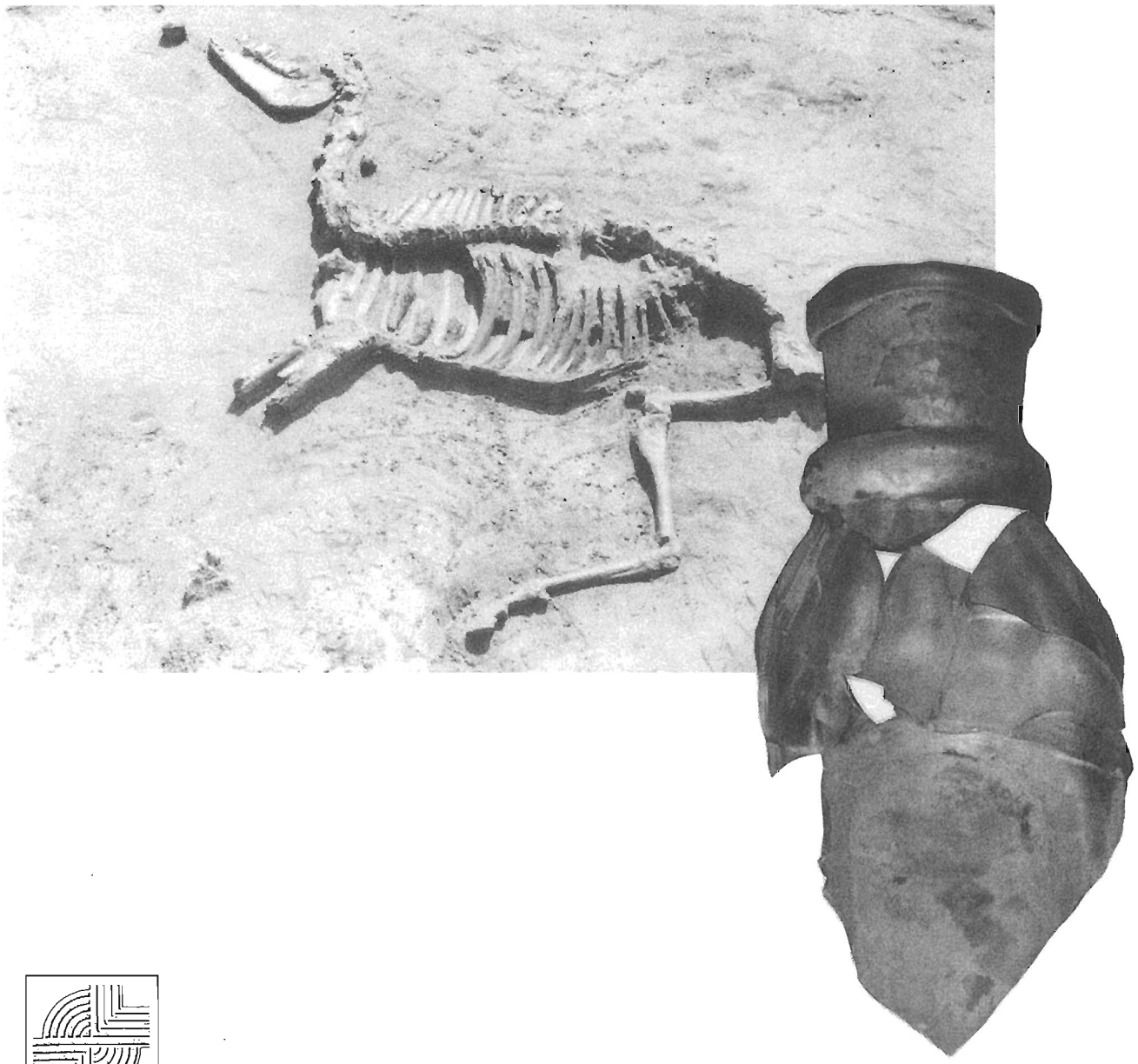
EXCAVATIONS AT A PORTION OF THE SECESSIONVILLE ARCHAEOLOGICAL SITE (38CH1456), JAMES ISLAND, CHARLESTON COUNTY, SOUTH CAROLINA



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EXCAVATIONS AT A PORTION OF THE SECESSIONVILLE ARCHAEOLOGICAL SITE (38CH1456), JAMES ISLAND, CHARLESTON COUNTY, SOUTH CAROLINA

Research Series 52

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Older men declare war. But it is youth that must fight and die.

-- President Herbert Hoover in his speech to the
Republican National Convention, June 27,1944

ABSTRACT

The portion of the Secessionville Site designated 38CH1456 is situated on the southeastern edge of James Island, on the southern edge of the Secessionville Peninsula overlooking what is today called Secessionville Creek. The area is best known as the location of the Confederate Tower Battery and the site of the June 16, 1862 battle which closed the James Island "door" to Charleston for the Union army. The defeat of General Henry Benham at Secessionville likely prolonged the Civil War and certainly altered the Federal strategy along the Carolina coast.

As early as about 2,000 B.C., however, the site was occupied by Native Americans producing what is today known as Thom's Creek pottery. Over the next 3,500 years the peninsula's proximity to shellfish beds and other natural resources made it a prime location of the settlement of small groups. Later the peninsula was the location of colonial, and then antebellum plantations. These, in turn, gave way to what was called Riversville, a planters community on the eve of the Civil War.

Archaeological site 38CH1456 was initially identified in 1992, but was at first thought to represent a Mississippian village. In 1996 Chicora Foundation was retained by the property owner, Martschink Realty Company, to conduct data recovery excavations on the tract. This work was intended to allow the development of the property and the excavations followed a data recovery plan approved by the South Carolina State Historic Preservation Office. Essentially, a variety of areas were to be stripped using heavy equipment, allowing the posited palisade, structures, and other features to be identified, recorded, and sampled.

As work began it was found that there was no Mississippian village. The features thought to represent palisades were agricultural ditches, perhaps associated with Riversville, and the ditches of the Water Battery constructed at Secessionville by the Confederate forces in late 1861 and early 1862. The bulk of the prehistoric materials identified were in disturbed contexts — in the plowzone, in the Civil War fill of the earthworks, and in the postbellum fill of the ditches. Most of these remains date from the Late Archaic and Early Woodland, with a very minor Mississippian component.

Although several intact shell pit features were encountered below the plowzone, most were potted out by site looters. One very large, and dense, shell pit was examined. This feature provides exceptional subsistence data for the Thom's Creek phase with very detailed zooarchaeological analysis of the faunal and shellfish remains. This feature has also been dated using radiometric techniques.

During the excavations, the focus turned to the Civil War materials present on the site. Initially these were primarily the subsurface remains of the extensive ditch and earthwork system developed by the Confederate forces at Secessionville. Not only was it possible to closely correlate the findings of the excavation with the drawings of the earthworks produced at the end of the Civil War, but it was also possible to evaluate the fortification's faithfulness to the military engineering principles of the period.

The stripping also identified an area containing a semi-subterranean hut used by Confederate troops. Nearby was an uncompleted house, as well as several trash deposits. Our focus in this area included not only the exploration of the material culture of the Confederate military, but also examination of faunal, phytolith, and pollen remains. This feature also served as a test of the OCR carbon dating technique.

The Confederate hut and its surroundings at Secessionville are of particular interest since no similar site has been explored in South Carolina.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

We want to thank Mr. Miles Martschink, owner of the property, for his exceptional support and interest in the exploration of the area's rich history and prehistory.

Oversight and review was provided by Mr. Lee Tippett at the South Carolina State Historic Preservation Office and Mr. Fritz Aichele at the Office of Ocean and Coastal Resources Management. Mr. Keith Derting of the S.C. Institute of Archaeology and Anthropology assisted us with the site numbering for the project. Mr. Scott Butler of Brockington and Associates very kindly provided us with copies of their earlier survey report for the site. Ms. Martha Zierden provided assistance in the curation of the collection with The Charleston Museum in Charleston, South Carolina.

We would also like to thank the field crew for their dedication and tremendous support, including Mr. Ian Hamer, Mr. John Hamer, and Mr. Hollis Lawrence, and Mr. Scott Sutton. They did an admirable job under often trying field conditions. Ms. Rachel Brinson-Marrs coordinated cataloging, assisted in a number of different areas in the lab, and helped to compile the historical information.

We also want to thank the others who have contributed to this report in one way or another. Of particular importance are those contributing special analyses: Dr. Cheryl Claassen, Dr. Arthur Cohen, Mr. Douglas S. Frink, Dr. Homes Hogue, and Dr. Irv Rovner. Dr. David G. Anderson was kind enough to offer peer review of different section of the study. Mr. Fritz Hamer was instrumental in tracking down a number of very important references. Dr. Tracy Power provided considerable assistance in understanding the historical significance of the site. Dr. Alex Moore at the South Carolina Historical Society graciously provided us with considerable historical information, pointing us in the direction of sources we had not previously encountered.

We were also fortunate to receive the assistance of a number of colleagues who responded to our inquiry concerning Civil War semi-subterranean huts. In particular, we need to thank Mr. Lyle Browning, Mr. Charles Heath, Dr. Don Linebaugh, Mr. Kevin Smith, and Mr. John Eastman. Finally, to anyone else who may have contributed, but whom we failed to mention, both our thanks for their efforts and our apologies for our forgetfulness.

INTRODUCTION

Previous Research and the Development of the Project

The site being investigated is situated in the Secessionville subdivision on James Island, about 5.0 miles southwest of the City of Charleston (Figure 1). It is found on the southeastern edge of James Island bordered to the south by an extensive marsh that separates it from Sol Legare, Goat, and Morris islands. The area, which for years has been cultivated or used as pasture for cattle, is bounded to the south by the marshes of Secessionville Creek and to the north by Fort Lamar Road (S-385) (Figure 2).

Today the site area is a broad expanse of nearly level fields grown up in light grass (Figures 3 and 4). To the east and west, in areas previously cleared for development activities by the South Carolina State Historic Preservation Office, there are early stages of single family development — laying out of lots, utility construction, and in one case, house construction. It is this anticipated single family development which has necessitated archaeological data recovery at 38CH1456.

The site was initially identified by an archaeological survey of the 32.5 acre development tract conducted by Scott Butler (1994) of Brockington and Associates in late 1992. The survey reported that the site covered virtually the entire development tract and consisted of:

> dense prehistoric ceramic and shell scatter with a relatively dense historic component. . . . Shovel tests recovered prehistoric sherds from both the Woodland and Mississippian periods; oyster shell and whelk tools are also prevalent on the surface. The historic component consists of a dense nineteenth century artifact scatter containing dark green glass, ginger beer bottle stoneware, alkaline and salt glazed stoneware, whiteware, and ironstone. Lead military ammunition and other metal artifacts diagnostic of the Civil War period were also located (during the metal detector survey) (Butler 1994:71).

At the northeast corner of the site Butler reported a possible Civil War encampment, characterized by a low density of artifacts, primarily noted on the surface. A second, more central concentration of prehistoric pottery was found, characterized primarily by "residual" or small sherds which was suggested to represent a "large Mississippian and Woodland period village or camp" (Butler 1994:74).

Although the bulk of the survey effort was limited to shovel testing and metal detecting, a single 1-meter unit was excavated at the extreme northwest edge of the survey tract, adjacent to the Fort Lamar earthworks. Here Butler found a modern plowzone, probably consisting of erosional spoil from earthworks covering an earlier (antebellum) plowzone. This deeper plowzone contained primarily Deptford materials. This survey effort also included a very detailed and thorough historical account of the antebellum Secessionville summer village and the Civil War fortifications at Fort Lamar (Butler 1994:18-56).

The archaeological site form for 38CH1456 recommended the site as potentially eligible, noting that the site "may contain remains of prehistoric residences as well as portions of antebellum slave village associated with Secessionville Plantation and portions of a Confederate camp associated with Fort Lamar" (38CH1456 site form, South Carolina Institute of Archaeology and Anthropology). The report echoed that the site was thought to be potentially eligible, although

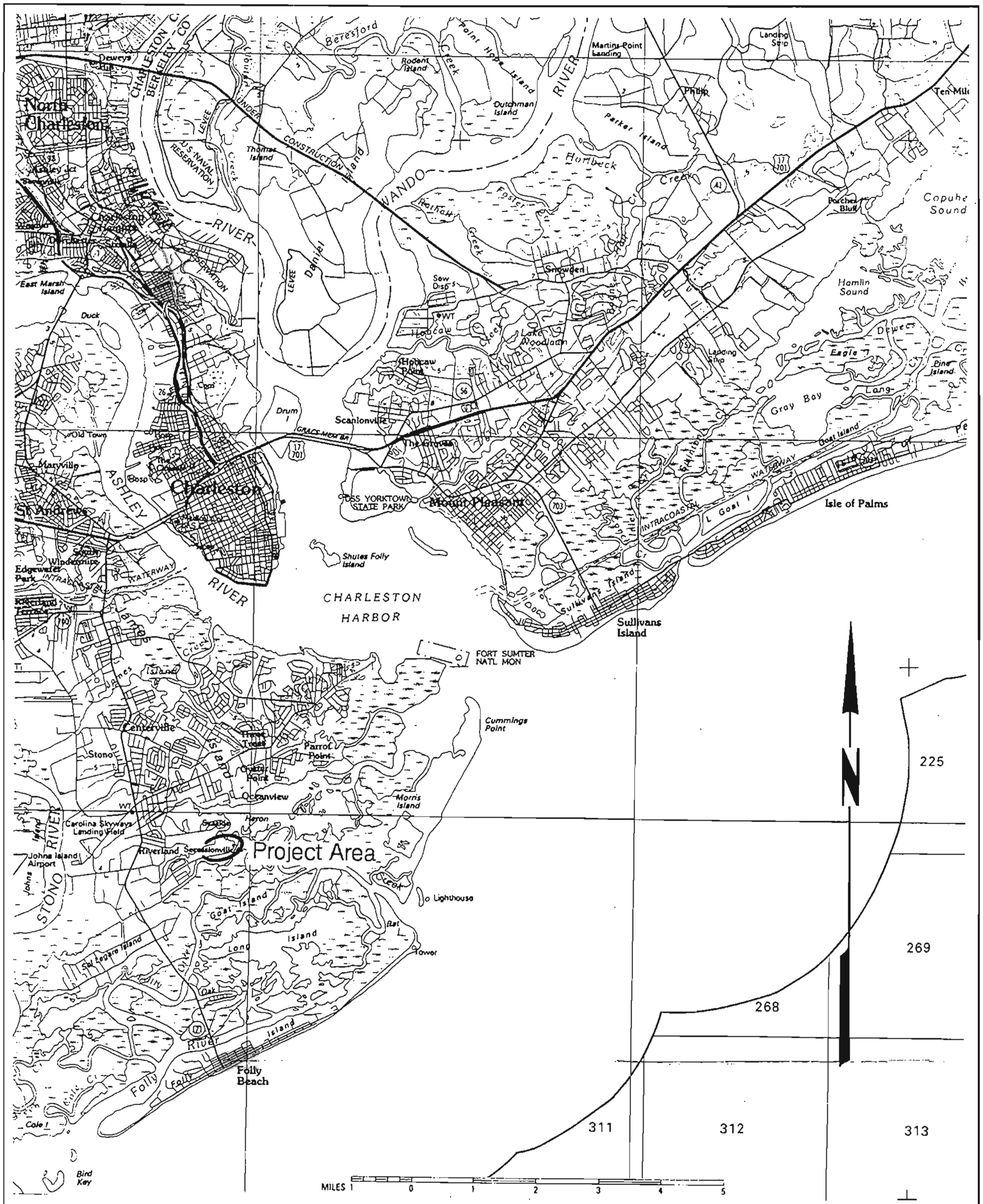


Figure 1. Location of the project area on the 1:100,000 James Island topographic map.

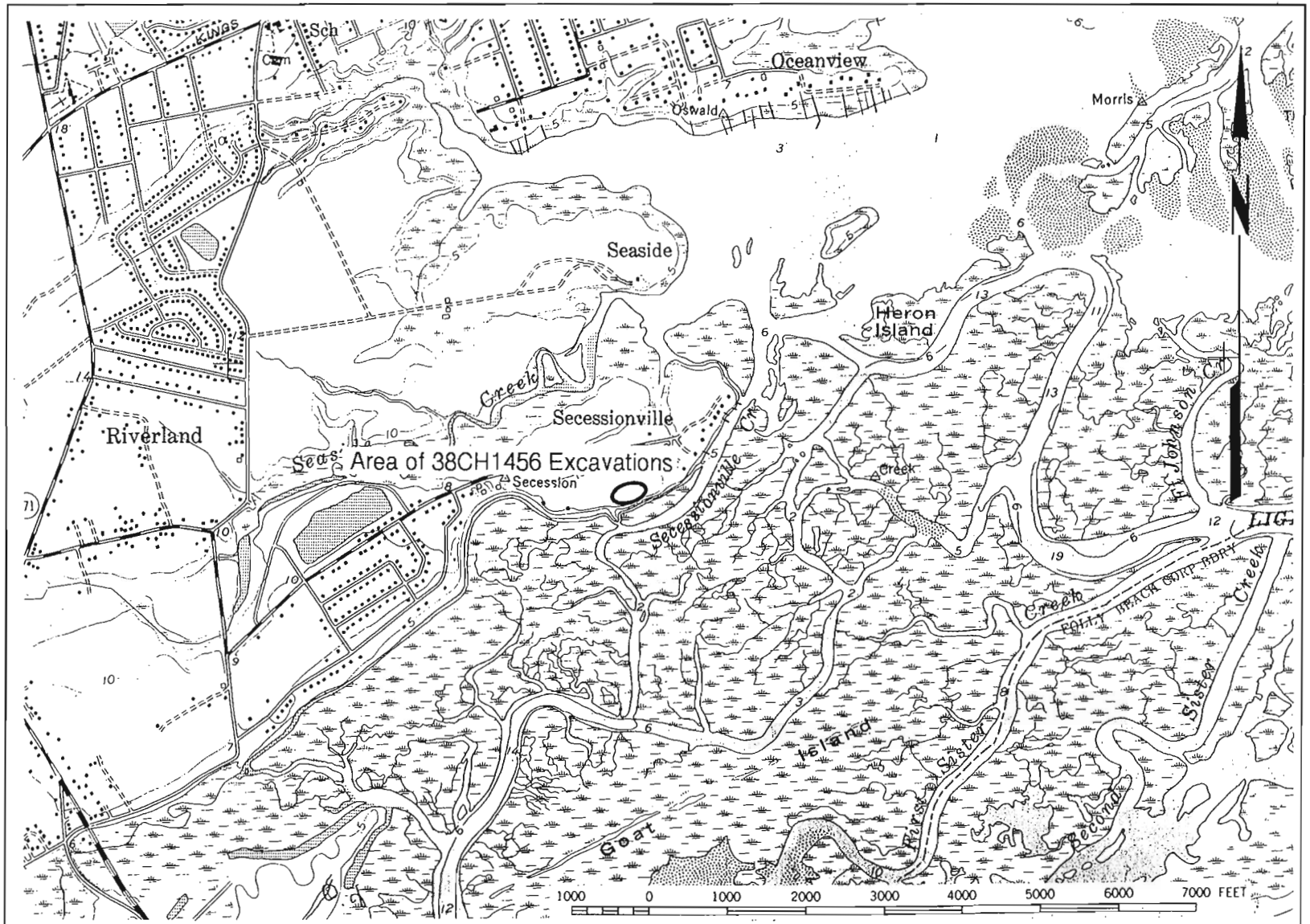


Figure 2. Location of 38CH1456 on the James Island USGS topographic map.

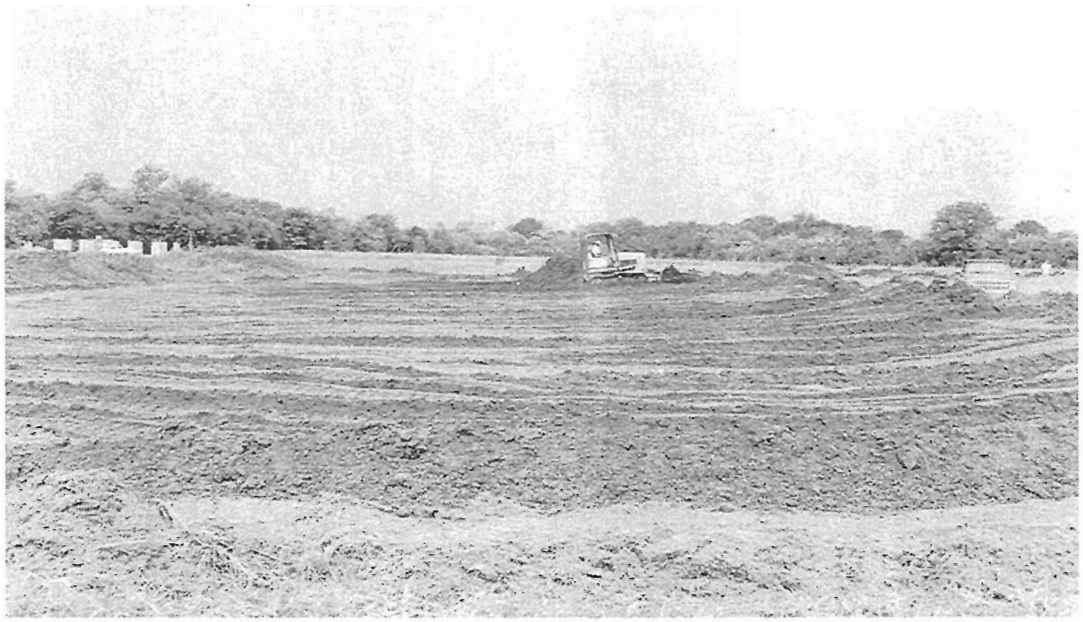


Figure 3. View of fields at 38CH1456 in the process of being stripped (MK-36580).

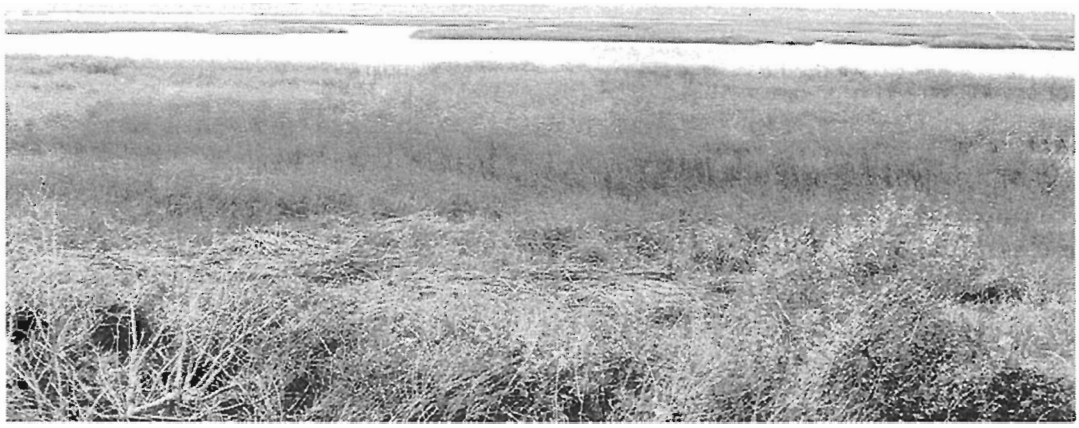


Figure 4. View of the marsh south of 38CH1456, looking toward Goat and Folly islands (MK-36557).

additional testing was needed "(1) to evaluate site significance and thus determine if further management of the site is necessary, and (2) if further management (data recovery/development redesign) is necessary to determine what time and cost will be involved" (Butler 1994:79).

A proposal for this additional testing work was provided by Brockington and Associates in late February 1994. The work was apparently approved by the SC SHPO and a series of 10-foot wide bulldozer cuts (Figure 5) were made at the southern edge of the field, along with 12 1-meter test units excavated by hand, in May 1994. The only summary of this work that we have been able to identify is a short synopsis provided in the resulting data recovery proposal by Brockington and Associates:

> In Lots 7, 8, 9, and 10, the machine scraping revealed extensive subsurface features. The most significant features revealed were segments of a Late Woodland/Early Mississippian palisade trench measuring 80-110 cm in width, and extending 70-95 cm below the scrape surface. Prehistoric middens and post patterns, indicating the presence of Late Woodland/Early Mississippian houses were also located in the southern portions of Lots 7-10. These remains were judged significant; it was believed that house construction in these lots would result in adverse impacts to significant subsurface archaeological features. . . . Significant research issues which may be addressed by data from 38CH1456 include: seasonality, site function; importance of horticulture, craft specialization and interregional contact; vessel assemblage; intra-site settlement; site abandonment; structure form and function; and Mississippian ceremonialism (Anonymous 1994:1).

It is our understanding that the SC SHPO concurred with the eligibility assessment and a short time later an MOA was prepared covering National Register eligible site 38CH1456 (signed on December 12, 1994 by Ms. Mary Edmonds, Deputy State Historic Preservation Officer). Although historic remains, including brick concentrations and artifacts, were found to the west of Lot 7 and although the trench features continued east of Lot 10, these areas were determined to be insignificant by the SC SHPO and were released for development.[1]

An archaeological data recovery plan, dated November 15, 1994, was provided by Brockington and Associates to Martschink Realty Company. This proposal, however, was apparently never acted upon and the site remained open from the previous testing.

Chicora Foundation submitted a proposal for the data recovery efforts at the request of Mr. Miles Martschink in early June 1996, with the request that we follow, as closely as possible, the technical data recovery plan previously submitted by Brockington and Associates. In order to develop this proposal we were provided access to the technical proposal (Anonymous 1994) and a map of the stripped areas, showing the features encountered. We also visited the site in June 1996 and observed the stripped areas which have been left open.

It appeared that the stripping revealed ditch-like features, which *might* be palisade lines. It likely forms one square corner. Although no wall lengths are currently known, the southern wall measures at least 250 feet in length, while the western measures at least 150 feet in length (based on the portions exposed by the grading). The

[1] The area to the east may have included at least a portion of the antebellum plantation settlement shown in Bache's 1825 map of the area and Payne's 1841 plat of the Secessionville peninsula (see Trinkley 1996a:Figures 10 and 11). The area to the west, while perhaps including remains from twentieth century tenant farms, may also have included portions of the Confederate camp at Secessionville.

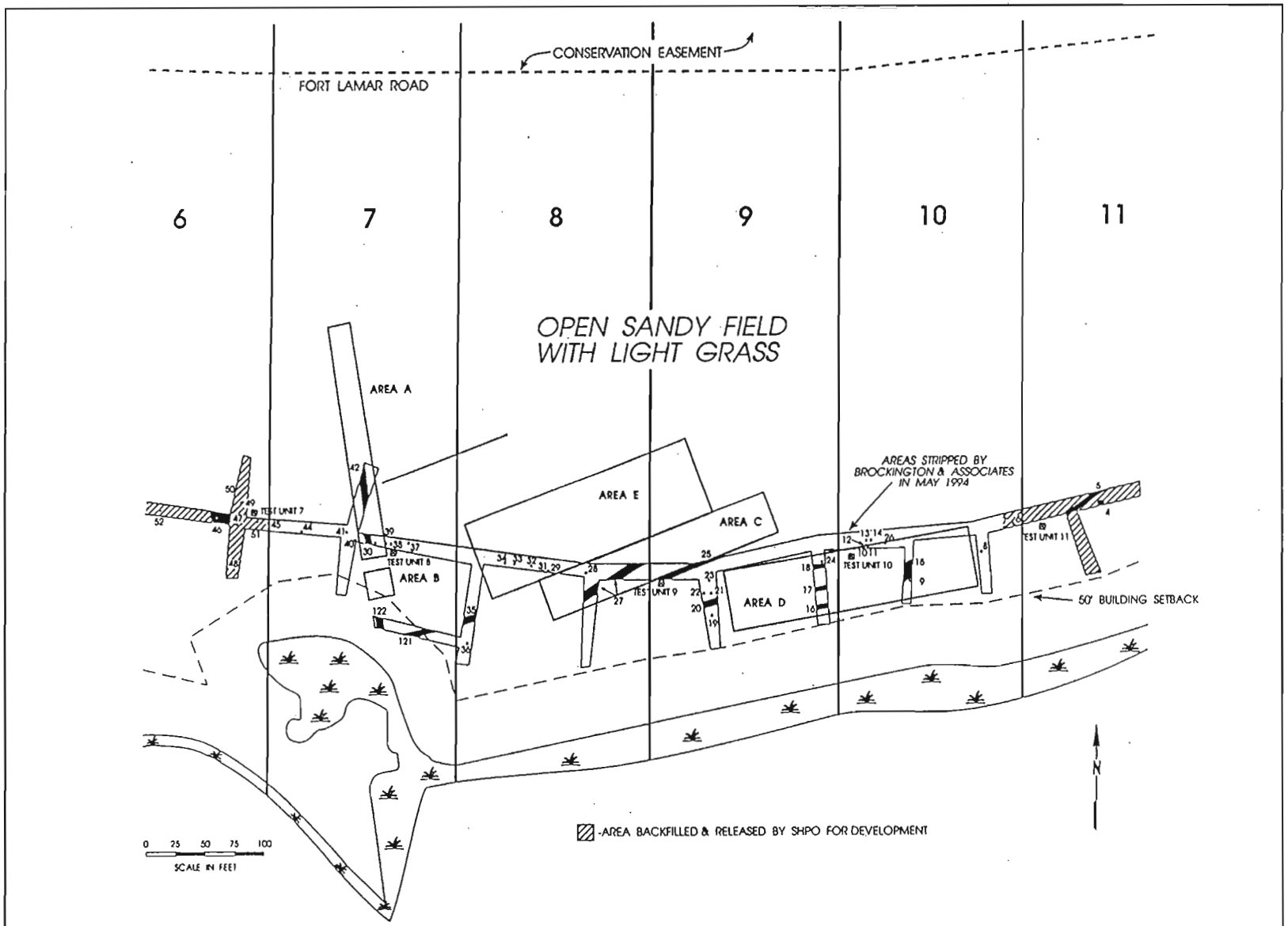


Figure 5. Areas mechanically stripped by Brockington and Associates in 1994 combined with areas proposed for further stripping.

features observed in Lot 9 suggests the possibility of multiple palisade lines (see Figure 5).

Within the posited palisade lines are a few features, most appearing to be post holes. No distinct house forms, or even wall sections, could be identified from either the on-site examination or review of the site map. The pottery recovered from the work apparently spans the Woodland Period. During a brief walk-over survey we recovered three Stallings Plain sherds, 32 Thom's Creek Plain sherds, two Thom's Creek Finger Pinched sherds, five Irene Complicated Stamped sherds, one possible Irene Simple Stamped specimen, 10 Irene Plain sherds, and 12 unidentifiable sherds. Also recovered were two fragmentary baked clay objects, one probable Savannah River Stemmed point and six historic items.

While it was impossible to know how representative this collection was of the total site, the Late Archaic/Early Woodland pottery accounted for 57% of the total or 70% of those sherds identifiable to a specific period. This called into question the assumption that 38CH1456 was a palisaded Mississippian village. There simply didn't seem to be enough late Mississippian material present to support such a conclusion.

In some respects the findings at 38CH1456 resemble the palisade of the moundless ceremonial center found at Charles Town Landing (South 1971). At this site three distinct palisade lines were encountered, forming a square roughly 200 by 208 feet. An addition, measuring 85 by 105 feet, was found on the western edge. A square walled temple and temple sheds were identified by South, although a great many more post holes appear random, unassociated with any recognized structures. Posts at 38CH1456 are much less common. While large features were relatively common at the ceremonial center, they are absent within the stripped areas on the Martschink property. Mississippian pottery was apparently common at the Charles Town Landing site and was dominated by complicated stamped designs. Incised and cord marked wares were uncommon. At 38CH1456 complicated stamped pottery was suspiciously uncommon, at least based on the limited pedestrian survey.

In other words, there were aspects of 38CH1456 which certainly *resembled* the Charles Town Landing moundless ceremonial center. They were, however, just as many other anticipated features which were not present. While we respected our colleagues assessment that this site represented a Mississippian settlement, this seemed yet to be conclusively documented.

Chicora's proposal was accepted by Martschink Realty Company on June 21, 1996 and was immediately submitted to the SC SHPO for review. Although no comments concerning the proposal were received from the SC SHPO, a letter from Mr. H. Stephen Snyder, Director of the Coastal Zone Management Division of the Office of Coastal Resource Management dated June 27, authorized Mr. Martschink to proceed with archaeological data recovery efforts.

The archaeological investigations were begun at 38CH1456 by a crew of five (including the Principal Investigator) on July 8, 1996 and continued through August 2, 1996. A total of 660 person hours were spent in the field with an additional 34 person hours spent on laboratory analysis and field processing. As a result of this work, 28,000 square feet of site were opened in addition to the 12,000 square feet exposed during the initial testing. A management summary of the work was prepared shortly after the completion of the field work (Trinkley 1996b) and was subsequently approved, allowing Martschink Realty Company to proceed with its development of the tract.

Research Strategy and Questions

Moving to the Scope of Work, the investigation of 38CH1456 was to consist of three specific tasks:

1. Using mechanical stripping an effort to determine the exact nature of the supposed palisade trench and its placement was necessary.

2. Using mechanical stripping, it was necessary to determine the function of the additional trenches found to the south of the major "palisade" line.

3. Using mechanical stripping an effort to expose a portion of the settlement area thought to lie within the "palisade" lines was critical.

In addition, data recovery required that a certain level of analysis be undertaken, and established certain levels of consultation, report production, curation, and literature review. Further the field work would require attention to both horizontal and vertical control, data collection strategies, and feature excavation.

Based on the survey, testing, and stripping data, Brockington and Associates outlined nine specific research topics: (1) seasonality of village occupation, (2) site function, (3) importance of horticulture, (4) craft specialization, (5) vessel use assemblage, (6) intra-site settlement pattern, (7) reasons for abandonment of the village, (8) structure form, size, permanence, and methods of construction, and (9) Mississippian ceremonialism. All of these are very complex, but worthwhile, endeavors. All make one or more assumptions.

For example, the research topic on Mississippian ceremonialism assumes that the shell-filled feature found at the site is, in fact, a palisade, that it is a palisade for a Mississippian village, and that ceremonial objects will be found in primary contexts. As the Brockington and Associates discussion points out, "there are no known mound centers [in which ceremonial objects are most commonly found] in the coastal region." While a mound-less ceremonial center was encountered during the exploration of Charles Town Landing (South 1971), relatively few "ceremonial" objects were found. This suggests that however significant this particular research goal is, it may be impossible to obtain the data from 38CH1456 necessary to address the question.

As another example, it was proposed to explore "craft specialization," with the observation "given that the village apparently served as a regional focus of ceremony and power, it is likely that the site also saw some degree of craft specialization to create high status items for local use and for export." While we certainly concur this is a common situation, there is actually relatively little evidence that this was a village, and even less that it served as a "regional focus." The previous research, at least as far as we could ascertain, has not produced evidence of shell beads, shell gorgets, specialized pottery vessels, mica sheets, soapstone, or exotic lithic materials. Again, although this is a worthwhile research goal, it seemed unlikely that it could be effectively explored with the data sets present at 38CH1456.

As unexciting as it may initially seem, we were convinced that a simple exploratory research design was necessary at this site. It seemed very important to resolve some fundamental questions concerning the site and its function before it would be possible to expand into higher order research.

Do the trench-like features actually represent palisade lines? While in many respects they are consistent with our expectations of palisades, why is shell seemingly so consistently associated with these trenches (nothing similar was seen at the Charles Town Landing site)? Why are not individual posts more obvious? If they aren't palisade lines what are they? If they are palisade lines, do the different trenches represent distinct lines? What happens to these different lines (do they merge, for example)? What is the total area they enclose? Is there any evidence that the multiple lines suggest village growth, rather than simply replacement of deteriorating wall sections? Can entrances be found and what will these look like? Very different entrances have been reported for the Charles Town site (South 1971:203) than were found at Town Creek (Coe 1995:87-88). Are sufficient post holes present to represent house patterns and can they be distinguished? Are other types of features, commonly found at palisaded villages, also present at 38CH1456? Are human burials present, as might be expected at a Mississippian village? Are quantities of animal bones present, perhaps preserved by the shell in the palisade trench (since refuse was frequently

thrown up against the palisade)? Are ethnobotanical remains present (perhaps as cob pits associated with the village square)? If ethnobotanical remains are present, will they contain cultigens such as corn? Can the site yield reasonably accurate radiometric dating useful in refining the chronology of the Mississippian Period along the South Carolina coast?

The questions were seemingly endless since, frankly, there was so little documented about this particular site and so little information had been recovered through the testing phase. Nevertheless, within this multitude of questions we felt it appropriate to focus on a small handful, otherwise research could easily become disjointed and diluted. We believed that there were essentially three questions appropriate to this site.

First, what does the site represent? This question would be addressed through site stripping, as previously proposed and reviewed by the SHPO, and interpretation of the features (such as pits and palisade lines). It would involve accurate recordation of the features and sample excavations of different feature types.

Second, what is the temporal placement of the site? This question would be addressed in two ways. The first would be a typological assessment of recovered artifacts, most specifically the pottery. As previously mentioned, most of the pottery obtained by Chicora during a grab survey dates to the Late Archaic or Early Woodland, although a small quantity of Mississippian wares were present. The typological analysis might focus on either the Mississippian wares or the wares dominating the site, depending on what is found during the stripping operations. The second manner of addressing the chronological placement of the site would be through radiometric determinations. We proposed to obtain dates, using wood charcoal, from several well defined features which were clearly associated with one ceramic assemblage. Our goal would be to obtain reliable dates with clear associations.

Third, what can the site tell us about subsistence strategies? Floral and faunal remains may be present, as may pollen and phytoliths. Each of these data sets may contribute significant information, depending on their context and association. It was our goal to explore those samples which were clearly and convincingly associated with a documented site component.

Proposed Field Investigations

The previously stripped areas were still open, allowing the features and post holes recorded in 1994 to be re-evaluated. We realized, however, that the stripped areas would need to be lightly graded to remove the vegetation which has grown in the open areas in the past year and half. This would be accomplished the first day on-site and would allow for an overview of the site and its features. Vertical and horizontal control was to be maintained by reference to one or more permanent lot marker(s) if the original Brockington datum could no longer be identified.

All excavations would be by machine stripping, followed by shovel skimming where necessary to expose or better define features. We anticipated providing the equipment foreman with an overview of the areas to be stripped and allowing him to establish the best locations for stockpiling of removed soil. Since the site is situated in an open field with sandy soils, we anticipated that only one area would be graded, fully exposed, and recorded at a time. This, we hoped, would minimize problems with soil drying. To further assist in the accurate identification of features it would be necessary to have a water supply on-site throughout the excavation.

As features (excepting post holes) were identified they would be cleaned and photographed using both black and white negative film and color transparency film. After being photographed each feature would be drawn and its center point will be tied into the site's horizontal and vertical control point. At this stage an effort would be made to categorize features by content, size, and shape. This would help guide decisions on sampling pit contents. The center point of each pit was to be marked with an orange pin flag labeled with the feature number.

While ideally feature excavation should be

undertaken at the conclusion of the stripping, we thought that the project time schedule would not allow this and that features would need to be sampled concurrently with stripping operations. Consequently, we proposed to initially excavate only half of each feature. Once half the feature was exposed it would be cleaned and photographed using both black and white negative film and color transparency film. The feature profile would be drawn and a new plan drawing of the excavated portion would be made. As we began to have a larger sample of features, become more familiar with their contents, and establish a better classificatory scheme, some features might be passed over and not sampled. Feature fill would be screened through ¼-inch mesh.

Flotation samples (typically 5 gallons in size) were to be collected from features which exhibited a high potential for the recovery of ethnobotanical remains. These typically include hearth areas or dark organic trash refuse areas. We have found from past experience that routine flotation of samples is not cost-effective -- they simply don't provide samples large enough for meaningful analysis. It is better to search for samples which are likely to produce good samples of food remains than to float materials by rote in the hope of finding adequate samples. A mechanical water flotation process was to be used and, if the water source permitted, was to be conducted in the field. We have found that this process maximizes the opportunity for the recovery of additional fill if necessary (i.e., if it is especially rich in floral remains or, alternatively, if it is a very poor producer of carbonized material). A one-quart soil sample is also collected from each provenience for future soil chemistry needs. Depending on the nature of the features we also collected pollen and phytolith samples.

Brockington and Associates recommended stripping in four areas: approximately 11,400 ft² to expose the posited palisade lines, approximately 13,000 ft² to expose the multiple ditch-like features, approximately 16,900 ft² to expose the structural remains in the village core, and up to an additional 8,300 ft² as necessary. We examined these recommendations and largely concurred, although we recognized that it was difficult, based on the current level of information, to project with accuracy these needs.

We suggested five discrete areas, labeled A-E on Figure 5. Areas A-C were designed to trace out the posited palisade lines. Area A was anticipated to measure about 100 by 25 feet (for a total of 2,500 ft²). Area B would measure about 25 feet square (for a total of 625 ft²). Area C would measure 200 by 35 feet (for a total of 7,000 ft²). This would leave an additional 1,325 ft² for expansion of the palisade search, if necessary. Area D, which we anticipated to measure about 200 by 50 feet for a total of 10,000 ft², would explore the multiple ditch-like features. This would leave about 3,000 ft² for additional expansions, should more work in this area be necessary. Area E, situated in the central core of the site, would encompass an area measuring 200 by 75 feet, for a total of 15,000 ft². This would leave in abeyance an additional 1,900 ft² should further expansion be necessary.

Field Modifications

There were rather substantive modifications of both our research goals and also the field methods. We found, fairly quickly, that the number of anticipated features did not materialize. Likewise, the Mississippian village also was not present. What appeared to be palisade lines were in reality essentially two sets of ditches, both likely historic in origin. As research proceeded we found that one set represented a probable antebellum agricultural drainage or boundary ditch, while the other represented remains of the Civil War earthworks constructed by the Confederate defenders of Charleston. The bulk of the prehistoric features found intact appeared to represent Late Archaic Thom's Creek shell steaming pits which had not been totally plowed out.

