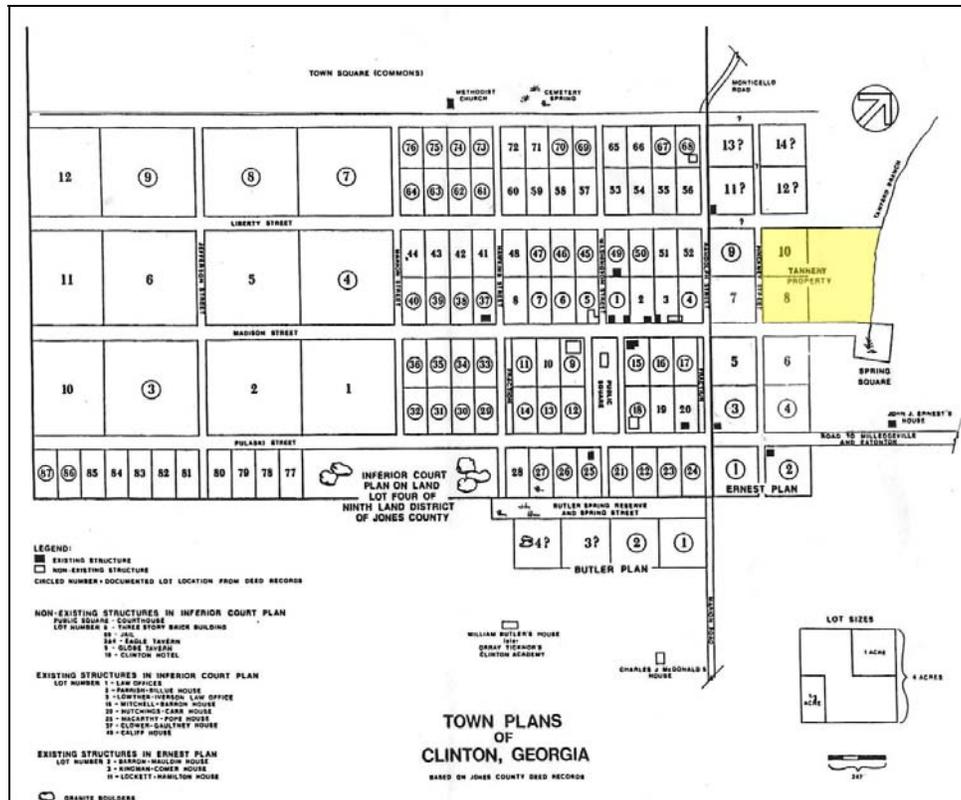


Figure 53. Map of Clinton indicating the location of streets and land lots. (Notes: The lots with circles were identified in deed records by Cawthon (modified from Cawthon 1984).

business at this location. The first name associated with an actual working tannery was John A. “Hurricane” Jones who purchased the property in June 1811 (Cawthon 1984: 36). Jones was also recorded as the builder and first resident of the Morgan-Holsenback home (09JO281) located immediately southwest of the tanyard (Williams, 1957: 199). In early records, the tannery is listed as one of the more profitable businesses in the town of Clinton. Records do not indicate, however, if the bark mill was built at the same time as the Clinton Tannery. The ability to grind bark for the tanning process, however, was seen as standard for any successful tannery operation at this time.

The United States manufacturing census of 1820 lists John Jones as the owner of the Clinton Tannery. In Clinton, the tannery is shown to have the greatest profit margin (54%) and the second greatest value of manufactured articles and amount of profit. The invested capital was reported to be \$500.00. Of the manufacturing establishments, John Jones’ was recorded as utilizing cow hides, 530 cords of Red Oak bark and lime<sup>7</sup> to produce upper and sole leather

<sup>7</sup>Lime is documented to have been used to dehair hides prior to tanning. A separate vat would have been available for this process (Rotenstein 1996a).

valued at \$2,250.00. Three male employees were reported to have received \$160.00 a year in wages. Annual raw materials costs were reported at \$860.00 a year. Jones is also listed as owning eight slaves. George Kenedy of the Kenedy and Healy Saddle and Harness business is also listed in the Clinton leather manufacturing information at this time although any connection with Jones' tannery is unclear (Cawthon 1984: 36).

The tannery continued to change ownership over the next forty years along with the Morgan-Holsenback home which continued to be occupied by each successive owner of the tannery (Williams 1957: 199). Records do not indicate, however, if the tannery property continued to include all of the original four and a half acres purchased by John G. Cook(e).

Edwin Harris Allen or Harris Allen is recorded to have bought the property in 1827 and historic records indicate that Allen family members were active in the tannery business at Clinton. The Allen family likely came from England. Originally settling in Virginia, the family moved into the Milledgeville area working as tanners during the land lotteries. Edwin Allen later purchased the Clinton tannery while another branch of the family likely established the prosperous tannery complex in Buford, Georgia (Allen 2002). An ad in *The Georgia Journal* newspaper of Milledgeville, Ga. dated April 4, 1829 advertises "500 hides wanted" and promises that the highest cash prices will be paid. The tanyard is listed as belonging to the estate of Harris Allen in Clinton and is signed John M. Allen. A legal notice released about a year later in March of 1830 lists J.M. Allen and C.K. Allen as administrators for the sale of Harris Allen's property in Jones County. A business day book ledger dated 1832, however, still lists his name<sup>8</sup> (Jones County Reference Manuscript 154, 1832). The ledger is mistakenly listed as "the John Toles' day book." Edwin Harris Allen's name, however, is clearly on this book in prominence. The day book, which lists the daily business for the dates September 25<sup>th</sup> to early December 1832, indicates the tannery included an active leather craft business during this time period. Many Old Clinton residents are listed as customers of the business. Items which were sold included shoes, platted whips, harnesses, chase harnesses, bridles, pieces of leather and more.

William E. Morgan purchased the tanyard in 1835. During this time and up to the Civil War over 8,000 tanneries are believed to have been in existence in the United States with most being concentrated in the northern states (Richards 1998). The large tanneries located in the northern cities began a trend toward the use of steam engines to power their bark mills. Many smaller rural tanneries continued to use water or animal power. Records do not indicate what Morgan used as a source of power for his bark mill during the antebellum period. One record lists that in addition to owning the tannery, Morgan also had a wood shop near the tanyard (Williams 1957: 234). This and other buildings likely existed as part of the tanyard operation. Morgan held ownership of the tanyard for the longest period of time, 1835 to the end of the Civil War in 1865. After the war Samuel H. Griswold, a long time resident of Clinton and famous Georgia entrepreneur, recorded that during the war: "the hides from the beef and mutton were carried to Morgan's Tanyard in Clinton and tanned into leather, from which were made shoes for the whites and negroes, as well as harness and leggins and many other things"

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<sup>8</sup>Tannery ledgers rarely survived from this period due to frequent incidences of flooding. Others were destroyed to hide financial information (Rotenstein 2001).

(Williams 1957: 520). One wartime diary even lists the purchase of a pair of leather shoes for as high as \$50.00 in Confederate money.

Although no records have been found, the Clinton Tannery may have directly or indirectly served as a fairly important manufacturer of leather or leather items for the State of Georgia or the Confederate Government during the Civil War. Samuel Griswold, one of the largest manufacturers of revolver pistols for the Confederacy, had direct ties to the Clinton Tannery just 13 miles from his railroad facilities. Griswold is listed as a repeat customer on the tannery's 1832 day book ledger. In addition to the pistol factory, the Federal Army recorded destroying a shoe blacking facility at Griswold's manufacturing center at Griswoldville in November 1864. Manufacturing facilities were specifically targeted by Union troops. Although military records do not indicate that the tannery was destroyed during Union General Stoneman's Raid in late July of 1864 or the brief occupation of Clinton by Union General Sherman's troops in November of 1864, this seems a likely fate for the tannery. Two December 1864 letters from Clinton were posted on the internet that reportedly read

#### Letter 1

I snatch a moment to advise you of the destruction committed by the enemy here. Many of us are utterly ruined; hundreds of our people are without anything to eat; their stock of cattle, hogs, are killed; horses and mules with wagons taken off; all through our streets and commons are to be seen dead horses and mules; entrails of hogs and cattle killed, and in many instances, the hams only taken; oxen and carts even taken away, so that we are not able to remove this offensive matter; our school houses and most of the churches burned; Captain Romens beautiful residence in ashes, together with everything of his that could be found, destroyed. He was from home. Atrocities most heinous were committed; Morgan's Tannery with a quantity of government leather destroyed and his family, like many others, deprived of all food; clothes taken off the backs of some of the contrabands, and female servants taken and violated without mercy, by their officers, and in some instances when they were reared as tenderly as whites. But I cannot recapitulate in detail the many outrages; residences of J. McGray, Dr. Blount, J. H. Blunt and others, burned.

#### Letter 2 sent to Columbia

The Yankees were five days in passing through this town. Nine dwellings were destroyed, besides a number of out houses, fences, etc. My house was not injured, but all the out-buildings, corn, fodder and provisions, etc., were destroyed. My office was broken open and all the jars smashed and the medicines poured on the floor. Every one in town has suffered in like manner. For several days after they left, the only meat in the town was picked up in the Yankee camp. How we are to get fire wood this winter, is as serious a matter as the food question. The Yankees declare that if ever they get into South Carolina, they would not leave a house standing in their march (Wylie 2007).

No information concerning the author or recipient was given.

A person named Holsenback appears to have been the last owner of the tannery property. Records, however, do not indicate that Holsenback ever operated the tannery. Holsenback may

have become an owner through marriage since a Holsenback/Morgan family plot exists in a nearby church cemetery.

### The Day Book Ledger (September-December 1832)

Few southern tannery records were identified during the present study. The lack of American tannery records may represent a pattern of businesses “losing” their books. Some tanners may have conveniently “lost” their books in order to avoid heavy taxes. The fact that tanyards were often located along creek beds may also have resulted in periodic flooding and consistent dampness that would have heavily damaged inactive records (Rotenstein 1996b). Regardless, the lack of records from the Clinton Tannery has severely damaged reconstruction of this operation.

The only known surviving record concerning the operation of the Clinton Tannery includes a day book ledger located in the collections of the Hargrett Rare Book and Manuscript Library at the University of Georgia. This account book records sales, repairs, purchases, and other miscellaneous business activities of an active tannery business located in Clinton, Georgia (Figures 54-57). Unfortunately, the ledger only includes a record of activities conducted from late September to early December 1832. The ledger indicates a thriving leather business that can be seen through the variety of transactions recorded in the pages. The records show a multi-faceted business that included mending leather items, selling plain leather and finished leather products, as well as the selling of items that might have been expected from a general store such as sugar and rum. One entry even charges a customer for blacksmith services. Conversely, the ledger also indicates that the tannery purchased items such as food and leather crafting services.

The ledger provides a unique look at the individuals involved in the market at the Clinton Tannery in late 1832 (Table 3). Several individuals are listed as buying items. Others are listed as providing services (Table 4). Still others are listed as both customer and contractors to the tanning business. Prominent customers include Samuel Griswold who appears in the ledger as an individual and possibly as part of two partnerships. John Jones, a previous owner of the tannery, and William Morgan, a later owner of the tannery, is also listed. Captain William Hogan and a Captain Parrish are also found. Doubtless, many of the individuals and families represented in the ledger were important in the history of Clinton.

The vast majority of purchases made at the Clinton Tannery during this time included leather items. The ledger featured approximately 454 purchases of goods and services from the tannery. Of these, nearly half involved the purchase of shoes (n=216). The other most common leather purchases include plain skins (n=19), a side of upper leather (n=13) Martingales (n=11), bridles (n=11), harnesses (n=10), bridles (n=8), haim strings (n=7), surchingle straps (n=6), saddles (n=5), and bags (n=5). Another large number of transactions included mending/stuffing saddles (n=11), mending harnesses (n=20), mending bridles (n=13), and mending surchingles (n=5). A complete list of the items and services that were listed in the 1832 Clinton ledger are shown in Table 5. Some of these items include non-leather goods.

Assuming that the period represented by the ledger is typical of the business transactions throughout the year, the average monthly income would have been \$357 with a yearly income of

\$4,286. Using the data available for the Clinton Tannery in the 1820 census (Figure 58), the business had a profit of \$1,565 for that year. Using the same ratio of expenses to income yields a profit of \$2,981 for 1832 based on the income listed in the ledger book. Doubtless, these numbers represent only an estimate. The 1832 ledger is a record of transactions during the early winter when shoes were in high demand but demand for leather items and mending due to agricultural activities would likely have been low. Unfortunately, no additional ledger books were found to show patterns in sales and purchases during any other time of the year. David Edwards and David Dewey's Tannery in Northampton, Massachusetts listed gross income similar to Clinton's. In 1815, the tannery earned \$1,402.42 and in 1816 it earned \$1,512.47 (Hannay 1936:29).

Many tanneries made efficient use of their markets by offering non-leather products and services in addition to leather products. Since many customers had credit on the Clinton Tanyard ledger, a variety of non-leather items may have been made available, albeit in small amounts, as a convenience to customers to meet their needs without having to go to another location. David Edwards and David Dewey's Tannery kept a day book similar to the Clinton Tannery. Non-leather items occasionally sold include potatoes, flour, pork, veale, rent for a horse, and sale of liquor. Thus the ledger exhibits a marketing strategy similar to Clinton (Hannay 1936:29). Ruben King drew up co-partnership papers for the "Butchering and tanning business" (Wood and Wood 1971:313). The Clinton ledger indicates the tannery may have been involved in the cattle business, which would have provided a ready source of hides. One entry lists the purchase of fodder although this purchase may have provided for the nutritional needs of animals used in the operation of the tannery. Deed records also show that at least one Clinton Tanyard owner had a wood shop which may have been a by-product of the tan bark harvesting (Figure 59). Lime, another tanning by-product, was listed as sold by the quart and pound in the ledger. Ruben King mentions a tanner that operated a distillery. One north Georgia tannery was known as Leet's Tavern and Tanyard. In fact, rum appears to be an item that sporadically appears in the Clinton ledger. Although not a tanning by-product, the availability of liquor at tanneries may be a relic from its association with the old deerskin trade. Rum was often used to trade for deerskins during the height of that era. Since most of the early deerskins were bound for export, early tanners were able to entice trade from American Indians in exchange for liquor (Braund 1993). Due to the limited temporal window provided by the ledger, the full extent of non-leather items bought and sold at the tannery remains unknown.

Table 3. List of individuals appearing in the ledger.

Abney?, Baly?	Facklin, Samuel	Jourdan, Janis?	Saltmarsh, Overton
Alford, James	Fackler, Samuel	Jourdan, W.?	Slade, Thomas
Alfred, James	Flicklin, M.?	Justice, Appleton	Slawten, Frederick F.
Allen, Abram	Franks, Wirton A.?	Kidd, George	Sleuejtel?, Nancy
Amos	Freeman, William	Kitchens, Frances	Smith, Benjamine
Atwood, T.J. and W.H.?	George, William	Kolb, Peter	Smith, E.
Barimone	Gibson, Abner	Lewis?, P.	Smith, James
Barmore?, Samuel	Glover, Wiley?	Locket, James	Smith, Moriah
Barron	Goodin, Gideon	Louther, Samuel	Smith, Thomas
Barron, Avington?	Goodine	Marshal	Smith, Williamson
Barron, Green?	Gooding	Mathis, Mr.	Stewart, Samuel
Barron, T.J.?	Goodward, James	Mattis, Mrs.	Sullivan, M.?
Barron, William	Goodwin?	McCartha, Charles	Sullivan, Michel
Bennett	Gray, Green	McCarthy, Roger	Sullivan, Mikel
Bermenten?, Wright	Gray, John	McLoud, Daniel	Toles, John
Blont, Thomas	Griffith, Lewis	McMillan, John	Trapp?, Benjamine
Blow, John	Griswold & Buckworth?	Mirren, Noah	Trice, Charles
Bose?	Griswold & Seekwith?	Mitchell	Tye (Frye?), Daniel
Bowen, Dr.	Griswold, Samuel	Mitchell, Warington	Ware, David
Bowen, Horatio	Gunn, Daniel	Mizzles?, John	Watson, Jacob
Bowen, John	Hackler, Samuel	Morgan, William*	Watley, Wilson
Bridges & Miazell	Hane, David	Morton, Samuel	Weaver?
Brochivich?, Basemore?	Hatstalt_on, Buford?	Oliver, M.?	Whatley, William
Buckwith & Griswold?	Hawkins?	Oliver, William	White, Will
Bunkley, William	Hawten? Frederick	Ornsby, E.	White, William
Cammel	Healy, M. <sup>†</sup>	Owens, Peter?	Williams, H.
Cannon?	Heath?, Pleasant	Paremone, Rodivich	Williams, Howel
Carter, John	Hogan?, Capt. William	Parrish, Captn	Winding, John
Choat, S.	Hogue, John	Parrish, Johnathan	Wood
Clover, Stephen	Hogue, Nancy	Penington, Elizabeth	
Clowers, Peter	Holcumb, David	Phillips, Dawson	
Comer, Thomas	Holida, Tehaway?	Pitts, Peyton	<sup>°</sup> former owner
Commer, Thomas	Huckby, Samuel	Pope, W.G.	of the tannery
Cowin, William	Jackson, William	Pope, W&G	
Dame, John	Johnson	Richy, John	*eventual owner
Day, Joseph	Johnson, William	Roberts, Henry	of the tannery
Dayton, John	Jones, D.M.	Rose	
Dayton, William D.	Jones, ?	Rumney, Joseph	<sup>†</sup> Possible owner
Delouch, Thomas	Jones, John B. <sup>°</sup>	Russell, Henry	of saddle and
Dennis, John	Jones, Randol	Russell, James	harness business
Dickerson, Robert	Jordan, W.	Russell, T.	in Clinton
Eubanks, Edward		Sage, Willis T.	

Table 4. List of individuals from the ledger that provided services to the tannery.

<p><u>Curried Leather-(possibly contracted to curry tannery leather)</u>  Hogue, William  Barron, William  Fuke?</p> <p><u>Shoemakers-(possible local shoemakers or journeymen)</u>  Russell, Henry  Russell, James  Gray, Green  Jackson, William  Day, Joseph  Hatstalt_on, Buford?</p> <p><u>Miscellaneous Leather Work-(provided saddle and strap work)</u>  Gray, Green</p>
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One of the habits or skills that seemed to be advantageous to a tanner was good book keeping. Since many tanners “traded on the halves” with customers, as well as tracked debts, credits, labor, and resource costs, many records had to be taken. In addition, detailed schedules and descriptions would have been kept of the leather being tanned in the vats (Ives 2006). A skilled tanner would note the differences in leather properties by animal types and the origin of the hides. A “country” hide or a “New Orleans Steer” was usually better quality than a “city” hide. Some comments dealt with individual pieces of leather and included notes on their quality identified during the long process of tanning. This extra attention was beneficial because higher grades of leather could be identified during the tanning process and sold at higher prices. In the meticulous notes kept on leathers at the Shriver’s Tannery, leathers were singled out with the following notes: “Very Handsome and Heavy”, “Strictly Prime”, or “Nice Color and Grain.” Other notes distinguished negative characteristics such as “rather boggy, but plump solid and heavy,” “rather dark and stiff,” or “...have not improved much. May tan in with very strong ooze and bark.” Shriver’s tannery, located in Union Mills, Maryland, was similar in size and operated during the same period as the Clinton Tannery. Detailed notes include a hand-drawn “Bark Table” from the late 1860’s that lists bark as costing \$9.00 a cord in Maryland at the time. The table also lists the cord volume that is converted and calculated per foot as a monetary figure (Figure 60).

Table 5. Goods and services provided by the Clinton Tannery in late 1832.

<u>Leather Goods</u>	buckles	slate pencils
Shoes	bit	slate
Pantaloons	saddle irons	thread
wagon whip	stirrups	tobacco (1 lb)
plaited whip	thron	lime
martingales	bags	bark
plain bridle	haim strings	
mounting bridle	trunk straps	<u>Services</u>
turkey bridle	belt	drawing on saddle
double rein curb bridle	pair of corce?	padding saddle
blind bridle	gind (gin?) bands	restuffing saddle
hedstall for bridle	triangle tree brace	mending saddle
snapple bridle for stallion	surchingle brace	covering saddle
throat band	set of braces	mending trace
horse collar	stirrup leathers	mending gin band
chase harness	side upper leather	mending whip
3 seats of front harness	band leather	mending line
carriage braking pads	wosted hide	mending girth
side saddle	grain hide	mending collar
plain saddle	sole leathers	mending stirrup
horse ring	horse hide	mending brow band
strap	deerskin	mending padding to saddle
cock eyes	calf skin	mending saddle bags
stirrup leather	sheepskin	mending halter
driving reins	goat	mending bridle
bridle reins		mending harness
coupling rein	<u>Other Goods</u>	mending surschingle
girth	Rum	molding saddle
braid leather	gin	repairing gig saddle
wagon line	sugar	making stirrups
grain string	black pepper	repair carriage
gig	sperm candles (1 lb)	blacksmith work
chucks		

Clinton October 21 1832			
	Payton Pitts	Dr	
	By padding & seating bed		6 00
	By 1 pair of Stirrups		1 00
	By mending tree		00 25
October 22	J. G. Atwood	Dr	
	to mending spring		12 50
22	Henry Russell	Dr	cr
	By making 12 pair at 25 cents		3 00
	Abram Allen	Dr	
	By 1 side upper leather		2 50
	Robert J. Saltmarsh	Dr	
	to mending harness		00 75
	John Gray	Dr	cr
	By making harness pads		3 00
	By seating & padding saddle		2 12 1/2
	William J. Dunkley	Dr	
	to mending bridle		00 12 1/2
23	John Gray	Dr	cr
	By seating & mending bed		1 12 1/2
	By Blade		1 12 1/2
	By Blade pencils		00 6 1/4
	Thomas B. Sted	Dr	
	to seating and mending saddle		3 25

Figure 54. Page from the Clinton tannery showing purchases and sales.

Clinton October 27<sup>th</sup> 1832

<del>James Gates</del>		Dr	60
<del>For 1 pair of sturris Leather</del>			75
<del>For 1 Set of bridle leathers</del>			1 00
<del>Benjamin Frapp</del>		Dr	
<del>For 1 pair of Shoes</del>			1 25
<del>Amos Gray</del>		Dr	
<del>For making bags</del>			1 50
<del>Amos Gibson</del>		Dr	
<del>For pair bags</del>			5 50
<del>William Oliver</del>		Dr	
<del>For 7/8 lbs of sole leather</del>			1 62 1/2
<del>For 1 Side upper leather</del>			2 00
<del>Benjamin B Smith</del>		Dr	
<del>For 1 Side of gir bands</del>			4 25
29	<del>Wm Williams Barrow</del>	Dr	
<del>For 1 pair of Shoes 3 at 1<sup>18</sup> each</del>			3 50
<del>Amos Goodin</del>		Dr	
<del>For 4 pair of Shoes</del>			5 00
<del>Samuel Southern</del>		Dr	
<del>For leather &amp; thread</del>			
<del>for by Hammer to</del>			
<del>Revere's his carriage</del>			
<del>Harness</del>			17 25

Figure 55. Page from the Clinton tannery showing purchases and sales.

No. 511  
Clinton November 3, 1882

William Jackson	Dr	
To cash ten dollars		10 00
By making 2 pair of shoes		25 50
By 25 cents per pair		17 50
Samuel Griswold	Dr	
To 1 deer skin		17 75
Abraham Jones	Dr	
To repairing hatter		17 12 1/2
Allen Gray	Dr	
To 1 pint of gin		17 12 1/2
Michel Sullivan	Dr	
To mending line		17 37 1/2
Allen Gray	Dr	
To order 2 shoo		2 50
J. W. H. Stwood	Dr	
To 1 pair of shoes		1 25
Allen Gray	Dr	
To cash fifty cents		17 50
William G. Morgan	Dr	
To 10 lb of sole leather		2 50
To 1 deer skin		17 50
Allen Gray	Dr	
To mending 2 saddling & mending saddle		2 12 1/2

Figure 56. Page from the Clinton tannery showing purchases and sales.

Clinton November 13. 1832.

	Mr Marshall	Dr	60
	For side sole leather &		
	Upper leather		5 60
	By 77 1/2 lbs of fodder		5 60
14	Wm Pope	Dr	
	For mending bridle		10 12 1/2
	Gen Gray	Dr	
	For order at William's		1 00
	Henry Russell	Cr	
	By making a pair		
	of shoes		10 78
	Gen Gray	Cr	
	By Drawing ore and		
	padding		4 00
	By covering Saddles &c		2 50
	Wm Jordan	Dr	
	For covering Saddle		5 50
	Wm Justice	Dr	
	For 1 plain Saddle		17 00
	Wm Bennett	Cr	
	By 1 year calf skin		10 62 1/2

Figure 57. Page from the Clinton tannery showing purchases and sales.



1879 Bark Packing Time Week commencing May 26 <sup>th</sup>	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
Donl Stokes	1	1	1	1	1/4	1	5 1/4 X 9.50
O. Koomtz		1/2	1	1	1/4		2 3/4 X 6.20
Line Koomtz		1/2	1	1			2 1/2 X 3.37
W Banker		1/2	1	1	1/4		2 3/4 X 7.62
Joe Erb		1/2	3/4	1	1/4		2 1/2 X 3.37
Hicks Tass		1/2	3/4	1	1/4	1/2	3 X 3.75
Eg. Yimling		1/2	3/4	1	1/4	1	3 1/2 X 3.37
And Yimling							X 5.81
John Numbach							X 25.37
							<u>Total 43.41</u>

Figure 60. Chart from the Shriver tannery records listing bark stackers and the amount of bark they stacked.