These field findings necessitated rather substantial changes in our research. Instead of posing questions concerning Mississippian village life, we were faced with interpreting a few features nearly 2,000 years earlier, as well as vast array of military fortifications now entirely below ground.

As work continued we also began to identify other military features, the most interesting being what appeared to be a semi-subterranean soldier's hut. This required that our research expand to include information on camp lifeways during the Civil War.

Instead of focusing on pollen and phytolith research at a Mississippian site, we would be dealing with a Late Archaic site with few features and a Civil War site with very specialized features. Instead of exploring zooarchaeological remains from a village context, we would have much smaller samples from only a few features widely separated in time.

What did remain constant was our interest in the ditches. But now, instead of exploring them as evidence of the changing dynamics of a Mississippian village, they would provide evidence of Confederate military engineering. We would be primarily concerned with comparing the earthworks we began to identify under the plowed soil with those identified in post-Civil War drawings and then to compare those, representative of the real defenses, with the ideal defenses proposed by West Point training.

Although the site as we eventually came to understand it was dramatically different than the site we anticipated conducting research on, it was no less interesting. Research at 38CH1456 provided two exceptional opportunities. First, we were able to spend a great deal of time focusing on one Thom's Creek feature, attempting to maximize data return and exploring different recovery techniques. We anticipate that this research will help others make difficult field decisions in the future. Second, we excavated the first Confederate semi-subterranean hut ever explored, allowing comparisons to both historical documents and also previously excavated Union huts. This is a significant advancement of Civil War archaeological research in South Carolina.

At least one reviewer has asked why no Civil War research goals were proposed as part of the initial research. As we hope is clear from these discussions, although historic research documented the military history, and significance, of the site, the archaeological survey and testing conducting by our colleagues did not recover any significant quantity of Civil War artifacts. As a result, regulatory review, including the State Historic Preservation Office, viewed the eligible component of the site to be limited to the postulated Mississippian village. By the time it was clear that this village did not exist, field work was already well underway and it was essential to make speedy modifications that would recover the significance of the site in a time and cost effective manner. The result, of course, is the methodology we have discussed and this final report.

We have little doubt that had there been a clearer understanding of the site, other methods might have been more appropriate or other research questions could have been posed and investigated. Nevertheless, we believe that the results of these investigations offer an exceptional view of Secessionville and provide an important addition to South Carolina's Civil War history.

The Natural Setting

Physiography

Charleston County is located in the lower Atlantic Coastal Plain of South Carolina and is bounded to the east by the Atlantic Ocean and a series of marsh, barrier, and sea islands (Mathews et al. 1980:133). Elevations in the County range from sea level to about 70 feet above mean sea level (AMSL).

In the project area elevations range from about 5 to 10 feet AMSL (Figure 2). It forms a peninsula, which while very constructed to the west, widens in the project area, becoming about 3200 feet in width. In general, the area is very level, representing a slightly elevated sand ridge running roughly east-west. The topography slopes to the north, toward the marshes of Seaside Creek, and to the south, toward the marshes of Secessionville Creek.

The project area is situated entirely to the south of a paved road, known locally as Fort Lamar Road, which bisects the peninsula. It was in this area that Butler (1994) identified two sites, 38CH1271 and 38CH1456. North of the survey

tract is the tidal marsh associated with Seaside Creek, which drains eastward into Clark Sound. The tract south of Fort Lamar Road is divided into two parts by a small slough or lowland area on the edge of the field, next to the marsh. This is the remnant of a small pond probably created by the defenders of Secessionville.

The project area is typical of James Island which consists of large sandy plains interrupted by marsh and tidal creeks. The mainland topography, which consists of similar subtle ridge and bay undulations, is characteristic of beach ridge plains. The topography of James Island was described by Edmund Ruffin in 1843 as:

> nearly level, but very slightly undulating, depressions being of rather moister grounds, but still in dry culture. There is but little waste land of any kind &c few creeks or swampy passages or receptacles of water (Mathew 1992:99).

Seven major drainages are found in Charleston County. Four of these, the Wando, Ashley, Stono, and North Edisto, are dominated by tidal flows and are saline. The three with significant freshwater flow are the Santee, forming the northern boundary of the County, the South Edisto, forming the southern boundary, and the Cooper, which bisects the County. Because of the low topography, many broad, low-gradient drains are present as either extensions of the tidal rivers or as flooded bays and swales. Examples of these are present in the area, and include a slough found north of Fort Lamar Road.

Geology and Soils

Coastal Plain geological formations are unconsolidated sedimentary deposits of very recent age (Pleistocene and Holocene) lying unconformably on ancient crystalline rocks (Cooke 1936; Miller 1971:74). The Pleistocene sediments are organized into topographically distinct, but lithologically similar, geomorphic units, or terraces, parallel to the coast. The project area is identified by Cooke (1936) as part of the Pamlico terrace, which includes the land between the recent shore and an abandoned shore line about 25 feet AMSL. Cooke (1936:7) notes that evidence of ancient beaches and swales can still be seen in the Pamlico formation and this likely contributed to the ridge and trough topography present in much of the area.

Within the coastal zone the soils are Holocene and Pleistocene in age and were formed from materials that were deposited during the various stages of coastal submergence. The formation of soils in the study area is affected by this parent material (primarily sands and clays), the temperate climate, the various soil organisms, topography, and time.

The mainland soils are Pleistocene in age and tend to have more distinct horizon development and diversity than the younger soils of the sea and barrier islands. Sandy to loamy soils predominate in the level to gently sloping mainland areas. The island soils are less diverse and less well developed, frequently lacking a well-defined B horizon. Organic matter is low and the soils tend to be acidic. The Holocene deposits typical of barrier islands and found as a fringe on some sea islands, consist almost entirely of quartz sand which exhibits little organic matter. Tidal marsh soils are Holocene in age and consist of fine sands, clay, and organic matter deposited over older Pleistocene sands. The soils are frequently covered by up to 2 feet of saltwater during high tides. Historically, marsh soils have been used as compost or fertilizer for a variety of crops, including cotton (Hammond 1884:510) and Allston mentions that the sandy soil of the coastal region, "bears well the admixture of salt and marsh mud with the compost" (Allston 1854:13).

Only two soil series occur in the project area: Seabrook loamy fine sands and Wando loamy fine sands. The Wando soils dominate the area, with the Seabrook soils found only in the area adjacent to Fort Lamar Road (Miller 1971: Maps 69 and 70). The Seabrook soils typically have an Ap horizon about 0.8 foot in depth which consists of a very dark grayish-brown (10YR3/2) loamy fine sand overlying a C1 horizon of dark-brown (10YR4/3) sand to a depth of about 1.8 feet

(Miller 1971:27). The Wando soils present a very similar profile with an Ap horizon of dark brown (10YR4/3) sand to 0.8 foot overlying a C1 horizon of brown (7.5YR5/4) sand to about 2.8 feet (Miller 1971:30). The primary difference between the two is that the Wando soils are excessively drained while the Seabrook soils are moderately well drained. In addition, the Seabrook soils tend to be more acidic than the Wando soils.

In fact, much of this description was clearly obvious to Ruffin over 150 years ago:

> The soil is sandy & very light, about 4 to 6 inches deep usually lying on a sandy subsoil. Sometimes the subsoil is somewhat stiffer, &c is called clay; but it is much mixed in with coarse silicious sand, & no where deserves the name of clay. But little of the land (excepting around the houses) is very rich, but nearly all seems in a middling state as to productiveness. From the kinds of grasses on cultivated fields, I would infer that the soil had been originally productive, though not highly so, & that it was naturally supplied with some calcareous earth; or in other words is not an acid soil. Like the other sea islands, this had been reduced to general poverty by exhausting cultivation; but recently has been improved by the new system of manuring, which however has to be continually repeated (Mathew 1992:99).

Climate

John Lawson described South Carolina in 1700 as having, "a sweet Air, moderate Climate, and fertile Soil" (Lefler 1967:86). Of course, Lawson tended to romanticize Carolina. In December 1740 Robert Pringle remarked that Charleston was having "hard frosts & Snow" characterized as "a great Detriment to the Negroes" (Edgar 1972:282), while in May 1744 Pringle states, "the weather having already Come in very hott" (Edgar 1972:685).

The major climatic controls of the area are latitude, elevation, distance from the ocean, and location with respect to the average tracks of migratory cyclones. Charleston's latitude of 32°37'N places it on the edge of the balmy subtropical climate typical of Florida, further south. As a result, there are relatively short, mild winters and long, warm, humid summers. The large amount of nearby warm ocean water surface produces a marine climate, which tends to moderate both the cold and hot weather. The Appalachian Mountains, about 220 miles to the northwest, block the shallow cold air masses from the northwest, moderating them before they reach the sea islands (Mathews et al. 1980:46).

The average high temperature in the Charleston in July is 81°F, although temperatures are frequently in the 90s during much of July (Kjerfve 1975:C-4). Mills noted:

> in the months of June, July, and August, 1752, the weather in Charleston was warmer than any of the inhabitants before had ever experienced. The mercury in the shade often rose above 90°, and for nearly twenty successive days varied between that an 101° (Mills 1972:444).

The area normally experiences a high relative humidity, adding greatly to the discomfort. Kjerfve (1975:C-5) found an annual mean value of 73.5% RH, with the highest levels occurring during the summer. Pringle remarked in 1742 that guns "sufferr'd with the Rust by Lying so Long here, & which affects any Kind of Iron Ware, much more in this Climate than in Europe" (Edgar 1972:465).

The annual rainfall in this portion of Charleston is about 49 inches, fairly evenly spaced over the year. While adequate for most crops, there may be periods of both excessive rain and drought. The Charleston area has recorded up to 20 inches of rain in a single month and the rainfall over a three month period has exceeded 30 inches

no less than nine times in the past 37 years. Likewise, periods of draught can occur and cause considerable damage to crops and livestock. Mills remarks that the "Summer of 1728 was uncommonly hot; the face of the earth was completely parched; the pools of standing water dried up, and the field reduced to the greatest distress" (Mills 1972:447-448). Another significant historical drought occurred in 1845, affecting both the Low and Up Country.

The annual growing season is 295 days, one of the longest in South Carolina. This mild climate, adequate rainfall, and long growing season, as Hilliard (1984:13) notes, is largely responsible for the presence of many southern crops, such as cotton and sugar cane.

Floristics

The area of the study tract exhibits two major ecosystems: the maritime forest ecosystem which consists of the upland forest areas, and the estuarine ecosystem of deep water tidal habitats (Sandifer et al. 1980:7-9).

The maritime forest ecosystem has been found to consist of five principal forest types, including the Oak-Pine forests, the Mixed Oak Hardwood forests, the Palmetto forests, the Oak thickets, and other miscellaneous wooded areas (such as salt marsh thickets and wax myrtle thickets).

Of these the Oak-Pine forests are most common, constituting large areas of Charleston's original forest community. In some areas palmetto becomes an important sub-dominant. Typically these forests are dominated by the laurel oak with pine (primarily loblolly with minor amounts of longleaf pine) as the major canopy co-dominant. Hickory is present, although uncommon. Other trees found are the sweet gum and magnolia, with sassafras, red bay, American holly, and wax myrtle and palmetto found in the understory.

Mills, in the early nineteenth century, remarked that:

> South Carolina is rich in native and exotic productions; the varieties of its soil, climate, and geological positions, afford plants of rare, valuable, and medicinal qualities; fruits of a luscious, refreshing, and nourishing nature; vines and shrubs of exquisite beauty, fragrance, and luxuriance, and forest trees of noble growth, in great variety (Mills 1972:66).

The loblolly pine was called the "pitch or Frankincense Pine" and was used to produce tar and turpentine; the longleaf pine was "much used in building and for all other domestic purposes;" trees such as the red bay and red cedar were often used in furniture making and cedar was a favorite for posts; and live oaks were recognized as yielding "the best of timber for ship building;" (Mills 1972:66-85). Mills also observed that:

> in former years cypress was much used in building, but the difficulty of obtaining it now, compared with the pine, occasions little of it to be cut for sale, except in the shape of shingles; the cypress is a most valuable wood for durability and lightness. Besides the two names we have cedar, poplar, beech, oak, and locust, which are or may be also used in building (Mills 1972:460).

The "Oak and hickory high lands" according to Mills were, "well suited for corn and provisions, also for indigo and cotton" (Mills 1972:443). The value of these lands in the mid-1820s was from $10 to $20 per acre, less expensive than the tidal swamp or inland swamp lands (where rice and, with drainage, cotton could be grown).

Today, virtually all of the project area's high ground evidences some form or another of disturbance, with most of this disturbance clearly being agricultural in nature. Virtually the entire area has been in cultivation or has been pasturage for cattle.

The maritime forest or wooded areas are limited to the edge of the marsh and around preserved Civil War earthworks. These areas are second growth forest which exhibits dense, at times almost impenetrable, vegetation.

Historically, James Island was largely dominated by Sea Island cotton, with lesser acreage of corn and sweet potatoes. Ruffin described the planting of these crops in the late antebellum (Mathew 1992:100-101) and it is clear that fields fronting the Tower Battery during the Civil War were covered in cotton stubble.

The estuarine ecosystem in the vicinity includes those areas of deep water tidal habitats and adjacent tidal wetlands, found at the southern edge of the project. Salinity in these areas may range from 0.5 parts per thousand (ppt) at the head of an estuary to 30 ppt where it comes into contact with the ocean. Estuarine systems are influenced by ocean tides, precipitation, fresh water runoff from the upland areas, evaporation, and wind. The system may be subdivided into two major components: subtidal and intertidal (Sandifer et al. 1980:158-159). These estuarine systems are extremely important to our understanding of both prehistoric and historic occupations because they naturally contain a high biomass. The estuarine area contributes vascular flora used for basket making, as well as mammals, birds, fish (over 107 species), and shellfish.

Curation

The field notes and artifacts from Chicora's data recovery excavations at 38CH1456 have been curated at The Charleston Museum as Accession Number 1996.61. The artifacts have been cleaned and/or conserved as necessary and have been curated using the museum's lot proveniencing system, incorporating the catalog numbers ARL-42172 through ARL 42237. Additional information concerning the conservation of the materials may be found in the **Analysis of Material Culture** section of this report.

All original records and duplicate records were provided to the curatorial facility on pH neutral, alkaline buffered paper. The black and white negatives from the excavations were processed to archival standards, while the color transparencies were processed to the manufacturer's specifications, providing relative stability with cool, dark storage.

THE PREHISTORY AND HISTORY OF THE SITE AREA

Prehistoric Synopsis

Overviews for South Carolina's prehistory, while of differing lengths and complexity, are available in virtually every compliance report prepared. There are, in addition, some "classic" sources well worth attention, such as Joffre Coe's *Formative Cultures* (Coe 1964), as well as some new general overviews (such as Goodyear and Hanson 1989). Also extremely helpful, perhaps even essential, are a handful of recent local synthetic statements, such as that offered by Sassaman and Anderson (1994) for the Middle and Late Archaic. Only a few of the many sources are included in this study, but they should be adequate to give the reader a "feel" for the area and help establish a context for the various components identified in the study area. For those desiring a more general synthesis, perhaps the most readable and well balanced is that offered by Judith Bense (1994), *Archaeology of the Southeastern United States: Paleoindian to World War I.* Figure 6 offers a generalized view of South Carolina's cultural periods.

Paleoindian Period

The Paleoindian Period, most commonly dated from about 12,000 to 10,000 B.P., is evidenced by basally thinned, side-notch projectile points; fluted, lanceolate projectile points, side scrapers, end scrapers; and drills (Coe 1964; Michie 1977; Williams 1968). Oliver (1981, 1985) has proposed to extend the Paleoindian dating in the Carolina Piedmont to perhaps as early as 14,000 B.P., incorporating the Hardaway Side-Notched and Palmer Corner-Notched types, usually accepted as Early Archaic, as representatives of the terminal phase. This view, verbally suggested by Coe for a number of years, has considerable technological appeal.[1] Oliver suggests a continuity from the Hardaway Blade through the Hardaway-Dalton to the Hardaway Side-Notched, eventually to the Palmer Side-Notched (Oliver 1985:199-200). While convincingly argued, this approach is not universally accepted.

The Paleoindian occupation, while widespread, does not appear to have been intensive. Artifacts are most frequently found along major river drainages, which Michie interprets to support the concept of an economy "oriented toward the exploitation of now extinct mega-fauna" (Michie 1977:124). Survey data for Paleoindian tools, most notably fluted points, is rather dated for South Carolina (cf. Anderson 1990). In spite of this, the distribution offered by Anderson (1992b:Figure 5.1) reveals a rather general, and widespread, occurrence throughout the region. Phelps (1983:21) states that settlement patterning for the North Carolina Coastal Plain is impossible to meaningfully discuss since there have been so few recorded sites, but speculates on the presence of base camps along major streams, with special activity sites in the uplands. An alternative is the model tracking the replacement of a high technology forager (or HTF) adaptation by a "progressively more generalized band/microband foraging adaption" accompanied by increasingly distinct regional traditions (perhaps reflecting movement either along or perhaps even between river drainages) (Anderson 1992b:46).

Distinctive projectile points include

[1] While never discussed by Coe at length, he did observe that many of the Hardaway points, especially from the lowest contexts, had facial fluting or thinning which, "in cases where the side-notches or basal portions were missing, . . . could be mistaken for fluted points of the Paleo-Indian period" (Coe 1964:64). While not an especially strong statement, it does reveal the formation of the concept. Further insight is offered by Ward's (1983:63) all too brief comments on the more recent investigations at the Hardaway site (see also Daniel 1992).

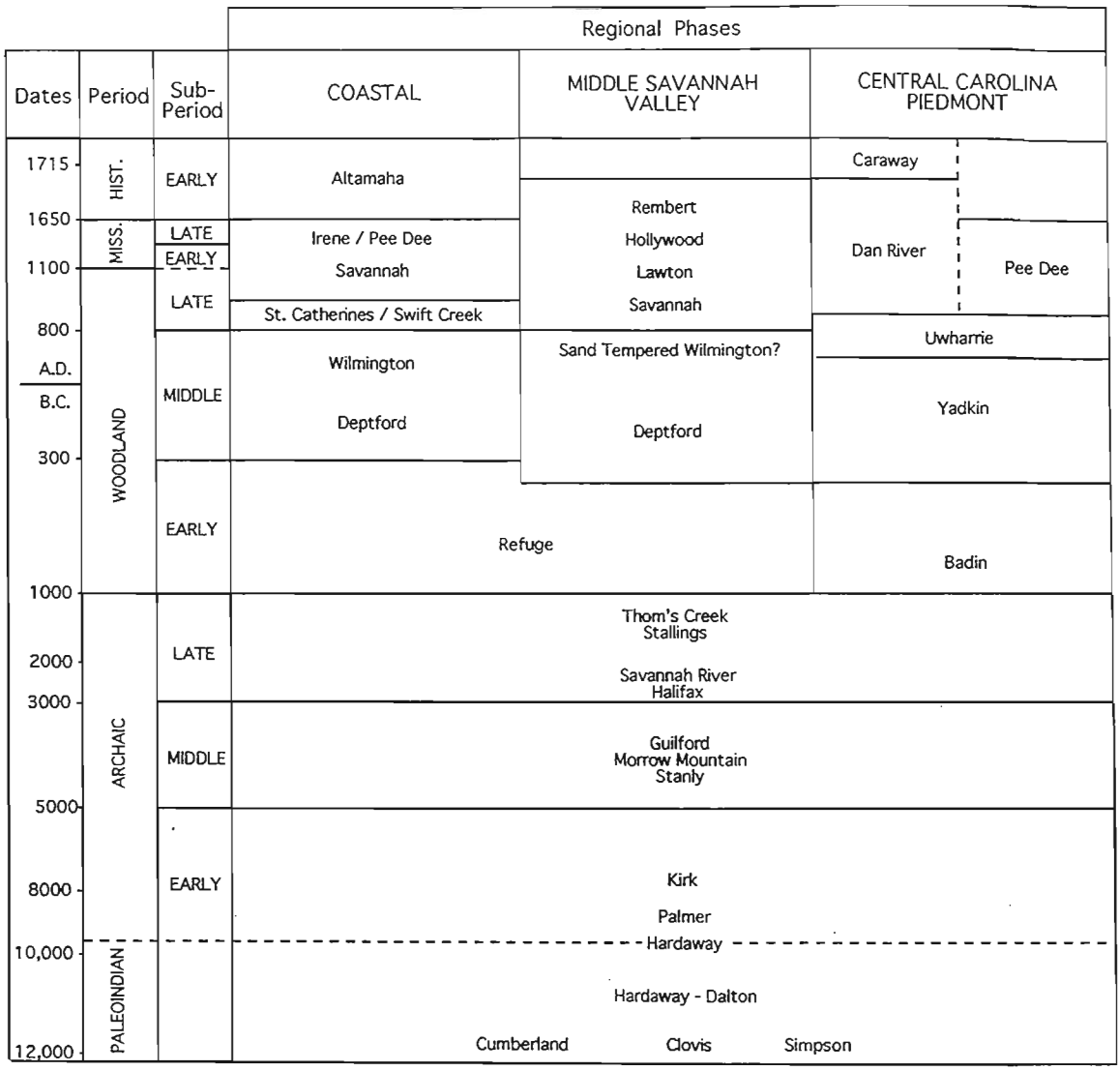


Figure 6. Cultural periods along the coast of South Carolina.

lanceolates such as Clovis, Dalton, perhaps the Hardaway, and Big Sandy (Coe 1964; Phelps 1983; Oliver 1985). A temporal sequence of Paleoindian projectile points was proposed by Williams (1965:24-51), but according to Phelps (1983:18) there is little stratigraphic or chronometric evidence for it. While this is certainly true, a number of authors, such as Anderson (1992a) and Oliver (1985) have assembled impressive data sets. We are inclined to believe that while often not conclusively proven by stratigraphic excavations (and such proof may be an unreasonable expectation), there is a large body of circumstantial evidence. The weight of this evidence tends to provide considerable support.

Unfortunately, relatively little is known about Paleoindian subsistence strategies, settlement systems, or social organization (see, however, Anderson 1992b for an excellent overview and synthesis of what is known). Generally, archaeologists agree that the Paleoindian groups were at a band level of society (see Service 1966), were nomadic, and were both hunters and foragers. While population density, based on isolated finds, is thought to have been low, Walthall suggests that toward the end of the period, "there was an increase in population density and in territoriality and that a number of new resource areas were beginning to be exploited" (Walthall 1980:30).

Archaic Period

The Archaic Period, which dates from 10,000 to 3,000 B.P.[2], does not form a sharp break with the Paleoindian Period, but is a slow transition characterized by a modern climate and an increase in the diversity of material culture. Associated with this is a reliance on a broad spectrum of small mammals, although the white tailed deer was likely the most commonly exploited animal. Archaic period assemblages, exemplified by corner-notched and broad-stemmed projectile points (Figure 7), are fairly common, perhaps because the swamps and drainages offered especially attractive ecotones.

It has often been suggested that there was a noticeable population increase from the Paleoindian into the Early Archaic. This has tentatively been associated with a greater emphasis on foraging. Diagnostic Early Archaic artifacts include the Kirk Corner Notched point. As previously discussed, Palmer points may be included with either the Paleoindian or Archaic period, depending on theoretical perspective. As the climate became hotter and drier than the previous Paleoindian period, resulting in vegetational changes, it also affected settlement patterning as evidenced by a long-term Kirk phase midden deposit at the Hardaway site (Coe 1964:60). This is believed to have been the result of a change in subsistence strategies.

Settlements during the Early Archaic suggest the presence of a few very large, and apparently intensively occupied, sites which can best be considered base camps. Hardaway might be one such site. In addition, there were numerous small sites which produce only a few artifacts — these are the "network of tracks" mentioned by Ward (1983:65). The base camps produce a wide

[2] The terminal point for the Archaic is no clearer than that for the Paleoindian and many researchers suggest a terminal date of 4,000 B.P. rather than 3,000 B.P. There is also the question of whether ceramics, such as the fiber-tempered Stallings ware, will be included as Archaic, or will be included with the Woodland. Oliver, for example, argues that the inclusion of ceramics with Late Archaic attributes "complicates and confuses classification and interpretation needlessly" (Oliver 1981:20). He comments that according to the original definition of the Archaic, it "represents a preceramic horizon" and that "the presence of ceramics provides a convenient marker for separation of the Archaic and Woodland periods (Oliver 1981:21). Others would counter that such an approach ignores cultural continuity and forces an artificial, and perhaps unrealistic, separation. Sassaman and Anderson (1994:38-44), for example, include Stallings and Thom's Creek wares in their discussion of "Late Archaic Pottery." While this issue has been of considerable importance along the Carolina and Georgia coasts, it has never affected the Piedmont, which seems to have embraced pottery far later, well into the conventional Woodland period. The importance of the issue in the Sandhills, unfortunately, is not well known.

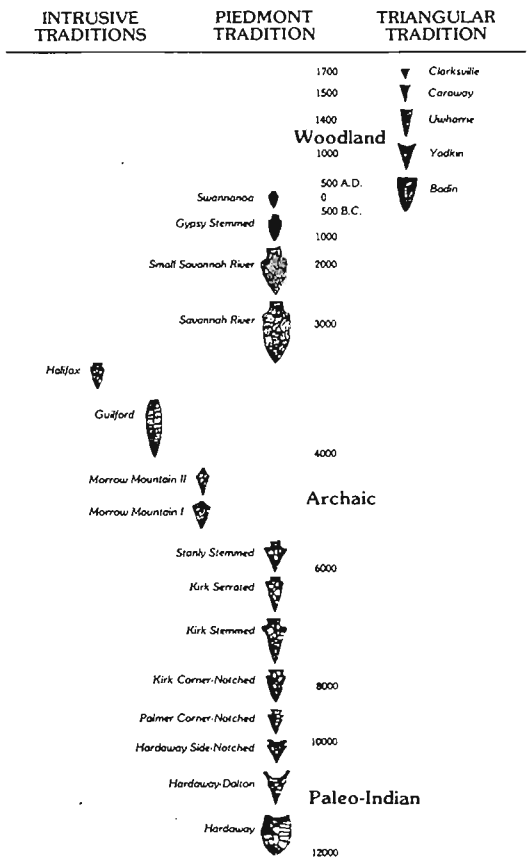


Figure 7. Projectile point traditions of North and South Carolina (adapted from Oliver 1985:Figure 10-8).

range of artifact types and raw materials which has suggested to many researchers long-term, perhaps seasonal or multi-seasonal, occupation. In contrast, the smaller sites are thought of as special purpose or foraging sites (see Ward 1983:67).

Middle Archaic (8,000 to 6,000 B.P.) diagnostic artifacts include Morrow Mountain, Guilford, Stanly and Halifax projectile points. Phelps (1983:25) also notes that the gradual increase from Paleoindian to Archaic in the Coastal Plain seems to peak during the Middle Archaic Morrow Mountain phase.

Much of our best information on the Middle Archaic comes from sites investigated west of the Appalachian Mountains, such as the work by Jeff Chapman and his students in the Little Tennessee River Valley (for a general overview see Chapman 1977, 1985a, 1985b). There is good evidence that Middle Archaic lithic technologies changed dramatically. End scrapers, at times associated with Paleoindian traditions, are discontinued, raw materials tend to reflect the greater use of locally available materials, and mortars are initially introduced. Associated with these technological changes there seem to also be some significant cultural modifications. Prepared burials begin to more commonly occur and storage pits are identified. The work at Middle Archaic river valley sites, with their evidence of a diverse floral and faunal subsistence base, seems to stand in stark contrast to Caldwell's Middle Archaic "Old Quartz Industry" of Georgia and the Carolinas, where axes, choppers, and ground and polished stone tools are very rare.

The available information has resulted in a variety of competing settlement models. Some argue for increased sedentism and a reduction of mobility (see Goodyear et al. 1979:111). Ward argues that the most appropriate model is one which includes relatively stable and sedentary hunters and gatherers "primarily adapted to the varied and rich resource base offered by the major alluvial valleys" (Ward 1983:69). While he recognizes the presence of "inter-riverine" sites, he discounts explanations which focus on seasonal rounds, suggesting "alternative explanations . . . [including] a wide range of adaptive responses." Most importantly, he notes that:

> the seasonal transhumance model and the sedentary model are opposite ends of a continuum, and in all likelihood variations on these two themes probably existed in different regions at different times throughout the Archaic period (Ward 1983:69).

Others suggest increased mobility during the Archaic (see Cable 1982), and Sassaman (1983) has suggested that the Morrow Mountain phase people had a great deal of residential mobility, based on the variety of environmental zones they are found in and the lack of site diversity. The high

level of mobility, coupled with the rapid replacement of these points, may help explain the seemingly large numbers of sites with Middle Archaic assemblages. Curiously, the later Guilford phase sites are not as widely distributed, perhaps suggesting that only certain micro-environments were used (cf. Ward [1983:68-69] who would likely reject the notion that substantially different environmental zones are, in fact, represented).

Recently Abbott et al. argue for a combination of these models, noting that the almost certain increase in population levels probably resulted in a contraction of local territories. With small territories there would have been significantly greater pressure to successfully exploit the limited resources by more frequent movement of camps. They discount the idea that these territories could have been exploited from a single base camp without horticultural technology. Abbott and his colleagues conclude, "increased residential mobility under such conditions may in fact represent a common stage in the development of sedentism" (Abbott et al. 1995:9).

From excavations at a Sandhills site in Chesterfield County, South Carolina, Gunn and his colleague (Gunn and Wilson 1993) offer an alternative model for Middle Archaic settlement. He accepts that the uplands were desiccated from global warming, but rather than limiting occupation, this environmental change made the area more attractive for residential base camps. Gunn and Wilson suggest that the open, or fringe, habitat of the upland margins would have been attractive to a wide variety of plant and animal species.

Another point of some controversy is the idea that the groups responsible for the Middle Archaic Morrow Mountain and Guilford points were intrusive ("without any background" in Coe's words) into the North Carolina Piedmont, from the west, and were contemporaneous with the groups producing Stanly points (Coe 1964:122-123; Phelps 1983:23). Phelps, building on Coe, refers to the Morrow Mountain and Guilford as the "Western Intrusive horizon." Sassaman (1995) has recently proposed a scenario for the Morrow Mountain groups which would support this west-to-east time-transgressive process. Abbott and his colleagues, perhaps unaware of Sassaman's data, dismiss the concept, commenting that the shear distribution and number of these points "makes this position wholly untenable" (Abbott et al. 1995:9).

The Late Archaic, usually dated from 6,000 to 3,000 or 4,000 B.P., is characterized by the appearance of large, square stemmed Savannah River projectile points (Coe 1964). These people continued to intensively exploit the uplands much like earlier Archaic groups with, in North Carolina, the bulk of our data for this period coming from the Uwharrie region.

One of the more debated issues of the Late Archaic is the typology of the Savannah River Stemmed and its various diminutive forms. Oliver, refining Coe's (1964) original Savannah River Stemmed type and a small variant from Gaston (South 1959:153-157), developed a complete sequence of stemmed points that decrease uniformly in size through time (Oliver 1981, 1985). Specifically, he sees the progression from Savannah River Stemmed to Small Savannah River Stemmed to Gypsy Stemmed to Swannanoa from about 5000 B.P. to about 1,500 B.P. He also notes that the latter two forms are associated with Woodland pottery.

This reconstruction is still debated with a number of archaeologists expressing concern with what they see as typological overlap and ambiguity. They point to a dearth of radiocarbon dates and good excavation contexts at the same time they express concern with the application of this typology outside the North Carolina Piedmont (see, for a synopsis, Sassaman and Anderson 1990:158-162, 1994:35).

In addition to the presence of Savannah River points, the Late Archaic also witnessed the introduction of steatite vessels (see Coe 1964:112-113; Sassaman 1993), polished and pecked stone artifacts, and grinding stones. Some also include the introduction of fiber-tempered pottery about 4000 B.P. in the Late Archaic (for a discussion see Sassaman and Anderson 1994:38-44). This innovation is of special importance along the Georgia and South Carolina coasts.

Called Stallings, after the type site excavated by the Cosgroves in 1929 (Claflin 1931), the definitive features of this pottery is its large quantity of fiber, now identified as Spanish moss (Simpkins and Scoville 1981), included in the paste prior to firing. Vessel forms include simple, shallow bowls and large, wide mouthed bowls, as well as deeper jar forms. The pottery is generally molded, although coiling fractures are occasionally present, particularly later in the period. Firing was poorly controlled with punctations (using periwinkle shells, reeds, and sticks), finger pinching, and incising. At least some of these motifs may be temporally sensitive (Trinkley 1986; Sassaman 1993). Sassaman, for example, suggests an early period dominated by plain vessels, followed by a period of drag and jab linear punctations. The final period appears to include a broad range of decorative motifs, including a resurgence of plain vessels (see Sassaman 1993:109-110).

In addition to the pottery, these Stallings sites also produce a rich cultural assemblage of bone and antler work, polished stone items, grooved and perforated "net sinkers" or steatite disks, stone tools (including knives , scrapers, and cruciform drills) (see Williams 1968).

Stallings phase sites are found clustered in the Savannah River drainage (Claflin 1931; Hanson 1982; Sassaman 1993) and in the coastal zone south of Charleston (Anderson 1975). Stoltman (1966, 1974) obtained an early radiocarbon date of 2515±95 B.C. (GXO-345) from Rabbit Mount in the Savannah Drainage. This area has produced a number of large Stallings sites, such as Stallings Island (Bullen and Greene 1970; Clafflin 1931), Fennel Hill (38AL2 notes on file, South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia), Rabbit Mount (Stoltman 1974), and Bilbo (Williams 1968:152-197; Dye 1976), with elaborate material assemblages.

Stallings pottery was produced as late as 1060±80 B.C. (UGA-1686), based on a date from the Cunningham Mound C in Liberty County, Georgia; although Milanich and Fairbanks (1980:78) suggest that fiber tempering may be found on the Georgia coast as late as A.D. 1. While Stallings pottery is usually considered older than, and often the progenitor of, Thom's Creek pottery, the radiocarbon dates leave little doubt that the two pottery styles are largely contemporaneous (Trinkley 1976; cf. Sassaman 1993:16-20).

The following Thom's Creek phase dates as early as 2220±350 B.C. (UGA-584) from Spanish Mount in Charleston County (Sutherland 1974)[3] and continues to at least 935±175 B.C. (UGA-2901), based on a date from the Lighthouse Point Shell Ring, also in Charleston County (Trinkley 1980b:191-192). The Thom's Creek phase is characterized by an artifact assemblage almost identical to that of Stallings sites. The only major differences include the replacement of fiber tempering with sand, or a clay not requiring tempering, and the gradual reduction of projectile point size.

Thom's Creek pottery, first typed by Griffin (1945), consists of sandy paste pottery decorated with the motifs common to the Stallings series, including punctations (reed and shell), finger pinching, simple stamping, incising, and very late in the phase, finger smoothing (Trinkley 1976). Investigations at the Lighthouse Point and Stratton Place shell rings, stratigraphic studies at Spanish Mount and Fig Island, radiocarbon dates from Lighthouse Point and Venning Creek, and the study of surface collections from a number of sties, have suggested a temporal ordering of the Thom's Creek series. Reed punctate pottery appears to be the oldest, followed by the shell punctated and finger pinched motifs. Late in the Thom's Creek phase, perhaps by 1000 B.C., there was the addition of Thom's Creek Finger Smoothed (Trinkley 1983:44). Although an interesting idea, this relative chronological order seems destined for dramatic revision.

Vessel forms include deep, straight sides

[3] This date is often discounted because of its large sigma and questionable association (see Sassaman 1993:20). The next oldest date is 2090±90 B.C. from the Bass Pond site on Kiawah Island in Charleston County (Trinkley 1993:160).

jars and shallow conoidal bowls. Lip treatments are dimple, and coiling fractures are common. Firing of the Thom's Creek vessels is certainly better than that evidenced for Stallings, but there continues to be abundant incompletely oxidized specimens.

Bone pins illustrated by Williams (1968:152-197) and Trinkley (1980b:Plate 17) may have functioned as weaving or netting tools (shuttles or needles). Common to the Thom's Creek sites are whelk shells with a carefully executed and well-smoothed hole in shoulder of the body whorl close to the aperture and a heavily worn or smoothed columella and outer whorl. These tools likely served as scrapers (see Trinkley 1980b:209-214). Other whelk tools evidence a heavily battered columella which has resulted in a blunt tip.

Like the Stallings settlement pattern, Thom's Creek sites are found in a variety of environmental zones and take on several forms. Thom's Creek sites are found throughout the South Carolina coastal zone up to the Fall Line. In the Coastal Plain drainage of the Savannah River there is a change of settlement, and probably subsistence, away from the riverine focus found in the Stallings Phase (Hanson 1982:13; Stoltman 1974:235-236). Thom's Creek sites are more commonly found in the upland areas and lack evidence of intensive shellfish collection. In the coastal zone large, irregular shell middens; small, sparse shell middens; and large shell rings are found in the Thom's Creek settlement system.

Limited testing has been conducted at one small Thom's Creek non-shell midden on Sol Legare Island (38CH770) in Charleston County (Trinkley 1984). The site evidenced very limited reliance on shellfish and faunal remains, with the bulk of the food remains consisting of large mammals. Excavations also identified a portion of a probable Thom's Creek post structure situated about 180 feet inland from the marsh edge.

Excavations at other coastal zone Thom's Creek sites includes the work by Sutherland (1973, 1974) at the Spanish Mount shell midden (38CH62) on Edisto Island. While this work has never been completed published, the site initially appeared to represent a seasonally occupied camp with a diffuse subsistence base, including reliance on shellfish, floral material, fish, and mammals. More recent investigations, however, suggest that this midden may actually represent the remains of a shell ring largely eroded away by Scott Creek (Cable 1993). This site was described by Edmund Ruffin in 1843:

> It is a mound formed by the aborigines, & which is entirely of shells, except some considerable intermixture of ashes, & bits of their broken pottery, broken bones & charcoal. The shells are of various kinds, of the neighboring river waters & sea, but principally of oysters. The mound is elipitcal [sic], & measured by stepping over, is 150 feet long, & 48 feet wide to a perpendicular break on the creek made by the inroads of the water, & which apparently has washed away about 18 feet more of the side. The perpendicular section of the shells where exposed by this loss, is 10 feet, & 12 feet in all to the summit (above the ground of ordinary height, on which they are placed). The surface, except at the perpendicular cliff, is covered over with rich soil, & a growth of small trees and shrubs (Mathew 1992:113).

Work by Michie (1979) at the Bass Pond Dam site (38CH124) in Charleston County, suggests a similar subsistence orientation. Additional research at this site by Chicora Foundation (Trinkley 1993:160) has produced a date of 2090 ± 90 B.C. for the site, perhaps the oldest well documented date for Thom's Creek pottery along the South Carolina-Georgia coast. At this site Thom's Creek Plain pottery dominates the collection, followed by Thom's Creek Finger Pinched and Thom's Creek Reed Punctate. The faunal analysis suggested that the site was occupied in the fall and/or early winter by a microband of perhaps 20 or 30 individuals.

By far the most work has been conducted at Thom's Creek phase shell rings (see Trinkley 1980b, 1985). These sites are circular middens about 130 to 300 feet in diameter, 2 to 6 feet in height, and 40 feet in width as their bases, with clear interiors. These doughnut-shaped accumulations were formed as small mounds, arranged around an open ground area, and gradually blended together. The ring itself is composed of varying proportions of shell, animal bone, pottery, soil, and other artifacts. The midden soils are silts, and the shell is lenses and crushed. Post holes are abundant, although no structures have been clearly defined. Pits are evidenced throughout the midden, but under the midden large shellfish steaming pits, several feet in diameter and 2 to 3 feet in depth, are most clearly evident. Their use and the subsequent disposal of the shells actually formed the middens.

These shell rings were apparently mundane occupation sites for fairly large social units which lived on the ring, disposed of garbage underfoot, and used the clear interiors as areas for communal activities. The sites further suggest relatively permanent, stable village life as early as 1600 B.C., with a subsistence base oriented toward large and small mammals, fish, shellfish, and hickory nut resources (Trinkley 1985).

These rings were also observed by Ruffin in the late antebellum period. He noted with special interest the shell middens:

> which are still more articially shaped, being regular, circular ridges, hollow in the middle. Such a one I saw on James Island, from 3 to 4 feet high, of oyster shells & periwinkles, in the center of which stands Dr. Legare's mansion house (Mathew 1992:113).

Even earlier, at the turn of the nineteenth century, John Drayton described the James Island shell ring:

> It is of circular form: measuring around two hundred and forty paces. Its width at the top is ten paces; and at its base from sixteen to twenty; and its height is from eight to 10 feet . . . . It is situated in the midst of cleared lands, on no uncommon residing; surrounding the dwellings house and offices of a gentleman who resides on the island. And the waters, which were driven by the hurricane of 1752, over much of the adjacent lands, are said to have been completely banked out by this work. This being observed by Mr. Rivers, he placed his dwelling house therein; which had been continued, either by repairs or new buildings, to the present day (Drayton 1802:56-57).

In fact, the Lighthouse Point shell ring can be traced from Henry Stirling Rivers to Dr. Thomas Legare (Trinkley 1980b:159) and the two quotes provide ample evidence of the site's gradual use, first for lime used in St. Michael's Church and later for road construction.

There is evidence that during the Late Archaic the climate began to approximate modern climatic conditions. Sea levels began to increase, flooding many of the Thom's Creek shell rings. Rainfall increased resulting in a more lush vegetation pattern. The pollen record indicates an increase in pine which reduced the oak-hickory nut masts which previously were so widespread. This change probably affected settlement patterning since nut masts were now more isolated and concentrated. From research in the Savannah River valley near Aiken, South Carolina, Sassaman has found considerable diversity in Late Archaic site types with sites occurring in virtually every upland environmental zone. He suggests that this more complex settlement pattern evolved from an increasingly complex socio-economic system. While it is unlikely that this model can be simply transferred to the lower coastal plain without an extensive review of site data and micro-environmental data, it does demonstrate one approach to understanding the transition from Archaic to Woodland.

Woodland Period

Sassaman (1993:55) recalls the cautions of Joseph Caldwell, who found "the regional landscape of the Early Woodland ceramic traditions" a "fascinating array of local developments and diverse extralocal influences." As a consequence, the Early Woodland becomes quickly confused and difficult to interpret.

As previously discussed, there are those who see the Woodland beginning with the introduction of pottery. Under this scenario the Early Woodland may begin as early as 4,500 B.P. and continued to about 2,300 B.P. Diagnostics would include the small variety of the Late Archaic Savannah River Stemmed point (Oliver 1985) and pottery of the Stallings, St. Simons, and (to a lesser extent) Thom's Creek series (Griffin 1943; Trinkley 1976; DePratter 1991:159-162). The fiber-tempered Stallings and St. Simons wares and the sandy paste Thom's Creek wares are decorated using punctations, jab-and-drag, and incised designs (Trinkley 1976).

Others would have the Woodland beginning about 3,000 B.P. with the introduction of the Refuge wares, also characterized by sandy paste, but often having only a plain or dentate-stamped surface (DePratter 1976, 1991:163-167; Waring 1968). There is evidence that the punctated and dentate surface decorations are gradually replaced by plain and simple stamped treatments. Sassaman et al. (1990:191) report a distribution similar to the earlier fiber-tempered and Thom's Creek wares, and suggest that the Refuge wares evolved directly from these earlier antecedents.

The Refuge Phase, dated from 1070±115 B.C. (QC-784) to 510±100 B.C. (QC-785), is found primarily along the South Carolina coast from the Savannah drainage as far north as the Santee River (Williams 1968:208). Anderson (1975:184) further notes an apparent concentration of Refuge sites in the Coastal Plain, particularly along the Santee River. The pottery is found inland along the Savannah River (Peterson 1971:151-168), although it does not extend above the Fall Line (see Anderson and Schuldenrein 1985:719; Garrow 1975:18-21).

The Refuge series pottery is similar in many ways to the preceding Thom's Creek wares. The paste is compact and sandy or gritty, while surface treatments include sloppy simple stamped, dentate stamped, and random punctate decorations (see DePratter 1979:115-123; Williams 1968:198-208). Anderson et al. note that these typologies are "marred by a lack of reference to the Thom's Creek series" (Anderson et al. 1982:265) and that the Refuge Punctate and Incised types are indistinguishable from Thom's Creek wares. Peterson (1971:153) characterizes Refuge as both a degeneration of the preceding Thom's Creek series and also as a bridge to the succeeding Deptford series. There is a small stemmed biface associated with the Savannah drainage Refuge sites. This type has been termed Groton Stemmed by Stoltman (1974:114-115) and Deptford Stemmed by Trinkley (1980a:20-23). Peterson suggests that, "a change from the `Savannah River' to the small stemmed points, a diminution basically, could occur during the Refuge" (Peterson 1971:159), although points similar to the Small Savannah River Stemmed continue to occur.

In spite of the relative lack of detailed investigations at Early Woodland sites, it seems likely that the subsistence economy was based primarily on deer hunting and fishing, with supplemental inclusions of small mammals, birds, reptiles, and shellfish. This is based on an impression that there was a continuation of a generalized Late Archaic pattern, which may or may not be appropriate.

Somewhat more information is available for the Middle Woodland, typically given the range of about 2,500 B.P. to about 1,200 B.P. The most characteristic pottery of this time period is Deptford, although both Swift Creek and Wilmington are likely late additions. Regardless, the Middle Woodland is best understood in the context of Deptford, which has been carefully described by DePratter (1979:118-119, 123-127), who suggests two divisions with check stamping and cord marking gradually being supplemented by complicated stamping. The introduction of clay or grog tempered Wilmington wares follows on the heels of the Deptford phase.

We do not, however, mean to imply that the origin of the Middle Woodland is well understood. In fact, Sassaman takes some pains to emphasize that the transition from Refuge to Deptford is not well understood:

> the Refuge-Deptford problem is the result of numerous regional processes that converge in the Savannah River region between 3000 and 2000 B.P. The sociopolitical entities that existed on the coast and in the interior during the fourth millennium dissolved after about 2400 B.P., resulting in the dispersal of small populations across the region. . . . Pottery designs changed from highly individualistic punctation and incision to the (seemingly) anonymous use of dowels for stamping. . . . the use of a carved paddle for simple stamping should mark the "blending" of Refuge and Deptford culture, or, more accurately, reflect the subsumption of Refuge culture by the expanding Deptford complex.
>
> To complicate matters, the tradition of cord-wrapped paddles makes its way into the South Carolina area sometime after 2500 B.P. (Sassaman 1993:118-119).

The work by Milanich (1971) and Smith (1972), coupled with the considerable additional site-specific research (see, for example, DePratter 1991; Sassaman 1993:110-125; Thomas and Larsen 1979) provides an exceptional background for this particular phase. Milanich's (1971) interpretation of a coastal-estuarine settlement model with interior occupation limited to short-term extractive activities, while still useful, has been modified through the discovery of a number of interior base camps. In fact, there seems to be evidence for a number of interior seasonal or perhaps even permanent base camps, although there is as yet no convincing evidence of horticulture. Anderson (1985:48) provides a brief overview of some very significant concerns. He notes that Milanich's interpretation that the interior river valleys were used by small, residentially mobile foraging groups which dispersed from large coastal villages is clearly not correct. In fact, just the opposite appears more likely, with coastal use and settlement being seasonal (Anderson 1985:48-49).

DePratter (1979:119, 128-131; 1991) takes the position that Wilmington pottery post-dates Deptford, ushering in the use of grog or clay as a tempering material in the late Middle Woodland. The check stamping and complicated stamped motifs found in the Deptford continue, except with clay tempering for a short time. Called Walthour, these wares are described by DePratter (1991:174-176), but they apparently existed for only a short period of time before being completely replaced by cord marking (DePratter 1979:119). They are also only occasionally seen on the central Carolina coast.

Wilmington phase sites are rather poorly understood in the South Carolina Coastal Plain. No only has there been little effort to develop settlement models incorporating the Wilmington, there is very little technological research on the pottery itself. In fact, the distinction between grog or clay tempered and sand tempered is occasionally ignored, resulting in considerably typological confusion.

Largely contemporaneous with the sherd tempered wares are the Mount Pleasant, McClellanville, and Santee series. The Mount Pleasant series has been developed by Phelps from work along the northeastern North Carolina coast (Phelps 1983:32-35, 1984:41-44) and is a Middle Woodland refinement of South's (1960) previous Cape Fear series. The pottery is characterized by a sandy paste either with or without quantities of rounded pebbles. Surface treatments include fabric impressed, cord marked, and net impressed. Vessels are usually conoidal, although simple, hemispherical, and globular bowls are also present. The Mount Pleasant series is found from North Carolina southward to the Savannah River (being evidenced by the "Untyped Series" in Trinkley 1981b). North Carolina dates for the series range

from A.D. 265±65 (UGA-1088) to A.D. 890±80 (UGA-3849). The several dates currently available from South Carolina (such as UGA-3512 of A.D. 565±70 from Pinckney Island) fall into this range of about A.D. 200 to 900.

The McClellanville (Trinkley 1981a) and Santee (Anderson et al. 1982:302-308) series are found primarily on the north central coast of South Carolina and are characterized by a fine to medium sandy paste ceramic with surface treatment of primarily v-shaped simple stamping. While the two pottery types are quite similar, it appears that the Santee series may have later features, such as excurvate rims and interior rim stamping, not observed in the McClellanville series. The Santee series is placed at A.D. 800 to 1300 by Anderson et al. (1982:303), while the McClellanville ware may be slightly earlier, perhaps A.D. 500 to 800. Anderson et al. (1982:302-304; see also Anderson 1985) provide a detailed discussion of the Santee Series and its possible relationships with the McClellanville Series. Anderson, based on the Santee area data from Mattassee Lake, indicates that there is evidence for the replacement of fabric impressed pottery by simple stamping about A.D. 800 (David G. Anderson, personal communication 1990). This may suggest that McClellanville and Santee wares are closely related, both typologically and culturally. Also probably related is the little known Camden Series (Stuart 1975) found in the inner Coastal Plain of South Carolina.

In some respects the Late Woodland (1,200 B.P. to 400 B.P.) may be characterized as a continuation of previous Middle Woodland cultural assemblages. While outside the Carolinas and Georgia there were major cultural changes, such as the continued development and elaboration of agriculture, the coastal South Carolina and Georgia groups settled into a lifeway not appreciably different from that observed for the previous 500-700 years. From the vantage point of Middle Savannah Valley Sassaman and his colleagues note that, "the Late Woodland is difficult to delineate typologically from its antecedent or from the subsequent Mississippian period" (Sassaman et al. 1990:14). This situation would remain unchanged until the development of the South Appalachian Mississippian complex (see Ferguson 1971). Anderson (1994:366-368) provides a basic review of the Late Woodland and Mississippian ceramic sequence at the mouth of the Savannah River. This review is particularly useful since it also compares and contrasts these developments to those in the middle and upper reaches of the Savannah (Anderson 1994:368-377).

Along the northern Carolina coast, Anderson et al. (1982:303-304) suggest a continuation of the Santee series into the Late Woodland. The Hanover and Mount Pleasant series may also be found as late of A.D. 1000. Along the southeastern North Carolina coast, South (1960) has defined the Oak Island complex, which is best known for its shell tempered ceramics with cord marked, fabric impressed, simple stamped, and net impressed surface finishes. The phase is briefly discussed by Phelps (1983:48-49), but curiously this manifestation is almost unknown south of the Little River in South Carolina.[4] Very little is known about the northern coastal South Carolina Late Woodland complexes, although sites such as 38GE32 may document the occurrence of village life in the Late Woodland.

South Appalachian Mississippian

As Schnell and Wright (1993:2) observe, "Mississippian" means different things to different people — even to its earliest researchers. To Willey (1966) it meant a particular group of traits. To Griffin (1985) it meant a complex social and technological interaction sphere. To Smith (1986) it was defined as an adaptive strategy. The meaning is further distorted, or at least affected, when the issue is viewed from a strict temporal or chronological orientation, such as this presentation (since to us, the period covers the period from about A.D. 900 to A.D. 1500).

[4] The Wando Series, or something similar, has been identified by a number of researchers along the coast north of Charleston. The pottery, most commonly cord marked or check stamped, is limestone tempered and may be either Middle or Late Woodland in time (see Adams and Trinkley 1993:64-71 for additional information).

The Mississippian may be viewed rather basically by focusing on a simple coastal chronology based almost entirely on the results of excavations at Irene (Caldwell and McCann 1941) and the resulting synthesis by DePratter (1979:Table 30; 1991:183-193). In this scenario the Savannah Phase, consisting of three subphases, is followed by the Irene, broken into two subphases.

The Savannah, characterized by cord marking, is seen as developing from earlier cultures. Present are flat-topped temple mounds, although these seem to decline dramatically from the mouth of the Savannah River northward. While the settlement system is very similar to that of the Late Woodland, there are also nucleated settlements found near estuaries and along freshwater rivers further inland. Although agriculture is seen by many as almost essential, there is no good evidence for corn or other domesticated crops.

Savannah II is distinguished by the introduction of check stamping and Savannah III is defined by the presence of complicated stamping. The Savannah III Complicated Stamped pottery is primarily curvilinear, often of concentric circles or oval motifs. Sassaman et al. (1990:207) suggest that the current temporal ranges are likely too restrictive for these subphases and suggest instead broader period of perhaps A.D. 1100 to 1200 for Savannah II and perhaps A.D. 1200 to 1300 for Savannah III.

The Savannah phase gives way to what is often called the Irene Phase, probably beginning about A.D. 1300. The Irene I Phase is identified by the appearance of Irene Complicated Stamped pottery using the filfot cross and line block motifs. Not only are these motifs different from the earlier Savannah Complicated Stamped designs, but the Irene ware is characterized by grit inclusions and a coarse texture, compared to the Savannah's sandy inclusions and fine to medium-grained paste.

Also present in Irene collections are a range of rim decorations, including nodes, rosettes, and fillet appliques. Although incising is found in very low quantities during this early period, the succeeding Irene II phase is characterized by bold incising. The mouth of the Savannah River, however, was likely abandoned by the end of the Irene I Phase since little incising is found in this area.

From the more northern region, the Pee Dee culture was defined through the excavations of Joffre Coe at Town Creek which is located about 150 miles due north of Charleston (Coe 1995; Reid 1967). The site, generally accepted to represent a northern intrusion of a Mississippian chiefdom, was originally dated from about A.D. 1550 to 1750, although more recent analyses suggests a date more likely between A.D. 900 and 1400 (Coe 1995:159).

In the Charleston area the only reasonably documented Mississippian excavations are those undertaken by Stanley South at the moundless ceremonial center at Charles Town Landing (South 1971). Anderson (1994:115) notes with regret that there has been "no broad-scale comparative analyses of Mississippian ceramics" for the South Carolina area, although there has been some effort to untangle the typology of the Middle Wateree valley (see, for example, DePratter and Judge 1990:56-58).

Historic Synopsis

Just as there are a large number of sources recounting the prehistory of the project area, the history of Charleston County has been extensively reviewed, summarized, and critiqued. There should hardly be any need to do more than point the interested reader in one or two directions for additional information and details. Simple, and readily available, summaries include *A Short History of Charleston* (Rosen 1982) and *Charleston! Charleston!* (Fraser 1989).

The history of the project area, relatively speaking, is exceptionally well researched and well understood. Butler, for example, provides 38 pages of historic documentation, representing a full 40% of his report (Butler 1994). Côté (1995) provides an even more complete history of the project area, focused on the immediate area of "Secessionville Manor," also known as the William B. Seabrook House. Most recently, Patrick Brennan (1996) has

published *Secessionville: Assault on Charleston*, an exceptionally detailed account of the Secessionville battle and the events leading up to it.

Colonial and Antebellum Ownership

The earliest identified owner for the Secessionville peninsula is apparently Thomas Fawcett, who in June 1698 obtained a warrant for 100 acres on James Island (Salley and Olsberg 1973:583). The grant was dated July 14, 1698 and was recorded August 6, 1698 (S.C. Department of Archives and History, Grant Book C, pp. 197-198). Although the meets and bounds are indistinct, and although the accompanying plat can no longer be found, Côté (1995:25) notes that subsequent deeds cite this grant. He also observes that Fawcett's ownership is clouded in ambiguity — there is no will, no estate inventory, virtually no historical record at all to indicate what may have happened on the tract during this very early period.

Moreover, the eventual disposition of the tract is not clearly understood since it does not show up again until the will of George Rivers devises 79 acres (the entire peninsula) to his son, Daniel in 1749 (Charleston County WPA Wills 1747-1752, vol. 6, p. 156). Côté observes that Rivers was a moderately successful planter who seems to have focused on poultry raising. His son David had already occupied the Secessionville peninsula, since the will devices, "all that tract of land where now he liveth extending to the westward as far as where my gate posts now stands in the fence that runs from marsh to marsh across the neck" (quoted in Côté 1995:26). West of Daniel was the tract he devised to his son John and even further west would have been the tract given to his son Thomas. Clearly the Rivers family was well established by 1749. Even more clearly, Daniel apparently had a settlement in the project area by this time — the first fairly conclusive evidence of a plantation settlement.

Daniel Rivers died in 1764, after acquiring a second plantation on James Island — that of Colonel Robert Rivers (formerly belonging to William Rivers). Côté (1995:27-29) suggests that he continued to live on the Secessionville peninsula, even after acquiring the other tract. There sees, however, to be little indication for this and, in fact, the wording of Daniel's will suggests more strongly that he may have taken up residence on the plantation acquired from Colonel Rivers. Regardless, in March 1765 the executors of Daniel's will sold the Secessionville tract to his son, John Rivers, for 10 shillings (Côté 1995:29). This deed traces the property back to Fawcett and also notes that the neck was known "by the Indians Washopeau" (Charleston County RMC, DB G3, p.177).

In John's 1773 will the eastern half of the plantation (accounting for about 77 acres) was devised to his son, Henry Rivers. Côté describes Henry Rivers as:

> an educated, middle-class young man who raised cattle, sheep and planted on a modest scale. His table was set with pewter plates, not silver. His few luxuries included a silver watch, a pair of silver buckles, some gold sleeve buttons, a riding chair and a small lot of books. He also owned eleven juvenile slaves (Côté 1995:30).

While Henry Rivers may have been a small planter, the watch, buckles, buttons, books, and riding chair all suggest that he was aggressively participating in growing consumer economy of Georgian society. Dying sometime between 1773 and 1776, this widow inherited his Secessionville plantation (based on a 1796 plat which reveals the property was previously owned by the "late widow of Henry Rivers").

There is another gap in the chain of title between River's widow and the next owner, John Stint, Sr. who had acquired the property at least by 1796. A 1796 plat reveals that Stint was the owner of only 44 acres. As Côté observes:

The lot of land now under discussion has shrunken from the original 100 acres to 79 acres (all of the land east of the neck) to just 44 acres (the eastern half of the land east of the neck) (Côté 1995:32).

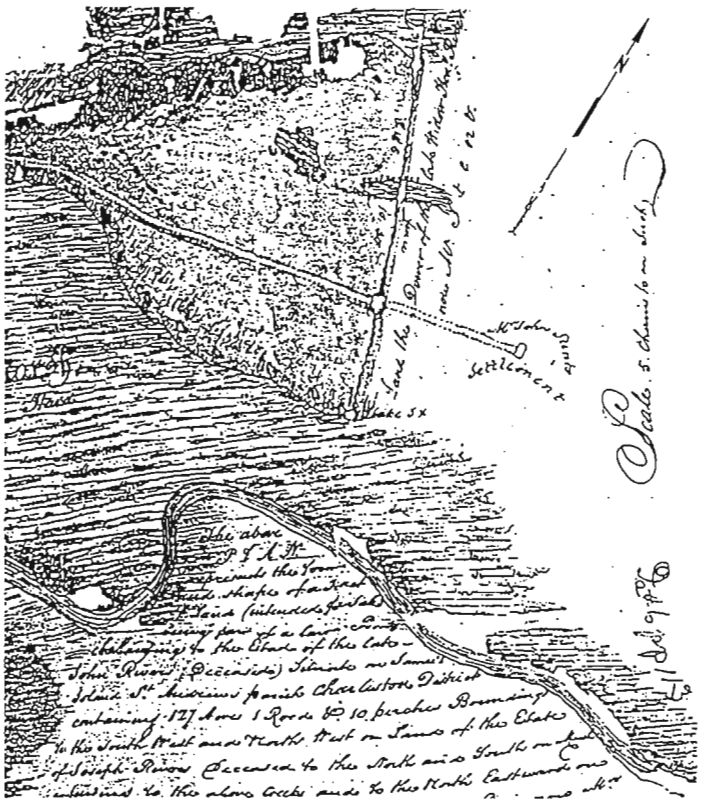


Figure 8. Project area in 1796, with Stent's settlement at the eastern end of the peninsula (Charleston County RMC, DB Q6, p. 110)

The land west of Stint and east of the neck, according to the 1796 plat (Figure 8) was still part of the "Estate of John Rivers (Deceased)." This suggests that John's estate was only partially devised by this late date.

John Stint died in 1816 and apparently passed the small parcel to his son, John Stint, Jr. Côté (1995:33) suggests that this Stint was also a small planter who raised cotton on the parcel. This is at least partially confirmed by a Coastal Survey map which reveals the presence of a dwelling, two out buildings, and four slave houses on the south edge of the parcel, outside the survey area, in 1825 (Figure 9).

In 1837 Edward Freer, executor of the estate of John Stent, Jr. sold the 44 acre tip of the Secessionville peninsula to Rawlins Rivers. Côté reports that:

> at this time, Rivers already owned the land to the west [apparently acquiring the tract from the executors of John River's estate]. This purchase reunited ownership of all the land on the peninsula under one owner (Côté 1995:35).

The 1850 agricultural census reveals that Rawlins Rivers was a relatively well established cotton planter — his 35 slaves produced 10 bales of cotton the previous year, as well as corn, peas, beans, potatoes, sweet potatoes, and butter (Côté 1995:35). It is also likely that he constructed what subsequently became known as the William

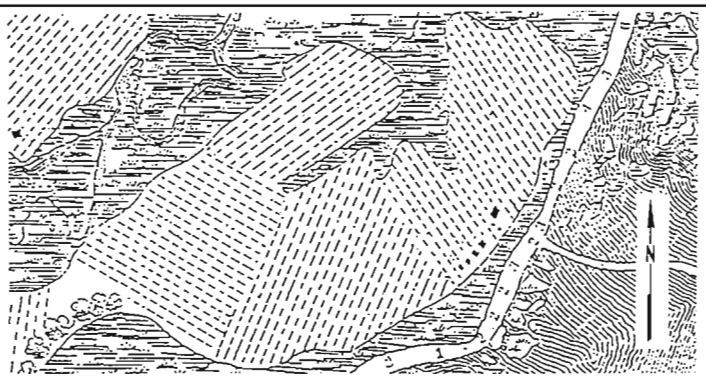


Figure 9. Secessionville peninsula in 1825 (Bache's *Charleston Harbour and the Adjacent Coast and Country*).

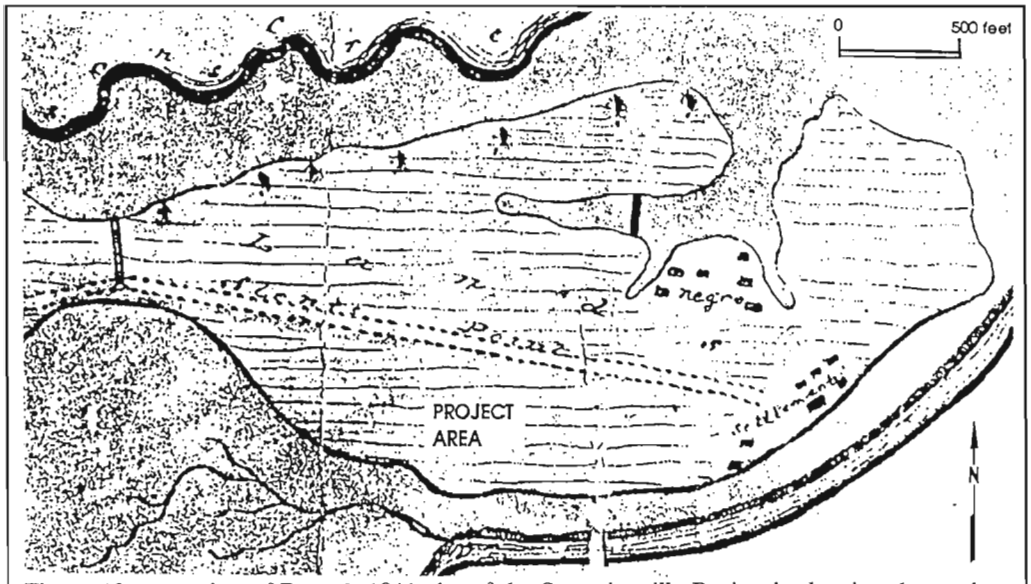


Figure 10. A portion of Payne's 1841 plat of the Secessionville Peninsula showing the project area and the "negro" settlement situated on the survey tract.

B. Seabrook House during his ownership. By 1838, however, Rivers had sold the 44-acre tip of the Secessionville peninsula to Henry F. Bailey (Charleston County RMC, DB T10, p. 199). The land was described as:

> All that plantation or tract of land . . . known by the name of "Stint's Point," measuring and containing forty four acres of high land more or less . . . bounding to the north on Simpson's Creek, to the northeast, east and south on a creek called Savannah Creek and to the west on land belonging to me the said Rawlins Rivers . . . (quoted in Côté 1995:36).

By 1841 Bailey had acquired all of the Secessionville Peninsula, plus additional land, for a total of 410.7 acres, which were surveyed by Robert K. Payne (Figure 10). This is a particularly valuable plat, since it reveals that while the main settlement had not moved from the earlier 1796 plat, the slave settlement had been shifted further away — across what is today Fort Lamar Road to the north. The plat also reveals that the point was still known as Stent's Point and that there was likely a ditch (possibly a property boundary) dug across the narrow neck. Côté suggests that there was "a bridge across a marshy inlet," although the plat suggests that this is more likely another ditch or dike, perhaps impounding a portion of the marsh for rice planting.

The Secessionville tract was sold by Bailey to Joseph Washington Hills, who by 1850 had acquired a total of 250 acres (Côté 1995:40). He owned 32 slaves and produced 9 bales of cotton, as well as subsistence crops. By 1851, however, he sold the 250 acre plantation to Constant H. Rivers, reserving for himself, "one lot of land" in what had already been promoted by Rivers as a new summer village.

The Development of Riversville

Constant Rivers was not only a successful cotton planter on James Island, he was also the developer of what historically was known as Riversville, a summer village for the island's planters. An 1852 mortgage identified Riversville as encompassing 14 acres and being situated at the extreme southeast end of Stent's Point. Côté observes that:

> Its seven lots fronted on Bay Street, a boardwalk promenade which ran the length of the village's settled waterfront, just above the high water mark of Savannah Creek. Behind the houses was the street known as Main or Washington, which rang

> parallel to Bay Street. This street still exists. It ran west from the tip of the peninsula to a point where it turned to continue on, as Savannah Road, to the neck of the peninsula and beyond. Two streets, Calhoun and McDuffie, ran between Main and Bay (Côté 1995:44).

He further notes that at least six of the seven lots had substantial houses built on them prior to the Civil War. In addition, a steamboat landing was constructed at the tip of the peninsula, probably to allow planters to transfer their belongings, and family, to the summer village.

Local legend explains that name "Secessionville" was derived from the "fact" that a group of James Island planters "seceded" from the previous summer village at Johnsonville (this view is repeated by Butler 1994:25 and Brennan 1996:32). As Côté goes on to explain, "the tradition always goes on to state emphatically that the name is not related to South Carolina's secession from the Union on December 20, 1860" (Côté 1995:n.p.). Côté admirably debunks this myth, proving that the village's earliest name was Riversville — a name which was still in active use as late as June 1859. In contrast, there is no evidence of the name "Secessionville" prior to February 23, 1861. Further, he found an 1864 Civil War soldier's account of the name — "This place is said to be where the first secession flag was raised." There is little doubt that the name "Secessionville" is directly tied to South Carolina's dissolution of the Union.

The year before the Civil War, Riversville had eight occupants — Adella M. Hills, Constant H. Rivers, William H. Rivers, Thomas H. Grimball, James M. Lawton, William W. McLeod, William B. Seabrook, and John W. Holmes. Only two, Grimball and Seabrook, owned 1,000 or more acres, or 90 or more slaves. Most were relatively modest planters (Côté 1995:59).

The houses were all likely of frame construction, set on brick piers. In addition to the main houses there were probably also housing for the servants who accompanied their masters and mistresses. Most of this town would slowly disappear during the Civil War, primarily from the efforts of salvaging. Only those houses actively used by the Confederate military forces would be spared.

The Civil War

Just as there are numerous accounts of Charleston's history, so too are there several excellent synoptic histories of Secessionville and the siege of Charleston. Not only do Butler (1994) and Côté (1995) provide overviews, but Burton (1970) and Rosen (1994) help place the local events in a much wider perspective. Finally, Gragg (1994), Jones (1911), and Power (1992) provide thorough secondary accounts of the actual Battle of Secessionville — the only action which the project area saw during the Civil War. As previously mentioned, Brennan (1996) provides a detailed account of both the battle and of the events leading up to it. Brennan provides considerably less information on what happened to the site after the end of the Civil War, dismissing the site's decline in only a few pages.

The election of Abraham Lincoln in 1860 precipitated the long-brewing crisis between the North and the South. Seven Southern states, lead by South Carolina, seceded before Lincoln's inauguration; four more plus the Indian Territory joined them in early 1861, with elements in Missouri, Kentucky, Maryland, and Arizona also finding representation in the resulting Confederate States of America. Irresolution marked the initial Northern response to secession, but this was quickly changed after the morning of April 12, 1861 when Confederate forces fired on Fort Sumter (see, Rosen 1994:63-68 for an overview of the events leading up to the attack on Sumter and the disagreements among historians of how these events transpired).

Federal response was galvanized by the South's first hostile action and in less than a month the Union blockade on Charleston and other Southern ports was established. By November 1861 what Burton called "the most formidable armada

ever assembled under the American flag" sailed into Port Royal and began to methodically destroy the Confederate forts guarding the entrance and protecting both Hilton Head and the town of Beaufort (Burton 1970:68). The Confederate forces retreated after only a few hours, leaving the area to the Federal troops.

The fall of Port Royal sent shock waves through the Confederacy and shortly afterward the little known General Robert E. Lee arrived in Charleston to assume command of the new military department of South Carolina, Georgia, and East Florida. Lee established his command at Coosawhatchie, on the line of the Charleston and Savannah Railroad. His strategy, in the words of Rosen was:

> to concede the immediate coast (a move that did not sit well with the planters of the area) except for the forts guarding Charleston and Savannah, which he greatly improved; to obstruct all the waterways between the two cities not already occupied by the Union navy; and to protect the railroad (Rosen 1994:83).

While it is certainly clear that the ability of generals and the experience of manpower affected the course of the Civil War, geography set the context in which these variables functioned. The Appalachians divided the Confederacy into eastern and western theaters, while the Mississippi further set apart this region. The Atlantic and Gulf coasts were lesser fronts. It was the proximity of the rival capitals — Richmond and Washington — which served to protect Charleston. Although the Union forces in Port Royal were posed to launch an offensive assault on Charleston, in the hope of splitting the Confederacy in two, Lincoln was preoccupied with an attack on Richmond.

As the Union forces delayed, Charleston continued to strengthen its defenses. Lee placed General Roswell S. Ripley over the Charleston district. By March 1862 Lee was replaced by Major General John C. Pemberton, an individual almost universally disliked by Charlestonians. Rosen notes that he relieved Ripley of his command and was never able to get along with South Carolina's Governor Pickens. Soon Charleston was under martial law and the local paper cried that this was "grievous and intolerable oppression — an unreasonable and tyrannical measure" (quoted in Rosen 1994:89).

In spite of the measures taken by Lee, Ripley, and then Pemberton, the large rivers of coastal South Carolina were a serious weakness in the defense of Charleston since they allowed numerous entrances and routes of movement — most difficult to protect or defend. Coupled with this natural weakness, Pemberton decided to draw his defenses inward toward Charleston, and abandoned the fortifications at Cole's Island on the Stono Inlet. Combined, these two were seized by the Federal navy, which began a gradual movement up the Carolina coast from Port Royal, first to Cole's Island, to Edisto Island, to Seabrook Island, then to John's and Kiawah islands, then finally digging in on Folly Island. This created a staging area for the assault on Charleston.

Among the Confederates' greatest fears was that the Union army would launch an assault on James Island, since if it fell, artillery batteries on the island would almost certainly lay waste to the inner harbor defenses. As a result, extensive defensive batteries were erected on James Island. Figure 11 shows James Island in 1862, after the construction of these Confederate batteries had begun. One of these, at Secessionville, was begun in January 1862. Colonel Lewis M. Hatch and the 23rd South Carolina Infantry constructed a four-gun battery across the narrow neck of the peninsula, an observation tower immediately behind the battery, and a bridge at the northeast corner of the peninsula to connect it with the mainland and provide a rear exit.

Some of the first troops stationed at Secessionville found it a pleasant post, in spite of the fatigue duty. One commented that:

> The peninsula furnishes a most admirable and perfectly delightful camp ground. It is level, and

affords a fine pasture for horses and cattle. The wild clover and other grasses grow there, spontaneously and luxuriantly. Fish and crabs (sea and stone,) of the finest kind and quality abound in the adjacent waters, and oysters (delicious bi-valve) crowd the mud banks, furnishing luxuries for both the planter and soldier (Izlar 1914:34-35).

This comment not only helps explain the attitude of the Confederate defenders, but also suggests that provisioning at the Secessionville works was supplemented by the abundant local resources — both domesticated and wild.

Figure 11 James Island in 1862 showing the early Confederate defensive works (*E. & G.W. Blunt's Map of Charleston and Vicinity*).

On May 29, 1862, under the increased threat of invasion by Union forces, Major John G. Pressly, commander of the Eutaw Regiment (25th S.C. Volunteer Infantry) at Secessionville and Provost Marshal for James Island, ordered that the island be evacuated. The notice in the Charleston *Mercury* instructed the planters to remove all private property, including slaves. Corn and fodder would be purchased by the Quartermaster. Concerning livestock:

> Beef Cattle will be valued and paid for by the Commissary Department. Milch Cows, if for the support of the negroes, may be sent off at once, but no Cattle can be removed for the purpose of being sold to butchers. Cattle cannot be removed from the Island without an order from the Provost Marshal. Sheep, Hogs, &c., must be removed, or, if not, will be taken and valued by the Commissary (Charleston *Mercury*, June 2, 1862).

This, too, suggests that the Confederate forces at Secessionville, at least early in the war, were well provisioned.

Côté observes that the Secessionville works, known initially only as the Tower Battery, was an impression, if not completed, defensive work in late May 1862:

> The fort at Secessionville embodied a sophisticated array of defenses. It stretched the entire width of the narrowest part of the peninsula, thereby requiring any attacker to confront it head-on — where they were in the direct line of the fort's artillery and small arms fire.
>
> An attaching army hadvirtually no room to maneuver, for the neck of land on

> which the fort was built narrowed to a killing field less than two hundred yards wide directly in front of the fort. Flanking maneuvers were made impossible by the salt marsh, which protected both sides of the fort, and any frontal assault was immediately slowed down by an abatis — a barricade of felled trees with the sharpened branches facing the enemy.
>
> After penetrating the abatis, the attacker had to deal with a moat seven feet deep and then scale a nine-foot high, hard packed earthwork. Those who withstood their withering fire and made it to the parapet of the earthwork then faced a second line of defense, for the whole interior of the fort could be swept by fire from a series of rifle pits in the rear of the fort. Outside the fort, the woods and bushes between the fort and the village were also filled with Confederate sharpshooters (Côté 1995:68).

The Union army, however, knew far less than this about Secessionville in late May and early June of 1862. For the most part they were settling into a defensive position. They were more hindered by the weather than by the Confederates. Brennan observes that:

> The June rains were influencing the evolving campaign in more ways than just discomforting the soldiers. The attendant marshy terrain gave the roadways that crisscrossed James Island a strategic significance they lacked in drier times. As it was, those roads became important factors with which both commanders would have to grapple (Brennan 1996:100).

It wasn't until June 8 that the Union forces began to fully comprehend the intent of the Confederate defenders. Colonel J.H. Morrow, leading a heavy probe northward toward Grimball's plantation, met heavy Confederate resistance from four companies of the Eutaws, stationed near the Presbyterian Church. Meanwhile, General Isaac Stevens pushed toward Secessionville. Brennan reports that these troops obtained their first good look at the Confederate defenses:

> One of the observers later wrote that "plainly discernable" across the intervening fields was a lookout tower. "It is a skeleton one, neatly build, not unlike a New York fire observatory in construction," he noted, ". . . almost if not quite 200 feet high." Even at this distance, they could make out the "red line of the fort, on the further side of a deep fosse. . ." Further east, a floating battery holding what the Federals described as "two heavy guns," could be seen in a waterway next to the village, which consisted of "perhaps a dozen to 20 houses" (Brennan 1996:115).

These troops also encountered the cotton field fronting the Secessionville works, as well as the Confederate rifle pits covering the approaches. Perhaps the most important finding of the day, however, was the realization that the Confederates intended to hold their James Island positions.

Secessionville's Place in the Theory of Field Fortifications

The fortifications described by Côté were traditional, and were based on the prevailing science of military warfare. As Paddy Griffith explains, even before the Civil War America's army had shown its tendency to "dig in" (Griffith 1989:124). In fact, he comments that, "it was perhaps significant that the Republic's only official military academy had been built as a college of engineering" (Griffith 1989:124). He explains that:

> Their Professor of Engineering and the Art of War, Dennis Hart Mahan, was to all accounts a persuasive teacher — and his favourite theme was the pre-eminence of the spade in combat (Griffith 1989:124).

Griffith realizes that Mahan, and his disciples — especially General Wager Halleck (who immortalized himself for his curious habit of digging in every few miles as he pursued a defeated enemy; he had earlier in 1856 written the text, *Elements of Military Art and Science*) and General P.G.T. Beauregard — based their faith not so much on a careful study of Napoleon's tactics or even American history, but rather on their complete lack of faith in militia armies to hold their own in battle. Any significant war would require the use of militias "and that meant it would have to be fought by primitive tactics which sacrificed mobility and flexibility in order to give a minimum standard of confidence and security to the troops (Griffith 1989:125). It was only behind earthworks that Mahan felt America's militia would be capable of fighting successfully. The most powerful of all Mahan's writings, *A Treatise on Field Fortifications*, was so significant that it was published during the Civil War by Confederate printers and was the standard work. When the Secessionville works are examined, it is clear that they were designed, laid out, and constructed in careful, almost rigid, adherence to Mahan's principles (Mahan 1862).

Griffith deals at length with the psychological power of fortifications — noting that throughout the war both sides dug in and both sides were loath to attack fortified entrenchments. The conventional wisdom was that fortifications could multiple the soldier's combat value by no less than six times — allowing, for example, 10,000 men to beat off 60,000 (Griffith 1989:130). In spite of the almost mythical attributes of earthworks, all that most fortifications could provide the defender, according to Griffith, was extra time to pour fire on the attacker from relative security with the hope that this directed fire would demoralize the opposing forces before they reached the objective. He goes on to point out that:

> Actually the main physical strength of a trench position was usually to be found neither in the extra protection it offered the defender nor in the obstacles it put in the way of an attacker. Paradoxically, it was the cleared field of fire in front of the trench that made it most dangerous. . . . It gave them [the defenders] a killing ground in which an attacker could be brought face to face with the full dangers of his enterprise (Griffith 1989:129).

Griffith notes that regardless, the vast majority of earthworks actually taken fell to flanking action (perfected by General Sherman) not to frontal assaults. He notes that:

> the longer the war went on, the more soldiers could be found who had experienced a "slaughter pen" at first hand. Such men had searing visions of the human cost of such enterprises, and quite naturally found it difficult to balance this against the highly abstract benefits to be gained by even a successful assault (Griffith 1989:131).

By late in the war this resulted in numerous cases of combat refusal. Even when mutiny was avoided, there were increasing numbers of abortive charges which, in Griffith's words, "went to ground" almost before they began (Griffith 1989:131). Drury and Embleton also note that more and more ditches were dug as the war continued (Drury and Embleton 1993:21).

In spite of this, Griffith warns that the ditches of the Civil War soldier were no more necessary in the mid-nineteenth century than they

had been a hundred or more years earlier.[5] He suggests the dependence on earthworks such as those at Secessionville grew out the combatants themselves:

> A more educated American population was less ready to risk death without at least a semblance of personal protection, and a high command imbued with the flannelling of the Vauban and Mahan schools was blinded to the inner character of mobile warfare. Once this curious brew had been mixed together and shaken up thoroughly in a few pitched battles, it settled out as the 1864 elixir. Lots of digging, lots of skirmishing, noise and smoke, lots of respect for the enemy's line and an acute awareness of the claims he had staked. But not often very much real fighting. It was a far cry indeed from the methods of Napoleon! (Griffith 1989:135).

Although Mahan's *A Treatise on Field Fortifications* (Mahan 1862) is undoubtedly the authority on the topic, David Wright (1982) has provided an excellent overview which often helps to explain some of the more obtuse comments found in Mahan. Figures 12 and 13 provide an overview of the terms most commonly used to describe earthworks.

Mahan begins his discourse by explaining that the purpose of the earthwork is both to provide security to its defenders and also to hinder the attack of those attempting to take it. Consequently, every earthwork will have a *parapet*, "to intercept the enemy's missiles, to enable the assailed to use their weapons with effect, and to present an obstacle to the enemy's progress," as well as a *ditch*, which "serves the double purpose of increasing the obstacles which the enemy must surmount before reaching the assailed, and of furnishing the earth to form the parapet" (Mahan 1862:2). Mahan then goes on to define the different features of an earthwork, such as the exterior and interior slopes, the banquette, crest, and berm (see Figure 12).

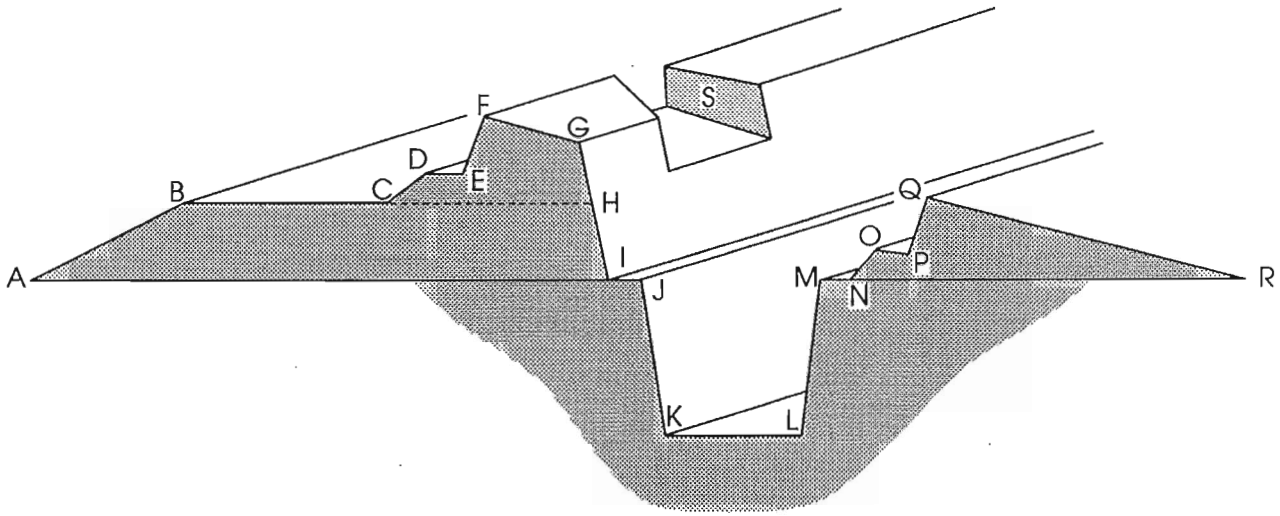
Mahan also offers principles upon which all earthworks should be constructed. For example, he insists that flanked positions are essential, since "flanks sweep with their fire the ground in front of the faces; remove sectors without fire and dead angles; cross their fire in front of the salients; and take the enemy's column in flank" (Mahan 1862:6). Drawing from his, he goes on to emphasize the importance of all angles being acute, since they all flanking fire, while an obtuse angle "leaves a portion of the ground in front of the face undefended" (Mahan 1862:6). Salients should never be at angles of less than 60°, since smaller angles provide interior spaces that are too confining and leaves too large an area in the front without fire.