The Shriver's multiple account books and notes were kept daily for many years. Although tedious, these notes helped the tanners keep up with a very complex business. The Shriver's also kept personal diaries in great detail. Reuben King's journal also represents one of these diaries. Notes scribbled at the end of the day were obviously intended for reminding the author of a variety of miscellaneous matters associated with the tannery.

The type and size of the labor force used in the Clinton Tanyard may never be fully understood. John Jones, the first known active tanner at Clinton in 1820, is recorded as having 8 slaves in Jones County, Georgia. No mention is given of how many slaves may have worked in the tanyard. A listing of \$160 dollars in wages appears on the Manufacturing Census of 1820. A comparison of this wage expense to those of some other tanyards might indicate that most of his labor was slave. Reuben King mentions paying for bark to be cut and delivered in 1803 at \$4.00 per cord. Clinton's 1820 census account lists 530 cords of bark used for the year. Calculated at \$4.00 per cord would result in a cost of \$2,120.00. When considering the labor costs experienced in tanyards solely for the stacking or procuring of tan bank, the 1820 wages of \$160 represents only 7.5% of the cost using 1803 prices. This indicates that Jones did not use these wages primarily for bark procurement or stacking. In 1831 Bodman and Hopkins of

Williamsburg, Massachusetts employed “five men at the relatively high wage of 1.75 per day” (Hannay 1936:29). The wages of laborers in Clinton may have been similar during this same time. Information on slave labor and wages can be found in an article by J.D.B. DeBow (1849:456).

Who might have received these 1820 wages from the Clinton Tannery? A comparison of the records of another similarly sized southern tanyard might aid in the understanding of how the owner utilized slave labor in contrast to paid labor. Some of the wages may have been used for the salary of a skilled worker or overseer. Conversely, entries in the 1832 Clinton Ledger indicate the regular purchase of saddles from several individuals. Such purchases are also commonly found in Reuben King’s Journal. The purchases indicate that the wages may have been, at least in part, destined for individuals providing leather crafting services to the tannery. The purchases may have been a very necessary expense in order to keep up with customer demands for finished leather goods.

Doubtless, some of the laborers employed by the tannery would have been required to have the knowledge to judge when bark was ground to the desired consistency as well as the correct amount of bark and type to be added to the vats during the tanning process. Notes from the Shriver tanyard indicate that hides were divided into lots and tracked through the tanning process using a system devised to identify the vats in which they were soaking. For each vat, the records indicate the number of layers of hides present and the dates when they were turned<sup>9</sup> (Figure 60). Details of the ground bark textures and type (oak, hemlock, etc.) were also noted as well as the strength the ooze<sup>10</sup> (Figure 61). The Shriver notes indicate several combinations of ground bark were mixed. In addition, many different ooze strengths were also utilized. The number of variables applied to the tanning of leathers required a person of great skill and experience. A tanner seeking a job advertised at the Clinton Tannery wrote, “I am capable of buying selling and exchanging (leather) well knowing the sound hide from the damaged ones from long experience in Europe and the \_\_\_ cities of the North. We shall defeat all competition in this country. I have witnessed a most extravagant use of bark and then producing nothing but the worst Ringy leather.–I will also state to you that as is I do from any (other) pretender (in the art and trade), to find fault with the hides skins and bark of this country through his incapacibilities is poor planned (planning).” This statement reaffirms that the greatest asset to a successful tannery was an experienced person who thoroughly understood the tanning process.

The extensive Shriver records document the Shriver Tannery operation from the 1820's-1870's and provides a gauge of the extent of the records missing for the Clinton tanning operation. The Shriver records, which may represent the most extensive documentation for an American tanyard, are housed at the Maryland Historical Society. Close analysis of these records could aid in a detailed understanding of the complexity of the American tanning business. Since tanning is almost an enigma to historians, these records would aid in the understanding of some of the forgotten skills that a tradesman learned from years of observations in the leather business.

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<sup>9</sup> Turned indicates that the leather pack was periodically flipped over to assure equal tanning on all sides.

<sup>10</sup> A term for the liquid solution mixed with the bark.

▲	Pack	Vat	H i d e s		Layers	When Turned 1869
1.	1759	15	20	New Orleans	1	May 15
2.	1859	23	20	" "	1	" 18
3	5059 <sup>2</sup> / <sub>2</sub>	17	20	City Plan 1 Country	3	" 19
4	1260	24	20	New Orleans	2	" 20
4	5159 <sup>2</sup> / <sub>2</sub>	16	20	City Plan 2 Country	3	" 21
3	1360	5	20	New Orleans	2	" 22
3	964	10	20	" "	2	" 24
4.	1064	2	20	" "	2	" 26
3	864	8	20	" " (bet pk)	2	" 27
4	1160	9	20	" "	2	" 28
4	269	11	40	" " 369 below	3	June 1
3	1460	1	20	" "	2	" 3

Figure 61. Chart found in the Shriver records to track hides soaking in the tanning vats.

When due 1869	Remarks	Tanned BARK	Oozes
May 32	Exp heavy Look well but raw yet.	clean	15°
" 17	Plump & well adv. may go in 3 but doubtful	med	13°
June 10	Rather raw. " " " " " good lay	5	13 1/2°
" 8	Smooth heavy & handsome. need another well in another	4	14
" 5	plump heavy & very handsome. will tan	clean	17
" 1	Heavy & well adv. may go in 3. bet pk	(med)	14
May 29	medium grather raw yet	med	14
" 28	soft & well colored. may go in 3	brims	14
June 15	smooth & look well. another strong lay may go in 4 lay	brims	15°
May 23	Handsome color & pretty heavy, must have	brims	15
" 20	Heavy & well adv. may go in 3.	brims	15°
" 20	Smooth & handsome - must have 4	brims	12
June 20	Heavy & in good adv. may tan in another strong lay	5 1/2	15°

Figure 62. Chart found in the Shriver records listing the contents of the vats including hides and tannin solution.

# Research Design

## Research Questions

Following the recording of 09JO282 during the archaeological survey conducted in 2001, several research questions were developed concerning the history of the leather industry in Georgia and its impact on operations at the Clinton Tannery and Bark Mill. Addressing these questions to aid in the interpretation of the site by the Clinton Historical Society became an important step toward developing a management plan. The Clinton Historical Society hosts War Days at Clinton each year to commemorate the Civil War skirmishes that took place in the vicinity. The history of the town extends much earlier, however. Clinton served as a major settlement on the Georgia frontier during the early history of the United States. The role of Clinton in the settling of the State of Georgia remains a relatively unexplored topic for the Historical Society. Their purchase of the tract that includes the Clinton Tannery and Bark Mill (09JO282) as well as the tanner's house site (09JO281) and another antebellum home (09JO280), has provided them with an opportunity to provide interpretation of the town beginning with its earliest foundations until its near destruction during the Civil War. This interpretation will focus around the relatively unexplored industry of vegetable tanning and leather crafting.

Given the easily identified surface manifestation of the tanning vats, the tanyard appears relatively intact and undisturbed. The site has the potential to provide additional subsurface features such as a vat drainage system, post holes and/or builder's trenches for the structures that were likely built at the site as well as trash pits and industrial parts. The following research questions have thus been developed for 09JO282.

1. What types of activities were conducted at the Tannery? The presence of a grinding stone indicates that the milling of tree bark was being conducted. A ledger found at the Hargrett Rare Book and Manuscript Library at the University of Georgia indicates that a leather shop was also present. How was the tannery complex laid out? Although the location of many of the vats are obvious, where are the beaming sheds, drying sheds, bark sheds, and perhaps an overseer house and leather shop. The confined space along the creek may necessitate the use of a multistory building rather than individual structures.
2. Tanneries have a number of vats including lime vats, bating vats, handler vats, and layaway vats. How do these vats vary in size, shape, and use? What types of wood were used in their construction? How are these different vats manifested in the field? During excavations at the Edenton Tannery in Chowan County, North Carolina, Garrow (1977) utilized pH testing of the soil to determine the location of the vats. Can similar studies be conducted to determine one type of vat from another? Lime vats would be expected to have a more basic pH than vats in which tannin was placed. What other types of soil testing might help distinguish one type of vat from another? Would these techniques also help determine what types of tree barks were being utilized in the tanning process?

3. Most tanneries are located adjacent to streams due to their excessive use of water. To what extent was Tanyard Branch used in the tanning process at 09JO282? Was the creek used as an energy source for the bark mill? If not, what might be the source of energy used to turn the massive bark mill stones?
4. How does the Clinton tannery compare to other early tanneries? How are they similar and how do local factors necessitate altering the tanning process? How innovative was this tannery compared to other tanneries? Did the Clinton Tannery incorporate any of the technological advances in the tanning process or did it continue to follow traditional methods, thus providing support for the accusations of inefficiency posed by David McBride in 1778. Can any of the designs at 09JO282 be distinguished or traced to a particular patent?
5. The Clinton Tannery and Bark Mill changed ownership many times. How did the changes in ownership effect the tannery operations? Are portions of the tannery rebuilt or reconfigured over time? During Allen's ownership of the tannery, an ad appears to have been placed in a newspaper seeking someone with the knowledge of constructing elements in a tanyard.
6. How successful was the Clinton Tannery over time? How did the continuing expansion of the frontier to the west effect the operation of the tannery? How large was the client base of the tannery and did it enlarge or shrink with time as additional tanneries were built? Were there definable differences between county tanners and city tanners? Did tanning resources become less available over time?
7. What is the best way to study and test a tannery industrial complex? Since industrial sites generally reveal a sparse number of artifacts, structural features are an important factor in interpreting an industrial complex. In addition, how can excavations be conducted at 09JO282 to minimize the destruction of the site? For example, will excavations increase erosion along the creek during periods of flooding? Will disturbing the structure of the vats cause the moisture levels to decrease thus accelerating the deterioration of the wood linings or materials they hold?

### **Previous Archaeological Investigations**

Few archaeological investigations have occurred on tanneries in the South or elsewhere in the United States. This lack of study is surprising considering the large number of tanneries that existed prior to the Civil War. Documentation of these tanneries is largely restricted to vague references in journals and newspapers. In some cases, the tanneries listed for sale in newspapers are the only indication of their existence to be found. Only a few tannery ledgers have been identified and even these have received little attention. Tanneries have generally become an enigma to historians.

Our research led to the discovery of a tannery study undertaken by SSI, Earth Systems Division of Marietta, Georgia (Garrow 1977). Following a reconnaissance survey, SSI conducted an intensive archaeological survey of the proposed site of the Chowan County Courthouse and Detention Center in Edenton, North Carolina in 1977. This survey revealed a tannery operation on the tract that operated from 1757 to 1770 with significant intact cultural features although many of the features existed below the water table. Testing included regularly spaced shovel testing and pH testing. The site was not tested by excavation units. In addition, excavations were conducted on a tannery located in Bethlehem, Pennsylvania in 1975. Despite being incorporated into a park, the Union Mills Homestead, which includes the Shriver Tannery, no archaeological excavations have been conducted. The Shriver family that owned and managed the tannery kept meticulous notes on the day to day operations of the tannery including mentions of tannery business in their personal journals. The tremendous amount of journals and ledgers owned by the Union Mills Homestead Foundation concerning this industry would provide an incredible opportunity for a historian to understand the process of American leather production beginning in the early 1800s. But no large scale study of these records have been attempted to date. Dr. Chris Murphy of Augusta State University currently has plans to conduct limited testing at the Kiokee Tannery (09CB629) in Columbia County, Georgia using predominantly student labor. Sue Moore of Georgia Southern University has recorded the possible site of a tannery (09JF298) in Jefferson County, Georgia although no field work has been conducted.

In June and July 2001, a phase I archaeological survey was conducted of the 5.25ha tract owned by the Clinton Historical Society that includes the Tannery Complex. The survey of the area included 130 shovel tests. Twenty-five of the shovel tests were excavated within the vicinity of the tannery complex although only three were positive for cultural material. In addition, a single shovel test conducted in the center of a tanning vat was positive for wood material. Shovel tests revealed an absence of top soil on the periphery of 09JO282 due to heavy erosion and recent clear-cutting activities. The area along Tanyard Branch, which includes the remains of the tannery complex, received only limited subsurface testing. Much of the tannery site was located by above-ground features since this portion of the project area was avoided during the recent clear cutting activities. Several large pine and hardwood trees indicate that the area has remained relatively undisturbed over many years. Additional subsurface testing was deemed unnecessary for the purpose of locating and identifying the tannery.

Historic documentation indicated that the tannery complex encompassed several components including a bark mill, tanning vats, wood shop, and leather shop. Several well-preserved tanning vats, at least one bark mill grinding stone, three fitted stone walls that outline a building or buildings, a stone dam, level areas that appear to be cut into the surrounding slope, an old road cut, dirt embankments, a possible drainage ditch, and additional unknown dirt and rock stone features were identified. The Clinton Tannery Complex was recognized as a highly significant example of Early American manufacturing and also as a very significant archaeological and historical resource. The layout and features of the site remained in excellent condition.

## Laboratory Methods and Curation Plan

All notes and cultural materials from the survey were taken to the office of Cypress Cultural Consultants, located in Beaufort, South Carolina. These artifacts were separated in the field by test unit designation and level and/or feature designation. Levels were excavated in arbitrary depths unless natural breaks were identified in the soils strata. All lithic materials were sorted by raw material, stage of reduction, and function when applicable. Prehistoric ceramics were sorted by temper, style, and type when known. The historic materials were sorted according to South's (2002) artifact groups with analysis completed for each group.

All artifacts and soil samples recovered from the site were returned to the laboratory of Cypress Cultural Consultants. In the laboratory, the artifacts were washed, sorted, and counted. Artifacts were entered into the database following South's (2002) functional groups when applicable including architecture, kitchen, clothing, arms, furniture, personal, tobacco pipe, and activity. Artifacts were then further classified by material, type, and color. All artifacts were counted, weighed and measured when appropriate. Artifacts such as brick, shell, and wood were only weighed although measurements of sample whole bricks were also made. When possible, temporally diagnostic artifacts such as military buttons and maker's marks were dated although these artifacts were few in number. Due to the low number of ceramics and other cultural material, dating techniques such as mean ceramic dating and pipe stem dating was not possible. Soil samples were not processed for specialized study but will be curated with the artifacts.

Following analysis, the artifacts were placed in archival bags and labeled with the appropriate provenance information. The artifacts recovered from the excavations are listed in the discussion of each test unit that follows. The artifacts, notes, and the final report will be curated at the Georgia Archaeological Site File in Athens, Georgia. This repository meets the Department of the Interior standards for curation as recommended in the 36 CFR Part 79 guidelines.

# Methods

## Background Research and Literature Review

A number of research facilities were consulted during the present study. A copy of the 1832 tannery ledger held by the Hargrett Rare Book and Manuscript Collection at the University of Georgia, Athens, was obtained. In addition, the Georgia Historical Society Library, Library of Congress and the United States Archives were searched for materials relating to the town of Clinton and the tannery business. Duke University held some limited tannery records in the Elliot W. Baynes collection that were reviewed for this project. The Union Mills Homestead in Union Mills, Maryland was visited and copies of microfilm containing images of the some of the exhaustive tannery records and ledgers were obtained. Numerous newspapers, historic journals, and websites were searched to find records of tanneries and leather crafting in the South. These included Civil War records, Ancestry.com, and Hargrett Library on-line records. Archaeologists with knowledge of historic sites that had historic relationships with tanneries were also consulted.

## Mapping

The total station mapping for the GPR grid was conducted using a Sokkia Total Station and a TDS Recon data collector. A total of 1,281 transit points was collected by the mapping crew. Of these, 10 were discarded as junk recordings. Of the remaining 1,271 data points, 1,020 were simply topographic elevation readings. The remaining 251 data points recorded the locations of various features at the site including: test excavation units, bricks, rocks, grist mill stone, artifacts, the creek, and other miscellaneous aspects of the site. The data was then processed using Golden's Surfer software, version 8, to produce the topographic maps. The authors provided further processing using AutoCAD. While the resulting topographic map provides a greater understanding of the topography at the factory, more time and resources would have resulted in a more detailed map. Unfortunately, the topographic map has coverage gaps in some areas. Additional mapping along the creek and the opposite bank, within the vats, and up the slope to the west should be conducted to complement the mapping activities. The site map created during the current project is shown in Figure 63.

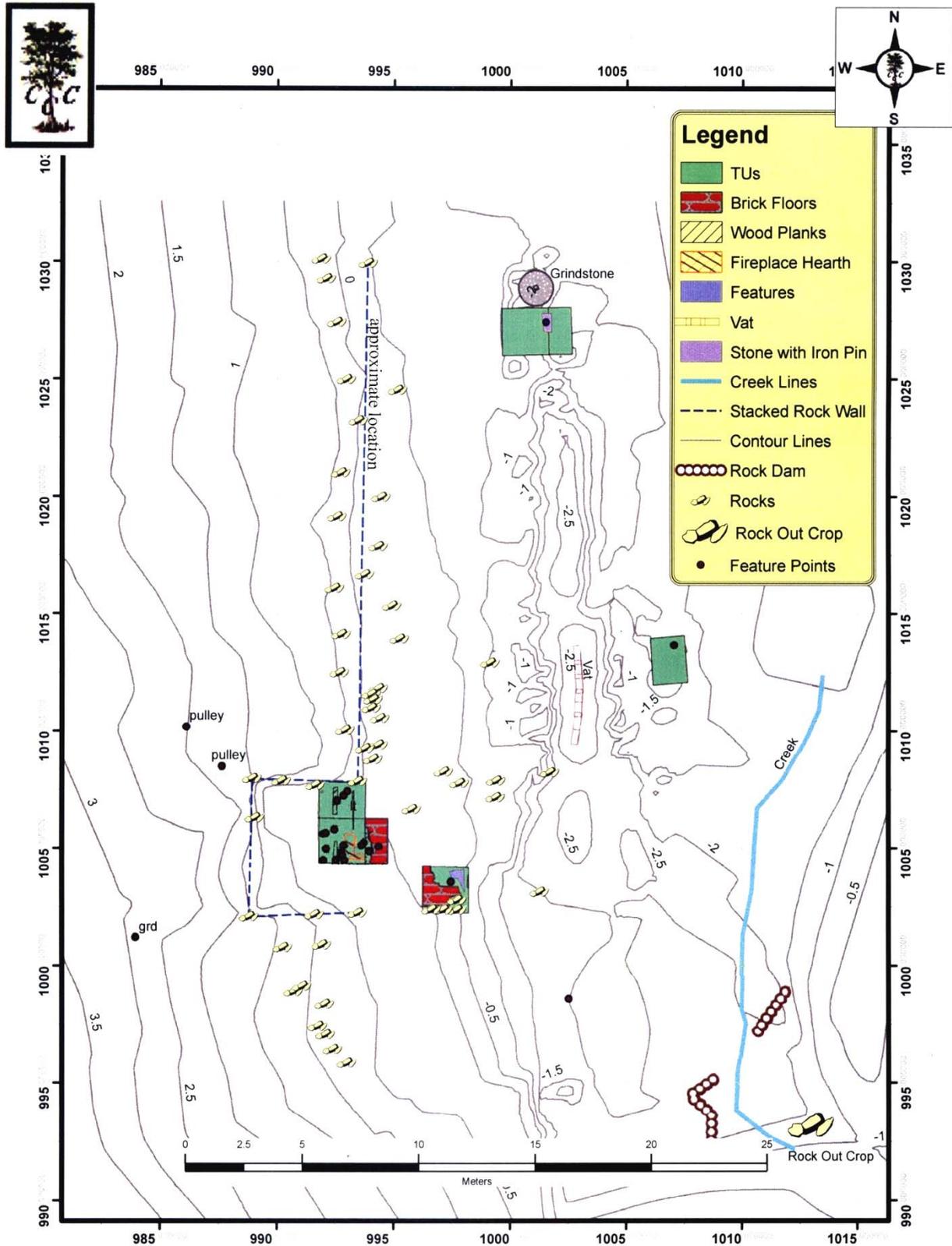


Figure 63. Map of 09JO282 showing the location of the excavation units, the stone wall, and the creek.

## Ground Penetrating Radar

The GPR device uses high frequency electromagnetic waves to acquire subsurface data (Figure 64). The device uses a transmitter antenna and closely spaced receiver antenna to detect changes in electromagnetic properties beneath them. The antennas are suspended just above the ground surface and the antennas are shielded to eliminate interference from sources other than directly beneath the device. The transmitting antenna emits a series of electromagnetic waves, which are distorted by differences in soil conductivity, dielectric permittivity, and magnetic permeability. The receiving antenna records the reflected waves for a specified length of time (in nanoseconds, or ns). The approximate depth of an object can be estimated with GPR, by adjusting for electromagnetic propagation conditions.

The GPR sample blocks in this study area were composed of a series of parallel transects, or traverses, which yielded a two-dimensional cross-section or profile of the radar data. These samples are called radargrams. This two-dimensional image is constructed from a sequence of thousands of individual radar traces. A succession of radar traces bouncing off a large buried object will produce a hyperbola, when viewed graphically in profile. Multiple large objects that are in close proximity may produce multiple, overlapping hyperbolas, which are more difficult to interpret. For example, an isolated historic grave may produce a clear signal, represented by a well-defined hyperbola. A cluster of graves, however, may produce a more garbled signal that is less apparent.

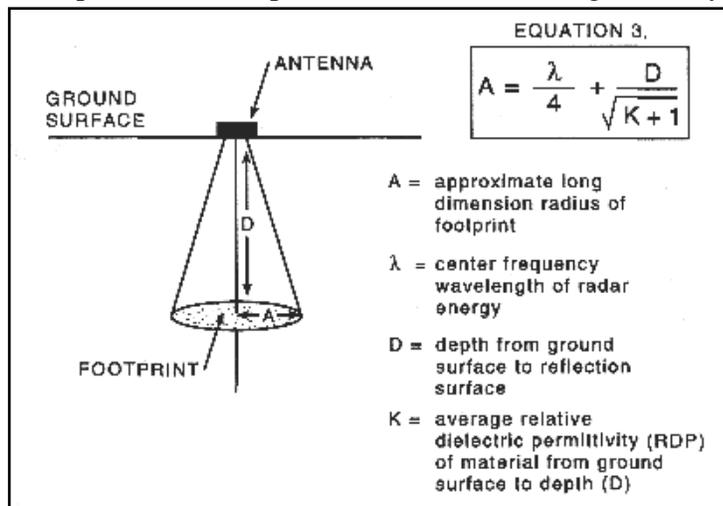


Figure 64. The Elliptical Cone of GPR Penetration (Conyers and Goodman 1997).

The GPR signals that are captured by the receiving antenna are recorded in an array of numerals, which can be converted to gray scale (or color) pixel values. The radargrams are essentially a vertical map of the radar reflection off objects and other soil anomalies. It is not an actual map of the objects. The radargram is produced in real time and is viewable on a laptop computer monitor, mounted on the GPR cart.

GPR has been successfully used for archaeological and forensic anthropological applications to locate relatively shallow features, although the technique also can probe deeply into the ground. The machine is adjusted to best probe to the depth of interest by the use of different frequency range antennas. Higher frequency antennas are more useful at shallow depths, which is most often the case in archaeology. Also, the longer the receiving antenna is set to receive GPR signals, the deeper the search.

The effectiveness of GPR in various environments on the North American continent is widely variable and depends on solid conductivity, metallic content, and other pedo-chemical

factors. The Georgia Piedmont is in an area considered to exhibit low potential for effective use of GPR. The soils found in the United States have been studied by the Natural Resources Conservation Service to determine the suitability for ground penetrating radar (GPR) studies (Figure 65).

Ground penetrating radar signals cannot penetrate large metal objects and the signals are also significantly affected by the presence of salt water. Although radar does not penetrate metal objects, it does generate a distinctive signal that is usually recognizable, particularly for larger metal objects, such as a cannon or man-hole cover. The signal beneath these objects is often canceled out, which results in a pattern of horizontal lines on the radargram. For smaller objects, such as a scatter of nails, the signal may ricochet from the objects and produce a confusing signal. Rebar-reinforced concrete, as another example, generates an unmistakable radar pattern of rippled lines on the radargram. Conyers notes: “Ground-penetrating radar works best in sandy and silty soils and sediments that are not saturated with water. The method does not work at all in areas where soils are saturated with salt water because this media is electrically conductive and ‘conducts away’ the radar energy before it can be reflected in the ground” (Conyers 2002).

GPR is particularly well suited for the delineation of historic cemeteries. Cypress Cultural Consultants has used GPR to identify unmarked burials at the Beaufort National Cemetery in Beaufort County, South Carolina and at the Dr. Ed White Cemetery on St. Helena Island, Beaufort County, South Carolina (Owens Battle 2004b and Owens Battle 2007). Historic graves are often easy to recognize in radargrams, as evidenced by a pronounced hyperbola. When 3-D slices intersect these hyperbolas the graves are usually clearly evident in plan view. When a series of graves are closely spaced, however, the grave radar “signature” is less clear-cut. By slicing the radar data at various depths along the hyperbola, the aerial perspective can be refined for optimal viewing and recognition. Since not all graves were dug to the same depth, 3-D slices at different depths can often yield very different views of graves in plan by varying the slice only a few centimeters.

Using the same Ramac X3M GPR system as that used in the present study, Elliott conducted several GPR studies of 18<sup>th</sup> and 19<sup>th</sup> century archaeological sites in coastal Georgia. The first study was at the New Ebenezer town site in Effingham County, Georgia (Elliott 2003a). The results of the GPR work at New Ebenezer included the delineation of a large portion of a British redoubt palisade ditch and the discovery of several dozen previously unidentified human graves (both within and beyond the known limits of the Jerusalem Lutheran Church cemetery). The Ebenezer project was followed by a GPR survey of the colonial-era Horton House site (and DuBignon Cemetery) in Glynn County, Georgia (Elliott 2002). More recently, GPR survey was conducted by Elliott and his colleagues at Fort Morris and Sunbury Cemetery (Liberty County), Sansavilla Bluff (Wayne County), Woodbine Plantation cemetery (Camden County), and Garden Homes (Savannah, Chatham County), and the Gould-Bethel Cemetery (Chatham County) and numerous other sites with satisfactory results (Elliott 2003b; Elliott 2004). Cypress Cultural Consultants used the Ramac system to identify the location of outbuildings at the McGrath-Scheper House (Owens Battle 2004a) and at the Beaufort National Cemetery in Beaufort, South Carolina (Owens Battle 2004b), as well as the Dr. Ed White Cemetery on St. Helena Island, South Carolina (Owens Battle 2007).

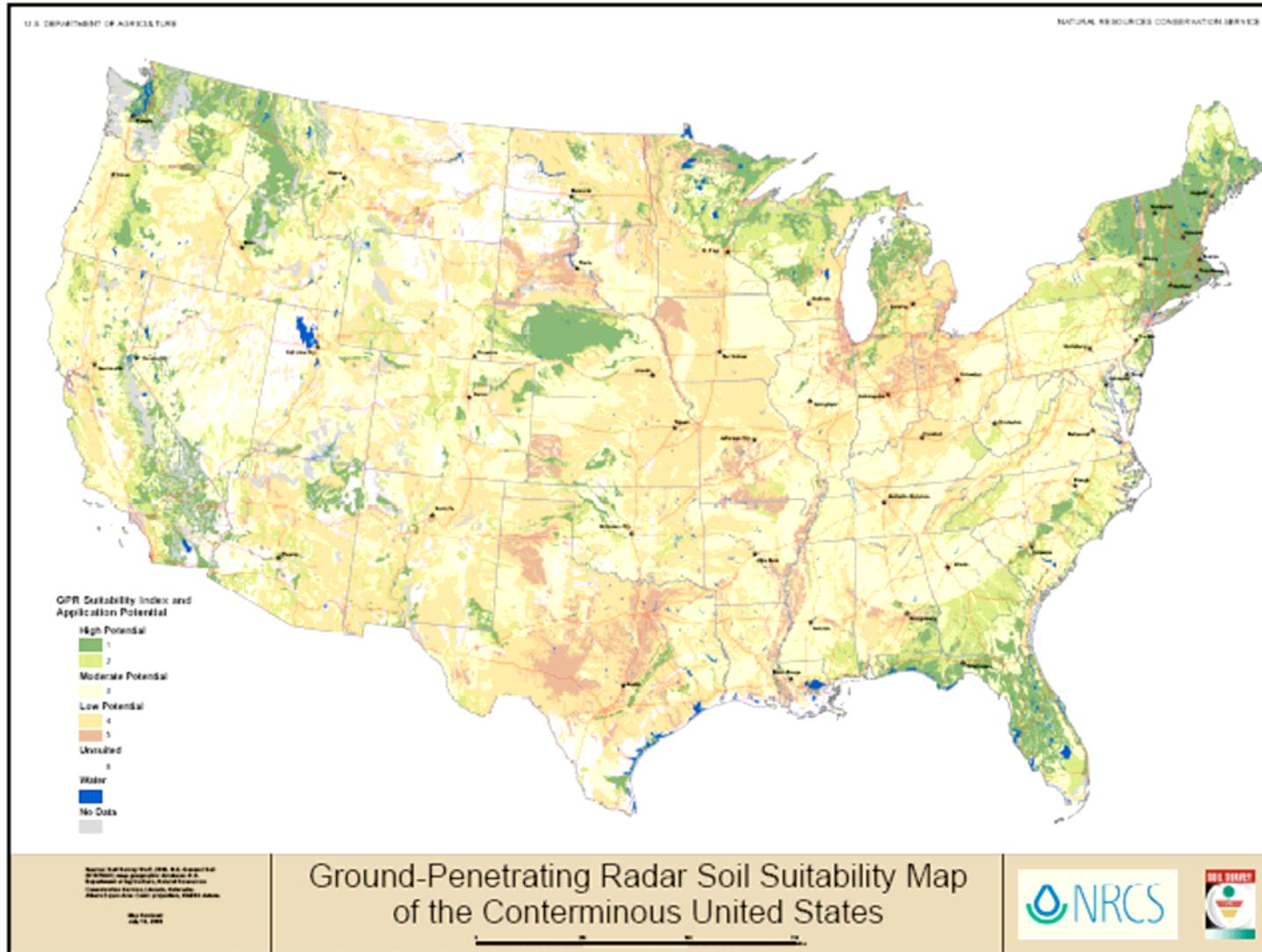


Figure 65. Map of the United States showing soil suitability for GPR.

The equipment used for this study consisted of a RAMAC/X3M Integrated Radar Control Unit, mounted on a wheeled-cart and linked to a RAMAC monitor. A 500 megahertz (MHz) shielded antenna was used for the data gathering. A Toshiba Satellite A65 personal computer was used to record the GPR data. MALÅ GeoScience's *Ground Vision* (Version 1.4.5) software was used to acquire and record the radar data (MALÅ GeoScience USA 2006a). The radar information was displayed as a series of radargrams. *Easy 3D* software (Version 1.3.3), which was developed by MALÅ GeoScience (2006b), was used in post-processing the radar data and 3-D imaging. This entailed merging the data from the series of radargrams for each block. The GPR data from the present study was further processed with more robust imaging software, which was developed by Dean Goodman and called *GPR-Slice* (Version 5.0). Goodman's *GPR-Slice* program is recognized as the world leader in GPR imaging. Horizontal slices of the data were then examined for important anomalies and patterns of anomalies, which were likely of cultural relevance. These data were displayed as aerial plan maps of the sample areas at varying depths below ground surface. These horizontal views, or time-slices, display the radar information at a set time depth in nanoseconds. Time-depth can be roughly equated to depth below ground.

Various adjustments to the GPR equipment were made in the field during the data collection phase. The time window that was selected allowed data gathering to focus on the upper 1.5 meters of soil, which was the zone most likely to yield archaeological deposits. Additional filters were used to refine the radar information during post-processing. These include adjustments to the gain. These alterations to the data are reversible, however, and do not affect the original data that was collected. This same combination of GPR equipment and radar imaging software was used previously in coastal Georgia and coastal South Carolina with very satisfactory results (Elliott 2003a, 2003b; Elliott 2002; and Owens Battle 2004a, 2004b, 2007).

Upon arrival at the site, the RAMAC X3M Radar Unit was set up for the operation and calibrated. Several trial runs were made on parts of the site to test the machine's effectiveness in the site's soils. The underlying soils at 9JO282 were compact clay, which was derived from ancient saprolite granite gneiss. This red clay subsoil was covered with a thin mantle of humus and sandy clay loam. GPR Machinery settings included the following:

Time Window: 85 ns  
Number of Stacks: 4  
Number of Samples: 812  
Sampling Frequency: 9605 MHz  
Antenna: 500 MHz shielded  
Antenna Separation: 0.18 m  
Trigger: 0.02 m  
Initial Time Zero: 48,762  
Radargram orientation: East-West  
Radargram progress: South-North  
Radargram Spacing: 50 cm  
Number of Radargrams: 64  
Dimensions: 33 m North-South by 10 m East-West  
Reference: Grid coordinate of Southeast Corner is 994.71 North, 1004.36 East

The GPR block was centered over the Clinton tanning vat ruins. This area was extremely uneven due to the trough-like features of the tanning vats. The application of GPR to such an uneven surface has rarely if ever been attempted in favor of more even surfaces. A unique strategy was devised to create a false even land surface. This was necessary in order for the GPR equipment to function properly. The strategy was accomplished by placing a series of planks and plywood over the vat depressions. The plywood would hopefully propagate the radar signals well enough to allow collection of information concerning the structure or integrity of the vats. Such information would be used to determine the best way to study the tanning vats during the testing phase of the project. Conversely, the void beneath the plywood within the vats may prevent the propagation of the radar signals. This unorthodox application of GPR was attempted to determine if such a technique was plausible in the location of other tannery vats with similar surface manifestations. The GPR equipment was moved slowly over the plywood sheets and by this method an unbroken radargram was obtained. Although a total of 64 radargrams were collected, a heavy thundershower preempted the complete survey coverage of the tannery ruin in the location of the bark mill stone.

The GPR grid was the same as the site grid which was established with the aid of a Sokkia total station and TDS Recon data collector. The grid was oriented parallel to the tanning vat orientation. Grid coordinates were arbitrarily defined. Datum 1 served as the transit station and was designated 1,000 meters North, 1,000 meters East, 100 meters arbitrary elevation.

GPR data was successfully collected from the Clinton tannery ruin (Figures 66 and 67). As expected, the uneven terrain of the tanning vat depression proved to be a challenge in the field data collection and in the post processing of the data. For much of the upper time slices the resulting maps depict an image of air voids. This represents the air space located beneath the false ground surface (i.e. the plywood) and the true ground surface. In addition, the radar signals appear to bounce off the walls and base of the vats producing a confusing signature. Beyond the appearance of trough-type structures, nothing further was distinguishable including information regarding the construction of the vats or the drainage system. Consequently, the areas of the vat depressions yielded data of questionable merit.

The remainder of the GPR survey did produce several interesting radar anomalies, however. These likely relate to the activities associated with the operation of the tannery. A single time slice (or aerial view) at a depth of 0.5m is presented in Figure 66. Within the GPR map, other than the obvious vat voids, exists areas where the ground has been heavily compacted. These areas are linear and immediately adjacent to the vats on the west side. The area may represent compaction as the result of heavy foot traffic by people, wheeled vehicles, and/or large draft animals. The area might also represent a location used heavily for tanning activities such as hanging and drying of the tanned hides since few flat areas were available for such activities. The other area of heavy GPR anomalies lies in the southwest corner of the GPR block. Due to the location of the area immediately east of the stone lined enclave, this area may be used during the same activities being conducted within the enclave.

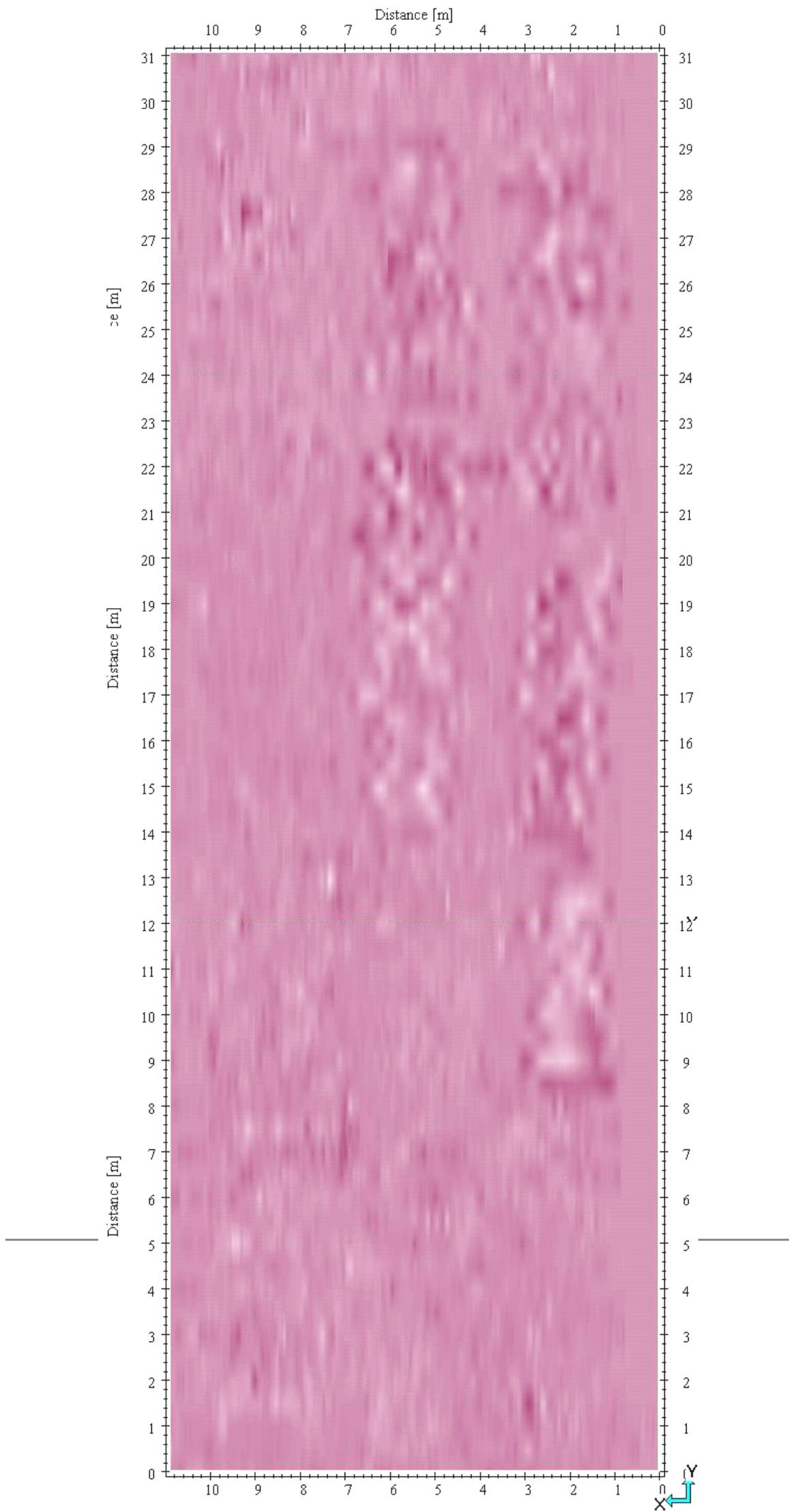
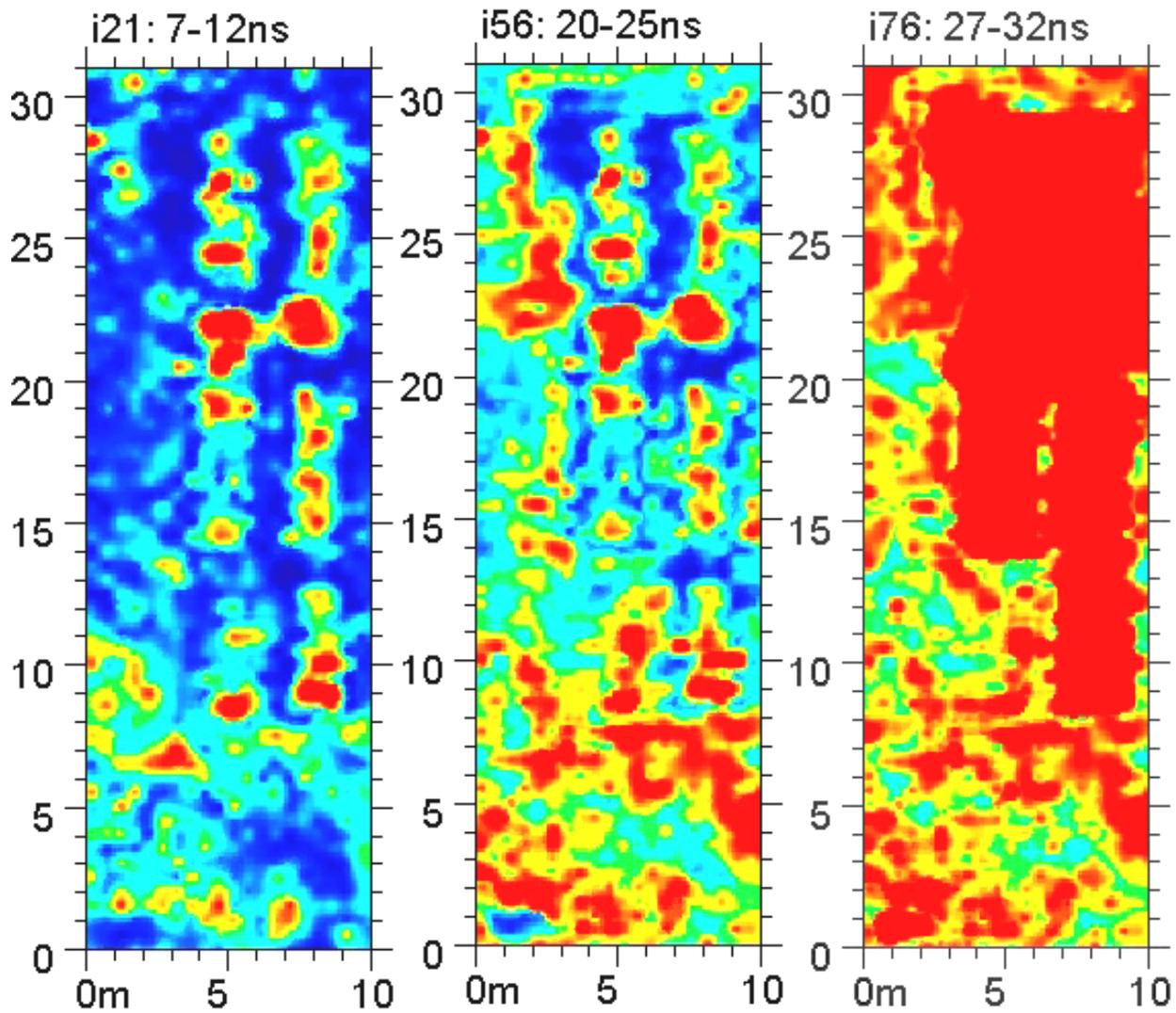


Figure 66. Map of the GPR signals recorded at the tannery site.



**Figure 67. GPR Slice maps of the GPR signals recorded at the tannery site at three different depths.**

The confusing radar signatures given by the GPR survey in this block near the tanning vats may be due to the construction methods used. Since the area has likely been completely dug out prior to construction of the vats, a method described by Ruben King at his tannery in Darien, then later filled in creating the two unusually flat terraces adjacent to the stream, the whole area has likely been heavily impacted. Consequently, GPR may not constitute the most appropriate technique for application in the area of the tanning vats.

### **Archaeological Testing**

The testing at 09JO282 included the excavation of seven test units. Test Unit 1 was located in the center of a small square feature cut into a bank shored up by loose stone walls. Test Unit 2 was located adjacent to the granite grinding stone on the north end of the site across a small circular depression. Test Unit 3 was located across a tanning vat adjacent to the creek. Test Unit 4 was located adjacent to the east side of Test Unit 1. Test Unit 5 was located adjacent

to the eastern edge of Test Unit 2. Test Unit 6 was located between the tanning vats and Test Unit 1 and 4. Test Unit 7 was located adjacent to the northern edge of the Test Unit 1 adjacent to a stone wall. Although Test Units 1, 2, and 3 were planned prior to the commencement of the current investigations, the locations of Test Units 4, 5, 6, and 7 were chosen during the course of the testing in areas that appeared to hold interesting archaeological features.

### Test Unit 1

Test Unit 1 was excavated in four levels in the center of a small square enclave cut into the embankment located west of the tanning vats. The coordinates of the test unit were 1004.3-1006.3m northing and 991.8-993.8 easting. The walls of the enclave were supported by a stone wall stacked without the aid of mortar. A low earthen rise marked by several scattered and broken bricks occurred within the center of the enclave. The test unit measured 2 meters square with a datum located near the SW corner of the unit at an elevation of 100.511m. The elevations of the corners of the unit were 100.28cm in the SW corner, 100.16cm in the NE corner, 100.15 cm in the NW corner, and 100.22cm in the SE corner.

Level 1 was excavated in an uneven layer measuring 7 cm in the SW corner, 5 cm in the NE corner, 4 cm in the NW corner, and only 1 cm in the SE corner to a depth of 100.111m. The soil of the layer included 5YR3/4 dark reddish brown clay loam mixed with brick rubble with 5YR2.5/1 black loamy clay near the surface. The artifacts that were recovered are listed in Table 6. The base of the level is shown in Figure 68.

Table 6. Artifacts recovered from Test Unit 1, Level 1.

Group	Material	Item	Description	Color	Count	Wt(g)
Architecture	Brick	Rubble				42kg
	Glass	Window	Fragments		14	9.5
	Iron	Washer	1.7cm diameter		1	1.4
	Iron	Nail	Cut		66	182.7
Kitchen	Ceramic	Stoneware	Alkaline-glaze fragment	Green	4	4.2
	Ceramic	Stoneware	Unidentified fragment		1	5.9
	Ceramic	Porcelain	Fragment	None	2	0.5
	Ceramic	Refined earthenware	Fragment	None	5	1.9
	Ceramic	Pearlware	Shell edge fragment	Green	2	0.4
	Ceramic	Pearlware	Polychrome fragment	Brown	2	0.7
	Ceramic	Pearlware	Polychrome rim fragment	Brown/blue	1	0.6
	Ceramic	Pearlware	Polychrome fragment	Blue	2	0.8
	Glass	Bottle	Fragment	Olive	2	1.5
	Glass	Bottle	Fragment	Clear	7	5.6
Bone	Faunal	Bone	Fragment		2	0.9



**Figure 68. West view of Test Unit 1 at the base of Level 1.**

Level 2 was excavated in an uneven layer measuring 4 cm in the SW corner, 9 cm in the NE corner, 5 cm in the NW corner, and 0 cm in the SE corner down to an elevation of 100.111m to 100.021m. Burned wood planks oriented north/south were identified in the southwest corner of the unit and were not excavated. The soil of the layer included 5YR3/4 dark reddish brown clay loam mixed with brick rubble. The artifacts that were recovered are shown in Table 7. The base of the level is shown in Figure 69.

**Table 7. Artifacts recovered from Test Unit 1, Level 2.**

Group	Material	Item	Description	Color	Count	Wt(g)
Architectural	Brick	Rubble				98kg
	Iron	Nail	Cut		42	158.5
	Iron	Nail	Cut, Burned		1	3.8
	Glass	Window	Fragment	Clear	5	1.7
Clothing	Glass	Button	4-hole (1.3, 1.1, 1.1 cm diameter)	White	3	1.6
Kitchen	Ceramic	Stoneware	Alkaline-glaze fragment	Green	2	1.4
	Ceramic	Refined earthenware	Fragment	Plain	1	4.4
	Ceramic	Refined earthenware	Rim fragment	Plain	1	0.3
	Ceramic	Pearlware	Foot fragment	Plain	1	4.2
	Ceramic	Pearlware	Polychrome fragment	Blue/yellow/brown	3	2.0

Group	Material	Item	Description	Color	Count	Wt(g)
	Ceramic	Pearlware	Polychrome foot fragment	Brown	1	0.6
	Ceramic	Pearlware	Transfer print fragment	Blue	1	1.2
	Ceramic	Pearlware	Annularware fragment	Brown/green	1	0.7
	Glass	Bottle	Fragment	Green	2	1.6
	Glass	Bottle	Fragment	Clear	2	0.8



**Figure 69. East view of Test Unit 1, Level 2, and Test Unit 4, Level 1.**

At the base of the level, Feature 1 was identified. Feature 1 is the base of a chimney with a hearth that opens to the east (Figure 70). The north arm of the chimney was absent but likely mirrored the southern arm. The chimney base measures 139 cm wide and 84 cm from front to back with an elevation of 100.141m at the top of the feature. The structure was left in place so the height of the chimney feature remains unknown. The amount of brick found indicates that some of those forming the upper portion of the chimney may have been “robbed” from the site. The soil within the hearth was excavated in two levels. The recovered artifacts are shown in Table 8.

Feature 1 revealed a predominance of artifacts associated with architectural and kitchen activities (Figure 71). The artifacts can be classified into architecture (n=33), kitchen (n=8), clothing (n=1), bone (n=1), activities (n=1), and arms (n=1). The architectural group is greatly underrepresented since the brick rubble (weight=66kg.) was not included in the count analysis. A graph of the types of artifacts is shown in Figure 72.

Table 8. Artifacts recovered from Feature 1 in Test Unit 1.

Level	Group	Material	Item	Description	Color	Count	Wt(g)
1	Activity	Floral	Nut shell	Fragment		1	<0.1
	Arms	Brass	Bullet casing	0.25 cal. <b>(Figure 73)</b>		1	1.2
	Architectural	Brick	Rubble				64kg
		Iron	Nail	Cut		11	42.6
		Iron	Nail	Cut, burned		1	5.2
		Glass	Window	Fragment		2	0.9
		Mortar		Fragment		1	0.8
	Bone	Faunal	Rib			1	5.3
	Clothing	Pewter	Button	Flat, "US" <b>(Figure 74)</b>		1	3.8
	Kitchen	Ceramic	Pearlware	Foot fragment	Blue	1	2.1
		Ceramic	Pearlware	Polychrome fragment	Brown	1	0.4
		Ceramic	Pearlware	Polychrome fragment	Red	1	1.0
		Ceramic	Stoneware	Small fragment		1	0.3
		Glass	Bottle	Fragment	Brown	2	7.0
		Glass	Bottle	Fragment	Clear	1	0.6
2	Architectural	Brick	Rubble				2kg.
		Iron	Nail	Cut		17	104.9
		Glass	Window	Fragment		1	0.4
	Kitchen	Glass	Bottle	Fragment	Olive	1	1.2



Figure 70. West view of feature 1 following excavations.