Moreover, no line should be longer than 160 yards. This is based on Mahan's belief that it would be the close fire of musketry, not artillery, that blunts the trust of the attacker. Since the musket was thought to be most accurate at distances of 160 yards or less, Mahan insisted that no line should be longer than could be covered by musket fire.

Mahan also emphasized the need for a "strong profile," explaining that deep ditches cause delays on the part of the attacker, "during which the column is exposed to a warm fire within short range" (Mahan 1862:7). Clawing up the parapet wall not only continues this exposure, but "the enemy presents himself in a fatigued and exhausted state tot he bayonets of the assailed, who have mounted on the top of their parapet to meet and drive him back into the ditch" (Mahan 1862:7).

The Tower Battery at Secessionville

[5]Griffith disputes those, such as Drury and Embleton (1993:21), who still suggest that entrenchments were the result of improved weapons. He observes that the threats from snipers and rifled artillery, while perhaps psychologically terrifying, were tactically marginal. Further, the new weapons, in his words, "were less different from their predecessors than had been claimed" (Griffith 1989:134).



ABHI	Rampart or Bulwark
CDEFGH	Parapet
JKLM	Ditch
NOPQR	Glacis
AB	Parade of Slope
BC	Terreplain
CD	Banquette Slope
DE	Banquette or Tread of Banquette
EF	Interior Slope
FG	Superior Slope
GI	Exterior Slope
GH	Exterior Slope,If no rampart
IJ	Berm
JK	Scarp Wall
LM	Counterscarp Wall
MN	Covered Way
NO	Glacis Banquette Slope
OP	Banquette
PQ	Interior Slope
QR	Glacis Slope
S	Embrasure

High Points or Crest:

F	Interior Crest
G	Exterior Crest
J	Scarp Crest
M	Counterscarp
Q	Glacis Crest

Low Points or Foot:

C	Foot of Banquette Slope
I	Foot of Exterior Slope
H	Foot of Exterior Slope, If no rampart
K	Foot of Scarp
L	Foot of Counterscarp
R	Foot of Glacis

Figure 12. Terminology of earthworks (adapted from Mahan 1862).

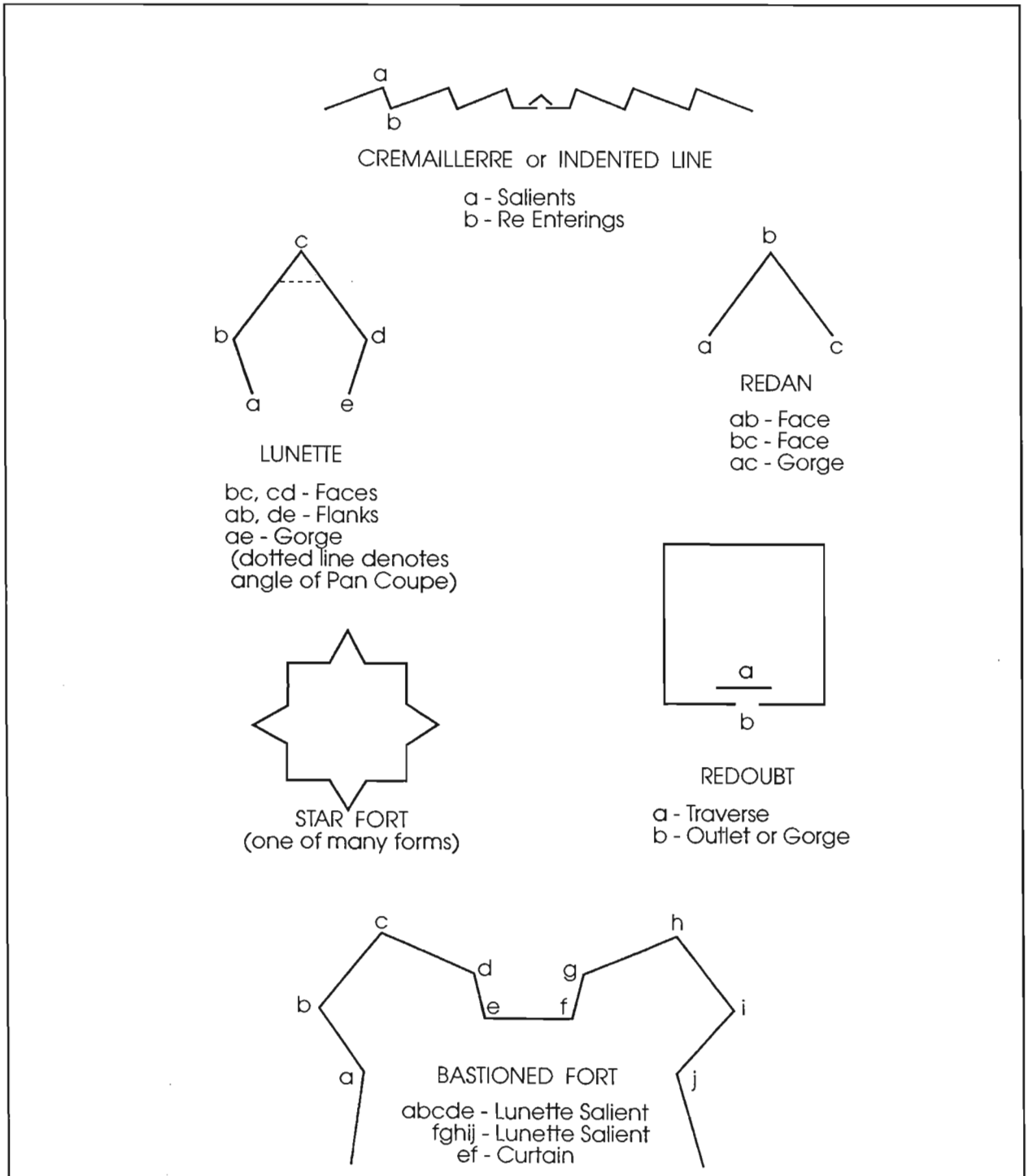


Figure 13. Fortification forms (adapted from Mahan 1862).

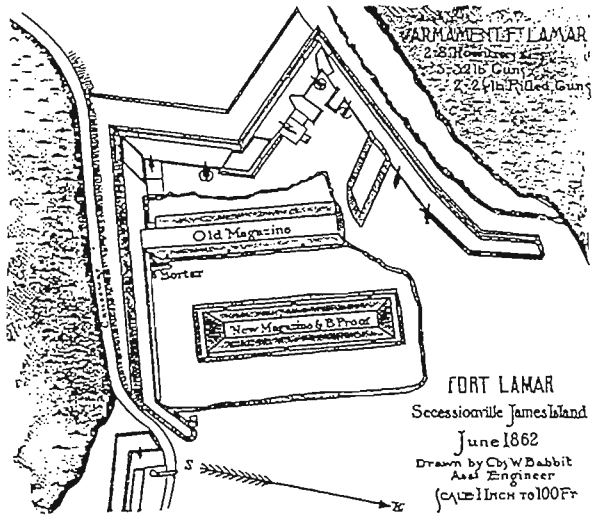


Figure 14. Fort Lamar (adapted from Johnson 1890:27).

(Figure 14) took the form of a priest-cap, "seldom used" according to Mahan (1862:12). The configuration resembles the letter "M," consisting of an indented capital that formed a 90° angle and was flanked by two small redans or salients of 60° angles. At Secessionville the capital was at an angle of 118° and the two salients varied from 72° to 78°. In general, however, the Tower battery closely conformed to Mahan's design requirements.

Mahan specified that parapets might range from 8 to 12 feet in height, with its width (at the interior to exterior crests) dependant on the nature of the attack anticipated. Period engineers had a variety of tables at their disposal to help them make this determination. For example, the shell from an 18-pounder at 110 yards would penetrate 6½ feet into the parapet, while a 24-pounder at the same distance would penetrate only 3½ feet (Mahan 1862:18). The ditch must be at least 6 feet in depth, with a width of less than 20 feet. The Tower Battery's ditch was 7 feet in depth and the parapet wall was between 9 and 16 feet tall. Again, the Confederate defenders appear to have followed Mahan's teachings with very few alterations. The 16 foot height is perhaps the only odd feature, since Mahan indicated that heights greater than 12 feet were typically very difficult to achieve with normal tools, like picks and shovels.

The Battle of Secessionville

Considering this context, it is easier to understand the relentless effort placed into the Charleston defenses, including those at Secessionville. The fortifications consisted of a barbette (i.e., firing over the parapet) battery with two bastioned salients and one re-entrant angle (a priest cap, as previously discussed). The gorge was open, although by June of 1862 two magazines had been built, the newer one including a bombproof (Figure 14). In spite of this, an inspection by Col. Johnson Hagood found the defenses wanting in early June. There were only four guns mounted on the Tower Battery and "the redans and redoubts . . . had no guns mounted or platforms laid" (Hagood 1910:86).

The Confederate army defending Charleston dug itself in, staked its territory, and established a clear boundary. Major General David Hunter saw an opportunity to attack James Island and perhaps even push on to Charleston. In early May 1862 he assigned Brigadier General Henry W. Benham the task of developing plans to assault the city by way of James Island (Power 1992:157-158). His initial plan was to mount a land assault by way of Edisto Island with half of the available troops, while depositing the remaining half quickly on James Island. This plan, however, ran into the bureaucratic obstacle of acquiring sufficient troop transports and, when the expedition was postponed, Benham observed:

> this movement, which was to have been a surprise, is undoubtedly now known to the enemy and may be defeated, or can be accomplished only at the probable cost of a large sacrifice of life, or it must be abandoned and Charleston still held by the rebels (quoted in Power 1992:158).

In spite of the problems, on June 2, 1862 Benham landed about 11,500 troops in the vicinity of Grimball's plantation on the southwestern tip of James Island. As yet another indicator of how important earthworks were Civil War armies, the Union troops began almost immediate construction

of a haphazardly placed low parapet running the length of their lines (Brennan 1996:119). Although the Confederate forces were aware of this landing and sent out scouting parties, they did little else. Burton (1970:103-104) attributes this primarily to the covering fire provided by the Union gunboats in the Stono River. One major effort by the Confederates to push the Union forces back into the Stono failed miserably, with the loss of about 60 or 70 Confederates and only 20 Union troops (see Power 1992:161-162 and Burton 1970:103-104).

At this juncture, General Hunter left James Island to seek additional reinforcements, effectively postponing the efforts to take Charleston. What happened next is relatively well known, and well recounted by Power:

> Hunter left Benham in command on James Island, issuing vague orders which seemed to simultaneously prohibit and require offensive actions. "You will make no attempt to advance on Charleston or to attack Fort Johnson until largely re-enforced or until you receive specific instructions from these headquarters to that effect," the orders read. "You will however provide for a secure entranced encampment, where your front can be covered by the fire of our gunboats from the Stono on the left and creek from Folly River on our right." These instructions would be the focal point of a wide-ranging controversy in a few days (Power 1992:161).

Accounts of the battle of Secessionville are provided by Brennan (1996), Gragg (1994), Jones (1911), and Power (1992). In addition, Butler (1994) provides another summary of the action. In the simplest of terms, by June 15 Benham decided that the Secessionville earthworks threatened both his position and the continued presence of the Union gunboats in the Stono. He embarked on what he later called a "reconnaissance in force" to overwhelm Secessionville, eliminating this threat (and fortuitously, placing his forces in proximity to Charleston). Power notes that Benham's junior officers were not nearly as excited about the idea, although it seems unclear whether their concerns were clearly conveyed (see Brennan 1996 for a detailed discussion of this issue). Regardless, the loosely devised plans called for Brigadier General Isaac I. Stevens' Second Division to lead an advance the next morning, June 16th, at four o'clock, with Brigadier Gen. Horatio G. Wright's First Division in close support. The Union gunboats were to provide artillery support.

Meanwhile, the Confederate forces, under the commander of the "Tower Battery" as it was still known, Colonel Thomas G. Lamar, had been busy having his 1st South Carolina Artillery finish the major defenses at the earthworks. The night of June 15th was the first time in weeks that they had been allowed to sleep without their small arms at ready. An account by Lieutenant Iredell Jones indicates that the 1st South Carolina (Charleston) Battalion was camped in the rear of Secessionville, near the footbridge connecting the peninsula with the main Confederate line to the north, while further west was the camp of the 9th South Carolina Battalion (Brennan 1996:159).

The Union attack began on-time, but capturing the Confederate pickets about ¾-mile away from the earthworks raised the alarm in at Secessionville and Lamar rushed his troops to the gun emplacements, while requesting nearby infantry support, with the Union troops only a few hundred yards from the earthworks. The battery's first shot punched a gaping hole in the Union line, causing them to falter while re-organizing. Meanwhile Confederate infantry began arriving, taking positions on the fortifications and commencing with musket fire (Figure 15). By this time it is likely that the Union troops were within what might be called the "decisive" range of rifle fire — under a hundred yards (see, for example, Griffith 1989:146).

Adding the problem faced by the Union forces was the topography — a narrow peninsula which forced the troops to bunch together. The

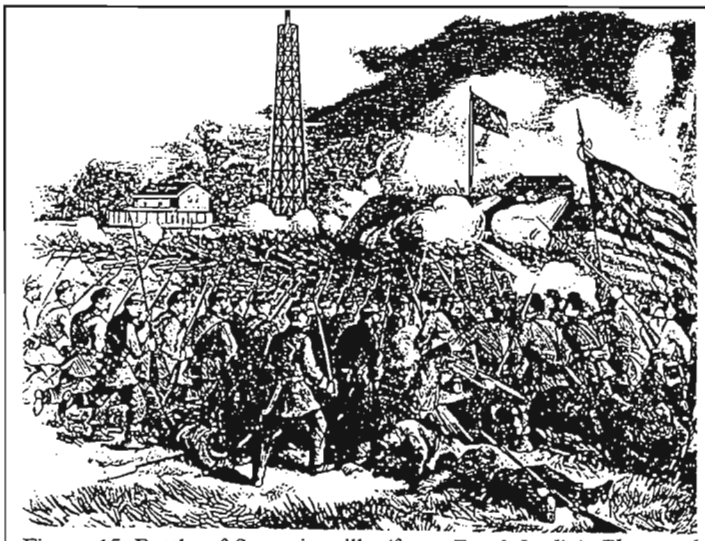


Figure 15. Battle of Secessionville (from *Frank Leslie's Illustrated Newspaper*, July 12, 1862, courtesy of the S.C. Historical Society).

result was disastrous — just as it had been for Napoleon's "monstrous column" 50 years earlier. This made the troops both exceptionally vulnerable and unwieldy as they got closer to the enemy. As Griffith notes:

> This was no new perception born of improvements in small arms; it had been the most fundamental teaching of the European theorists since 1815. The American generals who saw fit to ignore it could doubtless be accused of following outdated foreign practice, but it was abusive practice which had long been superseded in the more advanced schools (Griffith 1989:152-153).

Of course, at Secessionville, there was little choice but to bunch together, go through the narrow neck and hope that regiments could reform for the final assault. While the Union ranks broke into confusion, at least some troops did reach the parapet of the work, where they engaged in hand-to-hand combat with the Confederate defenders. Perhaps surprisingly, they were driven off the works and fell back to reform. In addition, about this time Stevens' brigade came up to offer support.

Griffith notes the problem of accelerating the attack was common to all such engagements, observing:

> Loss of impetus and failure to achieve shock were the main enemies of the Civil War tactician who wanted to cross the vital last 33 yards to come to grips with his foe. . . . The use of massed formations turned out to be even less successful (Griffith 1989:158-159).

He notes that many carefully developed attacks degenerated into rather formless mob tactics of a skirmish attack — essentially a swarm of individuals. At Secessionville this "swarm" was never strong enough to sweep over the Confederate positions in a unified movement — with a predictable outcome.

The Union field artillery, combined with the gunboats, were also ineffective. Rather than maneuver their pieces close to the enemy line in order to blow a hole in it, they were placed safely out of musket range, resulting in largely ineffective long-range fire. Power observes that even the gunboats' long-range shots did as much damage to Union troops as they did to the Confederate defenders (Power 1992:166).

While the Union forces attempted a flanking maneuver, the topography and vegetation prevented any effective attack. By about 7:30 in the morning, 3½ hours after the battle began, the Union troops began their withdrawal. Like most of the battles to follow in the Civil War, the Confederate troops did not capitalize on their victory by following the Federal forces. One explanation may be that, proportionally, the Confederate losses were nearly as great. Total Union casualties numbered 683 (107 killed, 487

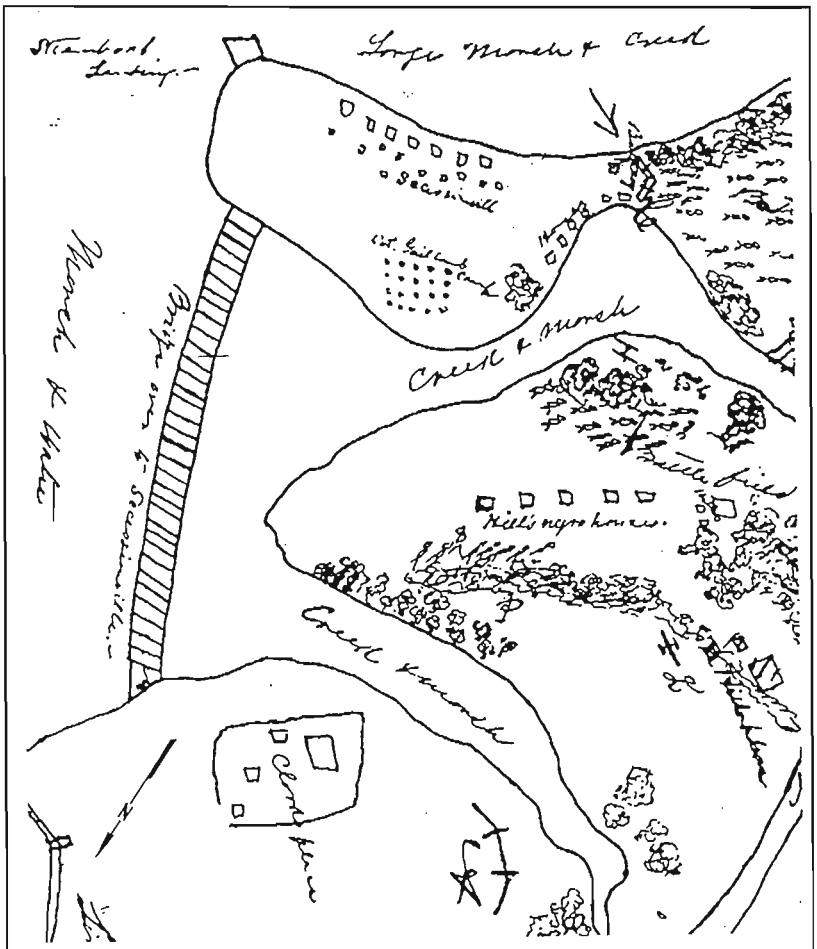


Figure 16. Capers' map of Secessionville (adapted from Butler 1992:48).

wounded, and 89 captured or missing), representing nearly 20% of the 3,500 troops committed to the battle. Confederate casualties included 52 killed, 144 wounded, and 8 captured or missing out of a total of 1,250 troops, or about 16% (Power 1992:168).

A report in the Charleston *Mercury* of June 17, 1862 reported that the Union dead left on the field were buried in a mass grave in front of the Tower Battery. The location of this mass grave has not been identified, although it is perhaps in the graveyard shown on a later twentieth century plat of the property (discussed below). In addition, additional Union dead were apparently buried at or near Grimball's plantation on the Stono (Côté 1995:86). Brennan also identifies a source reporting that graves were also dug around the Rivers house, about 4,600 feet southwest of the Tower Battery (Brennan 1996:245). The site of the Union field hospital, another account describes amputated limbs being tossed from an open window to waiting burial parties (Brennan 1996:254). This house was burned by the retreating Union forces (Brennan 1996:257). The Confederate dead were apparently transported to Charleston.

There are several maps of the battlefield. One of the more interesting, which provides considerable detail concerning the general area is reported by Côté (1995:79) to have been produced by Lt. Col. Ellison Capers, an artillery officer. This same map is attributed to a Major Manigault and given an 1864 date by Butler (1994:Figure 23). Based on the detail shown, it seems more likely that the earlier date suggested by Côté is correct. In particular, the sketch (Figure 16) shows the encampment of Lt. Col. Peter Gaillard (who assumed command during the Battle of Secessionville after Lamar was wounded). Figure 17 is a somewhat more finished version of a similar map, prepared by Stevens, while Figure 18 shows the battlefield from the perspective of the 79th New York Highlanders.

Hunter, Power reports, was furious at Benham, describing the battle as "a disastrous repulse, only redeemed by the brilliant conduct of the troops while engaged in the assault and their steadiness and patient courage when compelled to retire." He also called Benham's characterization of the battle as a "reconnaissance in force," "too puerile to deserve consideration" (Power 1992:169). Benham was sent to Washington in disgrace for courts martial. Burton and Brennan recounts how a variety of political forces intervened. While Benham's rank was reduced, and later restored, he

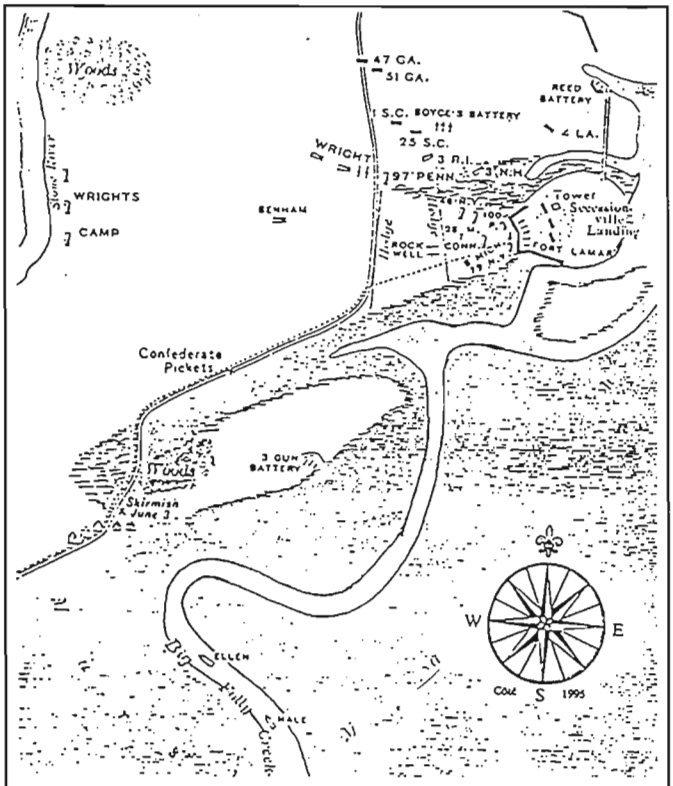


Figure 17. General Stevens' map of the Secessionville area (adapted from Côté 1995:80).

was never charged and retired from the military in 1882. He did not, however, ever again command combat troops (Burton 1970:113; Power 1992:170). James Island was evacuated by Union forces a few weeks later, ending their efforts to take Charleston by land.

For their part, the Confederate defenders realized the extraordinary importance of James Island to the defense of Charleston and spent much of the rest of the Civil War improving these defensive lines. Confederate Brigadier General Johnson Hagood, who served as Colonel of the 1st South Carolina Infantry at Secessionville during its attack, later extensively quoted from General Ripley's report of the defenses:

> General Beauregard's efforts were confined principally to completing the defenses of Charleston. On James Island, with which this writer is most familiar, these became very complete. Pemberton's and Ripley's lines from Secessionville, by way of Royall's house to Fort Pemberton, were abandoned. Starting at Secessionville a line much shorter was carried to Dill's, just above Grimball's on the Stono. This was a cremaillere [crenelated] infantry breastwork of strong profile, with heavy enclosed redoubts at distances of 700 to 800 yards, having defensive relations to each other. On the Stono were one or two heavy redoubts securing that flank. Fort Pemberton was nearly, if not quite, dismantled. From Secessionville to Fort Johnson, along the eastern shore of the island looking towards Folley and

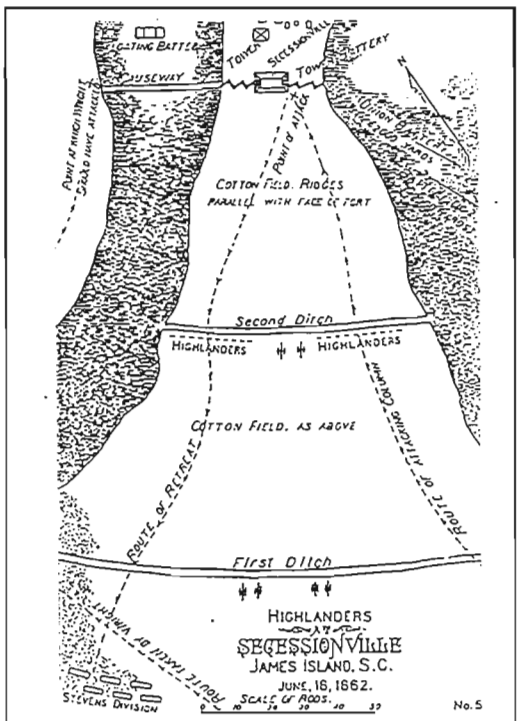


Figure 18. Map of the Secessionville battlefield (adapted from Côté 1995:82).

> Morris Islands, heavy batteries, opened to the rear with trenches or breastworks for infantry supports, were erected, and from Johnson to opposite the city heavy batteries for the defense of the inner harbor. Bombproofs, covered ways, rifle pits and all appliances of the engineer's art were exhausted in strengthening this system of works (Hagood 1910:169).

During late 1862 and early 1863 the Secessionville works were increased from a four-gun battery to a nine-gun fort with two power magazines and bombproofs (Butler 1994:39). By late 1863 Major John G. Pressley, of the 1st South Carolina, wrote:

> Regiment moved to Secessionville, and encamped between the line of houses and marsh towards the north. The field and staff officers occupied houses. Headquarters were in the red-top house owned by Mr. Lawton. The post was under my command. . . . This place had been greatly strengthened since we occupied it last July. Strong breastworks and formidable batteries had been built along the creek south of the peninsula, and just in front of the line of houses. A large bomb-proof had been constructed about one hundred and fifty yards northwesterly from Lawton's House [known as the Seabrook-Freer House today; see Figure 7]. Battery Lamar, across the neck of the peninsula, had been put in first-rate condition; in fact, the post was in a thoroughly defensive state (quoted in Butler 1994:43).

While Secessionville was never again attacked, the Union occupation of Morris Island, as well as the Union presence on the rivers, kept Secessionville under constant pressure. On June 20, 1863, a Confederate soldier stationed at Secessionville wrote:

> Since I wrote to you last the Yankees have shelled our camp last Wednesday they threw a few shells at our camp one only fell in camp that one fell in a few feet of several more knocked the top off a shanty with one man in it and busted in rear of the shanty (quoted in Côté 1995:89).

This same letter also recounted the complaint of Confederate troops throughout the war: "Our rations are so small that I am obliged to buy sometimes or suffer" (quoted in Côté 1995:89). In contrast, Hagood comments:

> The troops on James Island were generally hutted, and, from the facility of getting private supplies from home (they were chiefly Georgians and South Carolinians), lived tolerably well (Hagood 1910:172).

It seems likely that the conditions at Secessionville varied throughout the war. It is also true, as implied by Hagood, that troops which were "hutted" or living in semi-permanent quarters tended to be happier and live better than their comrades in field quarters. Nevertheless, it seems likely that Hagood, as an officer forty years after the war and writing the post-war era of reminiscences, probably saw the living conditions differently than the enlisted soldier of the period.

A description by Sergeant W.H. Andrews, of the First Georgia Regulars during his tour of duty in 1864 not only explains the origin of the name "Secessionville" (see Côté 1995:61-64), but also describes the site:

> This place is said to be where the first secession flag was raised, so we will take a view at our surroundings. In the first place, there is five or six houses all in a row along the edge of the marsh running north and south. In the rear of the houses there is a tower or lookout to watch the

> surrounding country in the day time. South of the houses we find Fort Lamar mounting several heavy guns. North of the houses is another battery of several guns. In the rear is a long bridge spanning a stream you can step over when the tide is in [sic], but when the tide is out [sic] makes for a broad expanse of water. About halfway [between] the houses and not far from them is a mound of earth known as bomb proof which is made, say four feet deep by six [feet] in width. Timbers or posts are arranged on the sides with cross timbers on top. It is them covered over in the shape of a mound some 10 to 12 feet deep in dirt and you have a place of refuge out of range of the shells (quoted in Butler 1994:43).

Talking about the Union shelling the Secessionville works, Andrews commented that one shell:

> entered the works a little farther on and the third one passed under one of the houses. His fifth one went through the roof, knocking a lot of shingles off. Several of the boys were in the house cooking at the time and by the time the shingles had reached the ground, the boys were out after them to put them around the pots, as the wood we received on the island was green pine and almost impossible to burn it (quoted in Côté 1995:97).

One of the more interesting views of Secessionville is an 1863 watercolor entitled, "Secessionville, S.C., from Black Island, Septr. 4th, 1863" which is at the Morris Museum of Art in Augusta, Georgia. Côté suggests that it was drawn by either a Union soldier or perhaps a correspondent for a newspaper, possibly Theodore R. Davis of *Harper's Weekly* fame (Côté 1995:93). Almost certainly the view was acquired from one of the "crow's nests" that were used as observation posts by the Union forces. Although the painting is dismissed by Butler (1994:44) as "stylized," Côté places greater confidence in it, noting the painter:

> pictured six substantial houses and an artillery battery fronting on the Great Sound, and eleven other structures behind them. The spacing of the houses corresponds closely with the lot descriptions in deeds from the 1850s. His depiction of fifteen civilian and two military structures agrees closely with the seventeen village structures shown on a map of the engagement drawn by Lt. Col. Ellison Capers. There were seven houses in the village; one was dismantled when the water battery was constructed at the tip of the peninsula. The single error in this painting was the artist's confusion over the tall, wooden Confederate observation tower, which loomed behind the village. He mistook it for the spire of a church (of which Secessionville village had none), and rendered the tower as a church steeple with a cross atop it. . . . (Côté 1995:91).

Summarizing, Côté notes that the painting reveals that structures were more numerous than previously thought, that the painter carefully reproduced the village's actual architecture, that the village had a boardwalk along its south edge, that there was more than one street, that the large scale removal of trees for the abatis did not seriously affect the village, that many of the earthworks were not yet built by 1863, and that the water battery (built to protect the steamboat landing) may have been added later.

The Secessionville houses apparently did not begin to disappear until early 1865 — shortly before the area was evacuated by the Confederate troops. On January 13, 1865, Brigadier General

Alexander Schimmelfennig, commander of the U.S. Army, Northern District of the Department of the South, commented:

> On James Island, from Fort Johnson to Pringle, they have been busy repairing and clearing the ground to the front and rear. The buildings at Secessionville are disappearing. More than anywhere else, however, has the enemy displayed activity on the forts and batteries on John's Island; there also buildings have disappeared and batteries been unmasked. This would seemingly tend to show that the enemy is preparing for a vigorous defense; intercepted dispatches, however, rather point in the direction of evacuation (*Official Records*, Series I, vol. 47, part 1, p. 1009).

While a defense may have been contemplated, on February 17, 1865 Confederate forces in and around Charleston withdrew, joining the remnants of the Army of Tennessee in North Carolina. On February 19, Lt. General W.J. Hardee reported to Jefferson Davis, "Charleston was successfully evacuated Friday night and Saturday morning" (*Official Records*, Series I, vol. 47, part 1, p. 1071). On February 18, while the Confederate forces were quietly leaving Charleston, Company A of the 21st U.S. Colored Troops entered the abandoned fortifications at Secessionville.

The U.S. Army occupied a number of the James Island works and during this period a number of engineers were busily mapping the fortifications and inventorying the armament abandoned by the Confederates. General Q.A. Gillmore, commander of the Union forces in the Charleston area was responsible for much of this work (Gillmore 1865, 1868). In particular, he itemized the defenses of Charleston, noting that "interior defensive line" consisted on Battery Ryan, Battery Tatam, Battery Haskell, Battery Cheves, while the "exterior or siege line" consisted of Battery Tynes, Battery Pringle, Fort Trenholm, Battery Leroy, Battery No. 1, Battery No. 2, Battery No. 3, Battery No. 4, Battery No. 5, and the Secessionville Works.

Gillmore observed that the exterior or siege line:

> was constructed at a later period than the Interior Line, was much more advantageously located, and was, therefore, the chief reliance for defense. Its right, at Battery Tyrnes, rests on the Stono about two miles and a half of Fort Pemberton, while its left envelopes the village of Secessionville — the scene of Brigadier-General Benham's attack in 1862 — almost surrounded by swamps, and located directly upon the deep creeks and bayoux emptying into Folly River and Light House Inlet (Gillmore 1868:20).

Concerning the strength of the Secessionville works:

> Secessionville Works
>
> These form a large entrenched camp, the only approach to while, from the front, is by a narrow neck held by:
>
> Battery Lamar
>
> *Armament*
>
> One 42 pdr., rifled and banded.
> Three 8 in. siege howitzers.
> One 24 pdr. smooth-bore siege gun.
>
> This work is provided with a magazine and a large bomb proof.
>
> Secessionville Water Batteries
>
> *Armament*

Three 32 pdr. guns, rifled and banded.

One 24 pdr. guns, rifled and banded.

One 24 pdr. rifle.

Two 32 pdr. Navy smooth bores.

One 24 pdr. iron howitzer.

Two 6 pdr. iron field guns, smooth bore.

These works extend from the left of Battery Lamar, along the edge of the marsh, to the bridge leading to Clark's Point. The line is indented, and has one bomb-proof shelter and two magazines. The guns bear on Black and Long Islands and the creeks adjacent thereto. A line of rifle-pits runs across the marsh and water to Clark's Point, to prevent boat parties from landing in rear of the siege line (Gillmore 1868).

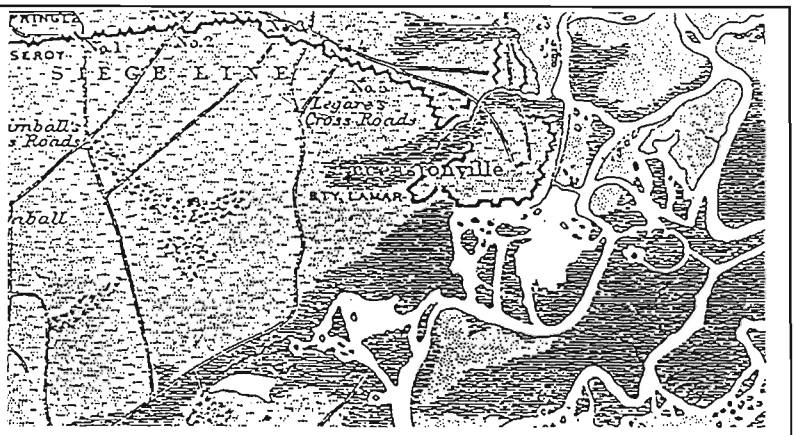


Figure 19. Gillmore's map of James Island showing Confederate defenses after the Civil War (Gillmore 1868: Plate 2).

Accompanying this report were Gillmore's map and plans, entitled "Plans and Sections of Rebel Works on James Island" which reveals the layout of the fortifications, including the location of the two remaining Secessionville houses, the abandoned guns, and the various earthworks (Figures 19 and 20).

About the same time, in the Spring of 1865, S.R. Seibert took the only known photograph of Secessionville (Figure 21). It shows the two surviving waterfront houses, the edge of an unfinished bombproof, and a number of frame structures. Côté describes these as "huts built as troop quarters and later occupied by the Freedmen." This seems reasonable, but he goes on to note that the waterfront residences were "torn down to furnish the lumber for these," which seems unlikely if General Schimmelfennig was correct and the Riversville houses weren't being demolished until just before the encampment was abandoned. It may be unreasonable to expect that we can identify a one-to-one correlation of demolition and building, especially if the demolition was conducted in anticipation of a spirited defense, as implied by General Beauregard's complaints that General Hardee was still hesitating his abandonment of Charleston as late as February 16 (*Official Records*, Series I, vol. 47, part 1, p. 1048).

Secessionville in the Postbellum

One of the earliest accounts of Secessionville after the war is that of Esther Hill Hawks, who visited the village on May 13, 1865:

> A ride of six miles [from Fort Johnson], with an occasional deviation to visit the "works" of a few families, brought us to the rebel stronghold, Secessionville. There are but two small framed houses, these were used as Hd. Qrs. and the huts for the soldiers are scattered several acres irregularly. They are built of rough logs and mud, with thatched roofs, a chimney on the side opposite the door, and rough brick floors. . . . There are over 300 people now at this place, and

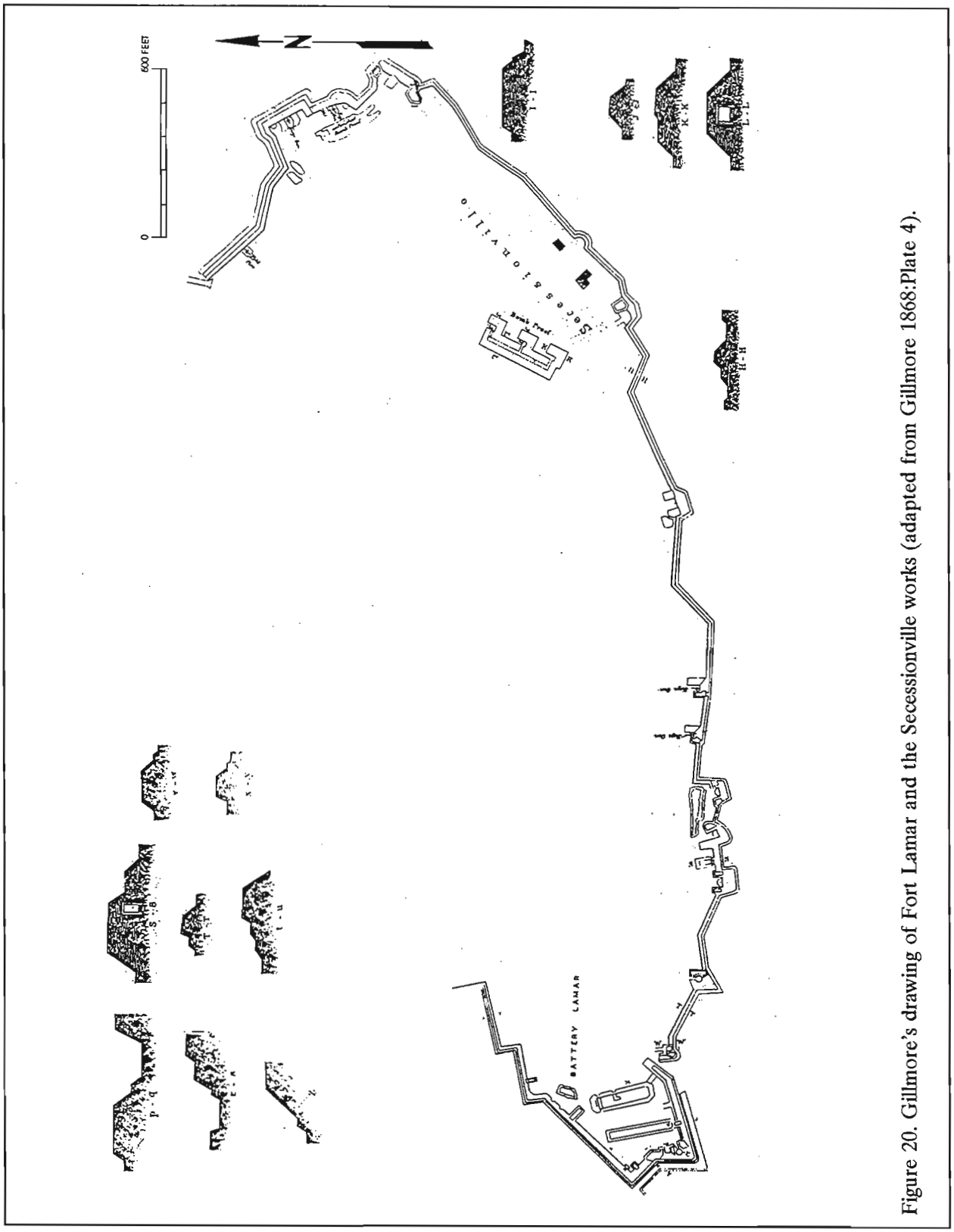


Figure 20. Gillmore's drawing of Fort Lamar and the Secessionville works (adapted from Gillmore 1868:Plate 4).