Figure 71. Artifacts recovered from Feature 1, level 1. (From left to right: nut shell, red polychrome pearlware fragment, brown banded pearlware fragment, blue underglaze pearlware fragment, brown glass fragment, "US" flat button, brass 0.25 cal. bullet casing and a cut nail.

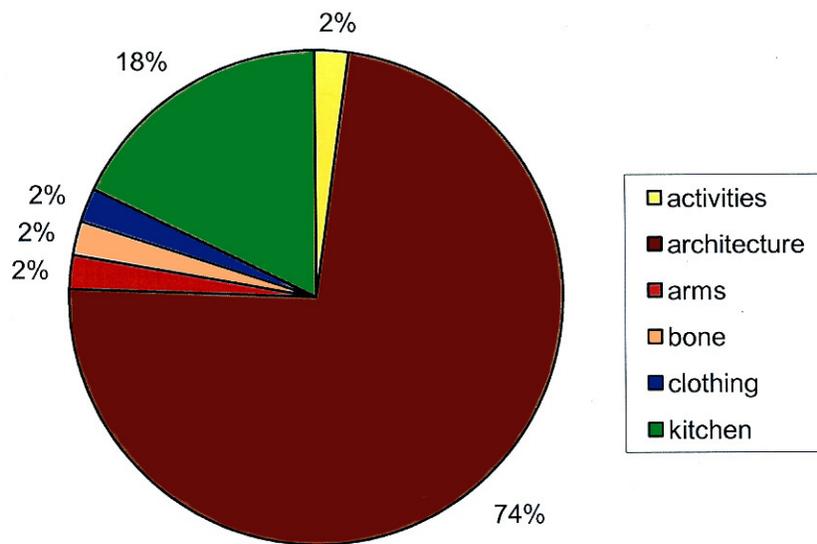


Figure 72. The artifact types recovered from Feature 1.

Level 3 was excavated in an uneven layer measuring 0 cm in the SW corner, 3 cm in the NE corner, 2 cm in the NW corner, and only 11 cm in the SE corner down to an elevation of 100.071m to 99.991m. The soil of the layer included 5YR3/4 dark reddish brown clay loam mixed with brick rubble. Wood planks, identified in level 2 in the southwest corner of the unit, were not excavated. In addition, a brick floor was revealed in the southeast corner of the unit. The bricks were laid without the use of mortar in a running or stretcher bond pattern. The brick chimney, Feature 1, extended through this layer south of the brick floor. The base of the level is shown in Figures 75 and 76. The artifacts that were recovered are listed in Table 9.

Table 9. Artifacts recovered from Test Unit 1, Level 3.

Group	Material	Item	Description	Color	Count	Wt(g)
Arms	Brass	Percussion cap			1	0.1
Architectural	Floral	Wood	Burned			50.4
	Brick	Rubble				89kg
	Iron	Nail	Cut		38	138.8
	Iron	Nail	Cut, burned		1	2
	Glass	Window	Fragment		2	0.4
Clothing	Brass	Buckle	Suspender		1	1.6
	Brass	Buckle	Sash buckle jewelry ( <b>Figure 77</b> )			
	Brass	Button	Eagle I (1.6cm diameter) ( <b>Figure 78</b> )		1	1.4
	Glass	Button	4-hole (1.0cm, 1.1cm diameter)		2	0.9
Furniture	Brass	Clasp	Finger clasp		1	1.3
	Iron	Unknown	Fragment		1	0.4
Kitchen	Ceramic	Refined earthenware	Transfer print fragment		1	0.2
	Ceramic	Refined earthenware	Rim fragment	Blue	1	0.2
	Ceramic	Refined earthenware	No-glaze fragment		1	0.2
	Ceramic	Refined earthenware	Polychrome fragment	Green/black	1	1.7
	Ceramic	Pearlware	Shell edge fragment	Green	1	0.8
	Ceramic	Pearlware	Shell edge rim fragment	Green	1	1.3
	Ceramic	Pearlware	Fragment	Plain	1	0.4
	Ceramic	Stoneware	Tiny fragment	Brown/white	1	0.4
	Glass	Bottle	Fragment	Brown	2	3.0
	Glass	Bottle	Fragment	Olive	2	6.0
Glass	Bottle	Fragment	Clear	2	2.4	
	Iron	Can	Ration can (very deteriorated) ( <b>Figure 79</b> )		1	
	Iron	Knife	Blade only (3 pieces), 18cm long and 2.5cm wide		1	60
Unidentified	Iron	Unknown	Flat fragment		17	17.2
	Iron	Sheet			1	1.6
	Iron	Unknown			3	11.5



**Figure 73. Civil War era Allen and Wheelock single shot rim fired pistol (.25 cal.) that may have shot the bullets whose casings were found during the excavation (Thomas 1965).**



**Figure 74. Solid cast pewter U.S. button (1808-1830) similar to the one found in Feature 1 (Albert 1976).**



Figure 75. East view of Test Unit 1, Level 3, in the foreground and Test Unit 4, Level 2, in the background.

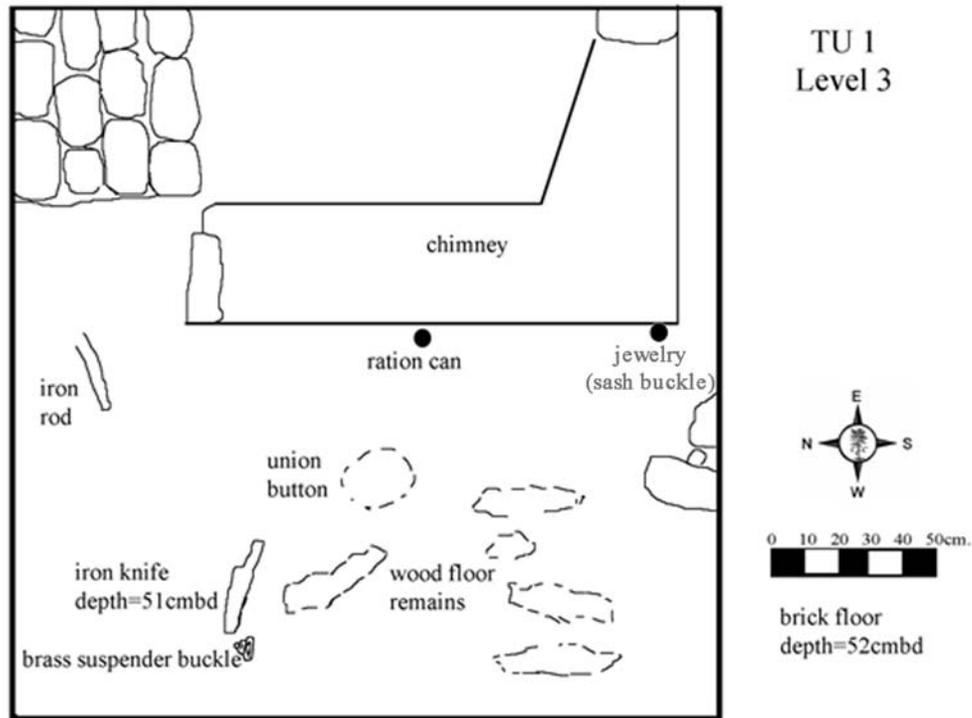
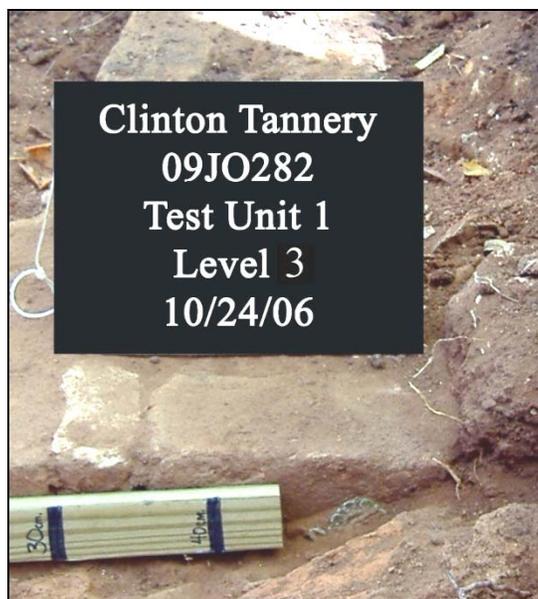


Figure 76. Map of Test Unit 1, Level 3 showing the chimney, brick floor, plank floor, and several artifacts.



**Figure 77. Sash buckle found in Test Unit 1.**



**Figure 78. Federal Eagle I button recovered from Test Unit 1 at the Clinton Tannery.**



**Figure 79. Ration can similar to the one found in Test Unit 1 at the Clinton Tannery.**

Level 4 was excavated in an uneven layer measuring 13 cm in the SW corner, 5 cm in the NE corner, 10 cm in the NW corner, and 6 cm in the SE corner down to an elevation of 99.941m. The soil of the layer included a mottling of 2.5YR5/6 red clay, 2.5YR4/4 reddish brown sandy clay, 2.5YR 4/3 reddish brown loamy clay, and 2.5YR6/1 reddish gray saprolite. Feature 1 extended to the base of this layer. The level revealed no cultural material beneath the wood floor so excavations ceased in this location (Figure 80). The artifacts that were recovered are shown in Table 10. Following the excavation of the test unit, the soil profiles of the south and west walls were sketched (Figures 81 and 82).

Table 10. Artifacts recovered from Test Unit 1, Level 4.

Group	Material	Item	Description	Color	Count	Wt(g)
Architectural	Brick	Rubble				1kg
	Iron	Nail	Cut		19	119.7
	Glass	Window	Fragment		2	2.8
Clothing	Glass	Button	4-hole (1.5cm diameter)	White	1	0.8
	Brass	Button	Flat (2.1cm diameter)		1	3.7
Furniture	Brass	Tack			1	0.3
	Brass	Plate	Flat, oblong, small hole on both ends, 2.2cm long, 0.8cm wide		1	0.8
Kitchen	Ceramic	Pearlware	Fragment	None	2	3.1
	Ceramic	Pearlware	Rim fragment		1	5.7
	Ceramic	Pearlware	Polychrome fragment	Brown/yellow	1	0.4
	Ceramic	Stoneware	Alkaline-glaze fragment	Green	1	6.9
	Glass	Bottle	Fragment	Clear	6	56.1
Activities	Iron	Horseshoe		Fragment	1	169.7
Unidentified	Lead		Flat circle		1	1.6
	Iron		Flat		1	162.5



Figure 80. West view of the base of Test Unit 1, Level 4, (left) and Test Unit 7, Level 3 (right).

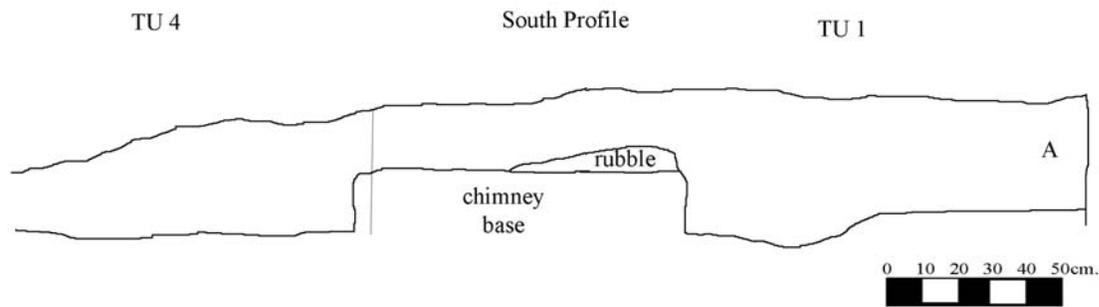


Figure 81. Sketch of the south wall of Test Units 1 and 4.

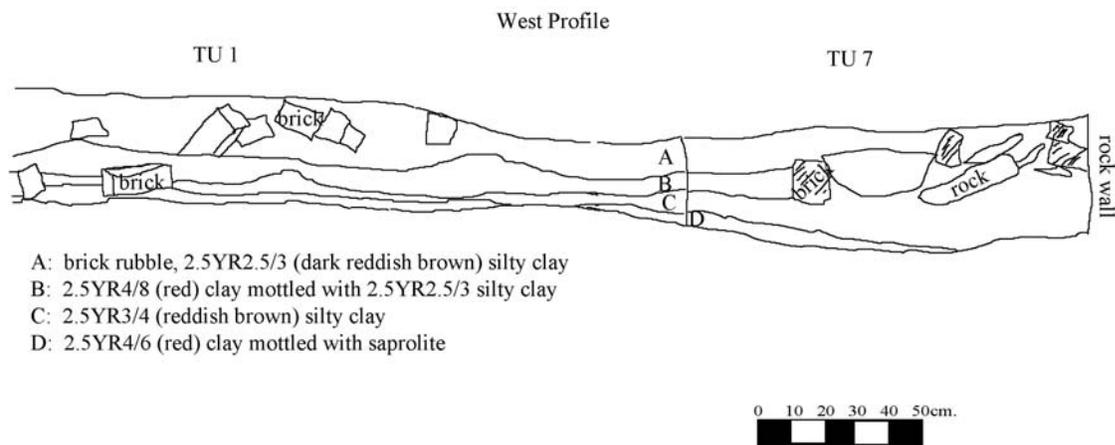


Figure 82. Sketch of the west wall of Test Units 1 and 7.

Test Unit 1 revealed an interesting range of artifacts (Figure 83). The artifacts can be classified into eight groups and include architecture (n=191), kitchen (n=72), unidentified (n=23), clothing (n=8), furniture (n=4), bone (n=2), activities (n=2), and arms (n=1) (Figure 84). The architectural group is greatly underrepresented since the brick rubble (weight=230kg.) was not included in the count analysis. The absence of many whole bricks indicates that some of them were likely removed from the site after the tannery was destroyed.



Figure 83. Artifacts recovered from Test Unit 1, Level 3. (From left to right: brass suspender buckle, brass clasp, milk glass buttons, green shell edge pearlware fragment, refined earthenware fragment with blue banding, stoneware fragment, red transferware fragment, cut nail, olive bottle glass fragment, brown bottle glass fragment, window glass fragment.)

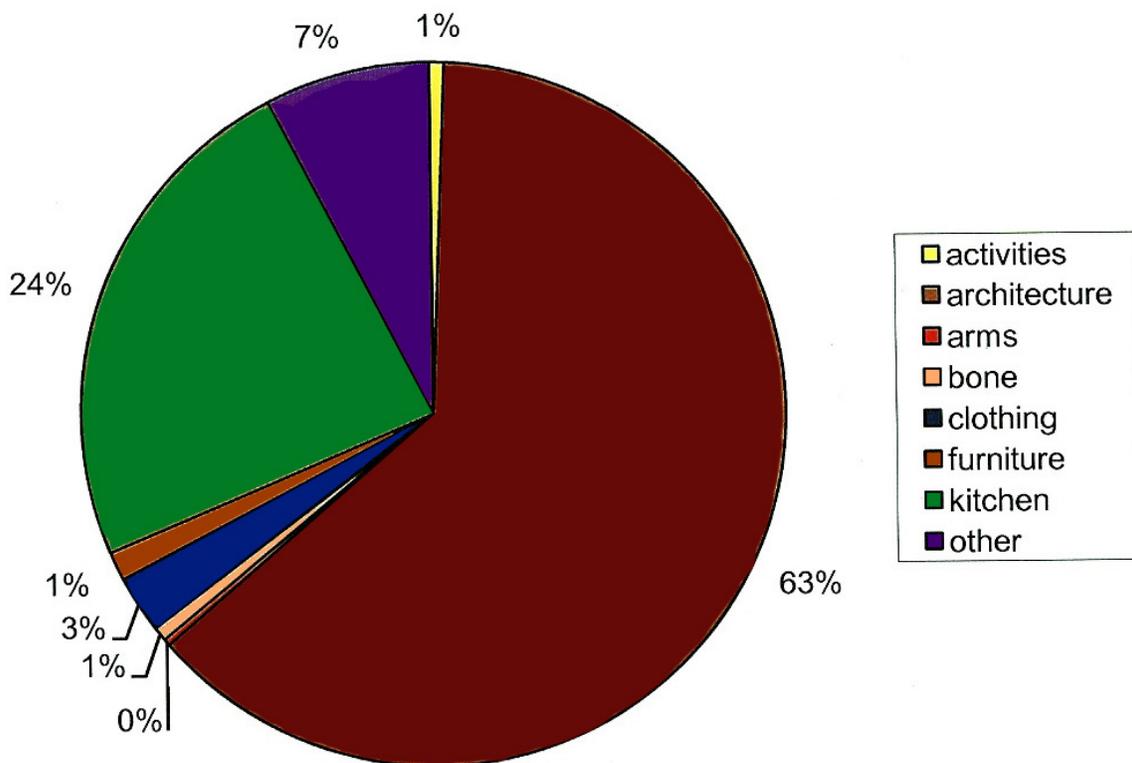


Figure 84. The artifact types recovered from Test Unit 1.

The location of Test Unit 1 represents the remains of a structure including a collapsed brick chimney. The chimney hearth opened to the east away from the stone wall. The presence of the structure is evident since 63% of the artifact assemblage includes architectural items. The chimney likely served, in part, as a place to prepare food since kitchen items comprise 23.8% of the artifact assemblage. The presence of a Civil War ration can, a 0.25cal. bullet casing, a piece of jewelry, and a Federal Infantry soldier's Eagle I button on the west side of the chimney indicates that the structure was last used to house Union soldiers when moving through the area. These soldiers may be responsible for burning the structure. Burned floor planks were identified

at the base of level 2 on the outside of the chimney. The planks indicate that the space between the chimney and the stone wall was covered with a wooden floor. The unidentified artifacts recovered in the test unit include mainly unidentified iron objects.

#### Test Unit 4

Test Unit 4 was excavated in two levels adjacent to the eastern edge of Test Unit 1 and was adjacent to the front of the hearth of Feature 1. The coordinates of the test unit were 1004.3-1006.3m northing and 993.8-994.8m easting. The unit was excavated to further explore the structural ruins situated in this location. The test unit measured 2 meters by 1 meter oriented north/south and utilized the datum of Test Unit 1 located near the SW corner of that unit at an elevation of 100.511m. The elevations of the corners of the unit were 100.40cm in the SW corner, 100.31cm in the NE corner, 100.38cm in the NW corner, and 100.43cm in the SE corner.

Level 1 was excavated in an uneven layer measuring 23 cm in the SW corner, 0 cm in the NE corner, 16 cm in the NW corner, and 13 cm in the SE corner to a depth of 100.011m. The soil of the layer included 5YR3/4 dark reddish brown clay loam mixed with brick rubble with 5YR2.5/1 black loamy clay near the surface. The artifacts that were recovered are listed in Table 11. The base of the level is shown in Figure 69.

Table 11. Artifacts recovered from Test Unit 4, Level 1.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble				40kg
	Floral	Wood			3	2.3
	Iron	Nail	Cut		9	27.4
	Iron	Nail	Cut, burned		1	3.8
	Glass	Window	Fragment		5	2.1
Bone	Faunal	Bone	Burned fragment		1	1.2
	Faunal	Bone	Fragment		3	2.4
Clothing	Brass	Rivet	Head only		1	0.4
	Glass	Button	4-hole (1.1cm diameter)	White	1	0.5
Kitchen	Ceramic	Pearlware	Shell edge rim fragment	Green	1	3.7
	Ceramic	Pearlware	Shell edge fragment	Green	2	1.0
	Ceramic	Pearlware	Foot fragment	Plain	1	0.4
	Ceramic	Pearlware	Fragment	Plain	4	3.1
	Ceramic	Pearlware	Polychrome fragment	Blue	1	0.6
	Glass	Bottle	Fragment	Clear	1	0.3
	Glass	Bottle	Fragment	Olive	1	0.3
	Glass	Tumbler	Fragment	Clear	1	2.0

Level 2 was excavated in an even layer measuring 11 cm thick to a depth of 99.901m elevation. The test unit was underlain by a brick floor comprised of bricks laid in an offset pattern without the use of mortar. The soil of the layer included 5YR3/4 dark reddish brown clay loam mixed with brick rubble. The artifacts that were recovered are listed in Table 12. The base of the level is shown in Figure 85. The brick floor was left intact following the excavations. A profile of the test unit is shown in Figure 81.

Table 12. Artifacts recovered from Test Unit 4, Level 2.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble				121kg
	Iron	Nail	Cut		18	70.9
	Iron	Nail	Cut, burned		3	8.5
	Glass	Window	Fragment		2	0.4
Arms	Brass	Bullet casing	0.25 cal.		1	0.9
Kitchen	Ceramic	Stoneware	Burned, broken (2 pieces)		1	1.7
	Ceramic	Pearlware	Fragment	Plain	3	2.2
	Ceramic	Pearlware	Burned fragment	Blue	1	1.2
	Glass	Bottle	Fragment	Clear	1	1.3
	Glass	Bottle	Thin fragment	Clear	1	0.3
	Glass	Bottle	Rim fragment	Clear	1	0.5
	Glass	Bottle	Fragment, "Co" on bottom	Brown	11	82.5



Figure 85. East view of Test Unit 4 at the base of level 2. (Note: Test Unit 1 is in the background.)

Test Unit 4 revealed an interesting range of artifacts (Figure 86). The artifacts can be classified into five groups based on the historic artifact categories and include architecture (n=42), kitchen (n=72), clothing (n=2), bone (n=4), and arms (n=31) (Figure 87). The architectural group is greatly underrepresented since the brick rubble (weight=161kg.) was not included in the count analysis. The absence of many whole bricks indicates that some of them were likely removed from the site after the tannery was destroyed.



Figure 86. Artifacts recovered from Test Unit 4, Level 1. (From left to right: green shell-edge pearlware fragment, tumbler fragment, blue underglaze pearlware fragment, bone fragment, milk glass button, rivet head, bone fragment, cut nail, bone fragment, and a burned bone fragment.)

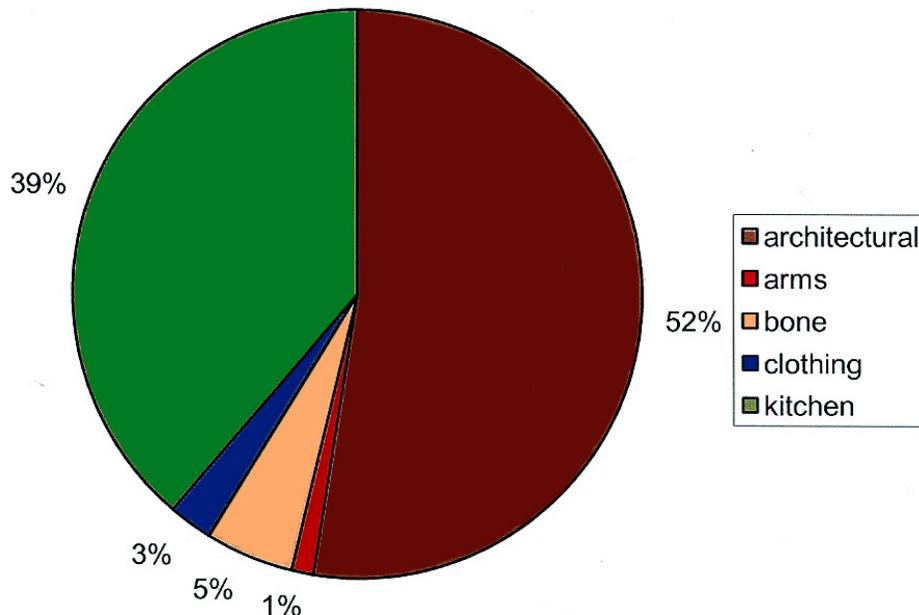


Figure 87. Artifact types recovered from Test Unit 4.

As also revealed in Test Unit 1, the location of Test Unit 4 represents the remains of a structure including a collapsed brick chimney. The entire unit is underlain by a brick floor that was initially found in the northeast corner of Test Unit 1. The presence of the structure is evident since 52.5% of the artifact assemblage includes architectural items. The chimney likely served, in part, as a place to prepare food since kitchen items comprise 38.8% of the artifact assemblage. The increase in kitchen items is due to the placement of the test unit in front of the hearth of the chimney where food preparation activities would have been conducted. The remaining artifacts include bone, likely from cooking activities, a rivet, a glass button, and a brass bullet casing.

## Test Unit 7

Test Unit 7 was excavated in three levels adjacent to the northern edge of Test Unit 1 adjacent to the stacked stone retaining wall. The test unit measured 2m by 1.5m oriented east/west and utilized the datum of Test Unit 1 located near the SW corner of that unit at an elevation of 100.511m. The unit was excavated to further explore the structural ruins situated in this location. The coordinates of the test unit were 1006.3-1007.8m northing and 991.8-993.8m easting. The elevations of the corners of the unit were 100.14cm in the SW corner, 100.01cm in the NE corner, 100.21cm in the NW corner, and 100.14cm in the SE corner.

Level 1 was excavated in an uneven layer measuring 20 cm in the SW corner, 7 cm in the NE corner, 27 cm in the NW corner, and 20 cm in the SE corner to a depth of 99.941m of elevation. The level ended at the top of a brick floor on the east side of the unit. The soil of the layer included 5YR3/4 dark reddish brown clay loam mixed with brick rubble with 5YR2.5/1 black loamy clay near the surface. The artifacts that were recovered are listed in Table 13. The base of the level is shown in Figures 88 and 89.