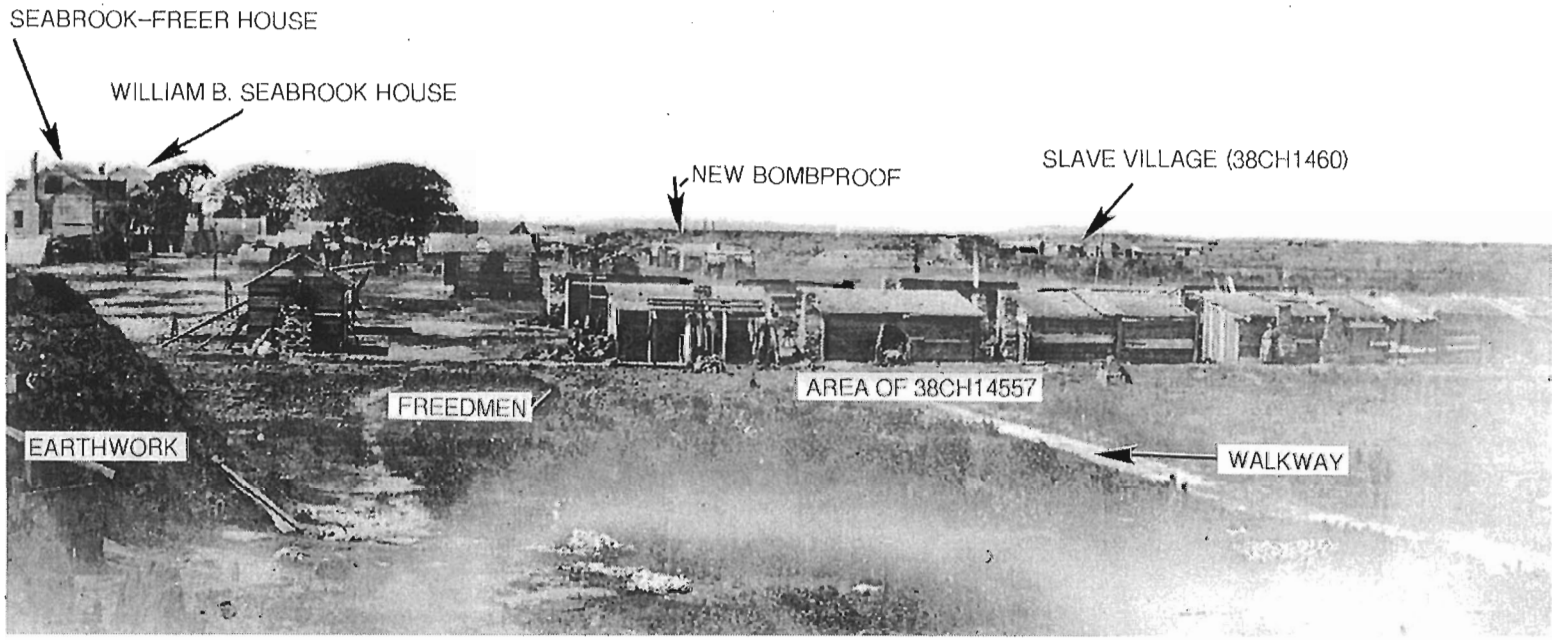


Figure 21. Photograph of Secessionville in 1865 (National Archives RG 165-C, Photograph C-775).

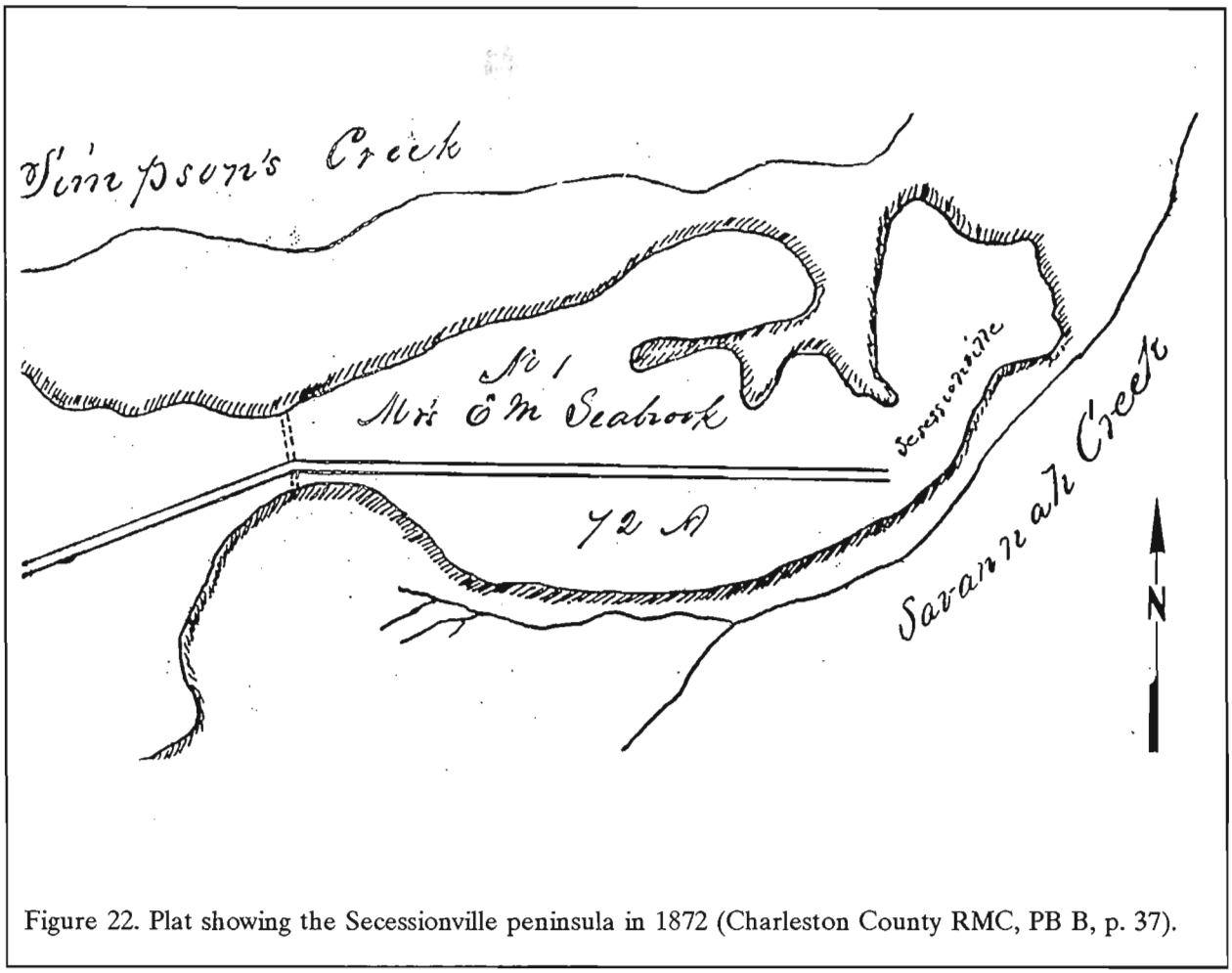


Figure 22. Plat showing the Secessionville peninsula in 1872 (Charleston County RMC, PB B, p. 37).

> it would take a stout heart to ride unmoved, among them — dirty ragged, *starving* expresses their condition. . . . We rode around the fortifications, which are of great strength and finely made dismounted and went into the house, formerly head qrs. of the rebs. Our shot and shell have shattered it considerably but it is still in *usable* condition and the people told me they were keeping it for *school* (Schwartz 1984:141-142).

By November 1866, when she re-visited Secessionville, the house was being lived in by a black family (Schwartz 1984:161).

Côté (1995:109) reports that the Seabrook and Freer families returned to Riversville, now renamed Secessionville, in the late 1860s, apparently evicting the freedmen and re-establishing their homes. William Seabrook died at his Secessionville home in 1870 and by 1872 his 258 acre plantation was divided into three tracts. His widow, Elizabeth, received the 72-acre portion east of Fort Lamar (Charleston County RMC, DB B16, p. 537; Figure 22).

Although impossible to determine with any certainty, Côté (1995:109) suggests that the bombproof near the village and the earthworks near the two surviving houses were fairly quickly leveled as the area was converted back into farmland. An 1895 photograph identified by Brennan (1996:307) reveals that at least portions of

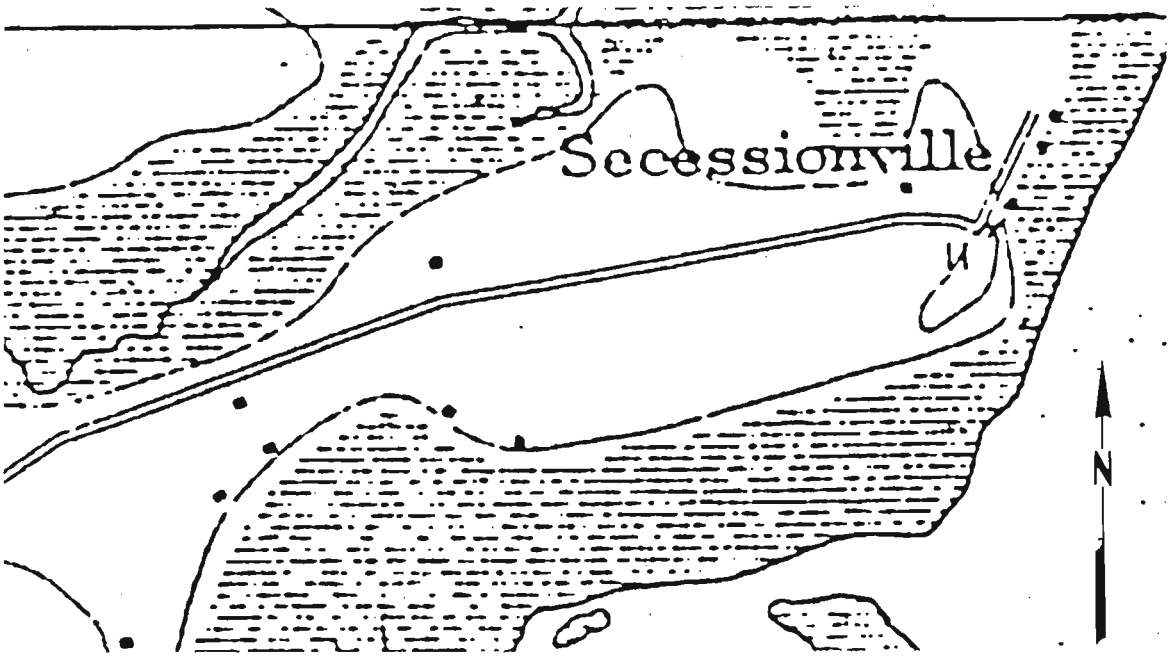


Figure 23. Portion of the 1919 James Island topographic map showing the Secessionville peninsula.

the Secessionville works remained intact, although certainly eroded and in less than pristine condition.

Like other areas of South Carolina, however, it is entirely possible that Secessionville changed little from the late nineteenth century into the early twentieth century. The 1919 topographic map of the area shows four structures — two south of Fort Lamar road at the southwestern edge of the tract, one north of the road and just east of the earthworks, and one north of the road at the eastern end of the tract. Otherwise it is rather unravelling (Figure 23).

The October 1939 aerial photography of the project area (CDV 1-30 shows the eastern third of the peninsula and CDV 1-44 shows the western two-thirds of the tract) might actually be of some assistance in understanding the eventual development of Secessionville had National Archives not transferred the original 9-inch negatives to 35 mm format. Currently the negatives are too blurry and indistinct to offer any except the most general appraisal of the area. For example, they suggest that the earthworks along the southeastern periphery had already been leveled. Elsewhere there is a dense stand of trees at the edge of cultivated fields.

In 1942 the Seabrook plantation had been re-united and was being passed from the estate of W. Edwin Thayer to Dr. Robert M. Hope. A plat of the 254 acre tract was produced showing some details (Figure 24). In particular it reveals two wharfs — one in the original location of the Riversville steamboat landing and another at the southwest edge of the property. South of Fort Lamar Road it reveals two tenant houses and a barn on the Martschink property, south of the study area. These two tenant houses correspond to those shown on the 1919 topographic sheet (although neither wharf is shown). Also south of the road, in the neck area, are two features labeled

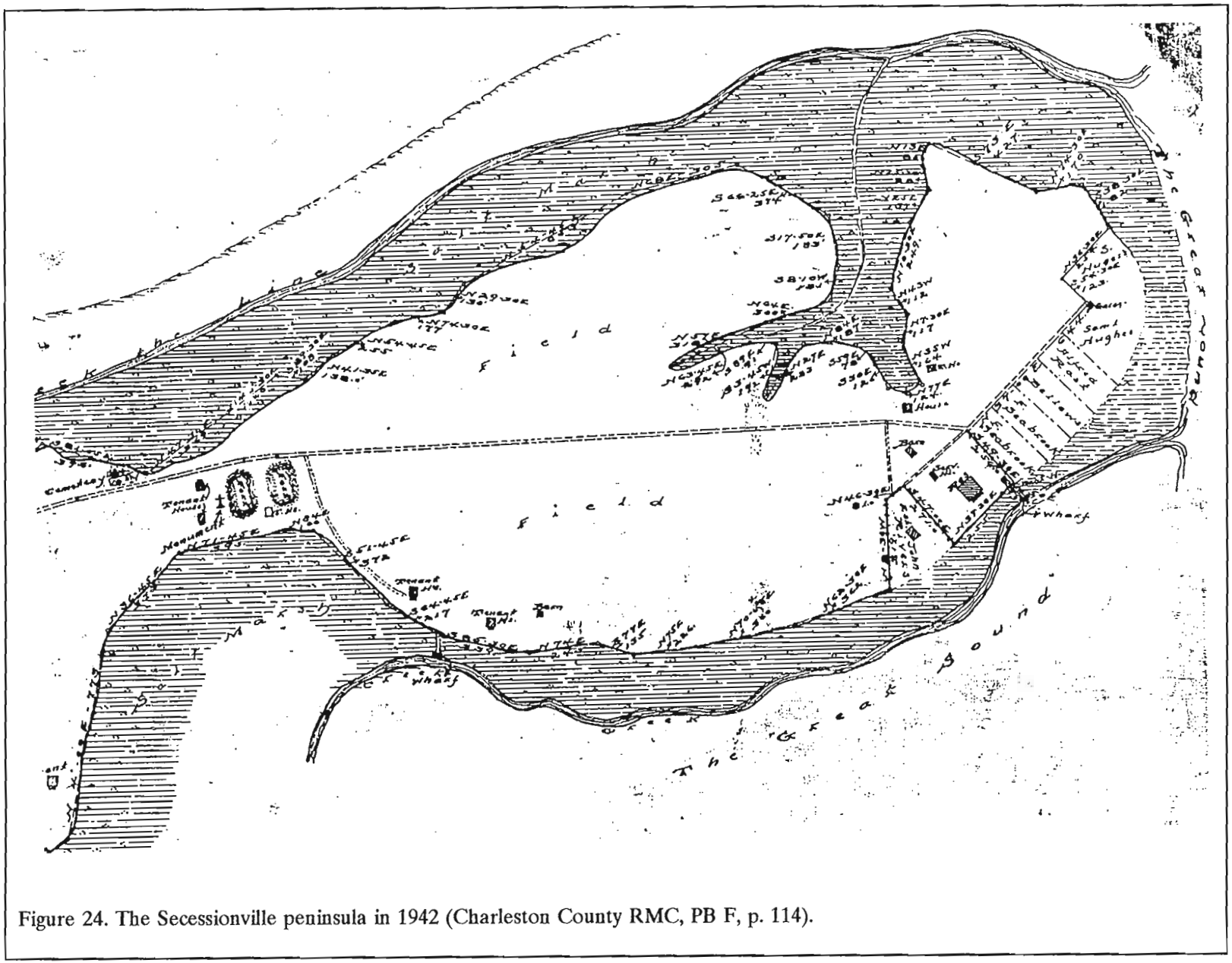


Figure 24. The Secessionville peninsula in 1942 (Charleston County RMC, PB F, p. 114).

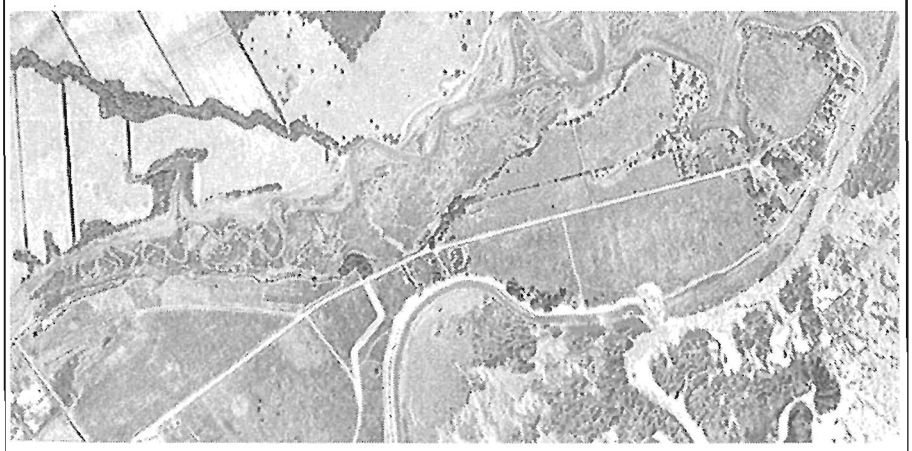


Figure 25. Portion of 1957 aerial photograph GS-VPL 1-77 showing Secessionville.

"fort," as well as three additional tenant houses and the monument erected in November 1924 (see Côté 1995:109).

Northwest of the neck is a cemetery, which may represent the mass grave of the Union soldiers. It is on the edge of the battlefield and would have been a convenient location for the graveyard.

North of Fort Lamar Road the plat shows only field until the far east end of the tract, where a single tenant house is shown. Just south of this was a barn, while to the southeast are still extant Rivers and Seabrook homes. To the rear of the Seabrook home is a single servant's quarters.

A 1957 aerial photograph (GS-VPL 1-77; see Figure 25) shows a well constructed and paved Fort Lamar Road. Beginning at the west, the graveyard area is cultivated. Only a little further east a dirt road runs south off Fort Lamar Road to the two tenant houses. Just beyond is the first fortification in heavy woods, with the next fortification, also wooded, separated from the first by another dirt road leading to the third tenant house.

These two sets of fortifications can be clearly identified by comparing the aerial to Gillmore's plans. The first represents Fort Lamar and its associated earthworks. The paved road punctured the northern point of the earthwork. To the north, along the edge of the marsh the various earthworks are clearly visible and match exactly Gillmore's drawings. The second wooded area represents the southern two-thirds of the "new magazine and bombproof." Its northern third has, by this time, been destroyed by the road. In addition, the old magazine has apparently been leveled, since a road

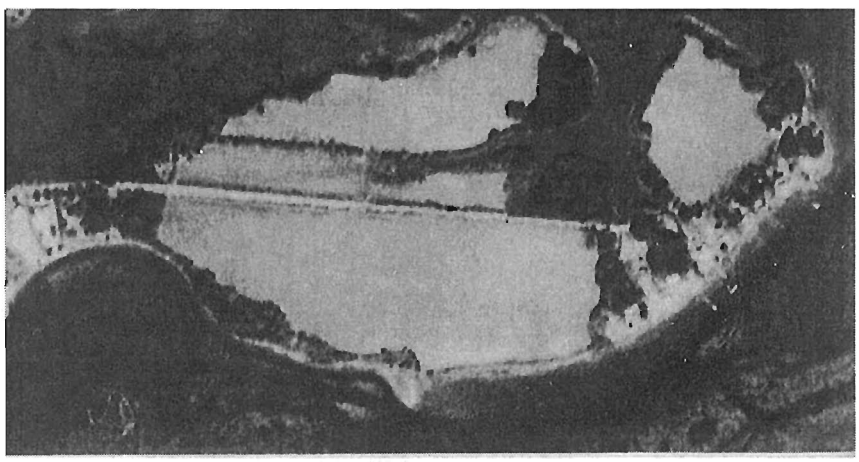


Figure 26. Portion of 1977 aerial photograph GS-VEHU 1-23 showing Secessionville.

leading to a tenant house is situated in this area.

The two tenant houses along the south edge of the property are also clearly visible in the aerial photograph, and the intervening area is heavily wooded. It is in this area that portions of the water battery were apparently located. The fields between the shore and the paved road, however, are intensively cultivated. There is an open marsh slough to the east — in the area shown as pond in Gillmore's plans. This same area, today, is partially filled in marsh. Moving along the edge of the bank there is only light vegetation and absolutely no indication of the massive earthworks which were located in this area. Clearly they had been filled by 1957.

Arriving at the edge of the cultivated tract there is a dirt road, although there is no indication of the barn shown on the 1942 plat. Nor is there any indication of the tenant house situated across the road from the barn over a decade earlier. By 1957 there were a series of eight houses built along the southeast edge of the water, including the Rivers, Seabrook, and Freer-Seabrook houses. The Water Battery in this area has also been leveled, being left intact only north of the houses, where trees mark the location of the unfinished bombproof and gun emplacement drawn by Gillmore. The earthworks completing the northern edge of the Secessionville defenses can still be plainly identified, including a second gun emplacement. At the location of the bridge connecting Secessionville to Clark's Point a while line can be seen in the marsh, revealing the possible presence of a plank road across the marsh.

North of the Fort Lamar Road the project area, in 1957, was heavily cultivated. The only structure is one at the eastern end of the project, situated in the middle of the field. While not shown on the 1942 plat, the structure in the aerial appears to be a tenant house.

Twenty years later, in 1977, an aerial (GS-VEHU 1-23; Figure 26) shows dramatic changes in the project area. The cultivated fields west of the project area have been heavily developed. The cemetery is now totally wooded. Areas which previously revealed the shape and orientation of the battery are now entirely grown up and are revealed only as dense woods. The shoreline growth is denser, except in the eastern area south of Fort Lamar Road where, for some reason, the cultivated field goes almost to the edge of the high ground. The southeastern quadrant of the project area, representing a small field encompassed by marsh to the north, northeast, and northwest, is now heavily wooded. It is likely that this field went out of cultivation because of its small size.

Côté remarks that in 1950, when the 250 acre Secessionville tract was sold to Martschink Realty, the "battlefield . . . was immediately targeted for development as suburban tract housing" (Côté 1995:110). Without venturing into the politics or motives of any of the parties involved, it is clear from even this brief review of recent land-use activities, that the entire parcel was undeveloped as late as 1957 and that the core of the site was clearly preserved as late as 1977. While there has been a gradual development of the project area, this is a trend which the aerial photographs reveal for the entire island. In fact, as recently as 1980 a review of James Island noted:

> Parts of James Island are now in the City of Charleston and are rapidly developing. The island was a rural farming area until about 10 years ago, when an influx of new residents moved to the island. The trend can be directly attributed to expanded port facilities and military bases in Charleston (Mathews et al. 1980:148).

To target one owner, or one development, is perhaps irresponsible, since the same activities have taken place throughout the coastal zone.

Brennan quietly documents the exceptional changes, and loses, which have occurred in the Secessionville area:

> Today, the campsites at the Grimball Planation still look much the same as they did when the Federal gunboats first entered

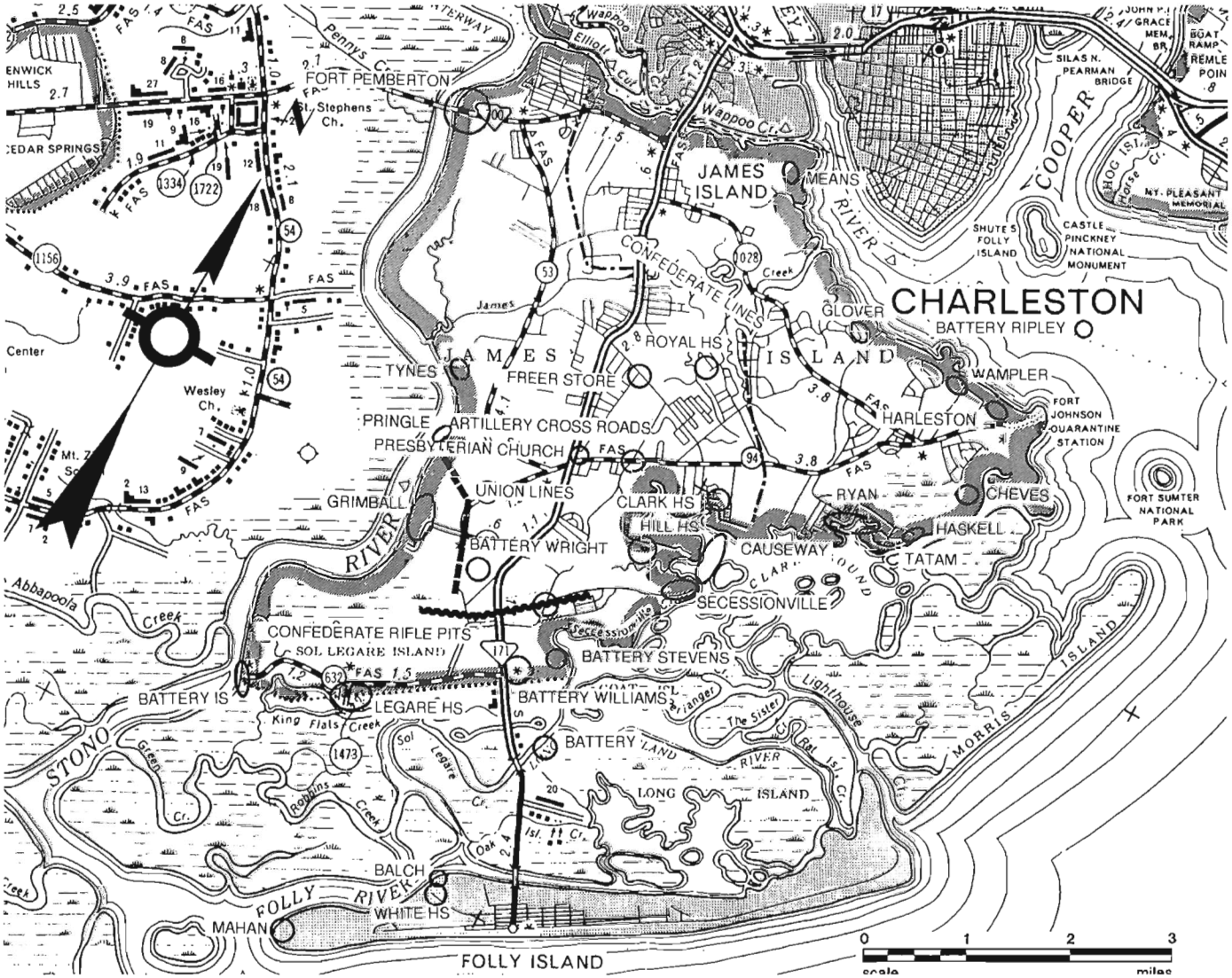


Figure 27. Overlay of major Civil War locations on modern James Island topography.

the Stono River, but elsewhere James Island little resembles her Civil War appearance. Fort Pemberton now serves as a lot line for a beautiful home overlooking the Stono. Sol Legare Island has become a neighborhood of older, modest homes, and newer upscale residences. Traffic roars by the graveyard of the James Island Presbyterian Church, where a large headstone recalls the Battle of Secessionville for the interested onlooker. East of the church is a quiet intersection that was once called the Artillery Crossroads, and beyond that, among the homes and schools, the gas stations and stores, stretch the remnants of the Island's first defensive line.

Along a quiet marshline that borders a residential neighborhood, a small plaque hidden by low-lying bushes commemorates Ellison Capers' efforts at the Clark House battery. To the south lies a housing development overlooking the marsh where the 3rd New Hampshire was trapped in the stinging Confederate crossfire. North of these buildings sits a well-preserved earthwork from a later defensive line, and an overgrown field, where the 24th South Carolina, the Eutaw Battalion, and the 3rd Rhode Island Heavy Artillery, fought with great courage.

To the south, across the intervening swamp, may be found tracts of modest homes, streets named after things military, and a read-estate development named after a long-dead Confederate colonel. Houses cover the field where the 28th Massachusetts received their baptism of fire, where Joseph Hawley worked to keep the 7th Connecticut from disintegrating, and where David Leckey drove his Roundheads into the Confederate guns.

To the east, the peninsula narrows to a neck where a telephone pole rises from thick overgrowth. Once must search for a moment or two, but eventually the outline of the northern parapet of Fort Lamar becomes evident. A modern road gouges the right front wall of the earthwork, the location of Bellinger's guns and the Charleston Battalion's rush to man the smoking walls. The telephone pole stands very near where Lamar sighted the Columbiad and sent his first his first roaring response to the Federal attack. Beyond that, heavy vegetation obscures the left front where the 8th Michigan and the 79th New York came to grips with Goodlett's detachment. Lamar's artillerists, and Smith's Pee Dee Battalion. The enlarged bombproof looms up just a few yards to the rear. Further east, the fields where soldiers once camped now bear witness to the sad expansion of civilization, as it stretches out to the few remaining buildings of the planter village of [Riversville] (Brennan 1996:307-308).

EXCAVATIONS

Strategy and Methods

As previously discussed, Brockington and Associates recommended stripping in four areas of 38CH1456:

- approximately 11,400 ft² to expose the posited palisade lines,
- approximately 13,000 ft² to expose the multiple ditch-like features,
- approximately 16,900 ft² to expose the structural remains in the village core, and
- up to an additional 8,300 ft² as necessary.

We examined these recommendations at the time of preparing our proposal and largely concurred, although we recognized that it was difficult, based on the current level of information, to project with accuracy these needs.

We suggested five discrete areas, labeled A-E on Figure 5. Areas A-C were designed to trace out the posited palisade lines:

- Area A was anticipated to measure about 100 by 25 feet (for a total of 2,500 ft²).
- Area B would measure about 25 feet square (for a total of 625 ft²).
- Area C would measure 200 by 35 feet (for a total of 7,000 ft²).

This would leave an additional 1,325 ft² for expansion of the palisade search, if necessary.

Area D, which we anticipated to measure about 200 by 50 feet for a total of 10,000 ft², would explore the multiple ditch-like features. This would leave about 3,000 ft² for additional expansions, should more work in this area be necessary.

Area E, situated in the central core of the site, would encompass an area measuring 200 by 75 feet, for a total of 15,000 ft². This would leave in abeyance an additional 1,900 ft² should further expansion be necessary.

Site Preparation

Upon arrival the site was as last seen in June 1996. It was covered with light grass and the previously stripped areas were still open, although they too were largely covered in grass. The first activity was to have these previously stripped areas re-opened by removing the grass and approximately 0.1 to 0.2 foot of soil. This allowed many of the previously plotted features to be re-identified.

Fortuitously, a flagged nail designated Reference Point 2 was identified in the central portion of the site. Although not shown on the original Brockington and Associates base map, we believe this represents one of several reference points they established to plot the stripped areas and associated features. This point was made the primary reference point for the current study. Since we were not sure if the original work was based on a magnetic north grid or some other technique, we tied this nail into a more permanent point (a nail embedded in the paved entrance to lots 9 and 10 off Fort Lamar Road at a distance of 510.8 feet and a bearing of N0°34'05"E). This baseline was used for distance and bearing measurements to all stripped areas.

The point off Fort Lamar Road was assigned an assumed elevation (AE) of 10.00 feet and all elevations at the site were taken in relation to this point. During the course of the work a

series of elevations were collected from across the field necessary to produce a topographic map of the site area. In general we found that the elevations are generally level, although there is a slight rise toward the marsh edge, probably reflecting the earthworks and their subsequent plowing.

The initial Brockington and Associates testing cuts were assigned numbers. Cut 1 represented the long east-west cut parallel to the marsh edge. Cut 2 was the only one running north from Cut 1. Cuts 3, 4, 6, 7, 8, and 9 ran south from Cut 1 and were numbered from west to east. Cut 5 ran west off the end of Cut 4, back toward Cut 3 (Figure 28). As the work progressed, we began to have difficulties matching projected feature lines and eventually discovered that there were minor errors in the site base map. Once the base map was replotted and drawn, it was possible to get the various features to match up over relatively long distances.

Mechanical Stripping

Our efforts to coordinate stripping areas, stockpiling soil, and shovel skimming small areas turned out to be somewhat more difficult than anticipated, especially as the research design began to be radically altered by the middle of the second week. Consequently, we found that we were forced to move spoil on several occasions.

Since all stripped areas (discussed below) were associated with currently exposed areas, we thought it would be relatively easy to maintain depth control. This was, in general, correct. Of course, those familiar is dozer operation realize that "level" is a relative term. It is considerably easier to maintain level operation on long straight cuts than in short areas, especially if the equipment must negotiate spoil piles. Nevertheless, we were fortunate to have an excellent operator and although there was some variation in depth, no serious problems were encountered.

One or more archaeologists were present during the stripping to oversee the work and suspend grading should unanticipated materials be encountered.

We also discovered that small bulldozers are generally unsatisfactory for site stripping. The equipment available for this study was able to move relatively small quantities of soil and once overloaded would begin to spin its tracks in the loose sand, creating disturbed areas needing extensive flat shoveling. A significant amount of time was spent cleaning up behind the dozer. Clearly, site stripping is better achieved by either larger equipment or through the use of a rubber tired grader.

As it developed, even the small dozer being used in this work was able to more quickly open areas than we were able to shovel skim them and plot features. An effort was made to mark feature locations and return to them later, but we found this did not appreciably speed up the operation. As a result, most of the mechanical soil removal was accomplished within the first two weeks. We did have water access at the site, a well with about 30 to 50 psi pressure. This was adequate for most operations, although even with constant spraying the site became very dry. The loose sands were powdery and preserving features was difficult.

Metal Detector Survey

A metal detector survey of the stripped areas was undertaken toward the end of the field work at the suggestion of the SC SHPO's archaeologist. While initially intended to explore the trench-like features, perhaps providing a guide to excavation, we expanded the work to include all of the stripped areas, hoping to identify additional features or perhaps recover artifacts missed in flat shoveling.

This work was conducted using a Tesoro Bandito II™ with an 8-inch concentric soil (electromagnetic type operating at 10KHz). The instrument has the capability to operate in either an all metal mode or discriminate mode (which eliminates ferrous metal response). The all metal mode is the industry standard VFL type which does not require motion of the search coil for proper operation. The discriminate mode is based on motion of the search coil, but allows control over the detector's response to ferrous metals.

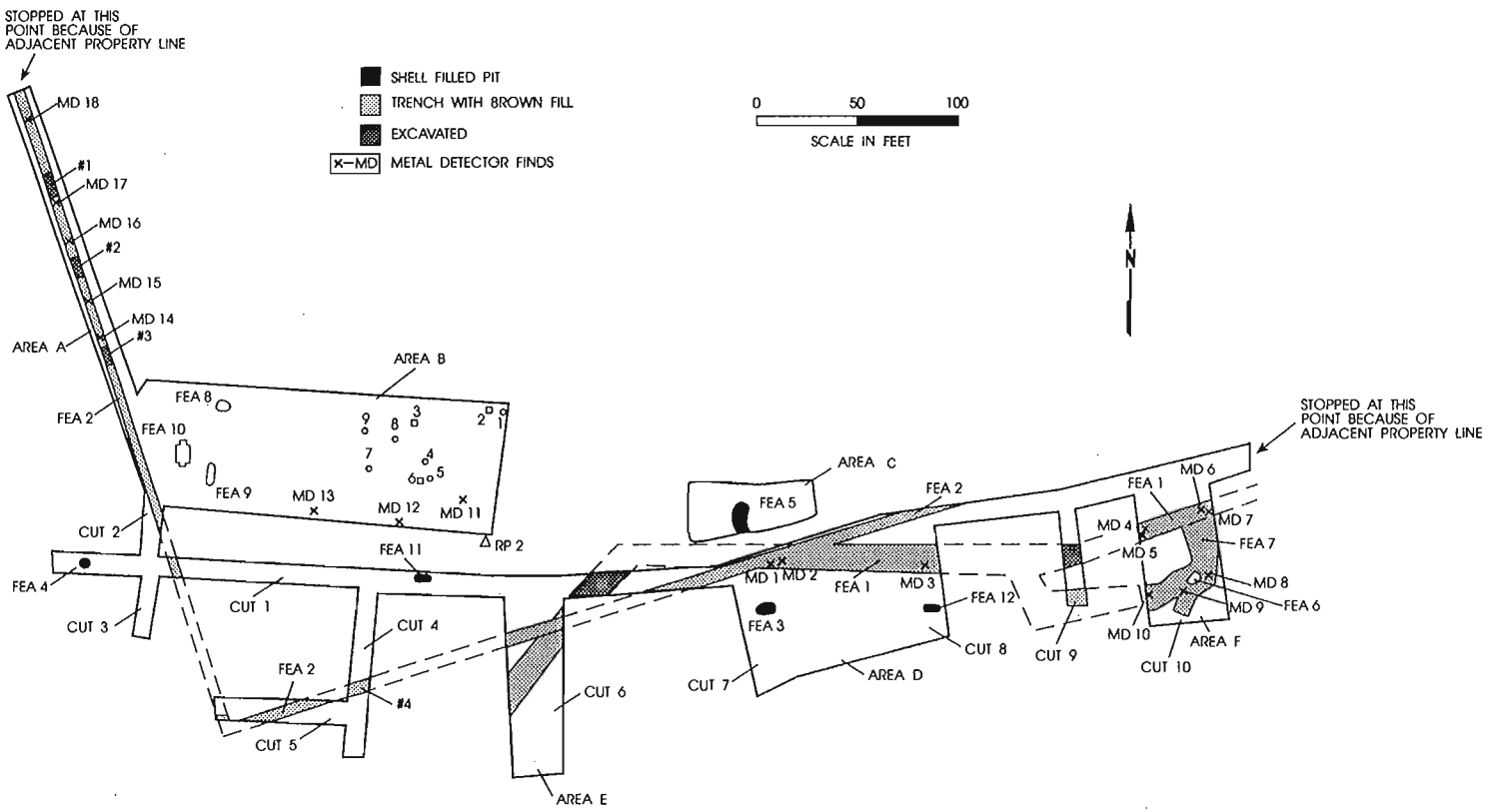


Figure 28. Data recovery excavations at 38CH1456 showing stripped areas and feature designations.

Since the goal of this work was to explore the density of *all* artifacts, not just to locate military items (such as brass buttons or lead ammunition), the instrument was operated in an all metal mode.

The metal detector survey resulted in identifying 18 "hits," each of which was flagged, plotted, and eventually excavated. As shown by Figure 28, these finds were rather isolated, with five occurring in Feature 1, five occurring in Feature 7, three occurring in Area B, and five occurring in Area A (all of which were nail fragments). Clearly metal items are most closely associated with various trenches, although even here they are rather uncommon. Military items were limited to several fired bullets and a fragment of artillery shell.

Excavations

Area A

Area A was placed to trace the posited palisade line (found in Brockington and Associates' Cuts 1 and 2) northward. The cut was eventually 15 feet in width and 240 feet in length, exposing a total of 3600 square feet.

What became designated as Feature 2 was found to extend the entire length of this exposure as a very straight line of dark soil with occasional pockets of dense shell. No other features were encountered in Area A, although several burned trees were found. The cut was terminated at its north end close to the western edge of Lot 7. The property beyond this had been released by the SC SHPO and had recently been purchased. It was therefore not possible to determine how far Feature 2 extends northward toward Fort Lamar Road.

Area B

Area B was placed just north of the original east-west Cut 1 by Brockington and Associates and it was initially intended to explore what was thought to be the village area. The area measured 185 feet east-west and 70 feet north-south, resulting in an exposure of 12,950 square feet.

We discovered that there was no evidence of a Mississippian village in this area. The eastern half, however, produced nine post holes, all of which were excavated. Six are round with pointed to rounded bottoms and depths of 0.3 to 1.1 feet below the subsoil. Three are square, ranging in size from about 0.6 foot square to 0.8 foot square and having depths of 0.2 to 0.7 foot below the subsoil (Figure 29). The three square post holes form two sides of a posited structure measuring 36 feet east-west by 30 feet north-south. No patterns were evidenced in the remaining post holes. The general absence of associated artifacts in this area suggests that this structure may have been utilitarian.

In the western half of this area we encountered three features (Features 8, 9, and 10) which were eventually interpreted to represent a small cluster of Civil War related features — a Confederate soldier's semi-subterranean hut, a second similar house which had never been completed, and a burn area where it appears trash was disposed of. Curiously, the area between these features and the post holes to the east is nearly devoid of cultural remains.

Area C

Area C was also placed just north of Brockington and Associate's original east-west Cut 1 and east of Area B. It measured 65 feet east-west by 25 feet north-south. Although it was originally intended to explore additional palisade lines, by the time it was opened we were relatively sure that no palisades existed and our interest in this area was simply to expand on the exploration of interior areas begun in Area B.

This stripped area produced no historic features, although a large shell-filled pit, designated Feature 5, was identified. A large quantity of animal bone and Thom's Creek pottery was recovered from the cleaning of this feature (Figure 30).

Area D

Area D was opened between Cuts 7 and 8, south of Cut 1, exposing an area measuring 85 by 60 feet for a total of 5,100 square feet. The goal in

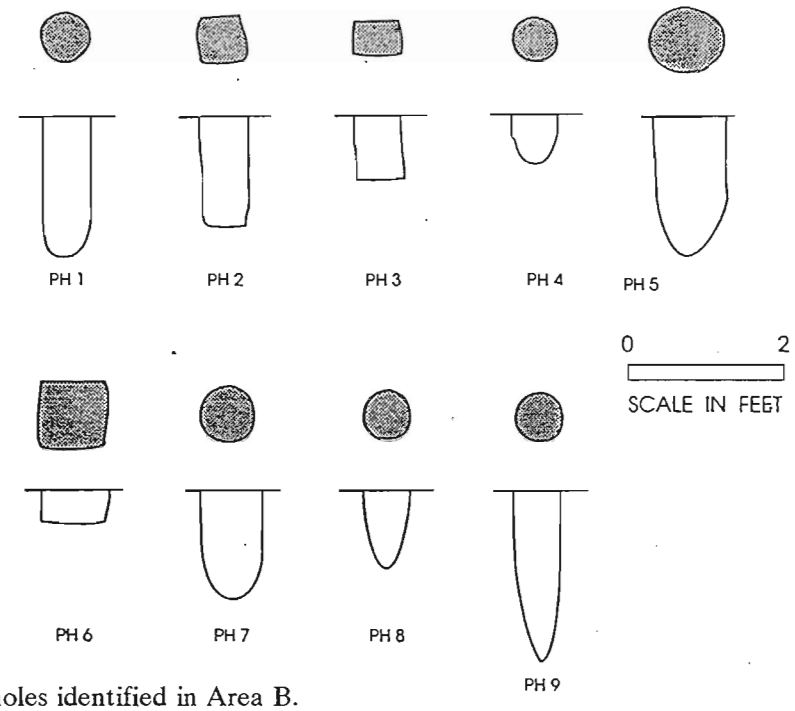


Figure 29. Post holes identified in Area B.

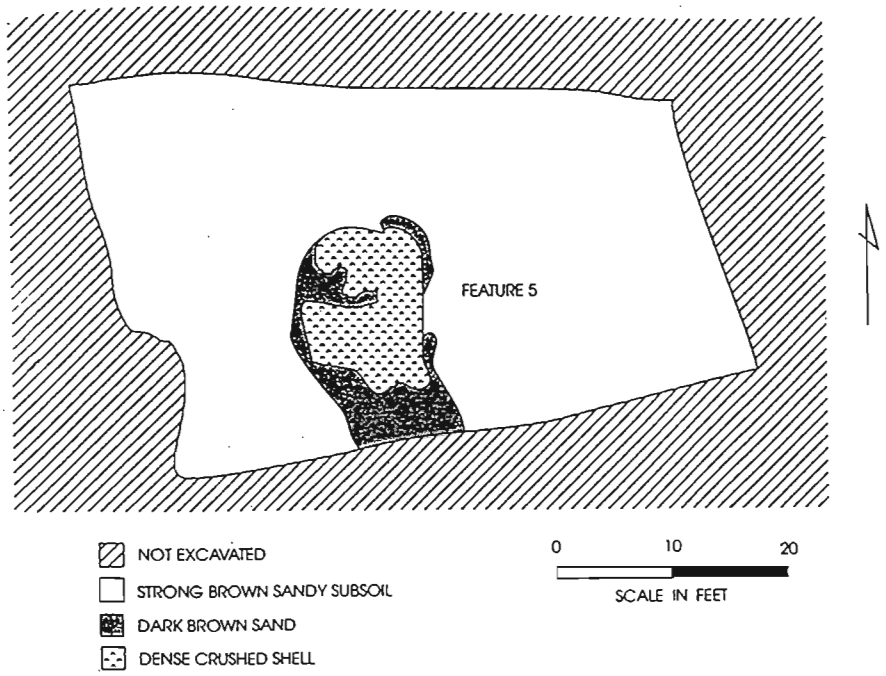


Figure 30. Plan view of Feature 5 exposed in Area C.

opening this area was to better understand the multitude of posited palisade lines originally reported by Brockington's test operations.

This work was conducted toward the end of the first week and proved to be a watershed in our understanding of the site. Work cleaning Cut 1 revealed a single narrow trench-like feature extending along its northern edge for nearly 120 feet. This proved to be Feature 2, found previously in Area A. Area D revealed no series of narrow palisade lines, just a single, second trench, much wider but still containing a mixed fill of dark sand and occasionally dense shell. We believe that the mottling of the fill probably mislead the previous investigators into believing that multiple trenches were present. It is admittedly very difficult to identify, and correctly interpret, small linear features in narrow excavations.

This wide trench designated Feature 1 and was found to intrude into Feature 2 (Figure 31). Irregularly spaced along the south edge of Feature 1 we identified a series of double post holes. South of Feature 1 Area D was surprisingly "clean." Only two shell pits, Features 3 and 12, and a rather amorphous smear of dark soil which could not be identified during this study, were identified. Regrettably, both Features 3 and 12 were heavily damaged by weekend site looters before they could be explored.

Area E

Area E was equally important in focusing our understanding of the nature of this site. Situated west of Cut 6, it measured 30 feet in width and 90 feet in length, exposing an additional 2,700 square feet of site area.

Area E allowed both Features 1 and 2 to be better defined and traced further along their routes across the site. For Feature 2 it revealed that the ditch or trench followed a very straight and consistent course. We were able to trace the feature from just north of Area D, through Cut 1 into Area E, through Cuts 4 and 5 to a corner, where the Feature turned northwestward with a 90° angle.

For Feature 1 it, in conjunction with the cleaning of Cut 1, revealed that the wider trench ran southwest-northeast, turning southeastward just north of Cut 1 (see Figure 28).

Area F

Area F measured 35 feet north-south by 65 feet east-west and exposed 2,275 square feet at the eastern edge of the site, expanding Brockington and Associates' Cut 10. Together with pre-existing Cut 9 this work revealed not only the extension of Feature 1 eastward from Area D, but also identified Feature 7, another wide trench. Figure 28 projects the probable outline of Feature 7, a portion of which was also found exposed in Cut 9.

The bulldozer also exposed Feature 6, a burial of a small donkey at the base of Feature 7 (Figure 32).

Features

We found, rather quickly, that the anticipated quantity of features did not materialize. Those identified were flagged when encountered either by stripping or flat shoveling. When an area was cleaned off and all features were found, each one was more carefully cleaned by troweling, was photographed, and finally drawn.

Although the number of features anticipated never materialized, many features were very large. For example, one the ditch features was found to consist of 710 lineal feet. In such cases we sampled features in an effort to get an idea of how these features might vary spatially. This sampling was typically done in a subjective fashion with an eye toward exploring different site areas. As previously mentioned, an effort was made to use a metal detector on the historic trenches in order to target areas with numerous metal readings for excavation, but no such areas could be identified.

We also employed both ¼- and ⅛-inch mesh for screening feature fill. The bulk of the fill was waterscreened, although some sections of trench fill were hand screened. In practice, we found few features suitable for flotation. A 5-gallon flotation sample was collected from one historic

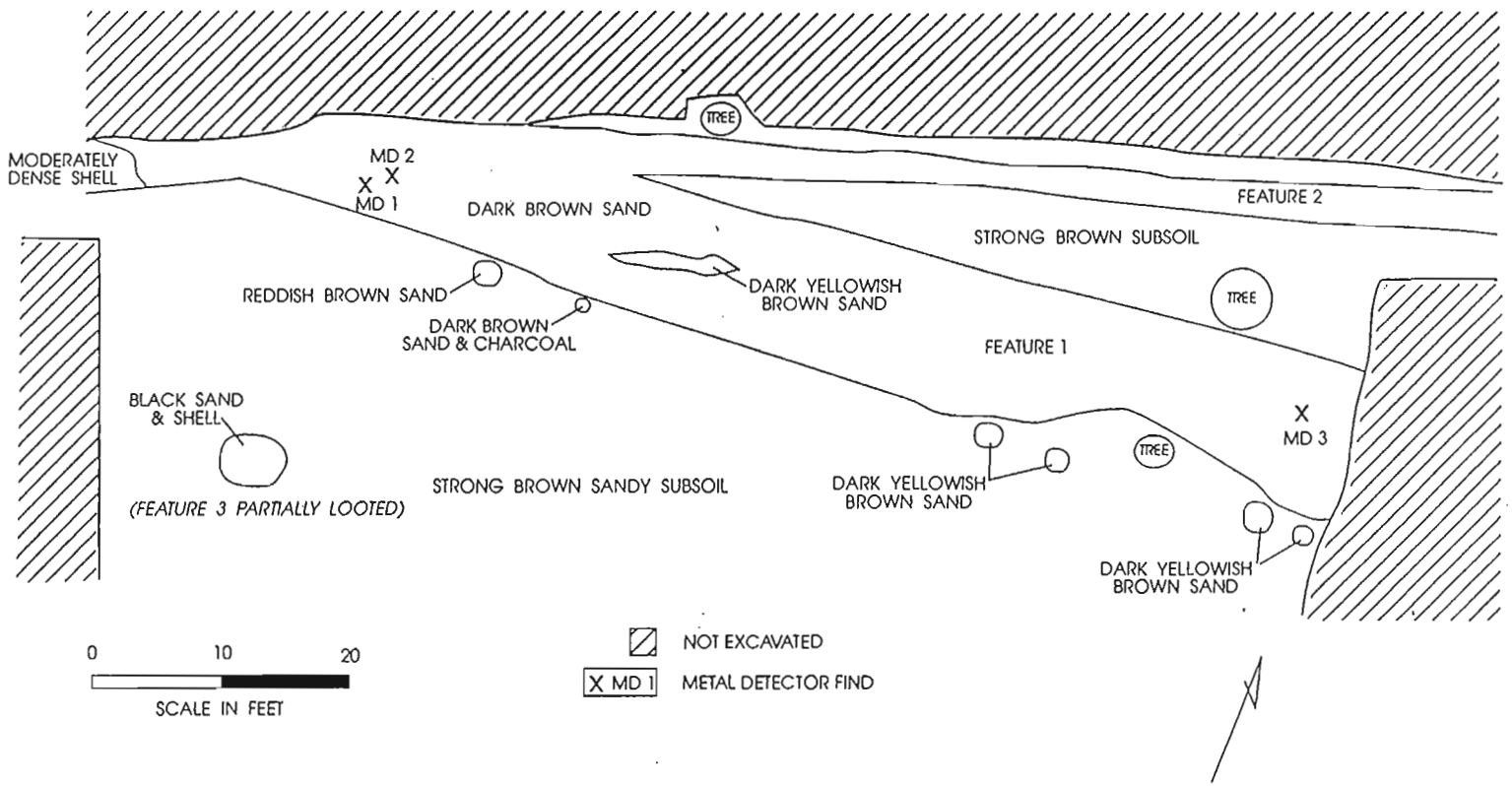


Figure 31. Plan view of features exposed in Area D.

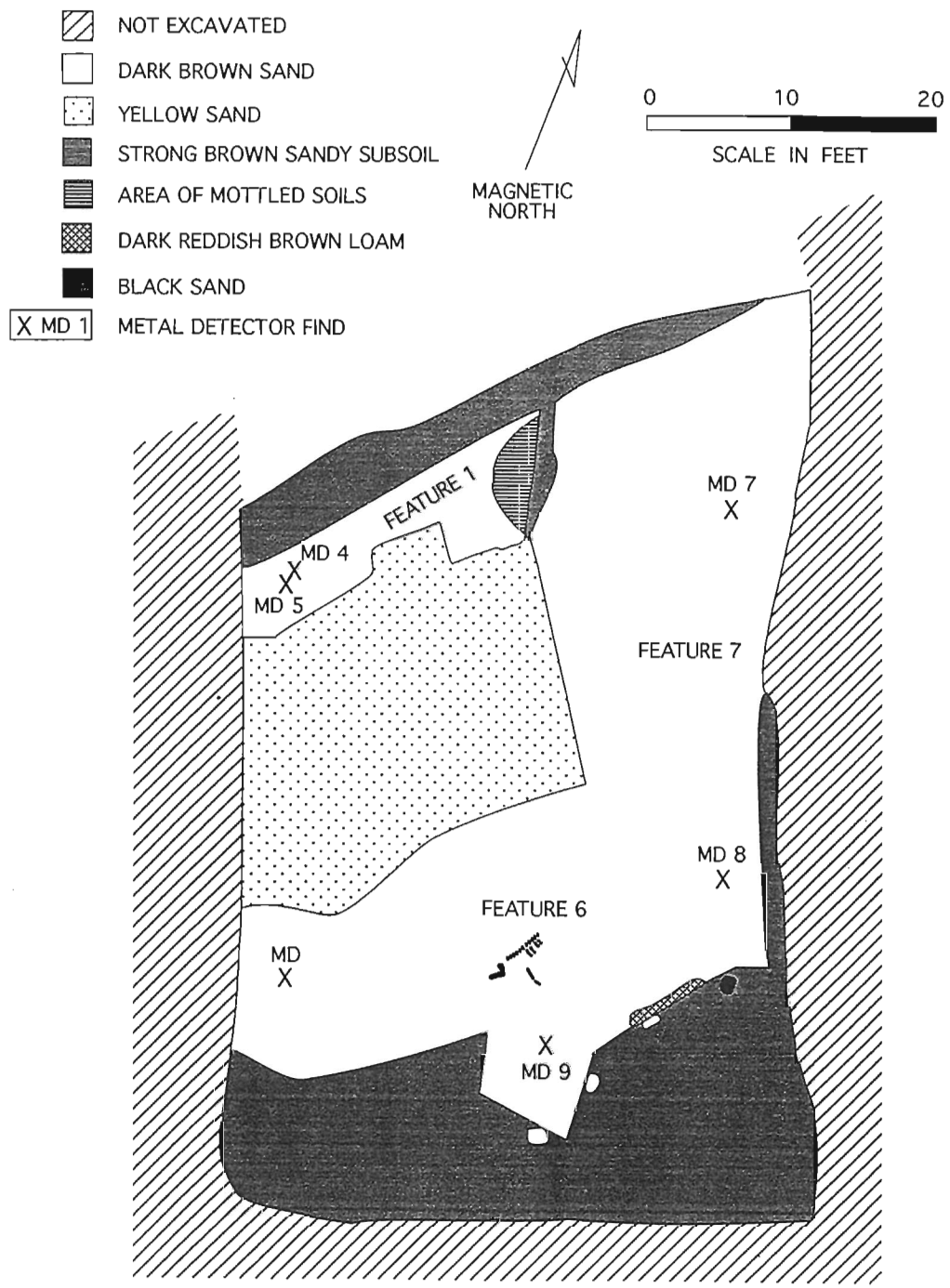


Figure 32. Plan view of features exposed in Area F.

feature (Feature 8), but was not floated in the field. As will be discussed in a following section, a very large portion of one prehistoric shell pit (Feature 5) was, however, floated in the field. Field flotation was difficult because of the distance from the water source and the greatly reduced water pressure.

Feature 1

Feature 1 was encountered (from west to east) in Area E, Cut 1, Area D, Cut 9, and Area F. It represents a relatively wide trench, varying from about 9 to 12 feet. Fill was also variable, with sections almost appearing to be composed of shell midden, while other sections consisted of a dark brown sand with only scattered shell. Although close to 400 feet of this feature could be projected, only 195 feet were actually exposed by the stripping.

The width was far in excess of what might be expected for a palisade. In addition, the early shovel skimming produced a small collection of historic artifacts recovered from the fill, including nails, fragments of barrel bands, and "black" glass — items which clearly were too late for a Mississippian feature, but which strongly suggested a military occupation. Moreover, the prehistoric remains present were more often Late Archaic Thom's Creek wares than Mississippian complicated stamped pottery.

When this feature was compared with the map of the Secessionville Water Batteries produced by General Q.A. Gillmore after the works fell into Union hands (Figure 20), there were strong similarities. In order to tie our basemap to Gillmore's map, several map points were identified in the field, allowing one to overlay the other.

We discovered that Feature 1 was a nearly exact match to the earthworks plotted by Gillmore. This is shown in Figure 33.

Two areas were selected for excavation — a portion in Cut 1 and a section in Cut 9 — representing about 25 lineal feet or a 12.8% sample of the entire trench which had been exposed. These two areas were selected to provide sections from two widely separated portions of the feature. Excavation was conducted by hand with the fill screened through ¼-inch mesh.

The first section excavated, from Cut 1, was the wider of the two and revealed a relatively wide interior ledge on the "outside" face of the earthworks and a much narrower step on the "inside" face (Figure 34). The trench was 4.5 feet in depth.

The "inside" step, of course, represents the berm, which Mahan explains was placed to "prevent the earth from yielding" (Mahan 1862:3). He goes into greater depth, explaining why this berm was narrower than that to the outside of the work:

> The berm is a defect in field works, because it yields the enemy a foot-hold to breathe a moment before attempting to ascent the exterior slope. It is useful in the construction of the work for the workmen to stand on; and it throws the weight of the parapet back from the scarp, which might be crushed out by this pressure. In firm soils, the berm may be only from eighteen inches to two feet wide; in other cases, as in marshy soils, it may require a width of six feet. In all cases, it should be six feet below the exterior crest, to prevent the enemy, should he form on it, from firing on the troops on the banquette (Mahan 1862:22).

Although this portion of Mahan's advice was closely followed, the trench has neither the depth nor width specified, suggesting that the water batteries were considered to have secondary value.

The profile reveals that some loose sand remained in the earthwork after construction, but that it was relatively well maintained. There is, for example, no evidence of lensed fill at the base,

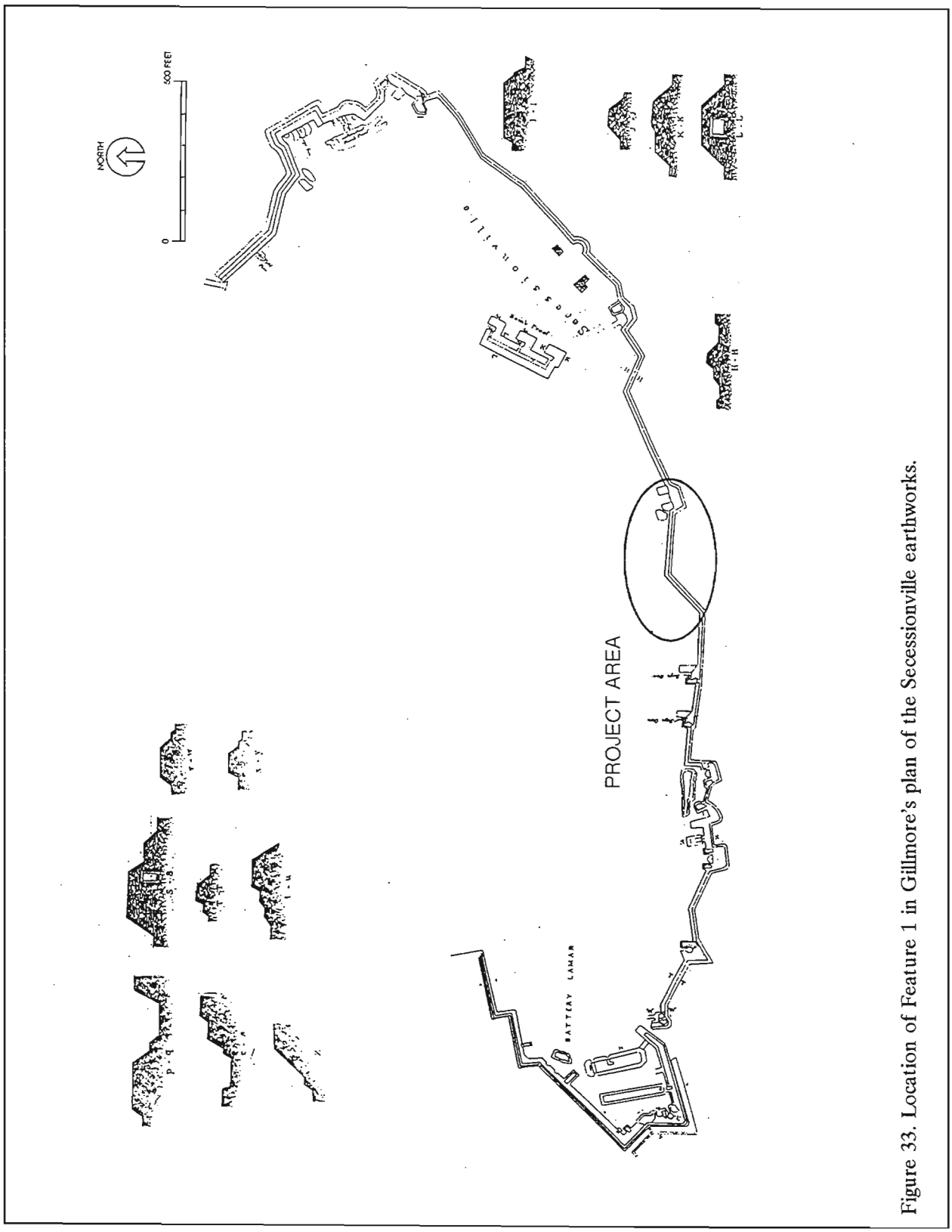


Figure 33. Location of Feature 1 in Gillmore's plan of the Secessionville earthworks.

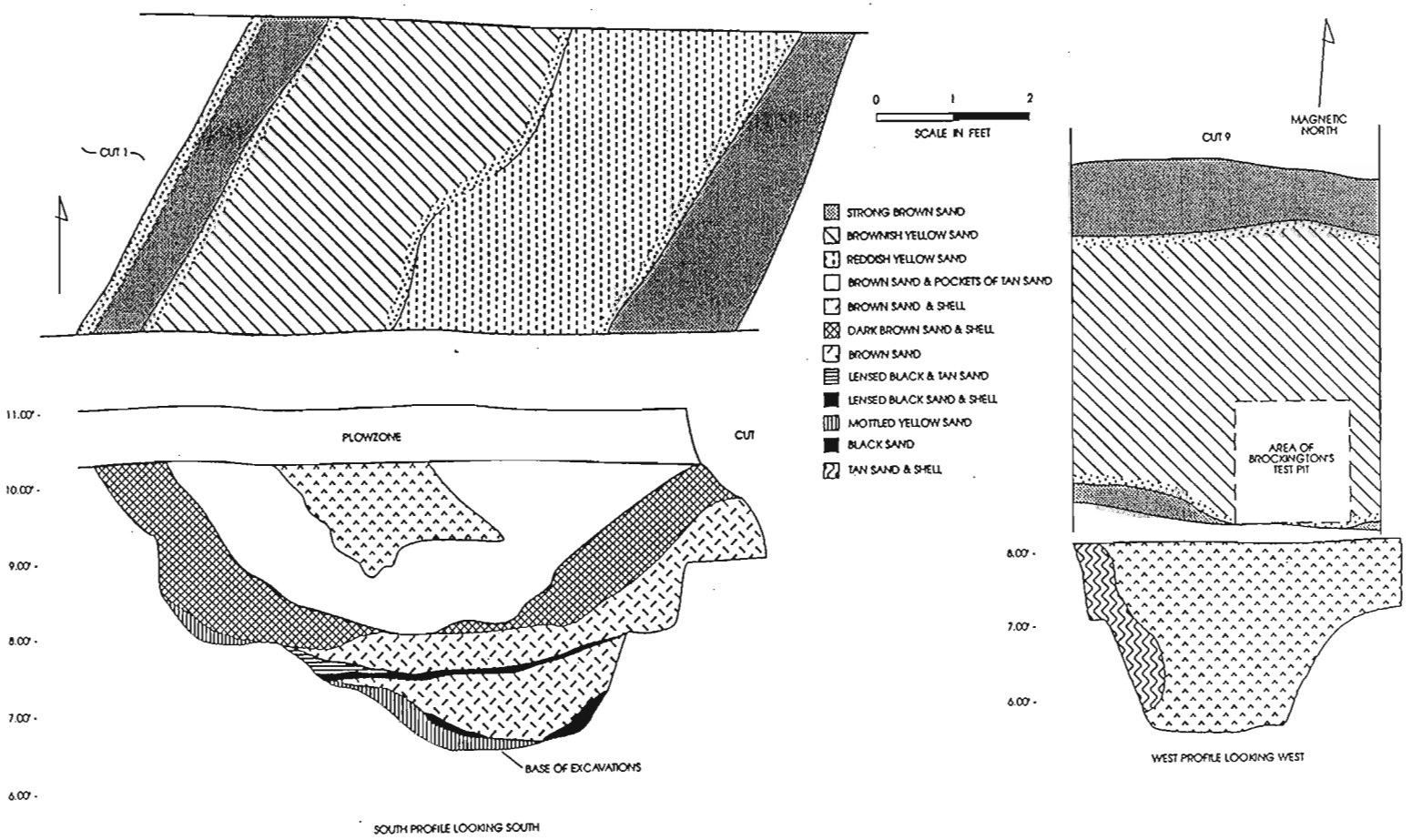


Figure 34. Plan and profile of two excavated sections of Feature 1.

revealing that it had been kept clean and not allowed to fill in. Above the base, however, there is evidence of lensing suggesting that after the Civil War the trench, while open, was no longer being maintained and water washed sand was gradually being deposited. Above this lens, there are a series of discrete "loads" of soil which we interpret as rapid backfilling.

This is consistent with the oral history collected by Butler, who notes that, "at some point during the early twentieth century, the majority of the earthworks along the eastern and southern perimeter of the peninsula were leveled because 'they were obstructing the summer breezes' (Fred Martschink, personal communication, 1992)" (Butler 1994:53). The clear differences in the soil, however, suggests that several sources were being used for backfill and that the work was perhaps being done by hand.

The second section, from Cut 9, revealed a trench only 8 feet in width. This narrowing, although not shown by Gillmore, may reflect the earthwork's peripheral location. Alternatively, it may simply reflect the natural variation in hand-dug entrenchments. This section also revealed that the ledge was wider on the "inside" face than on the "outside." The trench in this area was only 4.5 feet in depth, suggesting that as the earthworks were extended to the east they became less massive and more reliance was placed on the marsh being a deterrent.

If this analysis is correct, then Feature 1 begins to provide additional information concerning the strategy of the Confederate defenders. The importance of the Tower Battery, renamed Fort Lamar, had been proven and it seems likely that most efforts continued to focus on the peninsula neck. The marshes had proven to be limiting factors, although it seems that the Confederates envisioned defenses ranging from very substantial to minor ringing the southern edge of the peninsula and protecting the peninsula from nearby Morris Island.

The profile of this excavated section reveals a very homogenous brown sand and shell fill, suggesting that the pit was quickly filled using soil already partially mixed by the initial construction. It also suggests that the filling may have been mechanical.

In spite of the differences, the two excavated sections are very similar and are entirely consistent with the Civil War earthwork shown by Gillmore. Artifacts within the fill of both sections are almost entirely prehistoric — representing the remains originally excavated by the Civil War soldiers and eventually replaced in the trenches. Like both the surface collections and the stripped areas, Thom's Creek pottery was most common, although small quantities of other pottery was present. Historic materials were uncommon, revealing that military discipline prevented soldiers from using these earthworks as convenient receptacles for their trash. Although small quantities of animal bone, broken glass, and occasional nails were encountered, the ditches were not used to their full potential.

Feature 2

Feature 2 originates off the study tract and extends south-southeast down the entire length of Area A, through Cut 2, across Cut 1, and turns a 90° corner just south of Cut 5, extending east-northeast through Cut 5, across Cut 4 and Area E, re-entering Cut 1 and following it until just past Area D (see Figure 28). The northern and eastern terminus for the feature are not known since it extends off the study tract. The feature was projected for a total of 710 feet, although only 425 feet were actually exposed by the excavations.

The feature consists of a narrow trench or ditch, varying from about 2.5 to 4 feet in width (Figure 35). As elevations were plotted and compared, we realized that the ditch appears narrower in those areas where the stripping went slightly deeper. Consequently, the feature width probably averages between 3 and 4 feet.

The fill of this feature, like Feature 1, varied from a dark brown loamy sand to dense shell in a matrix of black sand. Shell content varied dramatically within any 20 foot section, with that segment in Cut 1 containing the densest shell.

Figure 35. View of Feature 2 in Area A looking north-northwest.

Four distinct sections (designated 1-4) of this feature were excavated, representing an 8.7% sample of the exposed feature. Three of these were in Area A and one was placed in Cut 4. The focus on Area A was intended to help identify changes in the feature along one "path," in the hopes that this information would help define its function. Excavation was by hand with all fill either waterscreened or dry screened through ¼-inch mesh.

The fill was dominated by prehistoric artifacts, primarily Thom's Creek pottery. As previously mentioned, shell was variable — Section 1 produced 24 pounds of shell, Section 2 yielded 103 pounds, Section 3 produced only 4.5 pounds, and Section 4 produced 62 pounds. Few historic materials were found in any of the excavations, although their presence demonstrates that this feature was backfilled during the nineteenth century. The absence of military items suggests (but cannot conclusively demonstrate) that the feature was filled prior to the military occupation of Secessionville.

The feature was found to vary from about 2.0 feet to 0.6 foot in depth below the stripped surface (Figure 36). The basal elevations, however, are more revealing and suggest that the fall of the ditch was toward the south where the two legs join together. The profile consistently revealed one steep side and one more gradually sloping side — consistent with a ditch excavated by shovel. The fill throughout its length was a homogenous dark brown sand, although Section 3 also revealed several concentrations of shell in the fill.

Taken together, these data suggest that Feature 2 was a drainage ditch which had been kept relatively clean and open until it was very quickly filled in, probably with the original spoil which had been out of the ditch for a relatively long time. The most likely time for this backfilling to take place was when the Confederate troops took over Secessionville and began construction of Fort Lamar and the marsh batteries. The ditch may have served as drainage during periods of heavy rain, further ensuring the healthfulness of Secessionville for the planters. Had the feature been completely exposed it is possible that a more definitive statement concerning function would have been possible. However, the fill from the ditch was such a minimal producer of cultural remains, the feature was given a very low

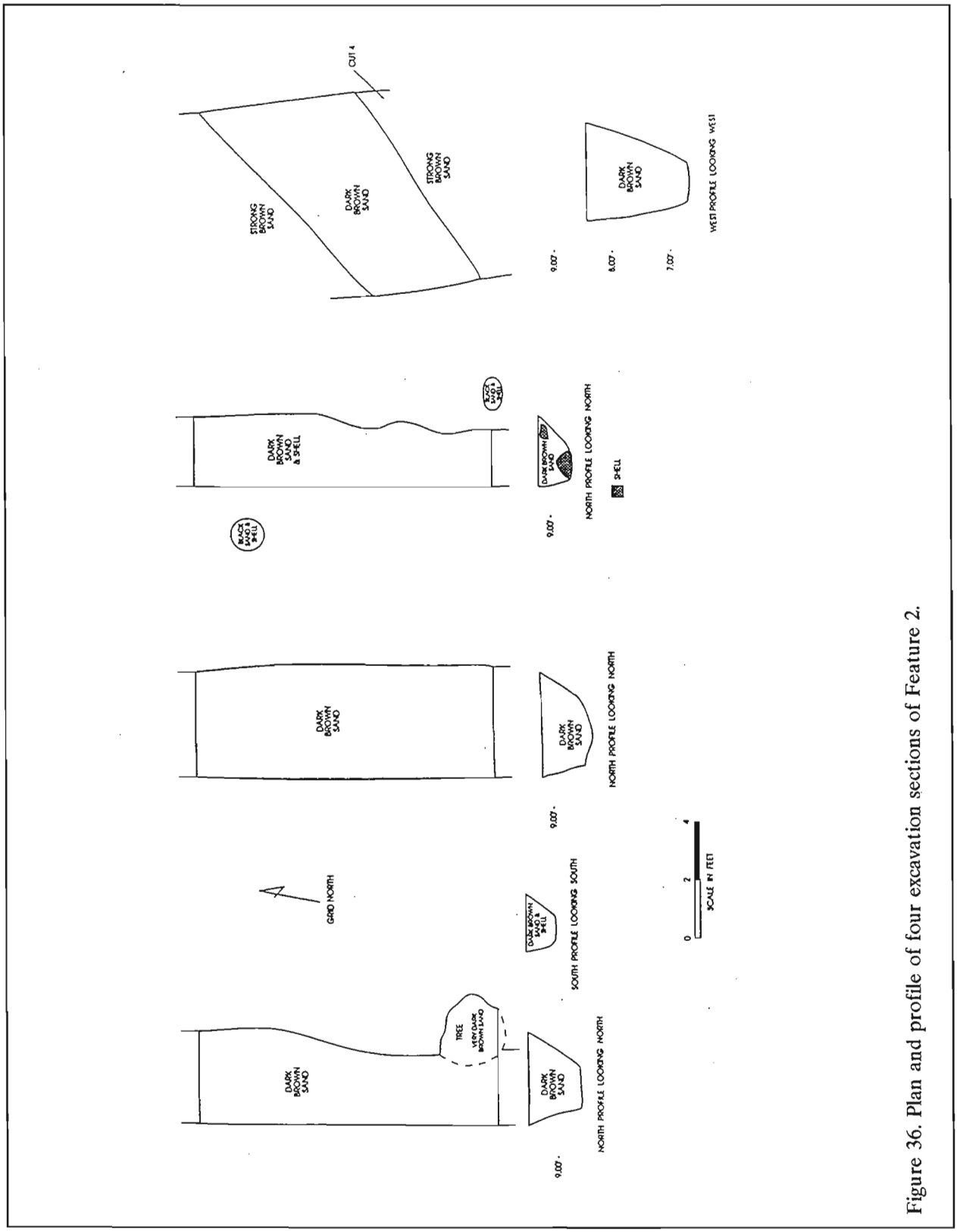


Figure 36. Plan and profile of four excavation sections of Feature 2.

investigative priority.

Feature 3

Feature 3 was a shell pit measuring about 3 feet north-south by about 4 feet east-west found south of Features 1 and 2 in Area D (Figure 31). Material associated with the feature during cleaning suggests that it dated from the Thom's Creek Phase. Before this feature could be sampled it was looted over a weekend. The central core of the pit had been gutted out, with much of the fill dumped back into the hole. Given the disturbance to the feature we decided to undertake no further investigation.

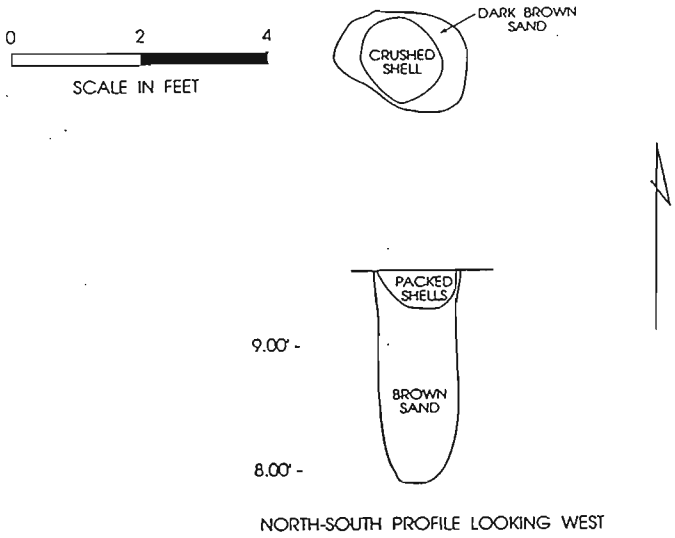


Figure 37. Plan and profile of Feature 4.

Feature 4

Feature 4 was originally thought to represent a small shell pit situated at the western end of Cut 1. Its measurements were initially recorded as about 2.5 feet in diameter. Like Feature 3, the initial indications were that this might represent a Thom's Creek Phase shell steaming pit. When bisected with the east half removed, we realized that it represented a post hole which had collected a small quantity of midden in its central "slump." The post hole was found to be about 1.2 feet in diameter and 1.7 feet in depth (Figure 37). The west half was not removed.

Feature 5

Feature 5, a large scatter of crushed shell, was found in Area C and was thought to represent perhaps as many two or three shellfish steaming pits. It was initially recorded as covering an area measuring about 38 by 23 feet (Figure 30). During the initial cleaning a large quantity of fish bone, Thom's Creek pottery, and deer antler were collected from the area. This feature was recognized as perhaps the best preserved prehistoric feature recovered from the excavations at 38CH1456.

This feature was bisected with only the east half being excavated. The fill was removed in two very distinct levels — the upper Level 1 fill consisted of dense, crushed shell, while the lower Level 2 fill consisted of brown to black soil with only sparse soil. Within these two levels the profile revealed a variety of additional levels. The bulk of the crushed shell observed in the original plotting was found to represent one feature, although it appears that a second pit may extend southward under backdirt. The excavated portion revealed a pit measuring about 12.5 feet north-south by 12 feet east-west and 2.7 feet in depth. This excavation yielded approximately 141 cubic feet of fill. This very large quantity of material required that a sampling strategy be employed and even with sampling this feature required 49 person hours for excavation.

Of the 71.5 cubic feet of Level 1 material, 18.3 cubic feet or 25.2%, was subjected to water flotation. The heavy fraction was hand sorted, removing all pottery, animal bone, and heavy pieces of charcoal. This heavy fraction was then weighed (346 pounds) and discarded. The vast majority of the animal bone recovered was fish,

primarily fish vertebra and otoliths. The light fraction yielded a relatively small quantity of charcoal and the only recognizable remains were hickory nutshell pieces.

In addition to this work, a 21.5 pound sample of the heavy fraction shell (representing a 6.2% sample) was sorted and weighed by species. For this particular feature we found that only 9.3% was oyster, 11.6% was clam, 7.0 was the common cockle, and 2.3% was whelk (primarily *Busycon carica* although one specimen of *Busycon canaliculatum* was identified). Periwinkle accounted for 23.3% of the sample. Although identifiable fragments of stout tagelus and ribbed mussel accounted for less than 1% of the sample, they represented almost all of the small fragments — accounting for 46.5% of the sample. Very minor constituents included angel wing and moon snail. This revealed that the shellfish most heavily represented by this subsistence episode were periwinkles, stout tagelus, and ribbed mussel, probably in about equal proportions.

An additional 7.3 cubic feet or 10.2% of the Level 1 fill was subjected to waterscreening through ⅛-inch mesh. Artifacts and animal bone were hand sorted from the waterscreening in the field and the remaining shell was weighed (122 pounds) and discarded.

The remainder of the Level 1 fill (64.3% of that from the eastern half) was screened through ¼-inch mesh. As might be imagined, animal bone recovery was minimal and only pottery was recovered. The resulting shell was weighed (1320 pounds) and discarded.

Of the 69.5 cubic feet of Level 2 material, 18.3 cubic feet or 26.3%, was subjected to water flotation. The heavy fraction was hand sorted, which took considerably less effort than Level 1, weighed (8 pounds) and discarded. While fish was still the dominant animal bone recovered, the quantity had declined dramatically from Level 1. The light fraction also contained a larger quantity of charcoal, with numerous large pieces of wood charcoal and hickory nutshell being recovered.

An additional 18.3 cubic feet (26.3%) of Level 2 was subjected to ⅛-inch water screening. Artifacts and bone were again hand sorted and the remaining shell was weighed (13 pounds) and discarded. The remainder of the Level 2 fill (47.4% of that from the eastern half was screened through ¼-inch mesh. Only 28 pounds of shell was recovered, less than anticipated based on the waterscreening and flotation. This is likely because so much of the shell was finely crushed and passed through the ¼-inch mesh.

These samples of Level 1 and 2 fill will allow us to compare the faunal recovery effectiveness of flotation heavy fraction to that of ⅛-inch waterscreening and will also allow the evaluation of faunal reconstructions derived from these two distinct recovery methods. Our goal here is to evaluate the effectiveness, and appropriateness of the two techniques on Thom's Creek sites. In addition, the flotation of a large quantity of fill — far beyond the typical 5-gallon sample (which is approximately equal to 0.7 cubic foot) — will allow us to gauge the benefits of larger flotation samples. Furthermore, the detailed person hour record of the feature excavation will also help evaluate cost-benefit studies.

Finally, although there has been extensive excavation of Thom's Creek features at sites such as Bass Pond, Lighthouse Point, and Stratton Place, this study represents the most intensive investigation of a single Thom's Creek feature undertaken. Its benefit to evaluating Thom's Creek subsistence patterns is improved by radiometric dating of charcoal associated with the Zone 1 fill, allowing a very tight date to be assigned to both the associated pottery and the subsistence remains.

The profile of Feature 5 was, in itself, revealing (Figure 38). Two distinct zones can be discerned in Level 1. One consists of crushed shell and gray sand which overlies a lens of crushed shell and yellow sand. These two likely represent different discard episodes. The lighter colored sand in the lower of the two suggests that this refuse was quickly covered up and had little opportunity for organic matter to be introduced. Both zones, however, also exhibit clearly defined pockets of

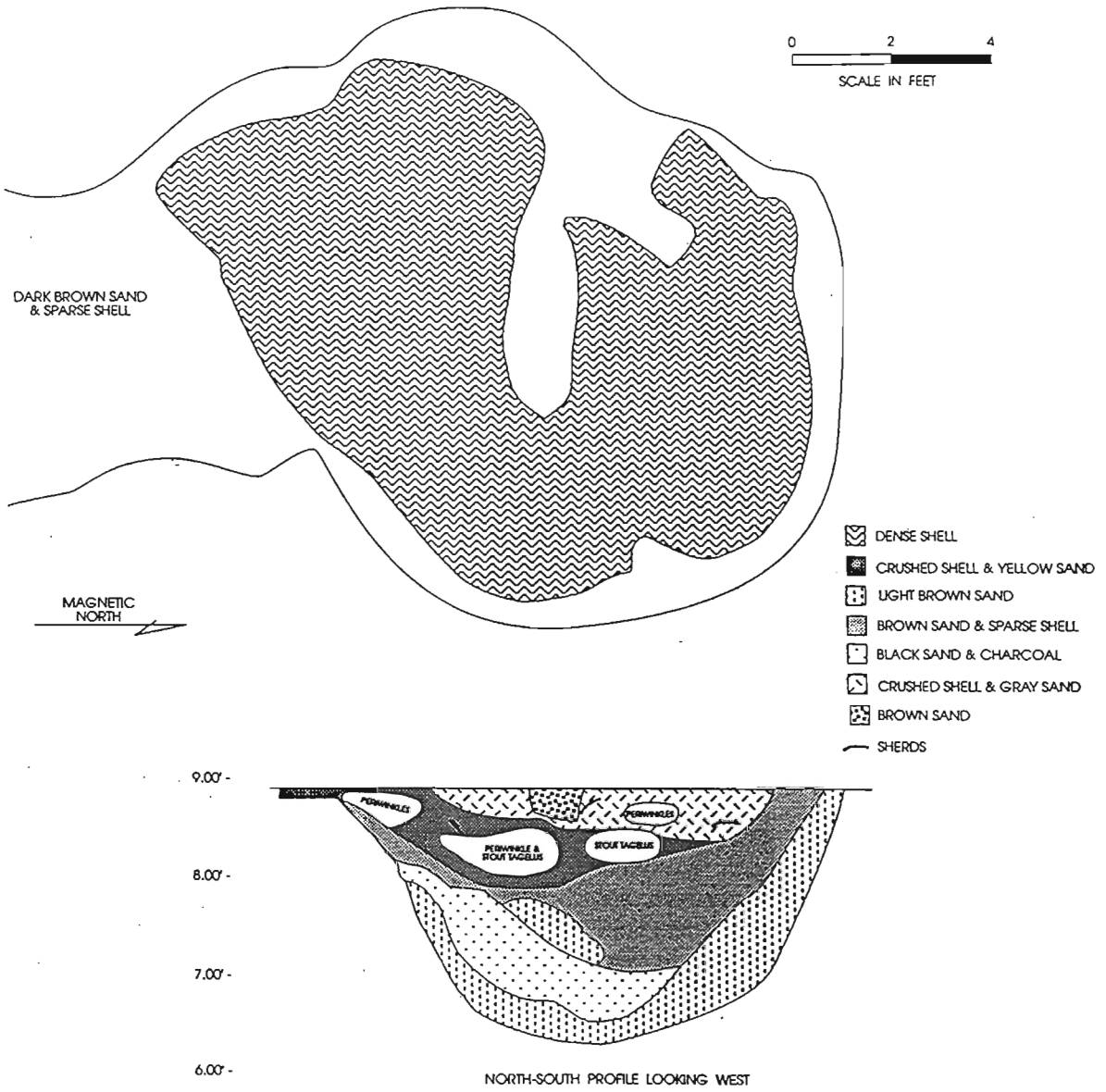


Figure 38. Plan and profile of Feature 5.

specific shell species. The uppermost level, for example, includes a distinct pocket or concentration of periwinkles, while the lower level reveals three such concentrations — one of periwinkles, one of periwinkles and stout tagelus, and one of only stout tagelus. Each of these pockets likely represents discard from a single collection or processing episode, although all may well have been consumed during the same meal.