Table 13. Artifacts recovered from Test Unit 7, Level 1.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble				189kg
	Iron	Bolt			1	41.4
	Iron	Nail	Cut		23	87.5
	Glass	Window	Fragments		2	0.8
	Mortar	Rubble			1	0.7
Kitchen	Ceramic	Refined earthenware	Rim fragment	Plain	1	2.7
	Ceramic	Pearlware	Fragment	Plain	2	1.5
	Ceramic	Pearlware	Molded bands, fragment	Plain	1	0.2
	Ceramic	Pearlware	Fragment	Blue	2	1.1
	Ceramic	Pearlware	Polychrome fragment	Green	1	0.3
	Glass	Bottle	Fragment	Brown	4	12.0
	Glass	Bottle	Fragment	Clear	2	0.6
	Iron	Knife	Blade only		2	26.5
Activities	Iron	Pipe	u-shaped, 107cm long by 30cm, 1.75cm diameter		1	
Other	Chert	Rock	Burned? fragment	Black	1	0.7

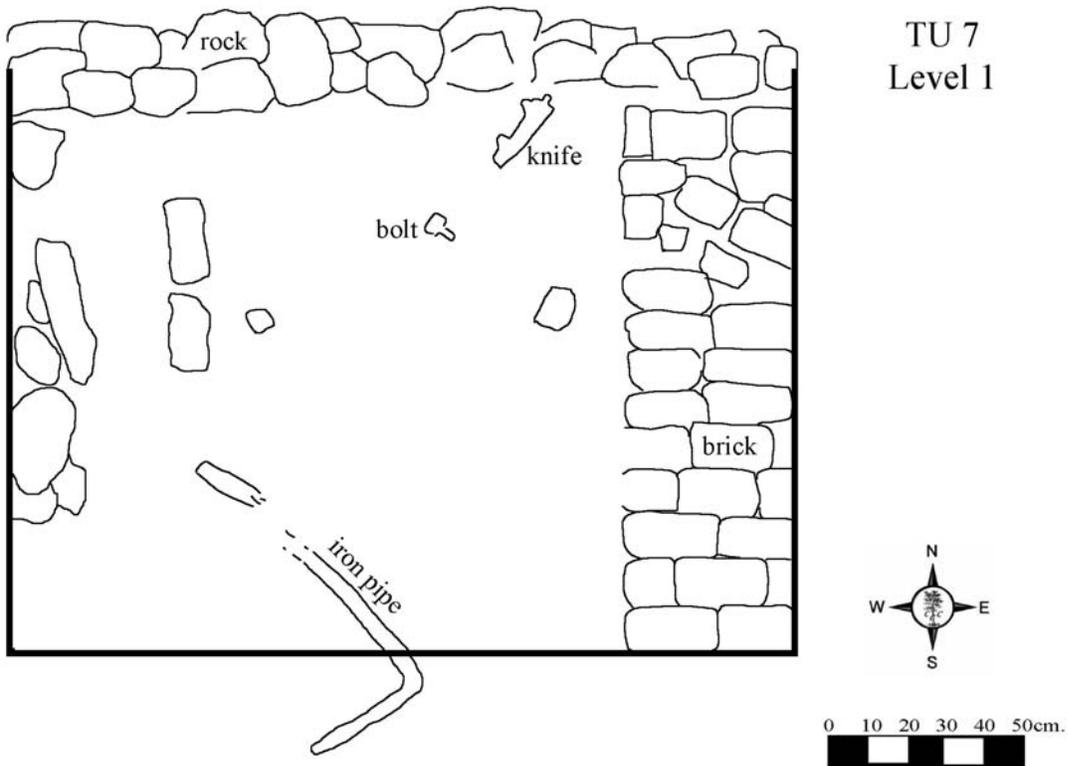


Figure 88. Sketch of the base of Test Unit 7, Level 1.



Figure 89. North view of Test Unit 7, Level 1.

Level 2 was excavated in a layer measuring 0 cm in the SW corner, 10 cm in the NE corner, 1 cm in the NW corner, and 9 cm in the SE corner to a depth of elevation between 99.941m and 99.841m . The eastern edge of the test unit was underlain by a brick floor

comprised of bricks laid in a running or stretcher bond pattern without the use of mortar. In addition, two wooden planks oriented north/south were found at the base of the level similar to those found in Test Unit 1. One was located near the center of the unit while the second lay adjacent to the brick floor. The wood was not excavated. The soil of the layer included 5YR3/4 dark reddish brown clay loam. The artifacts that were recovered are listed in Table 14. The base of the level is shown in Figures 90 and 91. The brick floor was left intact during the excavations.

Table 14. Artifacts recovered from Test Unit 7, Level 2.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble				6kg
	Iron	Nail	Cut		24	99.4
	Glass	Window	Fragment		2	0.5
Kitchen	Ceramic	Pearlware	Foot fragment	Plain	1	1.4
	Ceramic	Pearlware	Polychrome fragment	Green/brown	1	0.2
	Ceramic	Stoneware	Alkaline glaze	Green	2	15.8
	Ceramic	Stoneware	Lead-glaze	Brown	1	14.2
	Glass	Bottle	Fragment	Clear	1	0.1
Other	Iron		Flat		2	6.4
	Lead		Fragment		1	10.5

At the base of the level, feature 3 was identified. Feature 3 is a square post mold located in the northwest corner of the unit only 5cm south of the rock wall and 9cm east of another rock wall (Figure 92). The feature measures 13 cm north/side and 11cm east/west to a depth of 14cm below the base of level 2. Within the feature, some wood remnants were noted. The soil in the feature included 2.5YR4/1 (dark reddish gray) silty loam and was excavated in a single level. No artifacts were recovered from the feature. A sketch of the feature is shown in Figure 93. A profile of the test unit is shown in Figure 82.

Test Unit 7 revealed a only a small variety of artifacts (Figure 94). The artifacts can be classified into three groups and include architecture (n=59), kitchen (n=21), and unknown (n=4) (Figure 95). The architectural group is greatly underrepresented since the brick rubble (weight=195kg.) was not included in the count analysis.

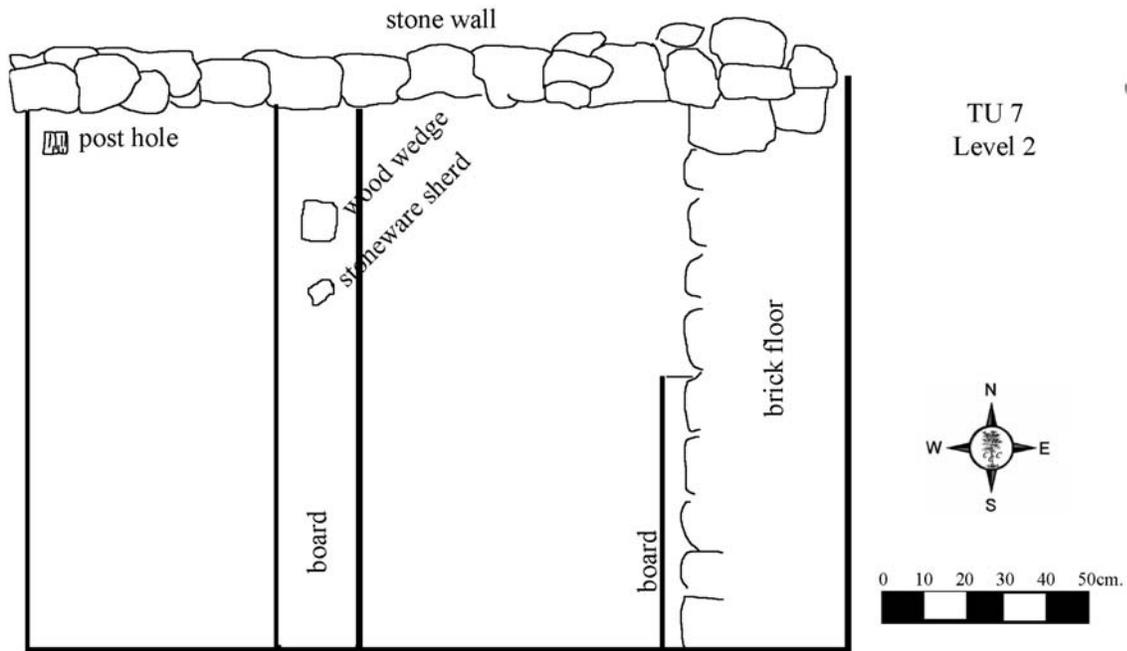


Figure 90. Sketch of the base of Test Unit 7, Level 2.



Figure 91. North view of Test Unit 7, Level 2 showing a plank board near the center of the unit.



Figure 92. North view of Feature 3 following excavation.

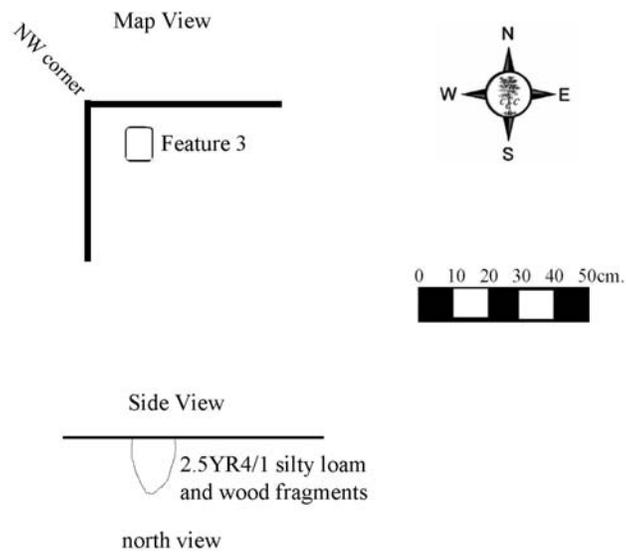
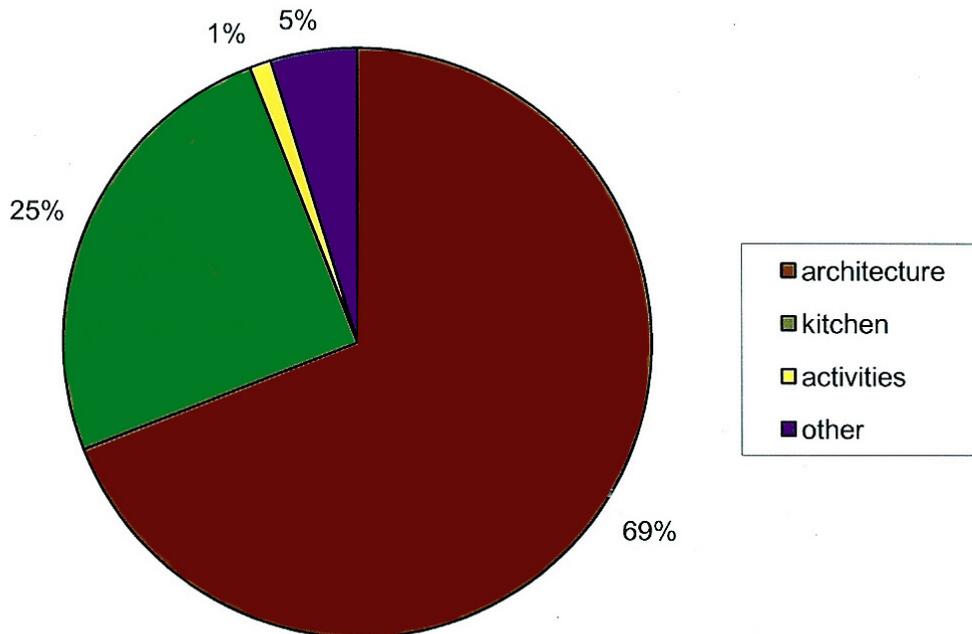


Figure 93. Sketches of Feature 3 including a map view and a side view.



**Figure 94. Artifacts recovered from Test Unit 7. (From top left to bottom right: 2 blue underglaze pearlware fragments, a plain pearlware fragment with a molded band pattern, a polychrome pearlware fragment, and a knife blade.)**



**Figure 95. Artifact Types found in Test Unit 7.**

As also revealed in Test Units 1 and 4, the location of Test Unit 7 represents the remains of a structure that includes a collapsed brick chimney. The eastern end of the unit was underlain by a brick floor that was initially found in the northeast corner of Test Unit 1 and the majority of Test Unit 4 (Figure 96). The presence of the structure is evident since 69.0% of the artifact assemblage includes architectural items. In addition, wood planks oriented north/south and a

wood post were identified near the base of the unit that further supports the idea that the area between the chimney and the stacked rock wall was covered by a wooden floor, whereas, the floor of the room east of the chimney was covered with brick. Similarly, food preparation or consumption must have been conducted within the area since 25.0% of the recovered artifacts were kitchen items. The remaining artifacts include iron and lead artifacts. The function of the iron pipe (1.75cm diameter) remains unknown. It was photographed and measured before being returned to the unit and subsequently reburied (Figure 97).

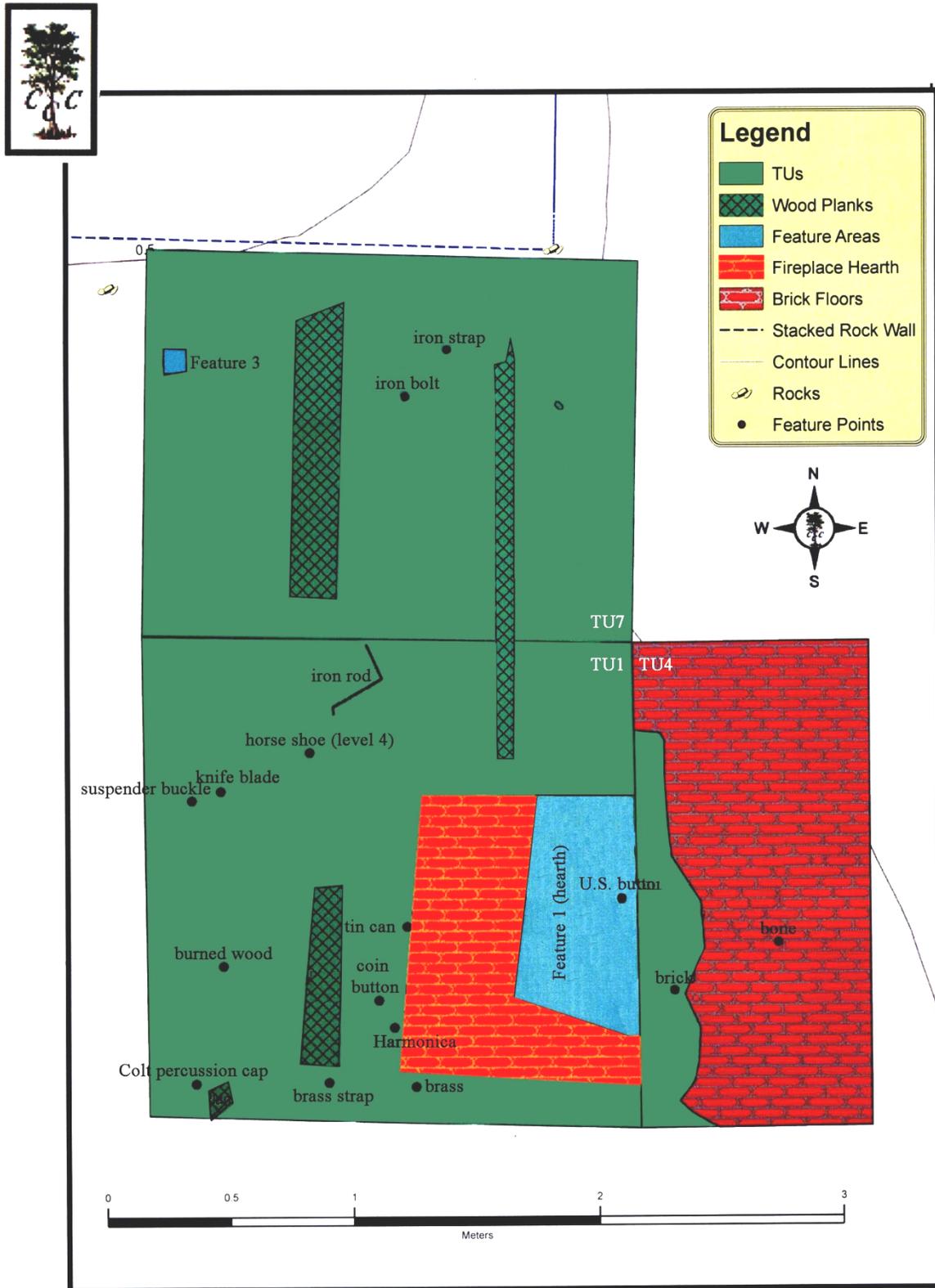


Figure 96. Map of Test Units 1, 4, and 7 as delineated by the total station.



**Figure 97. Pipe recovered from Test Unit 7.**

### Test Unit 6

Test Unit 6 was excavated in three levels located 1.5 meter east and 2 meter south of Test Unit 4. The coordinates of the test unit were 1002.2-1004.2m northing and 996.2-998.2m easting. The test unit was placed on the edge of the brick floor found in Test Units 1, 4, and 7. The edge of the floor was identified through probing the area between the rock wall and the vats. In addition, probing identified a rubble zone on the south end of the test unit that followed the alignment of a portion of the stacked rock wall south of Test Units 1 and 4. The test unit measured 2 meters square with a datum located near the SE corner of the unit at a relative elevation of 100.08m. The elevations of the corners of the unit were 99.88cm in the SW corner, 99.61cm in the NE corner, 99.89cm in the NW corner, and 99.87cm in the SE corner.

Level 1 was excavated in an uneven layer measuring 14 cm in the SW corner, 3 cm in the NE corner, 15 cm in the NW corner, and 18 cm in the SE corner to a depth of elevation between 99.74m and 99.58m. The soil of the layer included 2.5YR4/4 reddish brown silty clay over the western side of the unit although 5YR3/3 dark reddish brown silty clay was found on the eastern edge of the unit. The artifacts that were recovered from the level are listed in Table 15. At the base of the level, the brick floor revealed in Test Units 1, 4, and 7 was unearthed. The edge of the floor is jagged and generally trends from the southeast to the northwest. The base of the stacked rock wall was also revealed along the southern edge of the unit although the rock wall was no longer visible on the ground surface in this location prior to excavation. A large flat rock was found adjacent to the eastern end of the stacked rock wall and likely served as a foundation stone for a structure (Figure 98). A wood plank was found at the base of the level east of the brick floor. The base of the level is shown in Figures 99 and 100.

Table 15. Artifacts recovered from Test Unit 6, Level 1.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble				15kg
	Iron	Spike	5.8cm long with a head measuring 1.2cm by 1.0cm		1	17.9
	Iron	Nail	Cut, burned		3	9.4
	Iron	Nail	Cut		74	195.5
	Glass	Window	Fragment		3	1.2
Clothing	Iron	Shoe tap	5.5cm long and 1.9cm width		1	14.0
Kitchen	Ceramic	Refined earthenware	Fragment	Plain	3	8.7
	Ceramic	Refined earthenware	Rim fragment	Plain	1	1.0
	Ceramic	Refined earthenware	Molded rim fragment	Plain	1	2.0
	Ceramic	Refined earthenware	Striped rim fragment	Blue	1	0.5
	Ceramic	Pearlware	Molded rim fragment	Blue	1	1.0
	Glass	Bottle	Fragment	Emerald	18	50.4
	Glass	Bottle	Fragment	Clear	2	1.7
Activities	Chalk		Fragment		1	1.7
	Cinder		Fragment		3	39.3



Figure 98. East view of a large, flat rock located in Test Unit 6, Level 1.

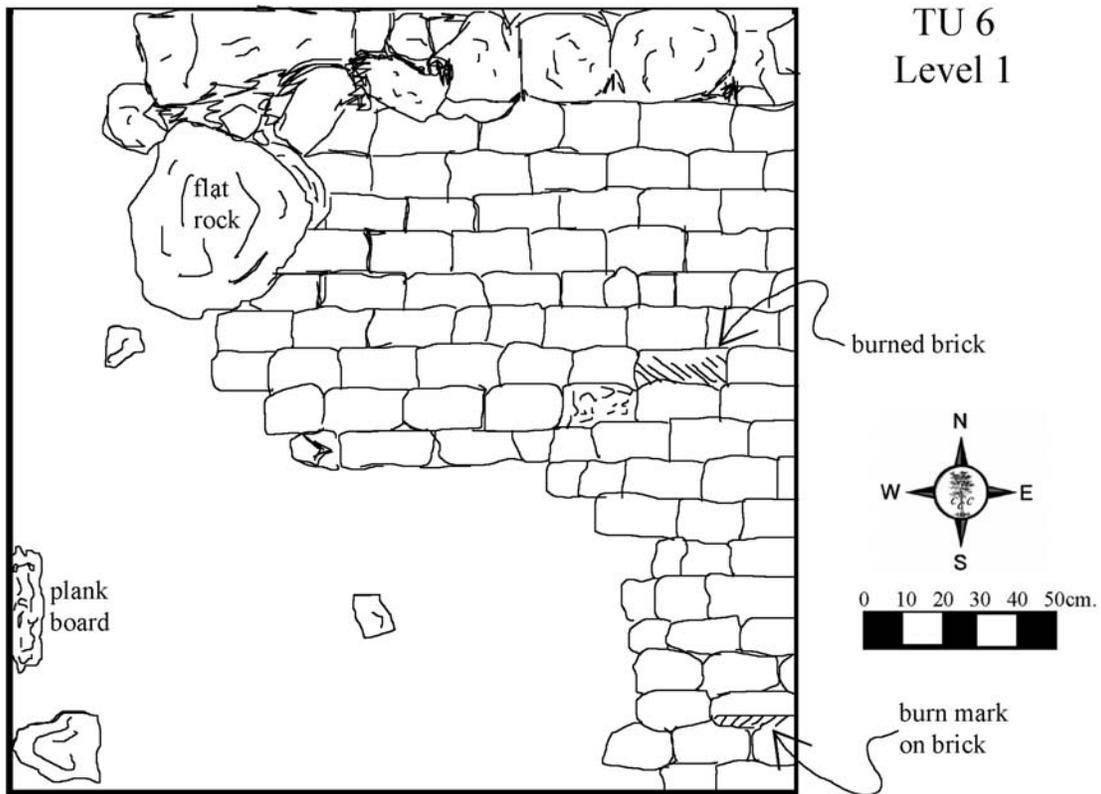


Figure 99. Sketch of the base of Test Unit 6, Level 1.



Figure 100. South view of Test Unit 6, Level 1.

Level 2 was excavated in an uneven layer measuring 0 cm in the SW corner, 8 cm in the NE corner, 0 cm in the NW corner, and 19 cm in the SE corner to a depth of elevation between 99.74m and 99.50m. The brick floor identified at the base of level 1 was left intact and not excavated leaving only approximately ½ of the unit available for further excavation. The soil of the layer included 2.5YR4/4 reddish brown silty clay with flecks of charcoal. The artifacts that were recovered are listed in Table 16.

Table 16. Artifacts recovered from Test Unit 6, Level 2.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble				17kg.
	Iron	Nail	Cut		17	42.6
	Mortar		Rubble		3	4.6
Kitchen	Ceramic	Refined earthenware	Rim fragment	Plain	1	0.4
	Ceramic	Pearlware	Foot frag.	Plain	1	3.3
	Glass	Bottle	Fragment	Emerald	53	116.5
	Glass	Bottle	Fragment	Clear	1	0.2

Level 3 was excavated in a layer measuring 0 cm in the SW corner, 8 cm in the NE corner, 0 cm in the NW corner, and 8 cm in the SE corner to a depth of elevation between 99.74m and 99.50m. The brick floor identified at the base of level 1 was left intact and not excavated leaving only approximately ½ of the unit available for further excavation. The soil of the layer included 2.5YR4/4 reddish brown silty clay with flecks of charcoal. The artifacts that were recovered are listed in Table 17.

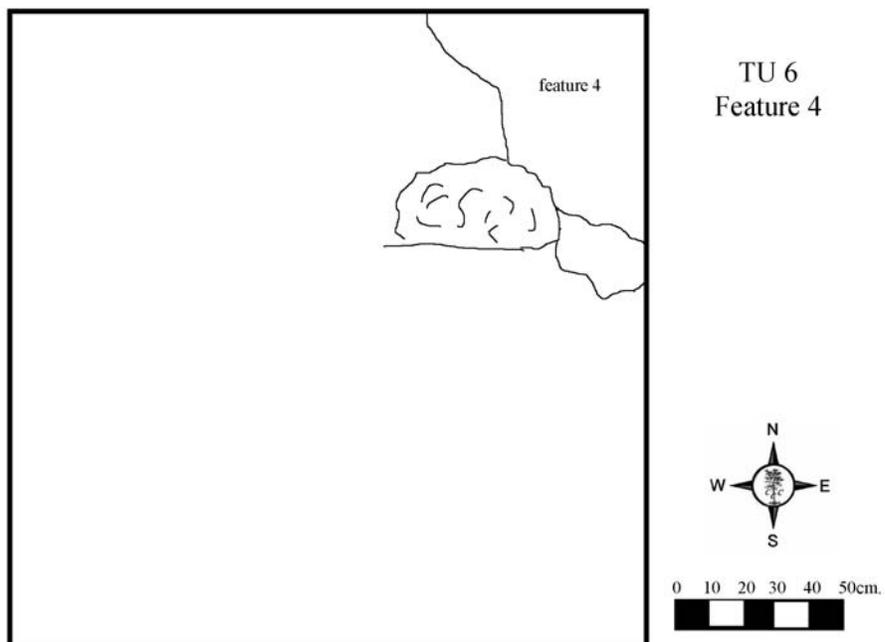
Table 17. Artifacts recovered from Test Unit 6, Level 3.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Iron	Nail	Cut		9	14.1
Kitchen	Glass	Bottle	Fragment	Emerald	1	0.5
Other	Brass				1	5.7

At the base of the level, Feature 4 was identified. Feature 4 is a possible builder's trench located in the northeast corner of the unit (Figure 101). The feature measures 92 cm north/side and 50cm east/west to a depth of 22cm below the base of level 3 (88cmbd). Within the feature, some brick rubble was noted. The soil in the feature included 2.5YR5/6 red clay mottled with 2.5YR5/1 reddish gray silty clay and was excavated in a single level. The artifacts that were recovered are listed in Table 18. A sketch of the feature is shown in Figure 102. The profiles of the test unit are shown in Figure 103.

Table 18. Artifacts recovered from Feature 4.

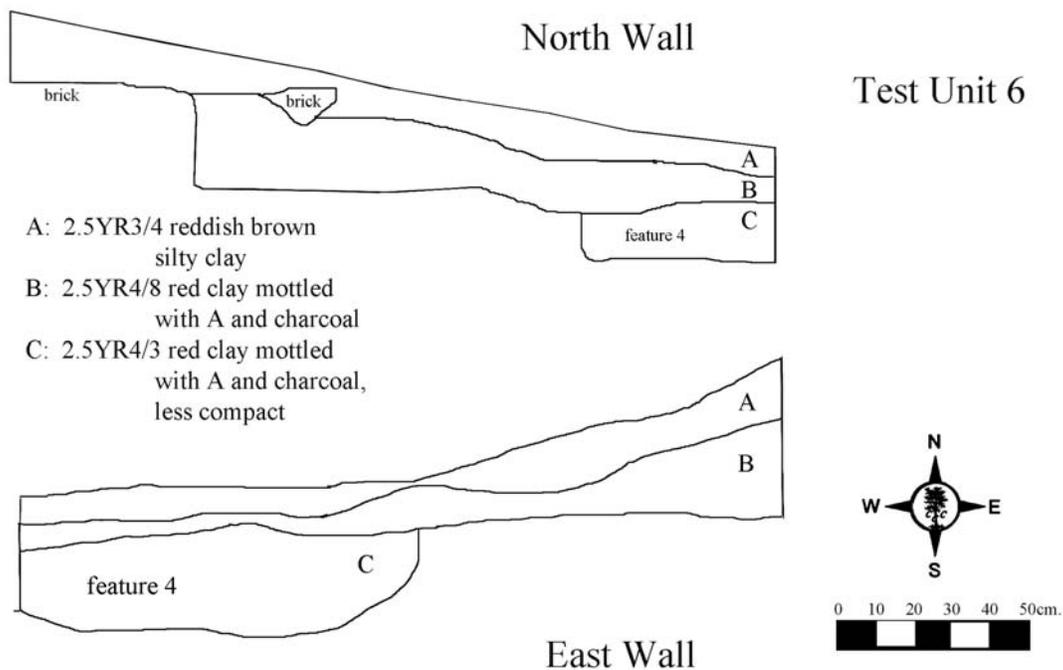
Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble				5kg.
	Iron	Nail	Cut		22	77.8
	Glass	Window	Fragment		3	0.9
Kitchen	Glass	Bottle	Fragment, "INC"	Green	1	4.2
	Glass	Bottle	Fragment	Green	3	1.2
	Glass	Bottle	Rim fragment	Clear	1	0.3
	Glass	Bottle	Thin fragment	Clear	2	0.4
Other	Iron				1	11.6



**Figure 101. Sketch of Feature 4 in Test Unit 6 at the base of Level 3.**



**Figure 102. East view of Test Unit 6, Level 3 and Feature 4.**

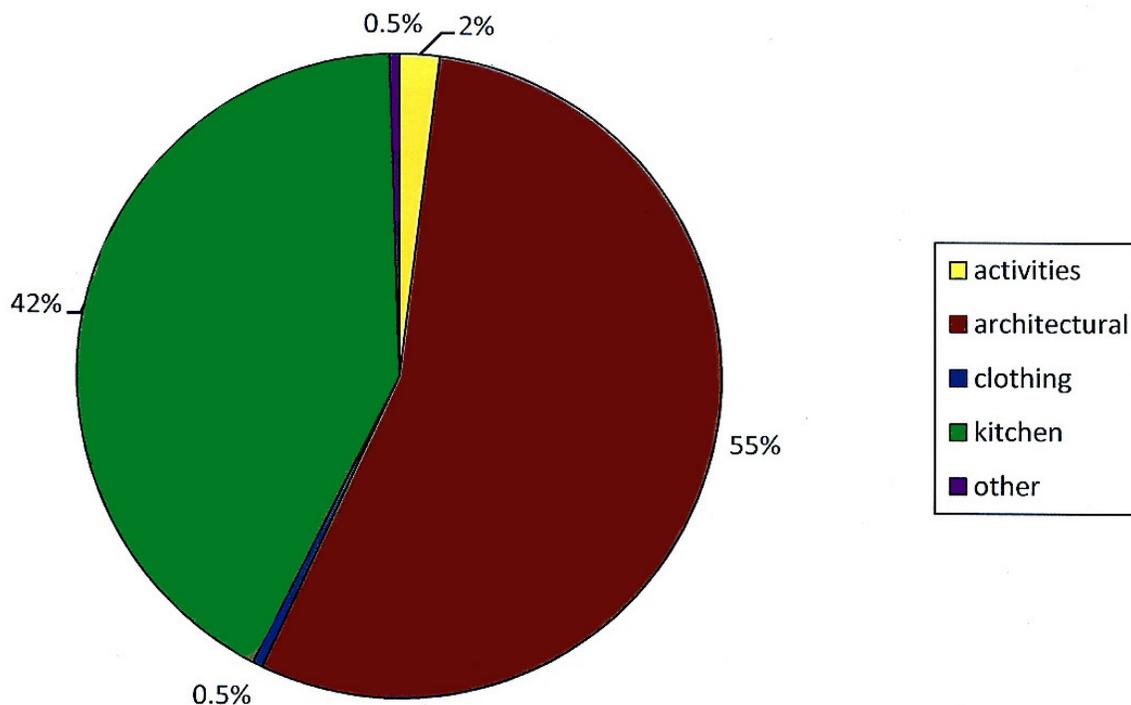


**Figure 103. Profile sketches for Test Unit 6 including the north and east walls.**

Test Unit 6 revealed a small variety of artifacts (Figure 104). The artifacts can be classified into five groups and include architecture (n=110), kitchen (n=84), activities (n=4), clothing (n=1), and other (n=1) (Figure 105). The architectural group is underrepresented since the brick rubble (weight=32kg.) was not included in the count analysis.



**Figure 104. Artifacts recovered from Test Unit 6, Level 1. (From top left to lower right: iron shoe tap, spike, blue molded pearlware fragment, plain pearlware fragment, green bottle glass fragment, annularware fragment, and a burned cut nail.**



**Figure 105. Artifact types found in Test Unit 6.**

As also revealed in Test Units 1, 4 and 7, the location of Test Unit 6 represents the remains of a structure that includes a collapsed brick chimney. A brick floor that was initially found in the eastern edges of Test Units 1 and 7 and the majority of Test Unit 4 underlay the western end of the unit (Figure 106). The presence of the structure is evident since 54.0% of the artifact assemblage includes architectural items. In addition, wood planks oriented north/south were identified on the eastern edge of the unit at the level of the brick floor. The presence of wood planks indicates that a wood floor may have existed on the outside of the room with the brick floor and perhaps outside of the house. The possibility that Test Unit 6 represents the eastern edge of the structure is supported by the presence of a possible builder's trench and a flat foundation stone. In addition, the stacked rock wall extending from the west, south of Test Units 1 and 4, ends in this location. Similarly, food preparation or consumption must have been conducted within the area since 42.0% of the recovered artifacts were kitchen items. The remaining artifacts include a shoe tap, a chalk-like material, cinder, and an unknown brass item. The cinder and chalk-like material may be from activities associated with the tanning process.

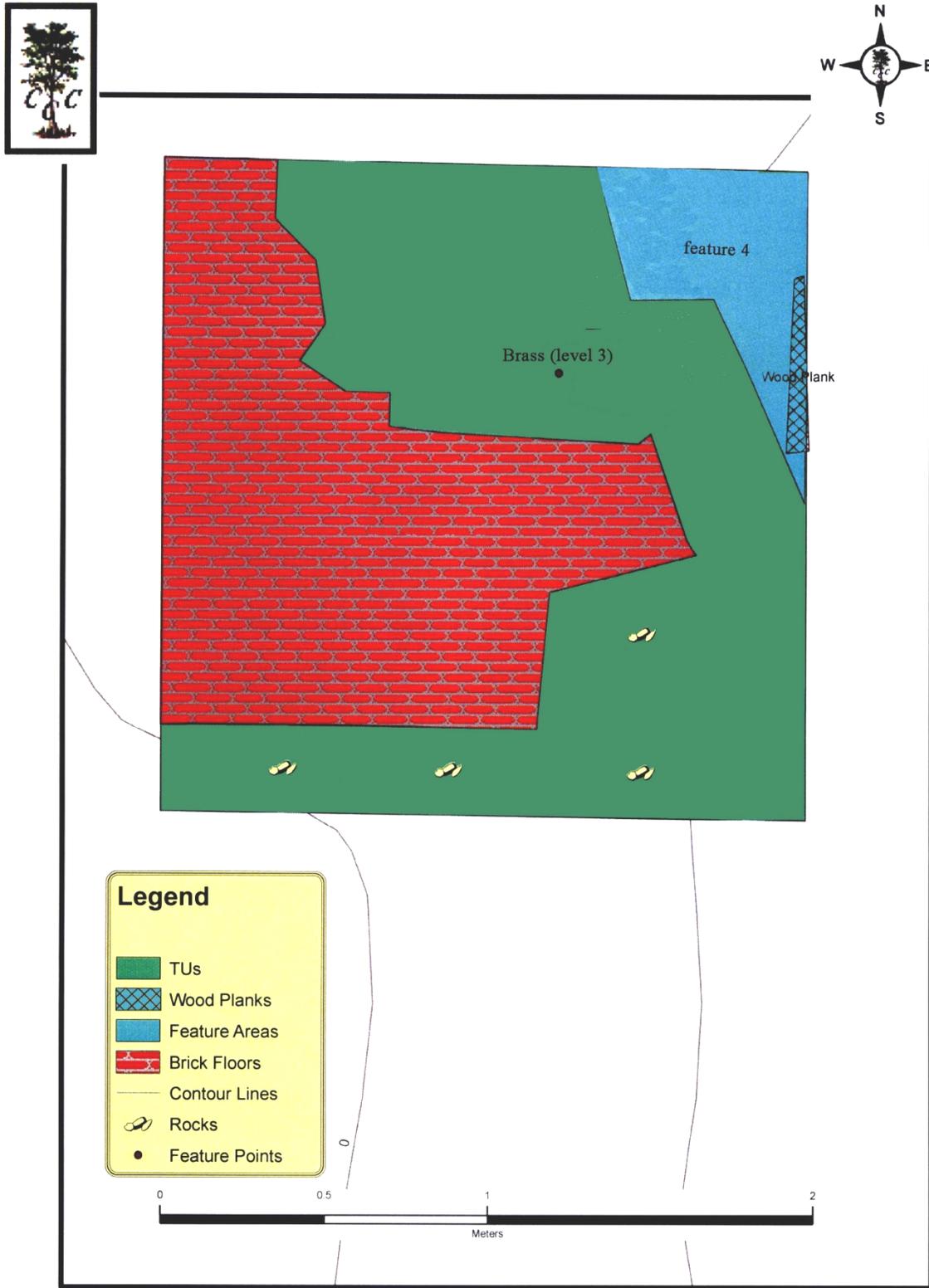


Figure 106. Map of Test Unit 6 as delineated by the total station.

## Test Unit 2

Test Unit 2 was excavated in two levels adjacent to the south end of the granite grinding stone (Figure 107) north of the tanning vats. The coordinates of the test unit were 1026.1-1028.1m northing and 999.6-1001.6m easting. The test unit was placed between a low earthen rise and the grinding stone. The rise encloses a donut-shaped depression that was cross cut by the test unit. The area is believed to represent the location of the bark mill that was located at the site. The test unit measured 2 meters square with a datum located near the SE corner of the unit at a relative elevation of 99.33m. The elevations of the corners of the unit were 99.22cm in the SW corner, 99.13cm in the NE corner, 99.20cm in the NW corner, and 99.25cm in the SE corner.



Figure 107. Views of two grinding stones from the Clinton Tannery.

Level 1 was excavated in an uneven layer measuring 10 cm in the SW corner, 9 cm in the NE corner, 2 cm in the NW corner, and 15 cm in the SE corner to a depth of elevation between 99.18m and 99.04m. The soil of the layer included 5YR4/6 yellowish red clay throughout much of the level except the northeast corner where the soil was 5YR3/3 dark reddish brown silty clay. The artifacts that were recovered from the level are listed in Table 19. The base of the level is shown in Figures 108 and 109.

Table 19. Artifacts recovered from Test Unit 2, Level 1.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble	High-fired fragment		2	137.2
	Quartz	Rock	Fragments			
	Iron	Nail	Cut		8	22.3

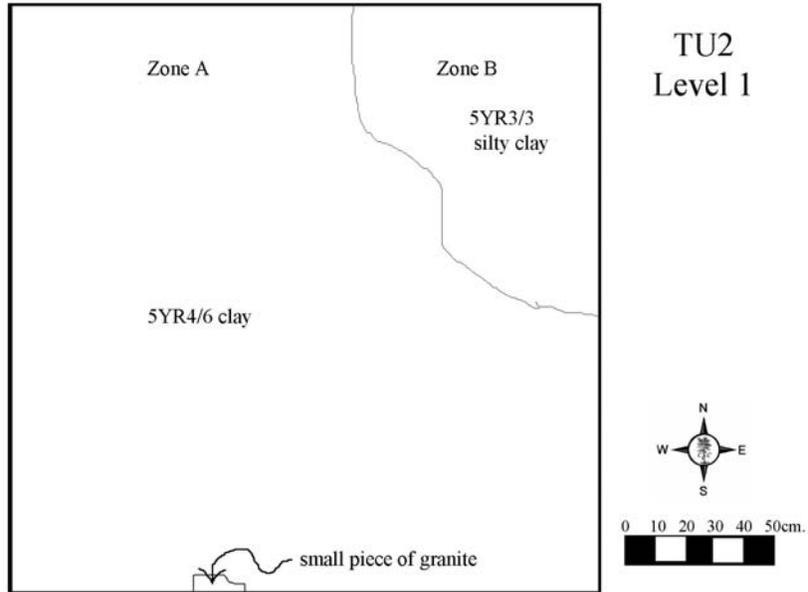


Figure 108. Sketch of the base of Test Unit 2, Level 1.



Figure 109. East view of the base of Test Unit 2, Level 1 showing the grinding stone to the north.

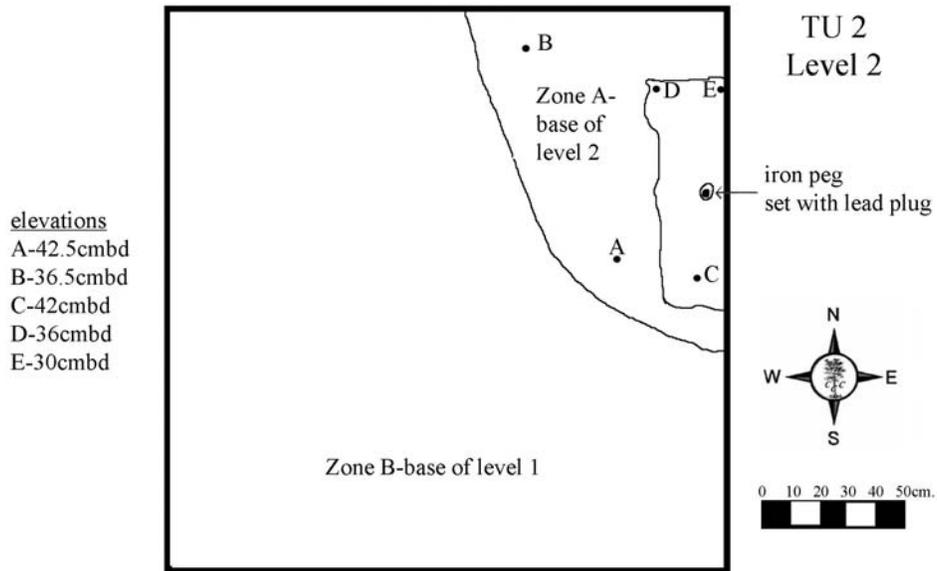
Level 2 was divided into two zones, Zone A and B (Figure 108). Zone B encompassed much of the test unit and was not excavated due to an absence of artifacts and the presence of clay subsoil. Zone A followed the donut-shaped depression that was visible at the ground surface prior to the excavation of the test unit. The zone, located in the northeast corner of the unit, was excavated in a 10cm layer to a depth of elevation of 98.94m. The soil of the layer included 2.5YR4/8 red clay mottled with 2.5YR3/3 dark reddish brown silty clay. The artifacts that were recovered are listed in Table 20. At the base of the level along the eastern edge of the test unit, a large cut granite block was revealed. The block measured 80cm long and at least 28cm wide before disappearing into the east wall of the test unit. The granite block featured an iron peg embedded in the center of the rectangular stone by the use of a lead plug (Figure 110). The base of the level is shown in Figures 111 and 112.

Table 20. Artifacts recovered from Test Unit 2, Level 2, Zone A.

Group	Material	Item	Description	Color	Count	Wt.
Architectural	Brick	Rubble				2kg.
	Brick	Rubble	High-fired fragments		3	182.6
	Iron	Nail	Cut		1	2.4
	Quartz	Rock			2	273.5



Figure 110. East view of the cut stone found in Test Unit 2.



Soils

zone A-5YR3/3 (dark reddish brown) silty clay  
 zone B-2.5YR4/6 (red) clay

**Figure 111. Sketch of the base of Test Unit 2, Level 2 of Zone A.**

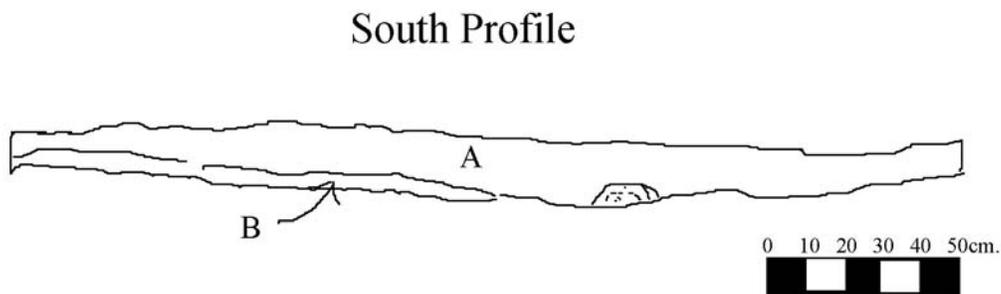


**Figure 112. South view of Test Unit 2, Level 2, Zone A with the grinding stone to the north.**

Test Unit 2 revealed only a few artifacts (n=19) that can all be classified into the architectural group. A sample of these is shown in Figure 113. The soil revealed an absence of organic material as revealed in the soil profile of the test unit (Figure 114).



Figure 113. Artifacts from Test Unit 2, Level 1. (From left to right: 2 quartz rocks, 2 high-fired brick fragments, and a cut nail.)



Soils

zone A-5YR3/3 (dark reddish brown) silty clay

zone B-2.5YR4/6 (red) clay

Figure 114. South profile of Test Unit 2.

The location of Test Unit 2 likely represents the remains of the bark mill used to pulverize bark for the tanning process and includes at least one of the grinding stones. No kitchen or personal items were found during the excavations indicating that the area was exclusively used for manufacturing purposes. The grinding stone is likely located near the grinding activities due to its sheer size that would have made moving the stone difficult. In addition, the bark mill is likely located in close proximity to the tanning vats where the ground bark would have been used. The iron peg embedded in the granite block was likely the pivot point for a wooden post that would have been turned by an animal such as a horse or mule (Figure 44) to provide energy for the mill. Based on the lack of nails found in this location, any structures in this location were simple, perhaps only a shed without walls or were built with the use of wooden pegs. Perhaps the area was occupied only by the apparatus used to prepare the bark and did not have any structure surrounding it.

## Test Unit 5

Test Unit 5 was excavated in three levels and two zones adjacent to the south end of the granite grinding stone north of the tanning vats and the eastern edge of Test Unit 2. The coordinates of the test unit were 1026.1-1028.1m northing and 1001.6-1002.6m easting. The test unit was placed within borders of a low earthen rise. The square rise encloses a donut-shaped depression that was cross cut by the test unit. The area is believed to represent the location of the bark mill that was located at the site. The test unit measured 2m north/south and 1 m east/west with a datum located near the SW corner of the unit at a relative elevation of 99.33m. The relative elevations of the corners of the unit were 99.25cm in the SW corner, 99.24cm in the NE corner, 99.13cm in the NW corner, and 99.17cm in the SE corner.

Level 1 was excavated in an uneven layer measuring 37 cm in the SW corner, 36 cm in the NE corner, 25 cm in the NW corner, and 29 cm in the SE corner to a depth of elevation of 98.88m. The soil of the layer included 5YR4/4 reddish brown silty clay throughout much of the level (Zone A) except the southern end of the unit where the soil was 2.5YR4/8 red clay (Zone B) which was excavated but not screened. The artifacts that were recovered from Zone A were limited to 4 fragments of brick weighing 101.4g. The remainder of the large cut granite block first identified in Test Unit 2 was revealed. The block measured 80cm long and 50cm wide with three tool scores along the top eastern edge. The base of the level is shown in Figures 115 and 116.

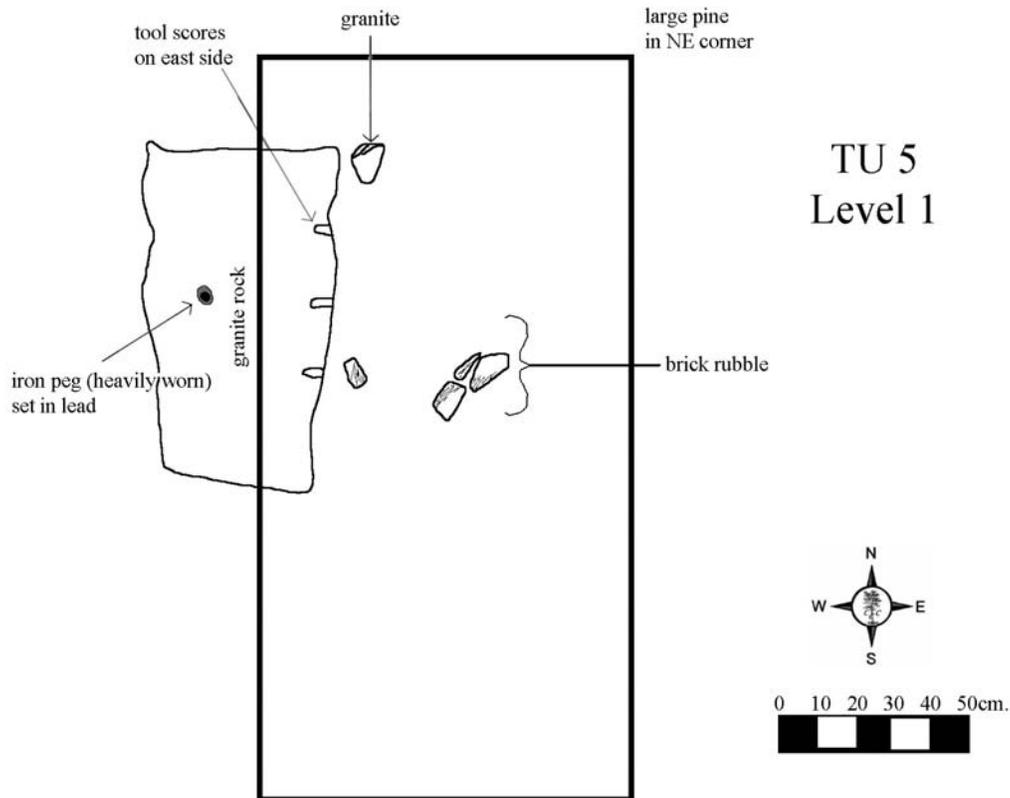


Figure 115. Sketch of the base of Test Unit 5, Level 1.



**Figure 116. East view of Test Unit 5, Level 1.**

Level 2 was divided into two zones, Zone A and Zone B, following the zones in Test Unit 2. Zone A encompassed much of the test unit and was excavated in an uneven layer measuring 16 cm in the NW corner of the unit and 18 cm in the NE corner to a depth of elevation between 98.88m and 98.70m. Zone A followed the donut-shaped depression that was visible at the ground surface prior to the excavation of both Test Units 2 and 5. Zone B, located from 0 to 70cm from the south end of the unit, was not excavated due to the absence of cultural material and the presence of clay subsoil. The soil of the layer included 5YR4/6 yellowish red silty clay. A single whole brick was recovered and measured 21.7cm long, 9.7cm wide, and 8.0cm thick. The brick was discarded. The base of the level is shown in Figure 117.