The dark sand below, termed Level 2, included three distinct zones. At the base of the feature is a band of light brown sand, likely representing the loose sand in the base of the hole after it was initially excavated. This lens was found to have virtually no shell and no pottery. Above this is a thicker band of black sand which contains some shell and abundant charcoal. It likely represents the remains of the fire used to steam the shellfish. It is found raked or pushed up to one side of the pit, suggesting that an effort had been made to move it out of the way or to possibly concentrate the heat on one side of the pit. Above this was the third lens — a zone of brown sand with noticeable, although still sparse, shell. This likely represents the soil thrown over the coals to separate them from the shellfish (otherwise the shellfish would have been fired, not steamed).

Feature 6

Feature 6, a donkey burial, was found during the bulldozing operations in Area F (Figure 39). Fragments of bone were noted after a pass and this area was excluded from additional stripping. As a result, the only loss was the skull and left mandible, although the left foreleg was badly damaged. No artifacts were associated with this burial, which occurs in the fill of Feature 7. This indicated that the animal was buried during the filling of the feature and suggests that it occurred toward the end of the fortification's usefulness.

Feature 7

Feature 7 (Figure 40) represents a ditch surrounding a gun emplacement shown on Gillmore's map for this area of the site. The eastern third of the feature was exposed in Area F and a small portion was also found in Cut 9 (Figures 28 and 32). Since the Feature 1 and 2 ditches were all poor producers of artifacts this feature was not sampled.

Nevertheless, this feature is rather important to our understanding of the Confederate improvements of the Water batteries. For example, there is a suggestion that the battery position was added after the main ditch and parapet had been constructed, suggesting incremental improvements in the works, rather than a master plan which was developed in stages.

In addition, the 20 feet provided for the gun platform between the front ditch and the original ditch would have been inadequate, indicating that the original ditch must have been filled in for the construction of this battery.

Finally, a series of post holes clearly revealed at the southeastern edge of the ditch suggests there may have been a palisade or some other obstacle constructed on the outside edge of the ditch. This approach is also discussed by Mahan and is clearly illustrated (Mahan 1862:Figure 23). These post holes tended to be difficult to see and others along the feature edge may have been missed. Alternatively, they may have been more shallowly placed and simply did not survive the mechanical stripping. Regardless, their presence once again reveals how closely Mahan's theory was followed. Although James Nichols (1957:71) cogently argues that the Confederate engineers developed a range of new tactics and approaches, it seems clear that the Secessionville works are fairly conservative in their design and implementation.

Feature 8

Feature 8 was found in the western third of Area B and consisted of a somewhat amorphous smear of gray ash, burned sand, and charcoal. During troweling, the feature produced a quantity of calcined animal bone and a number of burned machine cut nails, as well as several ceramic fragments. Upon excavation the feature was found to be only 0.3 foot in depth and to have a shallow basin-like shape (Figure 41).

Figure 39. View of Feature 6, the donkey burial in Feature 7.

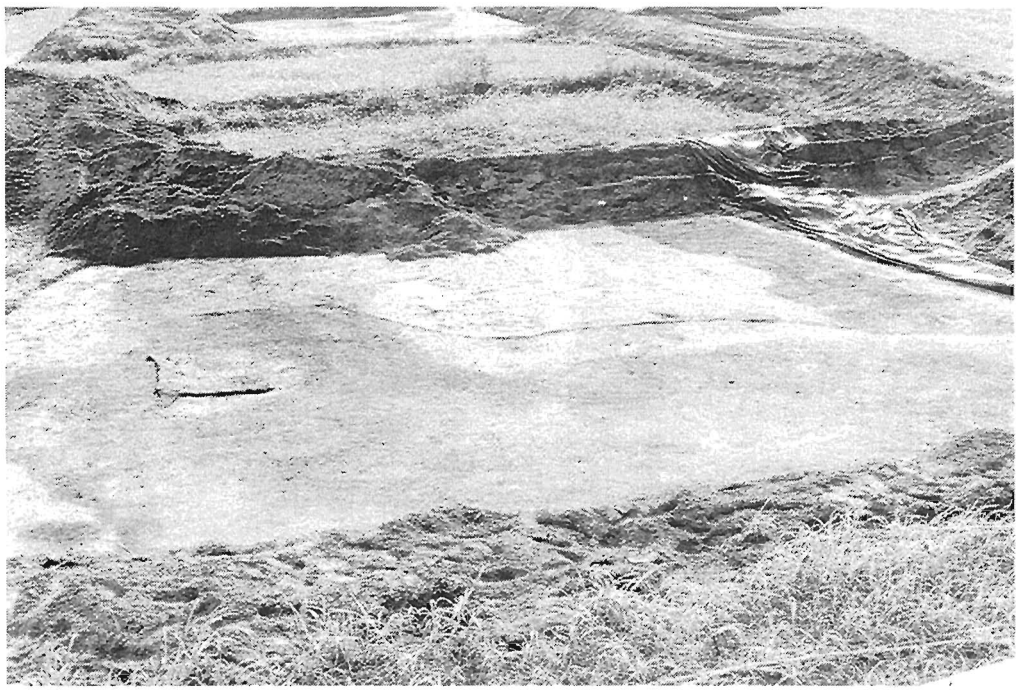


Figure 40. View of Feature 7 looking to the west.

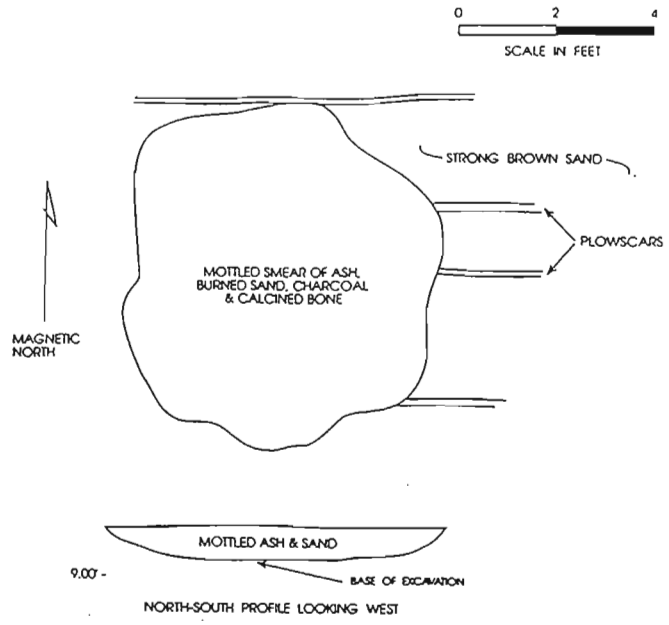


Figure 41. Plan and profile of Feature 8.

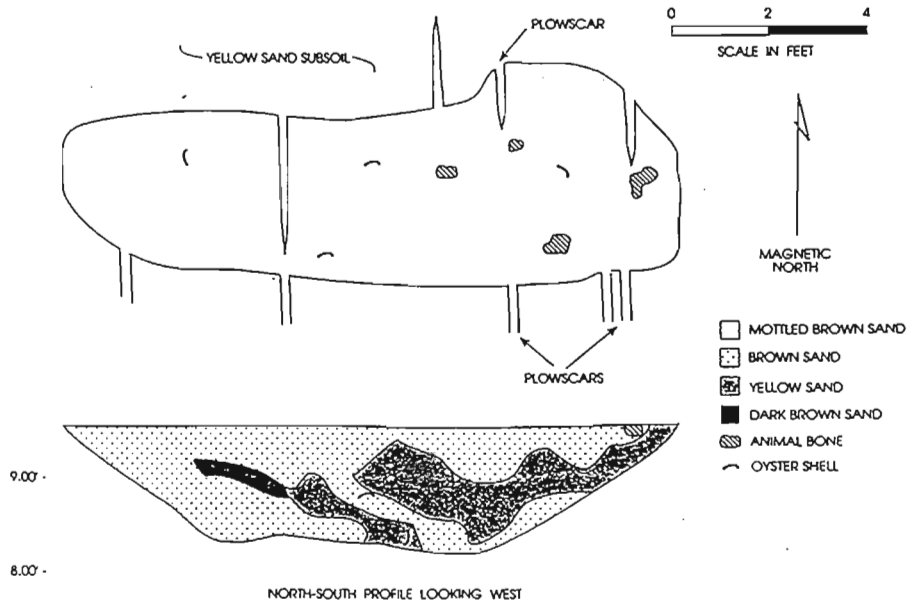


Figure 42. Plan and profile of Feature 9.

The fill was waterscreened through ⅛-inch mesh. The most abundant material is bone — much, although not all, being calcined. The bone color varies from gray to white, suggesting variable periods of time at temperatures higher than 1472° F (800° C). The cracking and longitudinal splitting (with no evidence of transverse fracture lines and warping) reveal that there was probably no flesh on the bone when it burned and that it was not green.

The presence of burned nails and one burned fragment of what appears to be 1-inch lumber, suggests that scavenged lumber was a common source of fuel. The presence of large quantities of animal bone suggests that trash gathered up in the Fort Lamar camp may have been burned. This feature seems to represent a trash disposal area. Its proximity, downwind, from Features 9 and 10 suggest that these features all represent a nucleus of military activity.

Feature 9

Feature 9 was also identified in Area B, about 35 feet south of Feature 8 and 15 feet southeast of Feature 10. The feature consisted of a linear smear of brown sand, sparse shell, and animal bone over an area measuring 13 feet north-south by 4.5 feet east-west. The feature was bisected with the east half removed. The fill was dry screened through ¼-inch mesh and the work revealed a somewhat saucer-like pit 1.3 feet in depth (Figure 42). Animal bone was found in the upper 0.3 foot, but below that depth the fill was entirely sterile. The profile reveals a series of what appear to be distinct loads of soil — some dark brown, others yellow, and still others brown — all swirled together.

This feature defied interpretation until Feature 10 had been excavated. It was not a trash pit — there were essentially no artifacts. It was not a tree — the fill and shape were both entirely inconsistent with this interpretation. We even considered that it might be where ordinance exploded, but it seemed unlikely that the crater would be linear. After Feature 10 was examined, however, Feature 9 was re-evaluated. We believe that it represents the beginning excavations for a structure such as Feature 10. Never completed it was quickly backfilled and trash collected only where the feature slumped as the soil compacted.

Feature 10

Feature 10, found in Area B, represents a semi-subterranean structure (Figures 43-45). It is oriented almost due north-south (N4°W), with its opening to the south and its firebox at the northern end. The structure measures 9 feet in width and 17.8 feet in width, although the floor area measures only 9 by 12 feet, for a total of 108 square feet. The entranceway is about four feet in width and the floor slopes gradually down to the hearth and firebox area. The floor in the center of the structure was about 1.0 foot below the stripped surface and about 2.5 feet below the ground level. The side walls are typically straight and the only deviation is along the southeastern wall where there is a slight ledge.

The doorway floor appears to have been a gradually sloping ramp into the room. The floor consisted of a very hard packed brown sand which consisted of waterwashed sands. At the north end of this structure the floor revealed a multitude of small dark circles. Larger than characteristic of worm or insect activity, and much smaller and better defined than typical of roots, these may reflect leaks from the roof.

There are identical ledges or notches at the interior corners of the firebox, perhaps revealing the location of vertical chimney supports. Along the outer sides of the chimney or firebox area there are also ledges which are probably where the chimney stack rested.

As previously mentioned, the center of the firebox is burned. At the outer edge of the firebox, toward the living space, there was a row of highly fragmented brick, perhaps representing the hearth edge. Outside the structure, at its south end, two square post holes were encountered. These may represent posts supporting an entranceway tarp, or they may be more intimately associated with the structure's construction.

The feature was excavated as five zones.

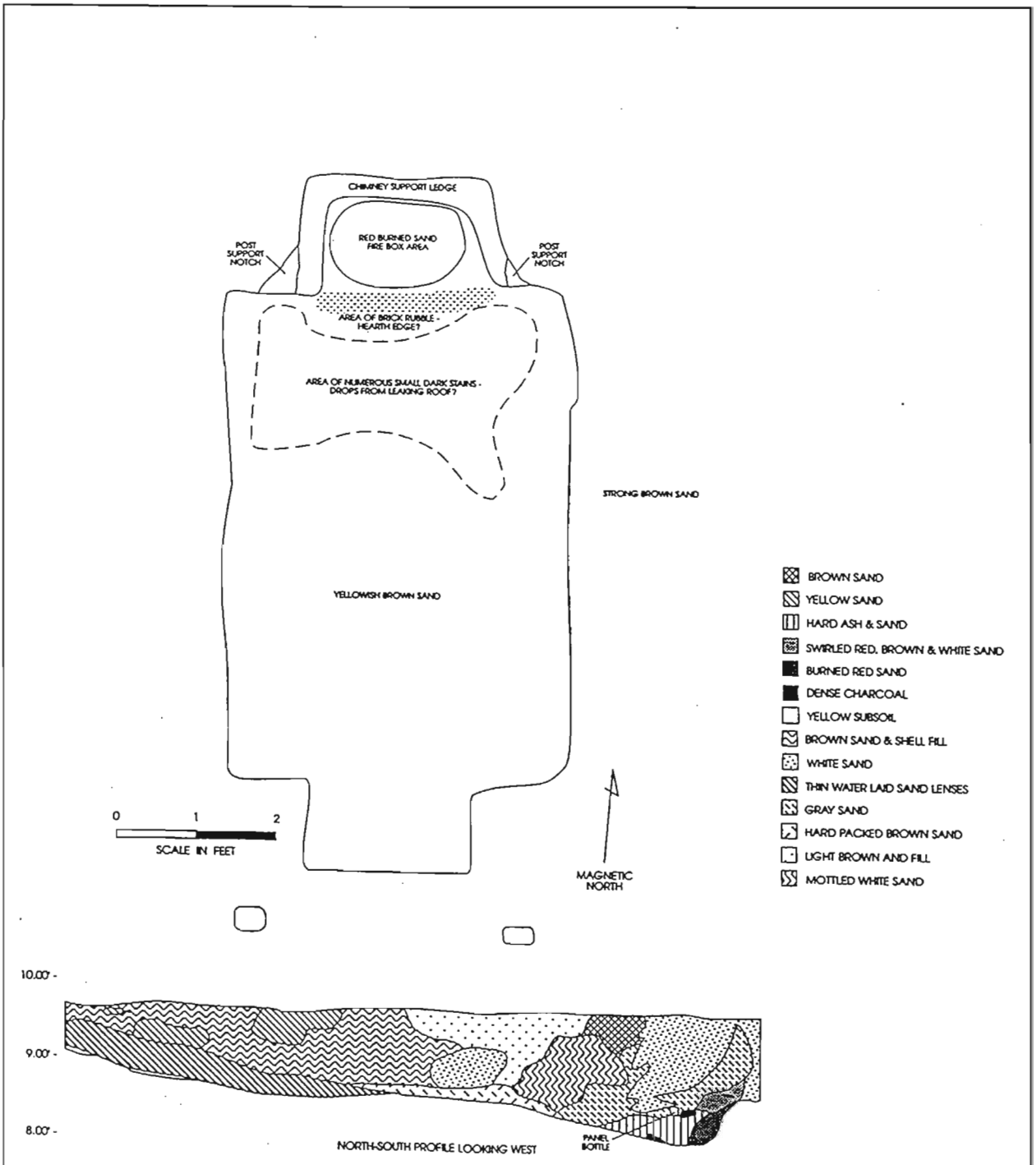


Figure 43. Plan and profile of Feature 10.

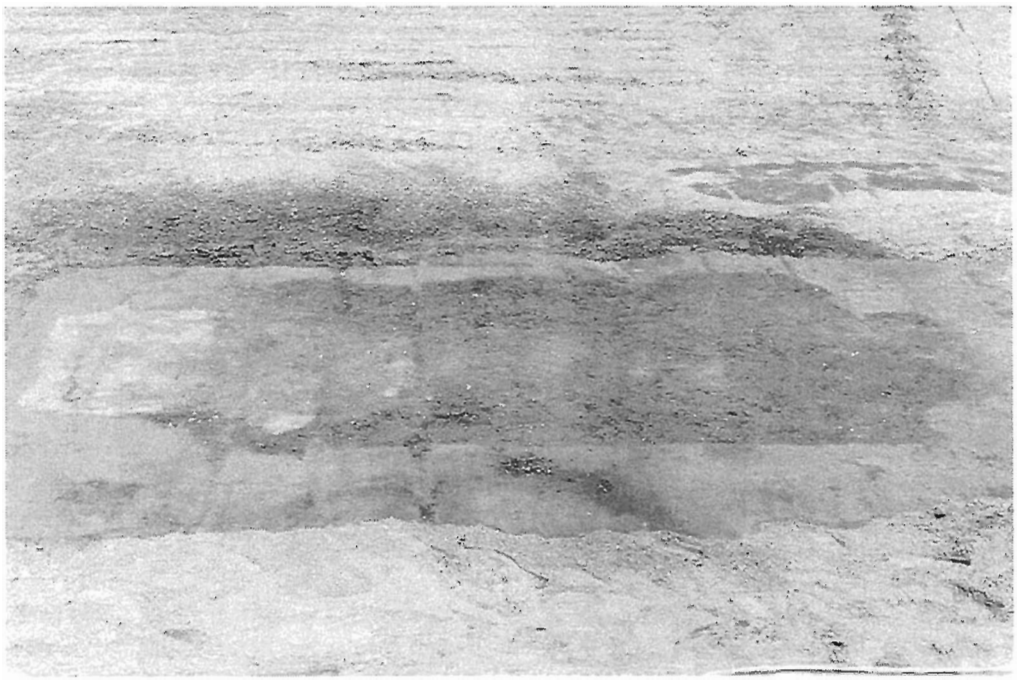


Figure 44. Feature 10 before excavation, view to the west.

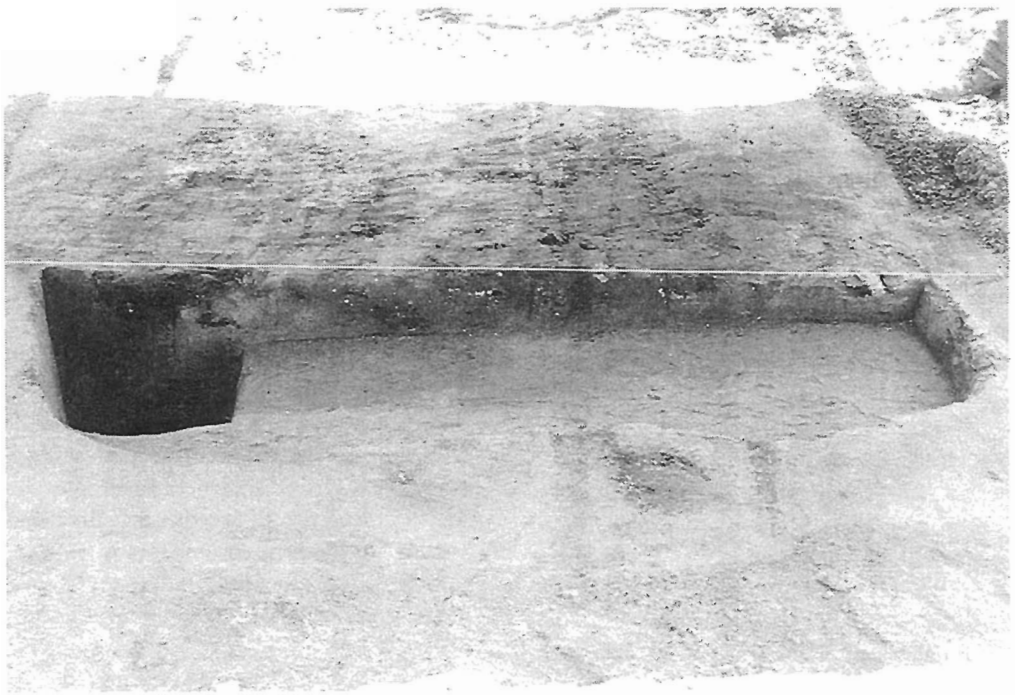


Figure 45. Feature 10, east half excavated, view to the west.

Zone 1 was the upper brown sand and shell fill. This almost certainly represents backfill after the abandonment of the structure and consists of primarily prehistoric material — prehistoric sherds and shell midden. Below this was were a series of thin refuse lenses not recognized until viewed in profile. Although these were incorporated with Zone 1 they actually represent refuse discarded in the structure, probably by its occupants. Materials from these lenses include broken glass, nails, and ceramics.

Below Zone 1 was Zone 2 — that portion of the floor clearly recognized by its hard packed texture. At the northern end of the structure Zone 3 was defined on the basis of the large quantity of mixed brown and white sands. At the present time we are not certain what these sands represent. They do, however, contain small quantities of historic material and virtually no prehistoric pottery or shell. No sand this color was found in any of the excavations and we believe that it may have been brought from another location. The sand appears to be associated with the chimney area.

Below Zone 3 was Zone 4, representing a gray sand lens which appears to be refuse accumulation in front of the hearth. This zone contained small quantities of ceramics and nails, as well as animal bone — in general containing the types of materials expected from piles of floor sweepings left in front of the hearth.

Zone 5 represented the ash, charcoal, and burned sand in the firebox area. At the top of Zone 5 was an unburned panel bottle.

Although the feature provides exceptional information concerning the lifeways of Confederate troops stationed at Fort Lamar (one of the artifacts recovered from the feature is a Georgia regimental button), and in spite of its excellent preservation, it provides relatively few clues concerning construction. Partially sunk below ground, this building may have been constructed of logs, although planks are perhaps even more likely. There is no evidence on which to offer conjectures concerning roof construction.

Later in this section of the Secessionville report we compare this structure to others found by researchers in Tennessee and Virginia. In addition, there is historical documentation which helps us better understand this particular type of housing. Although present in historical documents, and found by archaeologists in other areas, this is the first documented structure of this type encountered in South Carolina. It is also among the first Confederate huts excavated, allowing comparisons to be made between Union and Confederate housing approaches and options.

Features 11 and 12

Features 11 and 12 represent two small shell filled Thom's Creek pits. Feature 11 was found in Cut 1 south of Area B, while Feature 12 was found at the eastern edge of Area D (in Brockington's Cut 8). Both of these features were looted over a weekend, with their centers entirely removed. Some of the shell was piled up beside the features, although much was scattered around, as though it has been searched through. Given the disturbance to these features they were not sampled in this study.

Semi-Subterranean Huts at other Civil War Sites

Historical Evidence

The principal troop shelter during the Civil War, especially during the spring, summer, and fall, was one form or another of the tent. John D. Billings (1993 [1887]) provides a detailed account of the various tent forms, as well as life in these temporary shelters (Billings 1993:43-72 [1887]). Secondary sources describing tent life likewise abound. A popular example includes James Robertson, Jr.'s *Tenting Tonight: The Soldier's Life* which traces the progression from the Sibley tent to the wedge tent and offers a variety of period photographs (Robertson 1984). In a somewhat more detailed fashion Robertson comments that:

> Three types were used in the first part of the war. The wall tent was a large, box-shaped canvas structure with upright sides and sloping roofs. The walls were high

enough to permit a man to move around while standing erect. However, the wall tent was expensive to manufacture and heavy to transport; as a result, its use was confined to hospitals and officers.

Easily recognizable was the Sibley tent, named for Henry H. Sibley, who designed it and who later became a Confederate brigadier. A conical structure 18 feet in diameter and 12 feet tall, it resembled an oversized Indian tepee. . . . Sibley tents went out of use in 1862 because they proved too cumbersome for transportation and field operations.

Wedge tents were popular on the union side. Known as "A" tents because they resembled the letter without the crossbar when viewed from the end, they consisted of six-foot-long canvas stretched over a horizontal ridgepole which was staked on both sides. The tent had flaps for closing the front and rear ends. A wedge tent normally contained seven square feet of space and accommodated four men. . . . With the ridgepole less than five feet off the ground, everyone had to stoop before entering — and endure cramped quarters thereafter.

Beginning in the war's second year, the standard abode for soldiers was the shelter tent. It rapidly became known as the dog tent or dog shanty since "it would only comfortably accommodate a dog, and a small one at that." . . . "we received a piece of thin sheeting about four feet by six feet, in the binding of which were buttons and buttonholes. Each man was given one piece, with instructions to find two other men supplied with a similar piece, and combine the three into a tent. . . .

> Ill-supplied Confederate, always in want of tents, utilized every piece of canvas seized from the enemy (Robertson 1988:43-46).

Bell Irwin Wiley voices the same observation concerning the absence of Confederate shelters:

> Poets have delighted to dwell upon the tented field of Confederate days, but canopies were rarely to be found outside the imagination of the versem markers . . . . Later in the war oilcloths and tent-flies, both obtained largely from the Yankees,[1] were in greater evidence, but even so, the soldier who had such protection was always the exception rather than the rule (Wiley 1978:246; see also Robertson 1988:46).

War, however, tended to wind-down during the winter and troops on both sides tended to settle into winter quarters. As Griffith notes, "bad weather put a damper on the movement, the bivouacs, the health and the firepower of the Civil War soldier; it was little wonder that he liked to go into winter quarters for the worst two or three months of the year" (Griffith 1989:120).

These winter quarters are described in detail by a number of these same authors. Wiley provides a chapter on winter quarters, describing

[1] William Cameron, for example, commented that "every man in the regiment supplied himself with a rubber cloth, and a Yankee 'shelter tent'" (Bernard 1892:64).

the variety of huts "made of logs, chinked and daubed after the fashion of a pioneer cabin" (Wiley 1978:60). Also described are a few instances of cellars dug beneath tents or cabins, as well as the Confederate semi-subterranean "bombproofs" around Richmond. Billings also describes some huts built "one or two feet deep," observing that, "such a hut was warmer than one built entirely above ground" (Billings 1993:54 [1887]). Richardson observes that the winter shelters required considerably more ingenuity:

> Sometimes genuine log cabins went up, but more frequently winter quarters were an amalgam of dirt, logs and whatever roofing materials came to hand. Men dug the floor down a foot or more below the surface, then laid logs around the perimeter to a height of about four feet and chinked them with mud. The roofs might be made of boards, thatch or shingles — or simply of canvas that was draped over a ridgepole and covered with oilcloth ground sheets or ponchos to help keep out the rain.
>
> Many winter huts had fireplaces of sticks daubed with mud, with a barrel for a chimney, and floors of barrel staves (Robertson 1984:46-47).

There are a number of illustrations of typical winter camps. Alexander Gardner, for example, provides an exceptional overview of a typical camp layout showing tents with low log foundations and barrel chimneys (Gardner 1959:Plate 55). In another view, dated January 1864, he illustrates a wall tent with the addition of a well built brick chimney (Gardner 1959:Plate 57). An even greater number are illustrated by Robertson (1984). Edwin Forbes also illustrated a number of similar winter quarters and the editor of the volume comments that, "in winter camp no two huts were exactly alike and no one hut ever looked the same way twice" (Dawson 1994:26).

Strictly speaking this is almost certainly correct — individual huts varied and there seems to have been no standardized plan. Nevertheless, there were different "types" of huts and one of special interest. Wiley comments that among the Union troops:

> Perhaps the most common type of winter quarters was a hybrid structure, part wood and part fabric, made by superimposing wedge or shelter tents on log bases. These "winterized", "stockaded" or "barricaded" tents, like the log huts, were usually designed for the accommodation of four men. Sometimes the occupants enhanced roominess and warmth, by digging out several feet of dirt (Wiley 1952:57).

This sort of semi-subterranean structure, however, was equally used by the Confederates:

> In building their shelters, many of the soldiers dug holes three to five feet deep and then erected log cabins over the excavations. After the logs had been chinked and daubed, dirt was packed against the sides to shut out freezing winds. Fireplaces and chimneys were generally built opposite the entrances (Robertson, quoted in Bentz and Kim 1993:67).

Forbes (Dawson 1994:12) illustrated one which was likely semi-subterranean with a log foundation, a canvas tent roof, and a wattle and daub chimney (Figure 46). There are also several photographs from the Library of Congress which provide exceptional construction details. Figure 47 provides an overview of several such "stockaded" structures, including one with a frame still in place to support a canvas cover. Figure 48 provides even more information, showing a wall of four logs with the floor excavated about 1 to 1½ feet below

Figure 46. Winter hut drawn by Edwin Forbes (adapted from Dawson 1994:13).

Figure 47. Deserted camp and wounded Zouave (Library of Congress B8184-40485A).

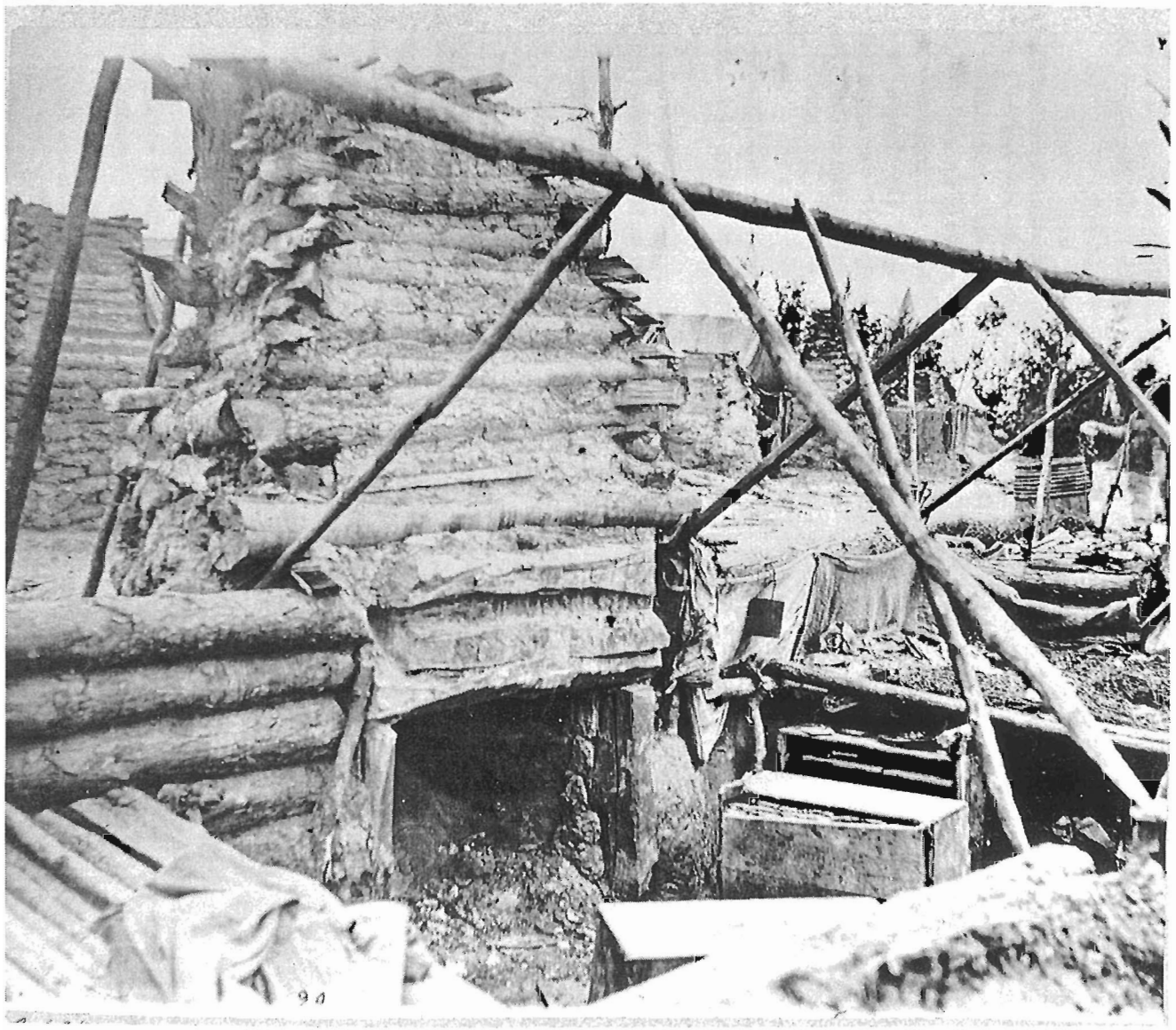


Figure 48. Abandoned camp of the 9th Army Corps near Falmouth, Virginia (Library of Congress Z62-51611).

ground level. Of additional interest is the construction of the chimney, the beds to either side of the chimney, and the debris associated with the hearth edge.

Browning illustrates a photograph of an abandoned Confederate winter camp at Marye's Heights west of Fredericksburg, Virginia (Browning 1995:51-52). Several of the huts are dug into the ground, again showing walls from three to five logs in height above the ground. He goes on to note that:

> The chimneys shown are generally rectangular log bases chinked with mud over which one or more barrels are placed. Shelter halves or other tent parts formed the roofs of all of these structures. Doorways are on the same wall with the chimney to one side/ Some side doors are also shown. Internal supports appear to exist in one hut . . . . The depth of some huts is considerable [perhaps ranging from 2.5 to 4 feet] (Browning 1995:51).

Gardner illustrates such a structure from Fort Stedman (Gardner 1959:Plate 84). The side wall was built seven logs high and at the narrrow end was a nicely laid brick chimney. Because of the angle of the photograph, however, it isn't possible to determine if the structure was excavated into the ground.

Additional evidence of these structures can be found in Dean Nelson's (1987) study of impermanent camp architecture. Although not focused on semi-subterranean techniques, he does mention this style and explores the range of variation typical in the historical accounts.

Archaeological Evidence

There are a number of archaeological studies identifying Civil War troup shelters. Thomas Higgins et al. (1995), for example, provide an exceptional study of the archaeological footprint of Sibley tents. Susan Winters, has identified a number of leveled tent platforms at Maryland Heights in the vicinity of Harpers Ferry (Winters 1994). W. Hunter Lesser and his colleagues have examined several stone piles thought to be the remains of cabins at forts in West Virginia (Lesser et al. 1994). There are, however, only two previous projects we have found in the literature which explore semi-subterranean huts.

The earliest study thus far indentified is the work at the Sevierville Hill site in eastern Tennessee. Situated on the north side of the Tennessee River just outside of Knoxville, this was one of a number of Union encampments forming the city's defensive line. The Union winter encampment at Sevierville Hill was subjected to limited archaeological examination in 1991 (Bentz and Kim 1993:1-2).

This work resulted in the discovery of seven "dugout structures" which the authors suggest:

> represent the subsurface remains of log and canvas winter huts with partially excavated or trampled floors and attached chimneys (Bentz and Kim 1993:44).

They divided their hut features into two catagories based on the feature form and the volume of fill (providing an estimate of size), although it appears that Catagory I hut remains are simply, in their word, "eroded or truncated forms, " while the Catagory II features "were more complete representations of this feature type" (Bentz and Kim 1993:44). Characterizing the features they note:

> Category II dugout structures (n=4) had rectangular or square dugout sections with rounded corners in plan view and had vetical to inslanting walls and flat bases in profile. The mean dimensions of the dugouts sections are 169 cm x 138 cm in plan view and 30 cm in depth. Two of the four hearth sections protruded from the center of one

dugout section wall while the other two hearths were attached at the corner of the dugout sections. The hearths were square to rectangular in plan view and had vertical, inslanting, belled, and shelved walls and flat bases in profile. The mean dimensions are 67 cm x 59 cm in plan view and 31 cm in depth (Bentz and Kim 1993:44, 49).

Figure 49 is representative of their dugouts.

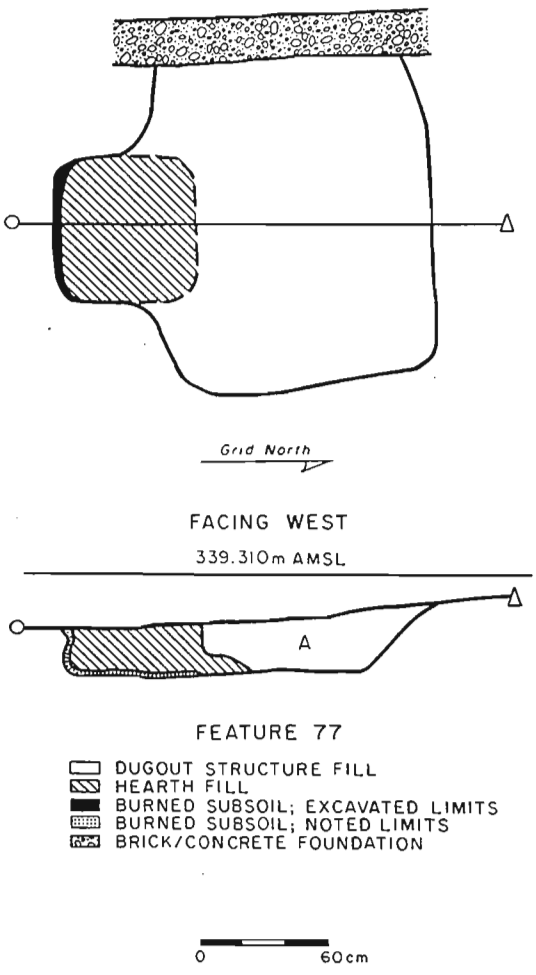


Figure 49. Sevierville Hill, Tennessee Feature 77 dugout (adapted from Bentz and Kim 1993:Figure 28).

Perhaps most intriguing is the size of the features encountered in this study. They range from 4.8 to 6.5 feet in length and 3.6 to 5.5 feet in width. None are the 12 by 9 feet encountered at Secessionville. It is likely that the dugouts found at Sevierville Hill may be for individual soldiers, but even so, it's clear that the winter quarters offered only limited comfort.

Excavations at a portion of the Confederate defensive line at Petersburg, Virginia were conducted by Browning. Although the report of that work (Browning 1995) has received relatively little circulation, it is of particular interest since three "sunken huts" were examined and were likely used by either South or North Carolina regiments.

The huts ranged from 5 to 10 feet in width and were about 12 feet in length. In this regard, they are almost exactly the size of the Secessionville example. The huts examined by Browning have both centrally located and offset chimneys, suggesting some variation in construction approaches. Browning attempts to document something of the comfort level of these semi-subterranean huts, concluding that, "there is no definitive indication that the Pamplin Park huts leaked and made life miserable for the inhabitants" (Browing 1995:111). Perhaps of greater interest is the finding that the floors of the huts tended to collect both fireplace debris and other trash, often being mixed with mud resulting in a "relatively homogenous mix of material" (Browning 1995:111). This suggests that the use of the huts was sufficient to result in considerable mixing, limiting the creation of distinct lenses. This is certainly the case at Secessionville.

Browning's research also documents the presence of shallow, saucer-shaped pits filled with burned trash. Since there was no evidence of in-situ burning, Browning suggests that the pits were used for "fireplace material disposal" (Browning 1995:89). He notes that some pits contained lenses of burned material and ash, indicative of various dump episodes. Artifacts

were typically limited to nails and fragments of calcined bones. These disposal pits resemble Feature 8 at Secessionville.

ANALYSIS OF MATERIAL CULTURE

Introduction

In so far as possible the analyses have been presented in simple, straight-forward terms, with a minimum of jargon or specialized discussion. For some of the more technical analyses we have chosen to incorporate the methodological explanations here, where they will be available for those needing them, but will not otherwise interfere with the flow of the discussions. We do not, however, intend for this to be a compendium of analytical techniques -- we will not detail every step, just those which may be different, especially technical, open to different interpretations, or controversial.

Many of the artifacts received field cleaning during rain periods in at the Florence laboratory, although final cleaning and cataloging of the collections was conducted at Chicora's Columbia laboratories. Most artifacts were wet cleaned, except for brass, lead, ethnobotanical, and some bone specimens, which were dry brushed. As previously discussed, the collections have been cataloged for curation at The Charleston Museum.

On the Nature of Analysis

Analytic approaches tend to raise strong emotions in archaeologists. Colleagues tend to either strongly agree that an approach is the only appropriate one, or that its use will lead to such erroneous results that the entire project might better have never been undertaken. Some view analysis as the worst possible drudge work, only slightly better than washing artifacts. While others view each artifact as capable of unlocking the past, if only you know how to listen. And to others the key is not the artifact, but rather the quantification process. Into the midst of these different ways of looking at the world is thrown yet another variable – project funding, whether that may be grant or compliance.

Often the role, perhaps even the goal, of "good analysis" will be simply "to set up signposts for future research" (Orton et al. 1993:34). In fact, for even exceptional analytical approaches to yield information on cultural behavior it will likely be necessary for a relatively large number of sites to be similarly investigated. This implies that a number of researchers must all agree to both fund and conduct their studies using virtually identical approaches. Of course new approaches will be added, and old ones will be refined, but there must be a consistency not often found. The underlying assumption here (or at least one assumption) is that work and conclusions should be constantly re-evaluated and re-examined. Returning to Orton et. al again, they remark that:

> in archaeology there are no last words, all is provisional, and if no-one ever improves on our work it is not because it is perfect but more likely because it is terminally boring (Orton et al. 1993:35).

Consequently, those looking here for the writing of Richard MacNeish's "Grand Synthesizer" will be disappointed. While we offer ideas and possible explanations, and while we have tried to reconstruct life as it most likely was at the site being considered, it seems foolish to suggest that the research has reached the stage of redundancy and we can now close the book. We have instead attempted to conduct our analyses with precision and with purpose, realizing that at the very least they will offer a "signpost" for others.