Level 3 was excavated only beneath the cut granite block on the western edge of the test unit. The level included only a 50cm square located 50cm from the eastern edge of the test unit and 50cm from the north wall. The soil included 5YR4/6 yellowish red silty clay except at the base of the level where a thin 5cm layer of 2.5YR2.5/1 reddish black loam was identified at the base above the underlying saprolite. No cultural material was identified in the level beneath the granite block. The excavation of the level revealed the shape and thickness of the cut granite block. The bottom of the block was rounded measuring only 6cm on the south end, 25cm in the center, and 20cm on the north end. The base of Level 3 is shown in Figures 118 and 119.

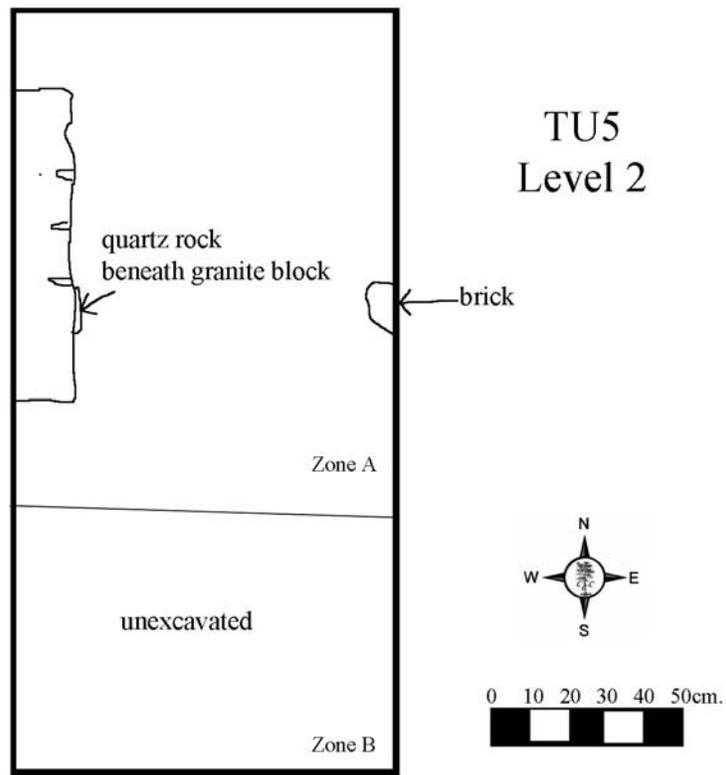


Figure 117. Sketch of the base of Test Unit 5, Level 2.

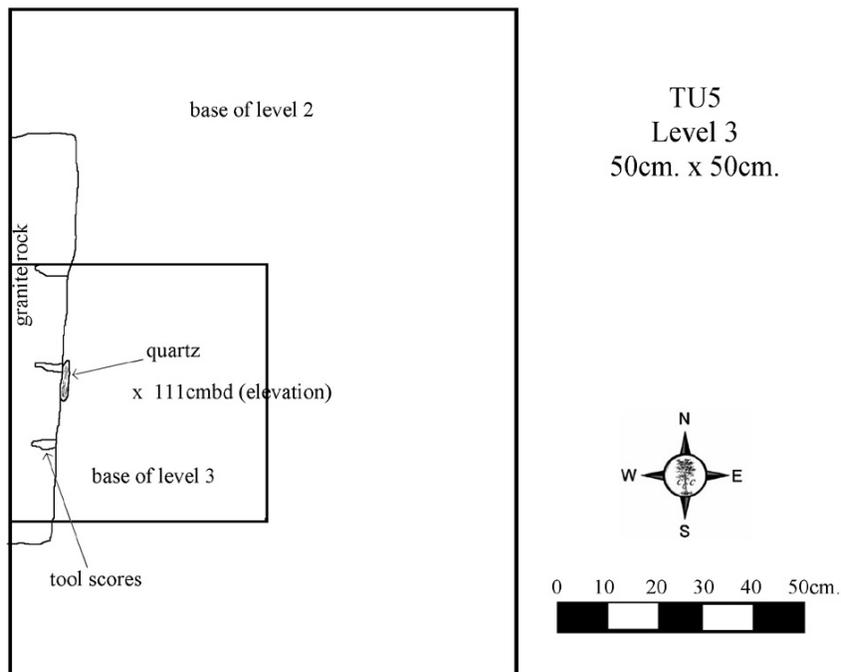
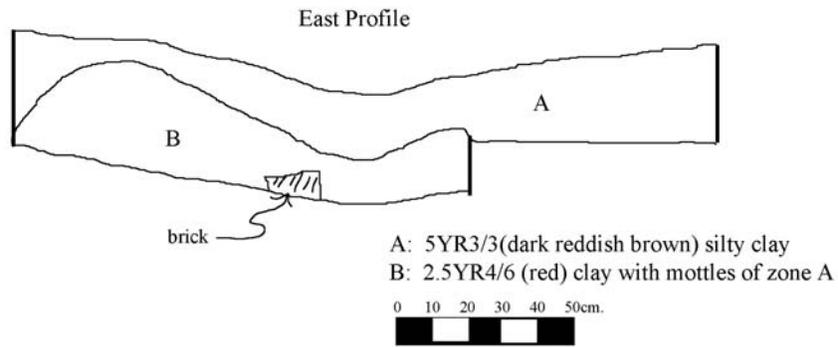


Figure 118. Sketch of the base of Test Unit 5, Level 2 and Level 3.

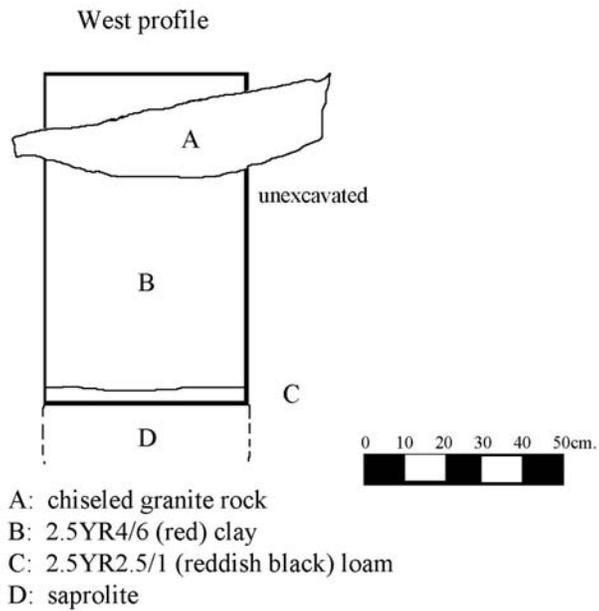


**Figure 119. South view of the base of Test Unit 5.**

Test Unit 5 revealed only a single brick (n=1) and brick fragments (n=4) that are classified into the architectural group. The soils were poor in organic material as evident in the test unit profiles (Figures 120 and 121). Similar to Test Unit 2, the location of Test Unit 5 likely represents the remains of the bark mill used to pulverize bark for the tanning process and includes at least one of the grinding stones (Figure 122). No kitchen or personal items were found during the excavations indicating that the area was exclusively used for manufacturing purposes. No nails were identified during the excavations. Therefore, any structures in this location were simple, perhaps only a shed without walls or were built with the use of wooden pegs. Perhaps the area was occupied only by the apparatus used to prepare the bark and did not have any structure surrounding it.



**Figure 120. East profile of Test Unit 5.**



**Figure 121. West profile of Test Unit 5, Level 3.**

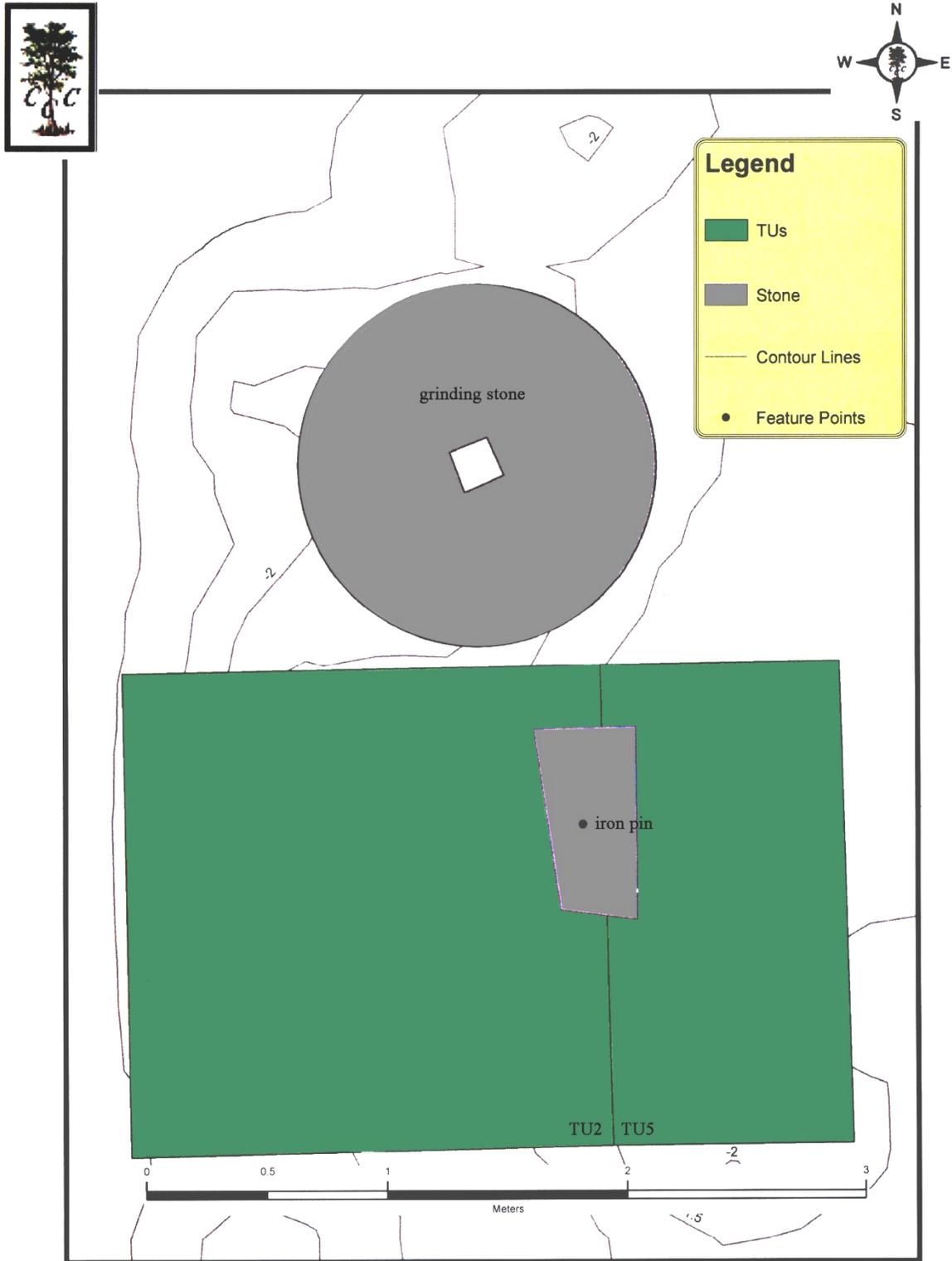


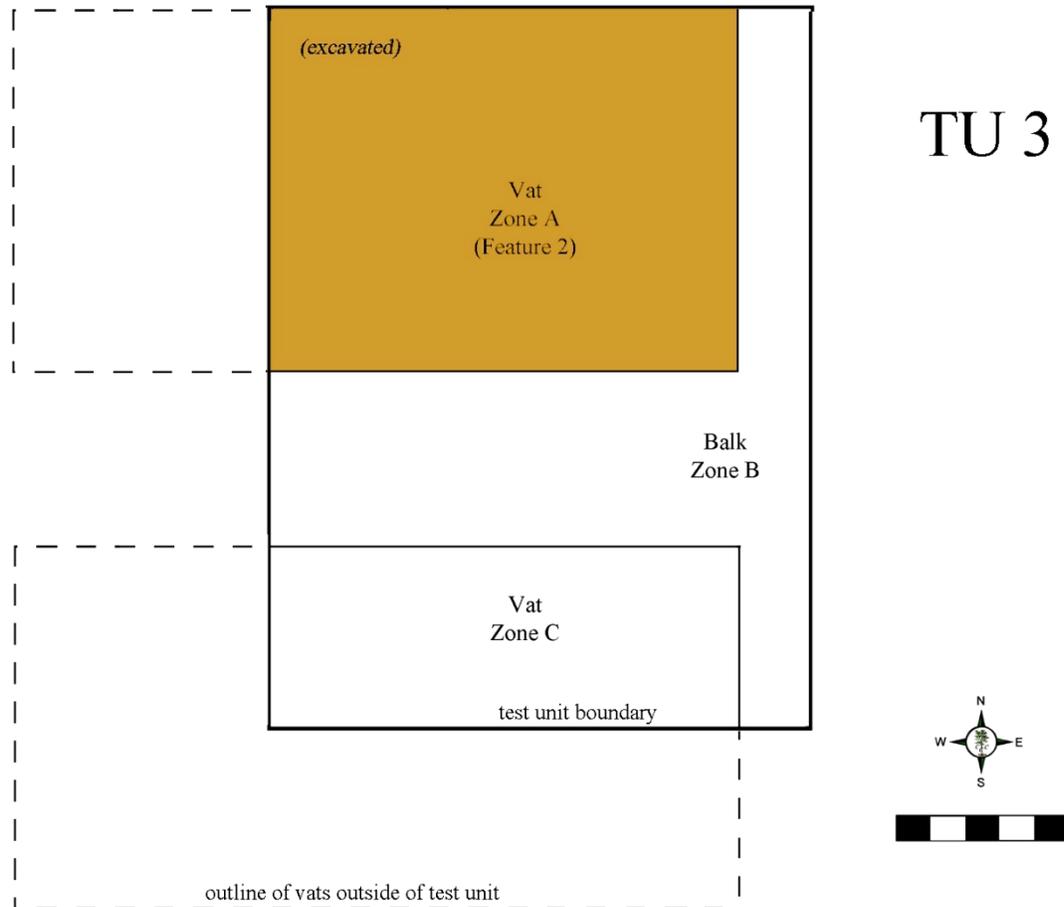
Figure 122. Map of Test Units 2 and 5 as delineated by the total station.

### Test Unit 3

Test Unit 3 was located in the area of the first intact row of tanning vats adjacent to the creek and measured 2m by 1.5m oriented north/south (Figure 123). The coordinates of the test unit were 1012.1-1014.1m northing and 1006.1-1007.6m easting. The datum was located near the NW corner of the unit at a relative elevation of 99.10m. The elevations of the corners of the unit were 98.42cm in the SW corner, 98.62cm in the NE corner, 98.82cm in the NW corner, and 98.63cm in the SE corner. The test unit cross cut the northeastern corner of a group of vats and was divided into three zones. Zone A included a portion of the interior of the northern vat, Zone B included the earthen balk around the two vats, and Zone C included a portion of the interior of the southern vat. Due to time constraints, however, only Zone A was dug and was excavated in a single layer. The zone was identified as Feature 2 (Figure 124).



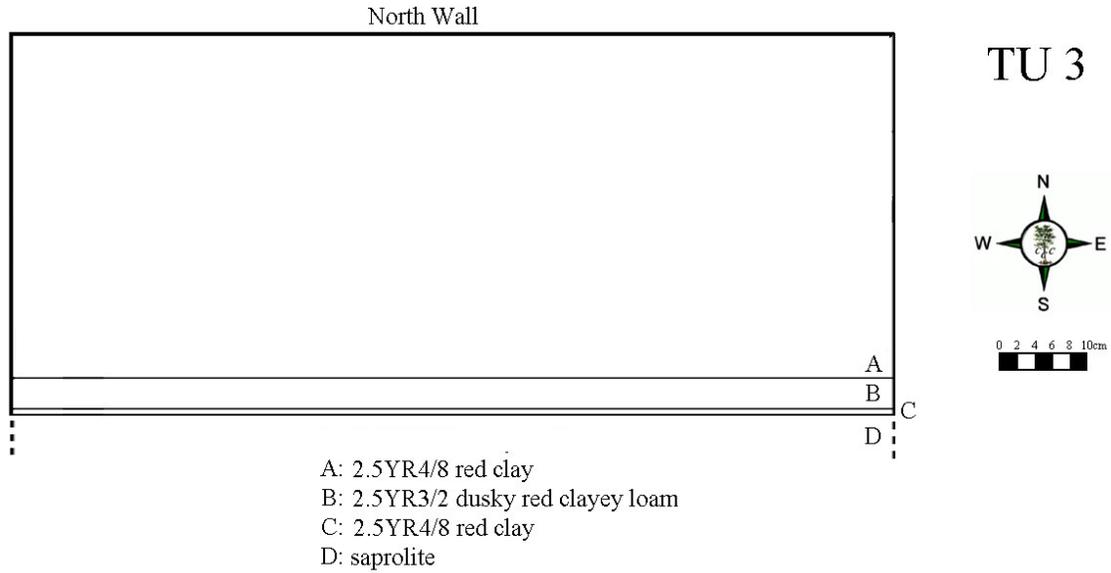
**Figure 123. North view of Test Unit 3.**



**Figure 124. Sketch of Test Unit 3 showing the location of the test unit in relation to the vats.**

Feature 2 measured 1.3m by 1.0m oriented east/west. The feature was excavated in a single layer measuring 25 cm on the east end and 30 cm on the west end to a depth of elevation between 98.11m and 98.15m. The majority of soil in the feature included 2.5YR3/2 dusky red clayey loam followed by a thin lens 2.5YR 4/8 red clay at the base underlain by saprolite. A profile of the north wall is shown in Figure 125. The artifacts that were recovered from the feature were limited to a single cut nail (3.4g) and a plain fragment of refined earthenware (3.1g). Feature 2 is shown in Figure 126.

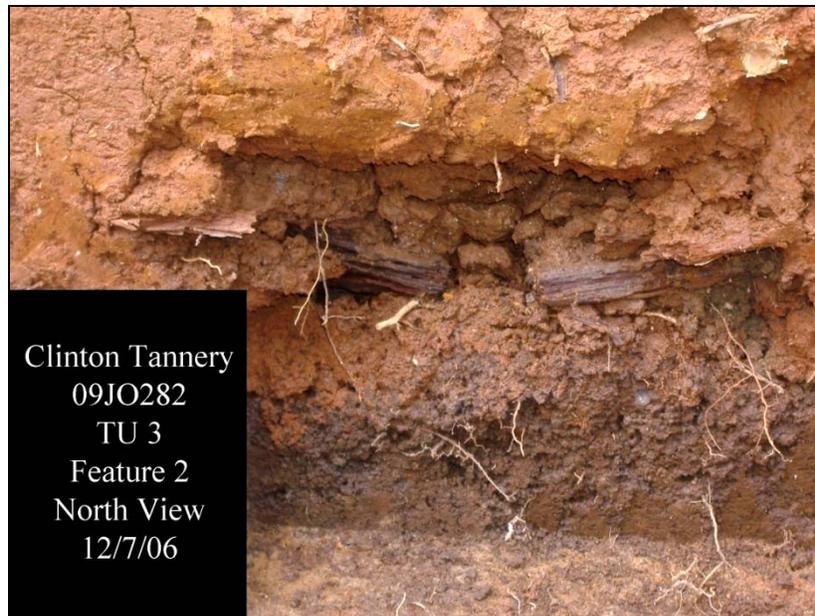
In addition to a cut nail and a fragment of a refined earthenware ceramic, Test Unit 3 revealed several areas where wood was preserved. This included the floor where only small wood knots were identified as well as remnants of wood planking set on edge along the east wall and on the eastern end of the south wall. In addition, wood fragments were identified within the north balk outside of the vat (Figure 127). These wood fragments were not flat planking as would be expected from remnants of the vat walls but appeared to serve a different function. This function could include a drainage system for the vat or possibly the remains of a structure used to attach the vats to each other during their construction.



**Figure 125. Profile of the soil layers identified in Feature 2.**



**Figure 126. North view of the base of Feature 2. (Note: wood in the wall outside of the vat.)**



**Figure 127. Wood inside the balk surrounding the vat of Feature 2.**

The soil profile of the north wall of the unit reveals details of the vats construction. The vats were constructed in a hole dug down to the saprolite that separates the soil from the bedrock. A thin layer of red clay was spread over the saprolite on which the vats were constructed. Following their construction, and perhaps the construction of a drainage system, red clay was packed around the vats to form the subterranean tanning system. Although the present study was limited to excavation of a portion of a single vat, the testing revealed that structural remains of the tanning vats remain intact and may provide valuable information on the tanning process. In addition, soil testing of the loamy soil identified at the bottom of the vats may reveal the types of vegetable material being used in each, thus, allowing insight into the steps of the tanning process.

### Jake's Woods

During the current investigations, the crew took a short trip to the location where many of Clinton's granite curb stones and cemetery wall stones were quarried. This area known as Jake's Woods (09JO298) includes a wooded ridge littered with many granite outcrops and boulders that lie on the opposite side of Tanyard Branch (Figure 128). At this location, several of the granite stones exhibit signs of being quarried (Figures 129-132) including tool scoring as well as unnatural breaks. Doubtless, the bark mill stones supplied to the Clinton Tannery were also obtained from this location and fashioned into the necessary shape. Jacob "Jake" P. Hutchings, a slave owned by R.H. Hutchings, became a stone mason skilled in the art of quarrying and stone crafting. He is credited with providing Clinton with the curb stones that line many of its streets and blocks for numerous structure foundations, as well as the rock walls and tombstones found in the area cemeteries. According to a Jones County Cemetery website,

His work is very ornate requiring little mortar if any to retain the gigantic blocks in place. He cut much of the stone that is visible today in Clinton as well as the stone that is seen around the grounds of the current Jones County Courthouse. The

stone around the Courthouse was originally the county jail which was located in Clinton until it was destroyed during The War Between the States.

Jacob Hutchings became a Republican member of the Georgia Legislature in 1866, being the only black representative in the history of Jones County. He was known to wear a tall silk hat and was a prominent influence in the black political community after the war. Jacob's wife was Emma and he acquired a considerable amount of land before his death on June 6, 1909 (Colvin 2007).

The large stone cemetery enclosure found at the Cabaniss-Hungerford-Hanberry House 10.5km (6.5 miles) north of the project area provides an example of Jacob's work (Figure 133). This house built in 1805 was constructed by George Cabaniss, a former Revolutionary War soldier born in Amelia County, Virginia. The clapboard house remains the only example of a Jeffersonian Classicism residential structure in Georgia and one of the few in the South (Owens Battle and Dean 2006).

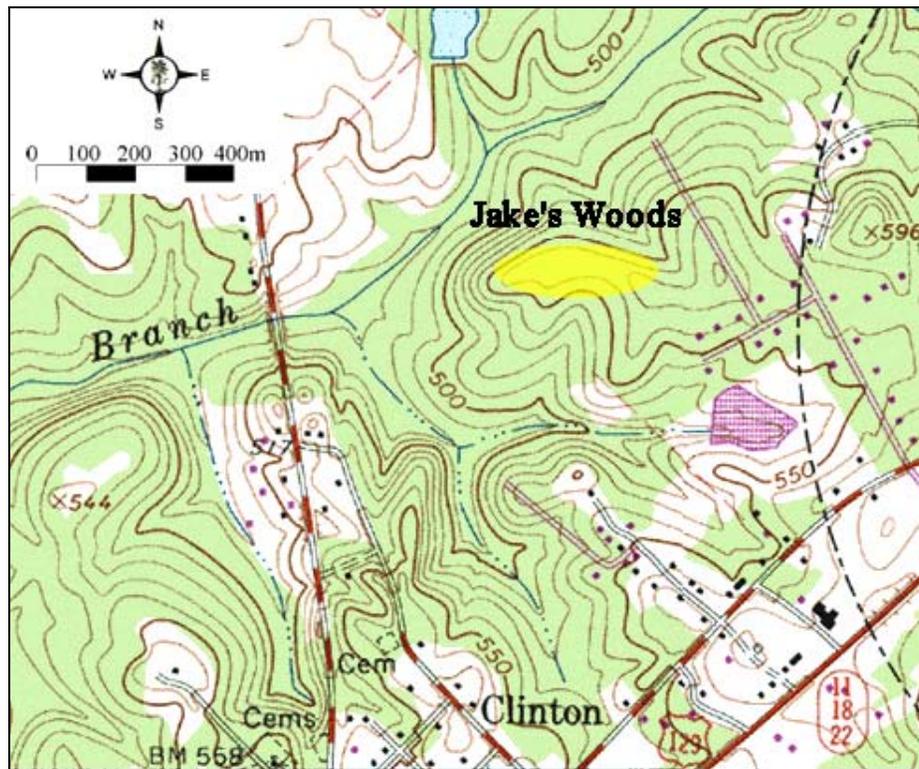


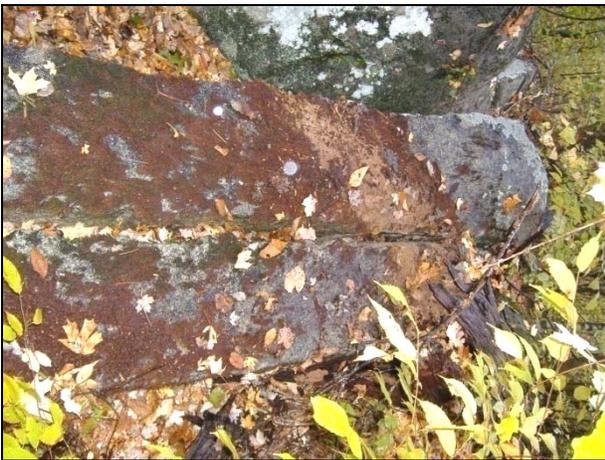
Figure 128. Location of Jake's Woods north of the project area.



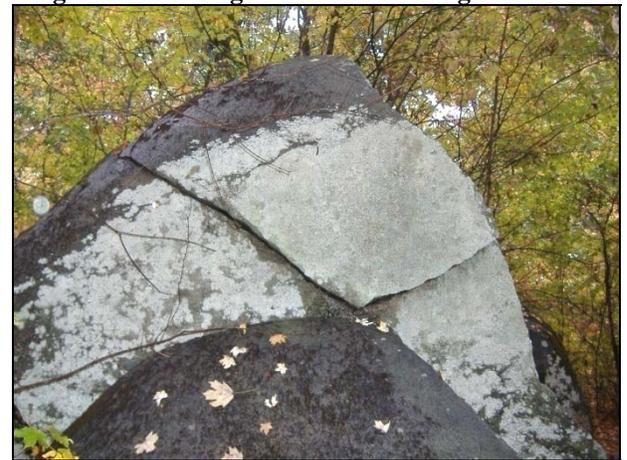
**Figure 129. A large quarried stone with tool scores.**



**Figure 130. A large boulder exhibiting tool scores.**



**Figure 131. A large split granite block.**



**Figure 132. A large boulder that has been split.**



**Figure 133. View of the well-crafted granite enclosure at the cemetery of the Cabaniss-Hungerford-Hanberry House.**

## Conclusions and Recommendations

Today the Clinton Tanyard exists relatively unaltered from its condition in November 1864 after it was destroyed by the Federal Army. This layout likely resulted from numerous reconstructions and alterations since it was first operated by Hurricane Jones around 1811. A note in the 1832 tannery ledger indicates that the tanyard may have been expanded or repaired at least once. An unidentified person wrote: "I understand that it is your intention to commence the tannery business-I can complete a Tannery on the cheapest and most convenient laid plans." The condition of the tannery discussed in this letter remains obscure. Nonetheless, the Clinton tanyard is a product of the changes in ownership, management, and technology that occurred over its fifty years in operation tracing an early vegetable leather industry through the formative years of Georgia history.

The Clinton Tannery includes a bark mill, a system of tanning vats, and at least one enclosed structure. The sophisticated process of tanning leather required many steps that had to have physical space in which to be conducted. Considering the restricted amount of space available along Tanyard Branch, the operation likely utilized the available ground surface as well as space available in the upper stories of a building or buildings constructed at the site. A flat area was created along the creek for the early stages of the tanning process. The more pleasant steps of the leather industry, drying and crafting, were likely conducted in the first and second floors of a structure built against the west bank of the creek and accessed from an upper floor via an artificial terrace. A possible layout and process utilized at the Clinton Tannery was formulated based on close examination of similar tanneries as well the archaeological testing of the site (Figure 134).

A circular trough feature located on the north end of the site in the vicinity of Test Units 2 and 5 likely represents the remains of a bark mill grinding station. This component might be one of the most unique features still in existence at the site. One bark mill stone remains in its original location where it fell from the bark mill apparatus during destruction and decay. The indented ground feature most likely represents the 16 ft circular track repeatedly walked by the animal that powered the mill. This conclusion is supported by the discovery of a large cut stone block found at the boundary between Test Units 2 and 5 in the approximate center of the circular feature. An iron rod was inserted in the center of the block. The rod was anchored securely in a large drilled hole by a lead plug. The protruding iron rod is evenly worn in a pattern consistent with heavy usage. This rod likely served as the anchor for the center shaft of the bark mill apparatus. This main pole would have been constructed of a strong wooden beam with a second wooden beam intersecting it at a 90<sup>0</sup> angle. The bark mill stone, or runner stone, was attached similar to a wheel on one end of the beam and the opposite end was attached to an animal such as a horse or ox. (A large square hole in the grinding stone located adjacent to Test Unit 2 indicates that the wooden rod through its center would have turned while the mill was in motion.) Another feature of some bark mills that may have been used at the Clinton Tannery is a bark dryer. To complete this setup, a large cogged wooden wheel similar to a gear was fixed at the top of the center shaft. The cogs would have turned an apparatus attached to a mesh barrel in which bark would have been placed. The basket would have tumbled the bark over an open fire to drive out any remaining moisture. The fire-dried bark would be very brittle and easy to pulverize.

# The Tanning Process

A-Green unprocessed hides are brought to this area, usually open with no shelter. The hides are usually cleansed, preferably in flowing water. Sometimes a chamber is built in the creek.) The water removes the filth, flesh, and blood. After being emerged for about 3 days, the hides have rehydrated and swelled."I put my first hides into soak-thus beginning my tanning business" (Wood and Wood 1971: 320).

B-The hides are removed from soak and carefully scraped while wet to remove any flesh or fat. The skins are put into a strong lime solution to remove the hair. "I worked the hides and put some of them-into the lime" (Wood and Wood 1971: 320). Reuben King wore Nankeen overalls, a short coat, and vest to protect himself from the lime solution. King indicates that the lime process took about 4 days with great care to ensure that the solution did not damage the hides. "I took up the leather that was laid away. It was unhurt I took 4 sides out of the Lime" (Wood and Wood 1971:323).

C-Hides are bated, usually in an above ground tub. The solution usually consists of water and salt with a pot-ash base. The solution removes the lime and restores some of the pliability of the hide. "I fleshed hides and Dear Skins" (Wood and Wood, 1971:425). King indicates that this step usually takes 2 to 4 days. Also in this location, some hogshhead (barrels) might be located for storage of special hides that were not going through the normal tanning process. "Laid away in a Hogshhead about ten deerskins 3 bear skins 1 sheep skin" (Wood and Wood 1971: 449).

D-Hides are carefully scraped in the open beaming shed to remove all remaining hair and flesh. Beaming was done on a bench with a rounded top. Beaming was performed by a smooth stone set in a wooden handle used to rub the hides and by a beaming knife with a rounded blade. The dehairing process was repeated if necessary. "I grained the hides and ground bark" (Wood and Wood 1971:449).

E-Bark that had been cut into 4 foot long strips were brought from the bark shed, a large walled barn in close proximity to the vats. The bark was often further dried in the sun or by use of an open fire

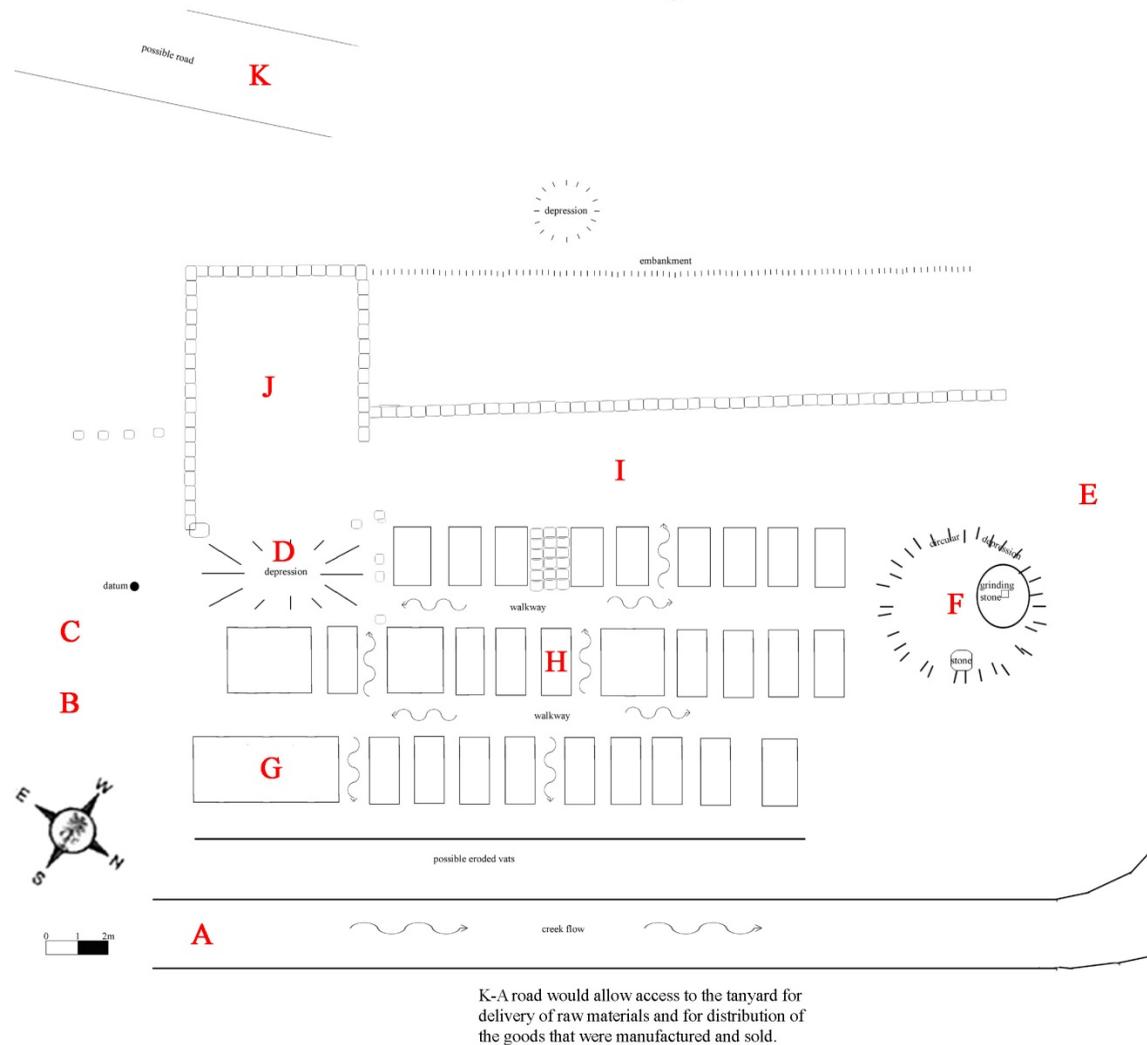
F-The dried bark strips were laid in the path of the runner stone in the bark mill by hand as a horse or ox turned the apparatus. A huge stone wheel would roll over stones set into the ground similar to a walkway. The bark was removed when the desired consistency was met then taken to the handler vats. "I ground Mill full of bark worked 12 sides 2 skins and put them in the bark" (Wood and Wood 1971:326)

G-Cleaned hides were tossed randomly into the handler vats. Ground bark was also added to the vats to create a strong solution called "the liquors," "ooze," or "stuff." Sometimes the handler vats were filled with old tannin solution from the regular tanning vats or "leaches." An underground drainage system often connected the vats. Periodically the hides would be moved around with a wood utensil called a plunger. The hides were taken up on occasion and allowed to drain and then put back into the vats. Uneven edges were also trimmed and sometimes scraped again during this stage. Often thick leathers, such as sole leather, needed the most attention to assure that the pores were open to the later tanning process. "I skived leather" (Wood and Wood 1971:431).

H-The hides were spread out smooth in the tanning vats, or leaches. Ground tan bark was sprinkled between each piece of leather until a desired layer thickness was made. The movement of the leather through the vats was carefully documented by assigning each vat a unique number or letter and recording the date when leather was added. The leather groupings were often referred to as a "pack," "lot," or "layer." Vats could contain several leather groupings. "I finished laying down 32 sides 1 Kip 10 Deer Skins in vat No 5 first layer on top of some tanned leather.... I laid away vat No. 4-60 sides flesh up to the forth layer" (Wood and Wood 1971: 449-450). As the tanning of leather packs became closer to completion, they were moved to vats with lower concentrations of tanning solution. The strength and color of the tannin solution in each vat was carefully judged by the tanner who also checked the tanning progress of the leather.

I-The leather was removed to the drying shed, commonly a large two-story building. Here, the leather was spread onto drying racks. The rooms were usually large and open. Following drying, currying the leather was begun. Oils were added to the leather to restore suppleness. Sometimes currying was conducted in a currying shop. "I began to coury some upper leather Stephen returned from St. Simons with one jug of oil" (Wood and Wood 1971:433).

J-Finished leather was sometimes crafted into leather items at the tanyard. The craft shop may have housed a tanyard caretaker. This area may also have served as the tanyard office where items were bought and sold by customers coming to the tanyard and records were kept. "I cut out 5 pairs of bootlegs" (Wood and Wood 1971: 433). "I worked in the Shop made one pair of Shoes Sow them with a leather string sold them to Mr. Parks at one dollar...[and] stufed a saddle" (Wood and Wood 1971:437). "...Repaired leather work for the Stage for capt. Twining" (Wood and Wood 1971:440).

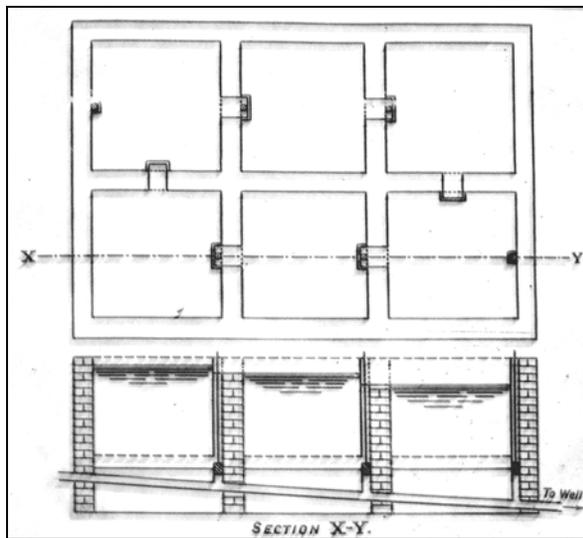


K-A road would allow access to the tanyard for delivery of raw materials and for distribution of the goods that were manufactured and sold.

Figure 134. The tanning process at the Clinton Tannery.

Thomas Pryor's Bark Mill patent featured such a device (Figure 44). A small flat area next to the bark mill may have supported this type of activity. J. Leander Bishop writes, "the rude appointments of a tannery....[feature] a circular trough fifteen feet in diameter, in which the bark was crushed by alternate wooden and stone wheels, turned by two old blind horses at the rate of half a cord a day...." (Welsh 1963:305-306). This account was written to describe a typical American tanyard in the same general era of the Clinton Tanyard.

The subterranean vats at the Clinton Tannery site are probably the most revealing feature to indicate the type of industry conducted at the site. The presence of the features is the most likely reason for the preservation of the site which was generally avoided during logging activities. Land owners encountering such curious features are often inclined to investigate their purpose. This curiosity led to the preservation of 09JO282 and its subsequent sell to the Clinton Historical Society. Tanning vats were often built into the ground in several rows. The area chosen for the tanyard would be completely excavated as one large pit. The wooden vats were carefully built with close



**Figure 135. Sketch from the Shriver Tannery showing both a map view of a sample of tanning vats as well as a cross section.**

attention to make them leak proof. The vat system itself was connected through a drainage system of underground pipes, carefully constructed to utilize a difference in elevation to drain the tanning solutions (Figure 135). The walls of the vats were supported by a series of braces that connected the vats together in one large structure. Evidence of the wooden walls and floors of the vats were found in Test Unit 3. Evidence of the wooden support braces between the vats or a portion of the drainage system was also identified during testing in the soil outside of the vat. The area was not further tested since it lay outside of the test unit. When the vats were in place, the spaces between them were packed with soil so that workers could freely walk uninhibited among them. Water was brought to the vats from a pump or an elevated portion of the local creek through use of a system of troughs/pipes. Evidence of this water delivery system was not identified during the present testing

although the remnant of a creek dam was identified. The tanning vats may have been covered by an open shed although the vats may have been individually covered to prevent exposure to the weather.

An 18' by 28' structure was located between the vats and the stacked stone wall against the dirt bank to the west. According to the excavation of Test Units 1, 4, 6, and 7; two rooms existed in this structure. One room east of the chimney featured a brick floor while the other half west of the chimney was floored with wooden planks and beams. The brick-floored room was equipped with a one sided fire place hearth of unknown height. No hearth opening was noted for the room west of the chimney. In addition, this room, which included about half the total floor area, was constructed in an area that had been carefully dug out of a natural steep hill side. The earthen enclave was supported by a low wall consisting of loosely stacked stone. The room may represent an addition to an earlier structure floored with brick and measuring only 16' by 16'. Additional testing might reveal the construction history of the structure. The structure may have served as housing for an

overseer based on the number of ceramic sherds and bottle glass fragments that were recovered. It probably also served as the currying and leather crafting shop (Figure 136) and perhaps the business office. Although the number of stories or floors included in the building remains unknown, an upper floor would have been easily accessible from the outside. A second terrace was dug into the bank above the low rock wall creating a level ground surface at the approximate elevation of a second story. The old road bed approaches this terrace indicating that the tannery was accessed from this location. A second story would have provided the space necessary for the numerous activities possibly associated with the structure including the greeting of potential customers. A possible appearance for this structure on the grounds of the tanyard has been sketched by one of the authors (Figure 137).



**Figure 136. Different views of a child's shoe found between the upstairs floor joists of an old house in Clinton that may have been tanned and crafted at the local tannery (courtesy of the Simmons family).**

Limited archaeological testing and mapping was conducted at the Clinton Tannery (09JO282), Jones County, Georgia to determine the condition of the resource as well as the ability of the resource to answer significant research questions. The property, which includes the tannery complex as well as the tanner's residence (09JO281) and another antebellum home (09JO280), is currently owned and protected by the Clinton Historical Society. The Clinton



Figure 137. Author's rendition of the Clinton Tannery.

Historical Society plans to continue developing a visitor center on the tract in order to present the history of the town of Clinton to the public. The plans include a possible amphitheater as well as a network of trails to link the tract to other historic sites in Clinton. An archaeological survey (Owens Battle and Battle 2001) of the 5.25 ha. tract will continue to aid in preventing additional impacts to the historic sites located on the tract that are all potentially eligible for the National Register of Historic Places. A map compiled by Cawthon (1984) indicates that the tannery tract may have continued north of the tract currently owned by the historical society (Figure 52). This area identified as tannery property by Cawthon is shown on the plat in Figure 138. This area should be surveyed to identify any activity areas associated with the tannery. The location of the bark shed, wood shop, and other possible outbuildings has not yet been identified.

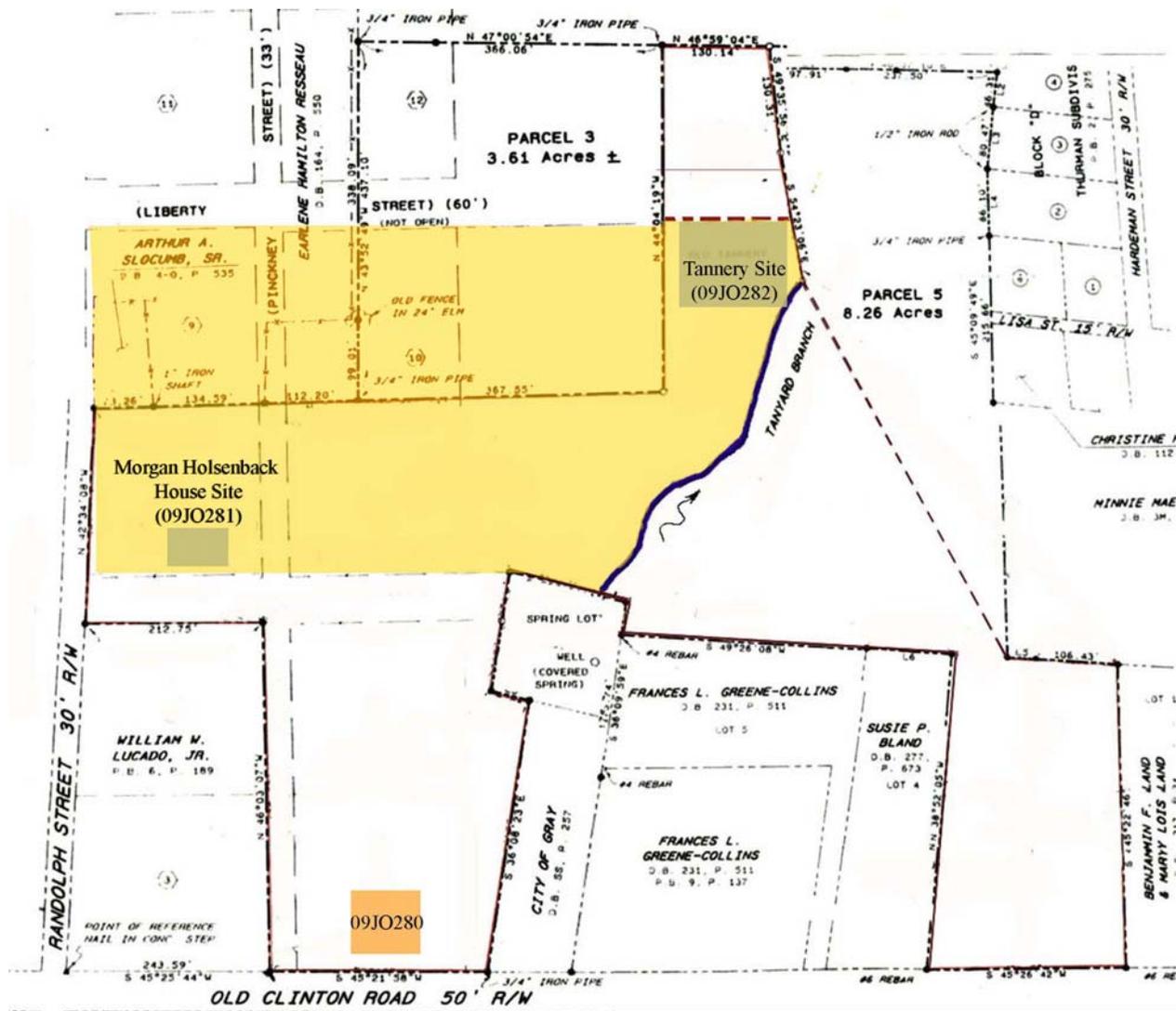


Figure 138. Map of the tract owned by the Clinton Historical Society. (Note: the area in pink may have been part of the original tanner's tract.)

The Clinton Historical Society may consider obtaining land on the opposite side of Tanyard Branch if possible in order to establish a visual buffer for the tannery. Some of the tanyard activities may have occurred in this location. The buffer will also prevent easy access from the opposite side of the branch by potential vandals. Ground disturbance at the site indicated that metal detector enthusiasts may have already caused limited damage to the resource. The Clinton Historical Society may consider posting signs indicating ownership of the property and activities that are and are not allowed on the property. Caution should be used in the wording of the signs in order to limit bringing additional attention to the site.

Future development on the tract should be limited to areas that were determined to be clear of archaeological material. The old roads that run through the tract could serve as excellent locations for modern trails and driveways. The area of Block C on the northeast side of Tanyard Branch could serve as a parking area for the park since it is devoid of cultural material and has been extensively disturbed. The former owner of the land should be contacted to determine if a map of the extensive water pump and sprinkler system exists which will aid in locating areas in which to run any future utilities across the tract. A professional archaeologist should be notified immediately if unexpected cultural material is discovered during future activities.

Based on comments received from members of the Clinton Historical Society concerning their ideas for future development and management of the tract, the following additional recommendations are made. The Georgia Department of Natural Resources, Historic Preservation Division (SHPO) in Atlanta is an excellent source of information for historic preservation and public outreach.

1. Seek professional consultation for long term preservation of the sites including a permanent covering system for the tanyard vats.
2. Seek professional advice before repairing historic structures around town including the rock wall and vats at the tannery.
3. Seek the advice of a landscape architect in constructing trails near the historic sites to limit erosion and foot traffic in sensitive areas. For example, trails up slope from the tannery should occur on boardwalks. Any interpretive stations placed above the site (to allow easy viewing of the tannery site) should also be placed on wooden platforms to avoid erosion of the bank.
4. Seek the services of a professional historic exhibitor to effectively relay the information concerning the history of the tannery and the other sites in Clinton. Interpretive contexts could include: industries destroyed by the Union Army, early leather industry, frontier life in Georgia.
5. The services of a website designer would aid in presenting site information to remote audiences.
6. Seek the advice of others involved in management of historic sites. Some have learned how to make their own signs and brochures. Others have learned to effectively handle pedestrian traffic while encouraging enjoyment of their sites.
7. Seek the advice of a tanner with knowledge of early vegetable tanning techniques to develop a living history program focusing on the Clinton Tannery.

8. Become part of the network of historic organizations and sites in the area and those involved with tanneries (ex: Fort Hawkins Commission and the Union Mills Homestead).
9. Encourage the collection of additional historic documentation for the Clinton Tannery. Additional sources included newspaper archives, special collections at university and state libraries, government documents, military records, and genealogic research sources (learn more about the tannery's owners and patrons.)
10. Remove large trees and other destructive vegetation at the tannery with care not to damage the site.
11. Research means to control erosion from flooding along the creek and from rainwater spilling down the hill west of the tannery. Limit foot traffic on and between the features of the tannery in order to prevent addition erosion at the site and soil slumping within the vats.
12. Construct a fence or other barrier to prevent foot traffic across the site and possible vandalism.
13. Avoid site impact by placing interpretive signs and living history activities outside of the site boundaries.
14. Document artifact collections from the Clinton Tannery and other sites around Clinton. A former owner of the site, William Lucado, has made a collection of items he discovered at the tannery.
15. Seek grant resources for management and development of the historic sites in Clinton (ex: Battlefield Protection Program for Civil War activity or for relationship with Ft. Hawkins).

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