Prehistoric Pottery

Relatively speaking, a great deal has been written concerning Thom's Creek pottery. The early literature, beginning in the 1940s with the work of James B. Griffin, and perhaps culminating with the work in the early 1970s of Gene Waddell

and Tom Hemmings, has been summarized by Trinkley (1976). This work also provided the first cohesive typological consideration of the Thom's Creek ware for the South Carolina coast.

Since that time the pottery has received only spotty additional consideration. Some further refinement was provided by Trinkley (1980b), although the primary focus was on the function of shell rings. The work by David G. Anderson (Anderson et al. 1982:248-264) is among the high points of the post 1976 period. Anderson notes that:

> at Mattassee Lake, Thom's Creek classification closely followed the typology proposed by Trinkley (1976, 1980b), retaining his separation of the original Thom's Creek Punctate type into Reed (Separate), Reed Drag-and-Jab, and Shell Punctate, although here these taxa have been reduced to varieties (Anderson et al. 1982:251).

He goes on to provide excellent overviews of the different wares and developed well-reasoned sorting criteria for the Thom's Creek type-varieties. Unfortunately, the archaeological community was unwilling to adapt the type-variety approach and Anderson's work has largely been politely ignored. It nevertheless remains essential to fully understand the variability of the ware.[1]

In particular, Anderson highlights one of the continuing issues surrounding Thom's Creek. Do the different decorative motifs represent temporal, spatial, or socio-political distinctions? While the original work by Trinkley (1976) argued for temporal differences, Anderson (among others) has for a number of years suggested that the differences may suggest:

> the boundaries of relatively endogamous, probably tribal level social groups. At least two, and possibly three, such groups are hypothesized to exist in the Sea Island area of South Carolina, characterized by Stallings wares in the southwest and Awendaw ware in the northeast, with a possible third group between them . . . . A separate group may have occupied much of the interior of the Coastal Plain, characterized by Thom's Creek ceramics . . . group endogamy is inferred from the relatively discrete ceramic distributions. If exogamous spouse procurement and exchange occurred, greater intergradation and stylistic overlap might be expected (Anderson et al. 1979:94-95).

Although never espoused many researchers, including the senior author of this study, Trinkley did comment, after exploring the decorative diversity at Lighthouse Point Shell Ring that the "most intriguing possibility is that we are observing the remnants of different social units, reflected by differing popularity of design elements" (Trinkley 1980b:196). In spite of this tentative acceptance, temporal differences were finally evoked to explain the stylistic differences.

Another high point is the very careful analysis of a Spring Island collection by Christopher Espenshade (Espenshade et al. 1994:110-114). This collection, consisting of portions of 27 vessels, was used to produce a very detailed technological and functional cross section of the wares at this one site. His finding are of special comparative importance and will be referenced in greater detail in the analyses of the Secessionville pottery.

The work by John Cable (1992, 1993) expands on the analytic techniques emphasized by Espenshade. He notes that "variation exhibited in paste has been virtually ignored" (Cable 1993:177) and proposes a series of six different pastes for

[1] Curiously, much of Anderson's work has been at least tentatively resurrected and is incorporated in *Indian Pottery of the Carolinas: Observations from the March 1995 Ceramic Workshop at Hobcaw Barony* (Anderson et al. 1996).

Thom's Creek wares in the Edisto area ranging from fiber through fine sand to coarse sand. Regrettably, he offers very little information concerning his methodology or data on the posited pastes and the different pastes seem to grade one into the other, making distinctions on the basis of individual sherds almost impossible

It is little wonder that this approach has meet with similar resistance as Anderson's type-variety approach and has not been widely adopted. Some colleagues have commented that it seems unlikely that the attributes can be readily sorted out. In addition, Cable's efforts are hampered by the very minimal distribution of his research. In the Columbia area, for example only two copies of his publication could be found, both in the holdings of state agencies.

Perhaps the one unifying theme of these different approaches is that there are, or should be, new and different ways of looking at old data, as well as new and, hopefully, improved ways of looking at new data. This section briefly outlines one approach.

A good place to start is to understand exactly what one is looking for -- why is the pottery analysis being conducted? Based on previous research, the nature of the collection from 38CH1456, and the ability of ceramic studies, the goals are relatively clear:

- to gather chronological evidence -- where does this assemblage fit with others thought to be of similar age?

- to gather evidence for the function of the pottery -- how was the pottery used at this particular site and does this use relate to any other evidence in the recovered assemblage?

- to establish distributional control -- to better understand if this pottery is similar or identical to wares from other sites?

Related to this third topic is the need to explore the technology of the pottery since that work will help us characterize the pottery, understanding the idiosyncratic details typical of 38CH1456.

We have chosen to concentrate on what Orton et al. (1993) term fabric (what Americanists term paste) analysis, coupled with detailed surface treatment analysis (i.e., the textile fabric itself), and form (i.e., the shape of the vessel). Each of these areas has been shown by previous researchers to be of particular importance in understanding the Thom's Creek pottery. We have chosen these areas, which emphasize visual analysis, over petrological analysis and compositional (or chemical/elemental) analysis for one fundamental reason: cost. For more advanced approaches to yield meaningful data would require studies beyond the funding level of this project.

It is likely that cost is an issue which has resulted in other researchers, such as Cable or Espenshade, to shy away from this approach. We will be the first to admit that this is too bad, since it seems almost essential to begin addressing some of the issues raised by scholars such as Cable, who insist that it will be paste, not decorative motifs, which provides the key to our understanding of Thom's Creek wares.

The paste studies will concentrate on those areas found by other researchers to be most significant in the definition of Thom's Creek wares:

- Texture: based on a freshly broken section and defined as *fine*, having at most small, closely spaced irregularities, or *grainy*, defined as larger, more widely spaced irregularities ranging up to large and generally angular irregularities. This was judged using lower power (7 to 30x) magnification.

- Temper Size: based on the U.S.D.A. standard sizes for sand grains and are defined as:

very fine - up to 0.1 mm
fine - 0.1 to 0.25 mm
medium - 0.25 to 0.5 mm
coarse - 0.5 to 1.0 mm
very coarse - 1.0 to 2.0 mm
granule - 2.0 to 4.0 mm

- Temper Size, also known as "rounding": with the inclusions defined as:

angular - convex shape, sharp corners
sub-angular - convex shape, rounded-off corners
rounded: convex shape, no corners,

typically estimated using Power's Scale of Roundness (see Barraclough 1992).

- Frequency of Inclusions: using a three point scale of abundant, moderate, or sparse. These can be estimated by reference to percentage inclusion estimation charts (see Mathew et al. 1991), with 30% or more being abundant, ranges of 10 to 20% being moderate, and 5% being sparse.

- Identification of inclusions: typically quartz (clear, white, red), although occasional fiber particles are also noted.

- Core cross sections: consist of a visual observation of a freshly broken edge. There can be at least five different cross-sections for coarse tempered pottery: (1) oxidized with no core (organics may or may not have originally be present), (2) oxidized with diffuse core margins (organics originally present), (3) reduced with black or gray extending through the sherd, leaving little or no lighter colored core (organics not originally present), (4) reduced, being dark throughout with no core (organics may or may not have been present originally), (5) reduced then cooled rapidly in air leaving very sharp margins on the interior dark core (see Rye 1981:Figure 104).

Other vessel studies, such as form, function, and decorative motif examinations will concentrate on a smaller constellation of essential features:

- Interior treatment/smoothing: for the Thom's Creek wares the most significant attribute appears to be shell-tool smoothing.

- Exterior smoothing: again, the most common seems to be the use of a shell-took, such as a shell. This typically leaves parallel striations.

- Rim diameter: measured in centimeters when a reliable arc was present.

- Thickness: in order to standardize the measurement it was consistently taken between 2 and 3 cm below the rim and is expressed in mm. Clearly, much of the diversity in thickness found in the literature must be from measurements taken on body sherds, which may represent virtually any part of the vessel. The range of where the measurement could be taken to allow the maximum data from this relatively small collection.

Historic Artifacts

The analyses of historic artifacts have followed relatively common procedures used by

most other scholars. For example, ceramics have been identified (and dated) using Bartovics (1981), Price (1979), and South (1977); mean ceramic dating follows South (1977), as does traditional pattern analyses. Some modifications have been necessitated by the military nature of the site, but we have tried to follow a rational, easy to understand process of adapting South's technique.

There is a small literature of sites appropriate for comparative purposes. Of course at the general level, there are a number of studies which help document camp life (see, for example, Bentz and Kim 1993; Geier and Winter 1994; Higgins et al. 1995; Legg and Smith 1989; Legg et al 1991). Most of these, however, focus on Union camps. When the literature is explored, there seem to be fewer discussions of Confederate camps (see, for example, Browning 1995). Consequently, the Secessionville study is of exceptional importance simply as a much needed contribution to the literature of Confederate camp life.

Conservation

A small number of the historic artifacts from these investigations have required some form of conservation by Chicora Foundation prior to curation.

Brass items treated during this study were limited to those with active bronze disease. Such specimens were subjected to electrolytic reduction in a sodium carbonate solution with up to 4.5 volts for periods of up to 72 hours. Hand cleaning with soft brass brushes or fine-grade bronze wool followed the electrolysis. Afterwards the surface chlorides were removed with deionized water baths and the items were dried in two successive acetone baths. The conserved cuprous items were coated with a 20% (w/v) solution of acryloid B-72 in toluene. This is a rather concentrated solution which often leaves a glossy, and somewhat distracting coating, but it provides better protection for long-term storage than a more dilute concentration.

Only ferrous objects with sound core metal were treated for this project. These items were subjected to electrolytic reduction in a sodium carbonate solution with currents no greater than 5 volts for periods of 5 to 30 days (depending on the extent of the corrosion; typically artifacts were allowed to undergo electrolysis for at least a week past the removal of all visible corrosion). Upon removal from electrolysis the specimens were wire brushed and placed in a series of deionized water soaks to remove soluble chlorides. When the artifacts tested free of chlorides (at a level of less than 0.5 ppm or $\leq$ 10μmhos/cm), they were dewatered in acetone baths and a series of phosphoric (10% w/v) and tannic (20% w/v) acid solutions were applied. The artifacts were air dried for 24 hours under 45% RH and coated with a 10% solution of acryloid B-72 in toluene.

Prehistoric Materials

Pottery

Prehistoric pottery was found in 32 of the site's 58 proveniences. A total of 1,697 sherds were recovered, of which only 297, or 17.5%, were sherds over 1-inch in diameter and suitable for detailed analysis. Moreover, 815 sherds (including 109 large sherds) are from Feature 5, a large Thom's Creek shell steaming pit encountered in Area C (see Figures 30 and 38). The remaining 188 sherds include additional Thom's Creek specimens (61.7%), as well as Deptford (6.9%), Wilmington (1.1%), Savannah (1.1%), Irene (27.1%) (Figure 50a-c), and unidentifiable (2.1%) examples.

The vast majority of this collection (essentially everything except for the materials encountered in Feature 5) come from mixed deposits — primarily surface collections from stripped areas or fill from historic features. Consequently, this analysis will focus on the materials from the one very good Thom's Creek context found during the study — Feature 5.

Thom's Creek Pottery from Feature 5

As previously mentioned, the excavations from the east half of this feature produced 815 sherds, all of which were identified as Thom's Creek pottery. Of these, 109 or 13.4% were large

sherds (over an inch in diameter). Four different surface treatments were found in the feature — plain (98.7%), finger impressed (1.1%), dowel stamped (0.1%), and what appeared to be cord marked (0.1%).

The decorative element of the finger impressed specimens (Figure 50d-e) is consistent with that previously reported:

> The type Thom's Creek Finger Impressed is characterized by broad, generally shallow grooves which appear to be the result of impressing the fingers of one's hand in the moist clay and dragging them. This motif is more than smoothing and yet it cannot properly be called stamping (Trinkley 1983:44; see also Trinkley 1980b:260,263).

The dowel stamped, in contrast, is a motif that more appropriately should be found associated with Refuge ceramics. At Secessionville the dowel ranges from about 1 to 4 mm in diameter and was very lightly impressed in the clay (Figure 50f-g).

The cord marked specimen (Figure 50h) is of special interest since its likely that the small fragment available for study probably reveals an accidental impression of a fishing net, basket, or mat. It appears that the specimen is an example of spaced weft-twining. William Hurley explains that:

> Weft twining is produced by manipulating the strands in the horizontal elements so that they twine about each other and surround or enclose the vertical warps (Hurley 1979:111).

In the Secessionville example the warps have an S-twist are about 2.8 mm in diameter. The wefts are also S-twisted, but are about 4.1 mm in diameter. Gaps between both the warps and the wefts create the effect of a grid. Although not enough of this fabric is preserved to allow any functional interpretation, it does provide a glimpse of a technology which, because of its use of organic materials, is no longer preserved at Thom's Creek sites.

By far, the most abundant Thom's Creek pottery is the plain material. Perhaps the most intriguing aspect of this ware is the prevalence of scraping, found on 51 specimens (representing 6.3% of the collection). Shell scraping is most common (accounting for 90.2% of the scraping marks), being characterized by fine, closely spaced tooling suggestive of the edge of a bivalve (Figure 50i-k). There are a few examples of some other tool being used(Figure 50l), possibly including a finger, but these are uncommon.

Scraping is most common on the interior of sherds (accounting for 60.8% of the observed specimens, n=28),and is found on the exterior in 12 cases (23.5%). Scraping is found on both the interior and exterior of only eight sherds, accounting for 15.7% of the examples.

It has been suggested that the scraping seen on these sherds is simply a byproduct of the forming process, perhaps representing an effort to even out and compact walls of coiled pots. The most opportunistic tool for this would be a nearby shell — an item which could be used and discarded. In most cases the scraping would be obliterated by a final floating of the surface or the application of some decorative treatment. If this is the case, it does seem reasonable that scraping would be most common on the interior of vessels, which perhaps would receive less attention than the exterior.

Although some collections seem to lack shell scraping (see, for example, Espenshade et al. 1994:112), this may simply be a factor of sample bias. There seems to be no evidence that shell scraping is a special decorative type or that it is associated with only a particular decorative element or paste.

When the paste of the sherds from Feature 5 is examined there is considerable uniformity. The texture is almost uniformly fine, although the temper (or aplastic) size does range from very fine to medium. Sherds with very fine to fine temper account for 75.6% of the assemblage, while very fine to medium sand is found in an

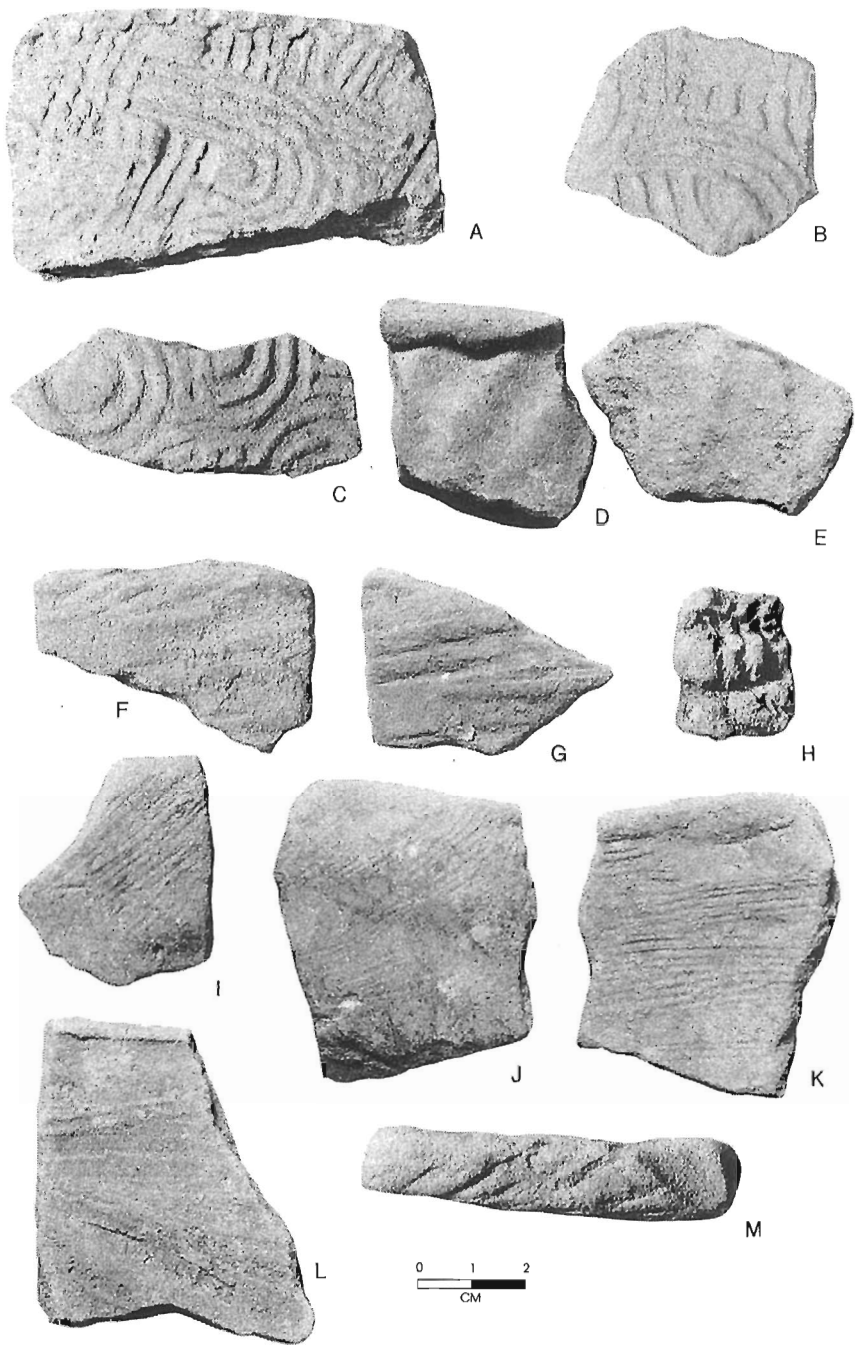


Figure 50. Pottery from the prehistoric component at Secessionville. A-C, Irene Complicated Stamped; D-E, Thom's Creek Finger Smoothed; F-G, Thom's Creek Dowel Impressed; H, cord impressions on Thom's Creek pottery; I, shell scraping on the interior of a Thom's Creek Plain sherd; J-K, shell scraping on the interior and exterior of a Thom's Creek Plain sherd; L, scraping on the interior of a Thom's Creek Plain sherd.

additional 23.3% of the pottery. The remainder of the pottery (1.1%) includes medium to coarse sand in the paste and these specimens frequently exhibit a grainy texture.

The temper is almost exclusively sub-angular in shape, although a few sherds appear to include rounded sand grains. This temper is predominately quartz, although several specimens were found with a few reddish lumps which appear to be argillaceous clots. These were probably formed during the coiling or vessel production, possibly representing clumps of partially dried clay, and are not thought to be intentional tempering. What is interesting is that relatively few of these clots were found, suggesting that the potters may have taken some considerable care in the preparation of their clay and the production of their pottery.

The quantity of temper shows considerable variability, ranging from sparse to abundant. Sparse temper (or quartz aplastics) are found in about 11.1% of the sherds. Moderate temper (or quartz aplastics) are found in about 44.4% of the collection, while 45.5% of the pottery appears to have abundant inclusions.

In the collection of 815 sherds, 42 rims were identified. The mean wall thickness for this collection is 7.5 mm (with a standard deviation of 1.2 mm and a range from 5.1 to 10.2 mm). Six different lip forms were identified in the collection, although simple rounded lips dominate the assemblage, accounting for 61.9% (see Figure 50i, j, and l). The nest most common lip form is flat, accounting for an additional 26.2% of the collection. One rim sherd (2.3% of the collection) ranges from flattened to rounded within about 3 cm, suggesting that these distinctions may be significant at only the most gross level.

Minor lip treatments include one sherd which is rounded to the outside and straight to the inside, two examples which are pointed, one specimen which exhibits a outward flange (Figure 50d). All of these different techniques have been found at sites in the past. Several specimens also exhibit dowel stamping on the rim (Figure 50m).

Looking at firing, the 109 large sherds from Feature 5 exhibit eight different cross sections. The two most common are fully oxidized (accounting for 29.3%) and oxidized on the interior and exterior with a dark central core (25.6%).

The next two most common are those which are fully reduced (accounting for 19.5%) and those revealing the exterior half of the sherd to be oxidized, while the interior half is reduced (accounting for 15.9%).

Together these four cross sections account for over 90% of the pottery in Feature 5. They also reveal an exceptional range in probable firing conditions. The cross sections of uniform color were likely produced by firing under fully oxidizing conditions. The next most common cross section, with oxidized margins and a dark core, is suggestive of incomplete firing under oxidizing conditions, probably with the vessel standing in an upright position to allow good air circulation. In these cases the firing conditions were good, but simply not long enough to completely oxidize the organic material in the clay.

The next most common cross section suggests that about a fifth of the vessels were fired under reducing conditions or else contained very large quantities of organic material. It seems more likely that the clays were relatively constant, but the firing conditions were slightly different, perhaps reflective of too much green wood or stacking on too much fuel and smothering the fire.

The final primary cross section, oxidized on the exterior and reduced on the interior likely resulted from vessels turned upside down in an oxidizing fire. In such a situation the exterior is well oxidized, but the inner margin, within the oxygen starved interior of the vessel, is reduced.

Other cross sections are relatively uncommon and likely represent very unusual circumstances. For example, one sherd was found with a dark core, bands of oxidized clay, and an interior and exterior surface which was also reduced. This sherd likely represents the results of changing atmospheric conditions. The pot probably

began in a reducing fire, resulting in the dark central band. The fire was perhaps then adjusted, or perhaps the location of the fuel relative to the vessel was changes, with the result that surface organics were removed, but the dark core was left unaffected. Finally, the fire lapsed back to a reducing stage for a short period toward the end of the firing, allowing carbon to blacked the interior and exterior surfaces, but not totally eliminate the oxidized zone.

The range in the cross sections suggests there was considerable variation in the firing of the Thom's Creek vessels in Feature 5. This may be the result of continued experimentation among the Thom's Creek potters or it may simply be an indication that uniform pottery production was not an essential goal or skill to acquire.

When the sherds are examined for additional information on the final vessels, 23 were of adequate size to allow some comments on vessel diameters and shapes. The diameters ranged from 18 to 40 cm, with a mean of 32 cm and a standard deviation of 6.5 cm. The collection is nearly evenly divided between shallow bowl forms (47.8%) and deeper, straight sided vessels (52.2%).

During the analysis a careful note was maintained on those exhibiting carbon deposits. Since the materials had been collected through either flotation or water screening, with no subsequent brushing or harsh treatment, it's likely that the results are reliable. Curiously, only eight specimens (out of the 815 sherds, or about 1%) exhibit carbon deposits and all were on the outside of the vessels (Figure 51b-c). In other words, there is no evidence of food burning on the interior of these sherds and relatively little evidence of sooting on the exterior.

In the most general of terms, the Feature 5 collection is similar to the Thom's Creek reported from Spring Island (Espenshade et al. 1994). The thickness range and mean are nearly identical and the range of aplastic inclusions (although expressed differently than the current study) also appears similar. So, too, does the range of vessel diameters. Differences, however, are found in the absence of scraping and the prevalence of sooting among the Beaufort samples.

It is considerably more difficult to compare the Feature 5 assemblage to the recent work by Cable for the Edisto area. As others have complained, it is difficult to understand the paste descriptions offered in his study. For example, Feature 5 reveals sherds with typically moderate to abundant quantities of very fine to medium sand aplastics. No fiber was found in the examinations. Would these sherds fit his "fine sand-tempered," "coarse sand-tempered," or variety (Fine Sand B) with "a fine sand matrix with moderate amounts of medium sand inclusions"? And since these different pastes are reputed to have different temporal periods, would they be found mixed in a single well defined feature? What is interesting when Feature 5 materials are compared to Cable's examination of the Thom's Creek pottery from Spanish Mount is that the mean thickness of pottery in Feature 5 is the same as that for his Fine Sand B variety ware.

In many respects the Feature 5 sample is very similar to material found at Lighthouse Point Shell Ring, also situated on James Island (Trinkley 1980b). The investigations at this site, however, did not provide the rigor of analysis as is being used by researchers today. As a consequence, paste is described as only:

> divided into three categories: a fine powdery friable paste exhibiting no inclusions, a gritty paste evidencing rounded quartz grains accounting for up to 75 percent of the sherd matrix, and a fine but contorted paste with variable quantities of an iron ore inclusion (Trinkley 1980b:200).

In retrospect, using better characterization methods, the sand in the gritty paste never accounted for more than about 25% of the paste and the iron ore inclusions were more likely clay clots. Nevertheless, we continue to see the same general range being proposed by Cable — fine sand ranging to gritty sand. At Lighthouse Point it was suggested that bout 60% of the pottery fell into the fine category, with another 38% being gritty.

Attempting to correlate the Lighthouse House Point data to that for Feature 5, it seems likely that the gritty pottery is similar to 1.1% of the Feature 5 pottery characterized as having medium to coarse sand in the paste resulting in a grainy texture. Although there are difference in the percentages, at both sites the finer pastes seem to dominate. At Lighthouse Point 57% of the plain pottery had rounded lips, compared to the 61.2% from Feature 5. In both cases the next most common was flattened, and flanged examples were rare.

The Thom's Creek collection from nearby Sol Legare Island (Trinkley 1984) is also very similar to the Feature 5 assemblage. Plain pottery dominates the collection, although small quantities of both Thom's Creek Finger Impressed and what was called Thom's Creek Simple Stamping, although it was produced with a tool described as a dowel (Trinkley 1984:24). The paste is described as "variable" containing "moderate quantities of medium sand" (Trinkley 1984:23). Rounded lips are found on about 63% of the collection, while flattened lips are found on the remaining 37.3% of the vessels — almost identical to the distribution in Feature 5. The Sol Legare work also identified at least one specimen which, "in different sections, is both rounded and flattened" (Trinkley 1984:23).

At both Lighthouse Point and the Sol Legare midden, sites within about 2 miles of Secessionville, the plain Thom's Creek pottery appears almost identical. Although each site exhibits different portions of decorative motifs, there seems to be some degree of geographical or spatial continuity, with the plain wares forming a cohesive tie between these sites.

Baked Clay Objects

Eight fragments of baked clay objects were recovered from the excavations at Secessionville. Five came from excavations in Feature 1, two were from Feature 2, and one was found on the surface. All of the recovered specimens are fragmentary (Figure 50d), although one is nearly intact, representing a compact ball of clay about 30 cm in diameter and containing small punctations (Figure 51e).

All of the specimens exhibit a highly contorted paste, consistent with the interpretation that they were hand made by squeezing lumps of clay. The fragments are all oxidized and well fired. They have a fine texture and the aplastic inclusions range from fine to medium, with most of the balls have primarily fine particles. The frequency of these inclusions ranges from sparse to abundant, but all of the observed particles were sub-angular and appear to be limited to quartz. In most respects, therefore, these balls appear to closely resemble the pottery clay and it is tempting to suggest that they were made from the same materials — no special clays were selected or prepared for these objects.

These items have been found at a number of Stallings and Thom's Creek sites (Trinkley 1980b; Williams 1968) and may occur into the Refuge and later Woodland (Anderson et al. 1982:320; Trinkley 1982). Possible functions include use as "boiling stones" or as cooking stones in a prepared pit. Both interpretations have convincing aspects — grooves and punctations found in the balls would assist in their removal from pots, but they also have been found in large numbers in several pits (which might simply be where they were left after use as boiling stones).

Research by Trinkley (1986:211-212) at Fish Haul has suggested, based on residual phosphate levels, that these objects may have been used as "roasting stones" in pits. This same conclusion is reached by Sassaman, based on the objects' posited thermal properties. He notes that, "pit roasting with backed clay objects seems much more likely" (Sassaman 1993:135). Curiously, little effort has been devoted to this issue by other archaeologists, who seem willing to accept the currently available data.

Bone Tools

Only one worked bone tool was recovered, a bone pin from Feature 5 (Figure 51f). This specimen falls into the Type II designation developed on the basis of Lighthouse Point examples (Trinkley 1980b:214). It is cylindrical with a spatulate head and measures 102.3 mm in

length. It exhibits a moderate polish along its entire length, but is not engraved.

There is evidence from Lighthouse House Point that these pins were used as weaving or net making tools, based on wear patterns. Microscopic examination of the Secessionville example failed to reveal any distinctive wear marks. It is, however, possible that the polish, itself, has resulted from wear and use.

The recovery of this bone pen in Feature 5 continues to emphasize that these tools were sufficiently common among Thom's Creek people for the items to be discarded or lost in a wide variety of contexts.

Lithics

The lithic remains at Secessionville include eight flakes, one chert core, one biface, one projectile point, and one soapstone disk fragment. These materials are from a variety of locations on the site, but none are associated with Feature 5.

The eight flakes include four siltstone, one metavolcanic, and three coastal plain chert examples. These materials were recovered from Features 1, 2 and 10, and Cut D.

The chert core, from Area B, includes remnant cortex and is a mottled white and honey color, similar to specimens from the Sweet Water Branch area of Georgia. The biface, from Area D, is of milky white quartz.

The single projectile point from the excavations, recovered in Feature 2, is the base of a Savannah River Stemmed (Coe 1964). The width is 48.8 mm and the thickness is 12.5 mm (Figure 51g). The estimated length is 110 mm. The metavolcanic point has a rounded base, similar to the Excurvate Based Variety identified by Oliver (1981:149).

The last lithic item recovered from Secessionville is a fragmentary soapstone slab with a hole (Figure 51h). The thickness of the disk at the hole is 16.8 mm and the hole diameter is about 13.5 mm.

These items have recently been explored at length by Sassaman (1993) and he points out that there is convincing evidence the slabs were used in moist cooking. Soapstone has excellent thermal shock resistance, making it an ideal material to repeatedly heat and drop in water for "stone boiling." Because of its significance in food preparation, soapstone was an important trade good throughout the region. After about 1550 B.C., however, this trade began to wane, probably because improved ceramic technology replaced the need for alternative cooking techniques. In the heart of soapstone production on the Middle Savannah drainage, indirect-heat cooking continued for another several centuries. Sassaman suggests that the reason for this cultural conservatism is that:

> soapstone exchange inhibited the adoption of direct-heat cooking with pottery because pottery was perceived as a threat to the continuum of social relations based in soapstone exchange. I suggest that prestige accrued through control over the production and distribution of soapstone, and this prestige was converted to power and influence over individuals to resist the innovation of direct-heat cooking (Sassaman 1993:229).

Sherd Hones

The last artifact type to be considered are sherd hones. Both Michie (1979:64-67) and Thomas and Larsen (1979:44-46) discuss a number of wear patterns on pottery sherd abraders. The four major types include those with rounded edge damage, faceted (i.e., flat) edge damage, flat surface abrasion, and shallow grove damage. This latter type consists of shallow groves and excludes sherd hones, frequently found at Thom's Creek sites. The hones have deep, sharp grooves.

Feature 5 at Secessionville yielded nine hones among the 815 sherds. Most exhibit a single groove up to about 4 cm. in length and from 5 to 10 mm in width (Figure 51i-k). All occur on

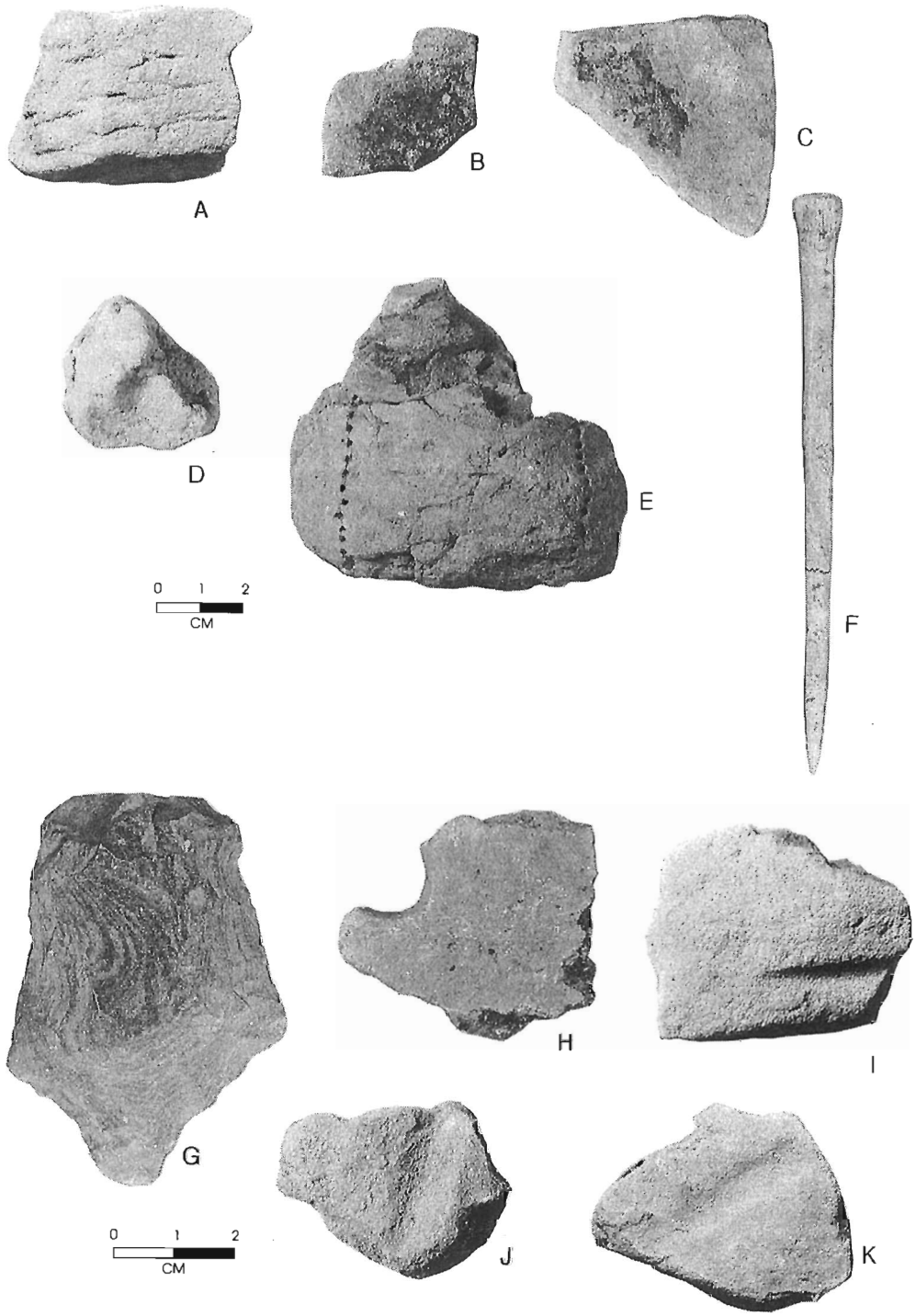


Figure 51. Thom's Creek assemblage from Secessionville. A, Thom's Creek Plain sherd with incompletely smoothed coil lines; B-C, charred material on the exterior of Thom's Creek pottery; D-E, baked clay objects; F, plain bone pin; G, Savannah River Stemmed projectile point; H, perforated soapstone disk fragment; I-K, sherd hones.

Thom's Creek Plain sherds, although this isn't unusual considering that the type accounts for 98.6% of the collection.

These grooved abraders appear to have been held stationary and had a hard, rounded object rubbed across their surfaces. The size of the grooves suggests that they were used in the production of bone pins, to smooth the roughly shaped pin during the final stages of manufacture. Hones were likely tools of convenience and opportunity — picked up from a nearby refuse pile, used for a specific purpose, and then discarded.

The radio of the worked bone to sherd hones has been calculated for several sites and ranges from about 1:2 to 1:4 at shell ring sites (see Trinkley 1980b) to 1:12 at sites such as Bass Pond (Michie 1979; Trinkley 1993:163). This preliminary work has suggested that there is a difference between these non-ring and shell ring middens. At Secessionville, when only Feature 5 is considered the ratio is 1:9, much closer to the non-ring middens than to the examined shell rings.

Future research at sites producing these tools may wish to explore the presence of bone collagen. If, as we suspect, they were used for shaping bone pins, some direct evidence of this may be found using either chemical or optical techniques.

Summary

The prehistoric artifacts from Secessionville date from the Late Archaic through the Mississippian, including Thom's Creek, Deptford, Wilmington, Savannah, and Irene wares. In addition to pottery, small quantities of lithics were also identified, primarily siltstone and coastal plain chert.

These materials, however, are generally found in mixed contexts, often associated with historic remains. It appears that most of the prehistoric materials are found in either plow zone or historic features and very few intact prehistoric contexts are present at the site. In fact, the only such context identified and examined in this research was Feature 5, a large Thom's Creek phase shellfish steaming pit.

Materials clearly associated with the Thom's Creek phase include a small ceramic assemblage very similar to those found at the nearby Lighthouse Point Shell Ring and the Sol Legare non-shell middens. Although the feature failed to produce lithics, one bone pin was recovered from this context, as well as a small quantity of sherd hones.

Although the assemblage produced no striking discoveries, its examination does help better describe the Thom's Creek pottery from this area.

In particular, the paste has been well characterized, hopefully meeting the demands of a more rigorous examination of the ware. These findings will be of special interest as information concerning the dating of this feature is presented and the ceramic assemblage is compared to efforts by researchers such as John Cable to establish a more refined understanding of Thom's Creek periods.

Historic Remains

Historic remains are not much more common at Secessionville than prehistoric materials and many of the features are relatively poor producers. Just as we focused on the prehistoric remains from one feature, we will focus on the Civil War artifacts associated with Features 8 and 10. Before doing so, however, it may be informative to briefly examine the materials found associated with the other historic features on the site, especially the various ditches.

Feature 1

Feature 1 is the fill associated with Secessionville Water Battery ditches. Historic materials from both the flat shoveling of the feature and also the excavation of two different areas includes two blue hand painted pearlware ceramics, 12 fragments of green container glass (probable soda water bottles, including the base of one blown in mold bottle with a diameter of 80 mm), one fragment of "black" glass (probably an ale or beer bottle), one 10d machine cut nail, three unidentifiable nail fragments, and four brick fragments.

None of the materials are military in nature, and while some items, such as the soda water bottles, are common on camp sites, these items are equally

common at mid-nineteenth century domestic sites. Thus, while the feature contains historic materials, there is nothing in the fill which would be suggestive of a Civil War site. This further emphasizes that the feature was not used for the disposal of camp trash — the earthworks were as carefully policed by the Confederate forces as other camp areas and all trash was deposited in areas which didn't include the ditches.

In addition to the excavations, there were also three specimens recovered from the surface of this feature through metal detecting. Two of the items were .577 cal. bullets for rifled muskets, Enfield pattern. There were likely Confederate bullets. The other item from this area was an iron ring with a diameter of just under an inch. This probably represents harness hardware.

Feature 2

Feature 2 is the narrow, linear ditch thought to represent agricultural drainage. It was likely both constructed and filled prior to the Civil War. Although the fill contained a number of prehistoric material, also recovered were six fragments of "black" glass, all with very heavy patina, and one molded light green bottle base. The "black" glass likely represents either late eighteenth or early nineteenth century material, while the green bottle glass may represent mid-nineteenth century ware.

This ditch was not a trash repository during its use, suggesting that it was frequently cleaned out. Its fill, containing primarily prehistoric remains, with only a few historic items, suggests rapid filling with immediately available materials, probably nearby plow zone or ditch bank spoil.

The metal detector survey of the ditch yielded five "hits," producing six machine cut nail fragments. No military items were identified.

Feature 6

Cataloged with Feature 6, but coming from the base of the donkey burial, is a fragment of a barrel strap, about 1-inch in width. It is likely that this item is actually associated with the battery identified as Feature 7.

Feature 7

The only items recovered from Feature 7 were those identified in the metal detector survey. Four machine cut nail fragments were recovered, as well as one brass straight pin measuring 1⅜-inches with a round head. Also found in this area was a fragmentary stamped brass strip measuring about 24 mm by 16 mm. The only military item is a fragment of iron shot measuring 80 by 60 cm with a thickness of about 17 mm. This may represent a fragment of a Federal Navy Parrott shell.[2] If so, it is the only artifact recovered from the site which may have been deposited during the June 16, 1862 battle.

Feature 8

This feature consists of a shallow saucer-like depression where trash was dumped and burned. It is likely that this feature is associated with the semi-subterranean hut used by Confederate troops stationed at Secessionville. Unlike the features encountered by Browning (1995:89), materials were burned in the Secessionville feature. In addition to a large quantity of faunal material, discussed in a following section, the feature produced an assortment of primarily kitchen and architecture related materials, itemized in Table 1.

The only ceramics identified in the feature are undecorated whitewares. The burnt earthenwares are likely also whitewares, based on crazing patterns and thickness of the fragments. Glass fragments include both container fragments, typical of condiments and other food stuffs, as well as "black" glass associated with ale or stout bottles.

[2] Brennan recounts how, in the days just before the Battle of Secessionville, Union artillery kept the peninsula under near constant bombardment. So many shells hit toward the rear of the works that some troops wondered if the Federal artillery was aiming for the footbridge (Brennan 1996:159).

The metal container fragments are of special interest, since they document the Confederate use of "processed" and preserved food items. The one can lid from Feature 8 was relatively small, measuring 1¾-inches. Rock (1984) notes that by 1863 items such as sweet corn, chicken, turkey, duck, geese, fish, and beef were routinely canned, along with condensed milk. To that list Lord (1975:65) adds oysters, peaches, and pigeons.

In the Union army these canned goods were occasionally issued as military rations and were often available from the sutlers. In contrast, it's likely that Confederate rations probably didn't include much canned food.[3] Caldwell makes a special note that, "canned beef, imported from England (!) was issued a few times" (Caldwell 1866:195). It is, however, possible that in a major port such as Charleston the food options might have been greater than in further removed operations.

Also present in this feature were a number of cut bone fragments, probably reflecting leisure-time activities. These items are discussed in greater length for Feature 10 and also in the faunal analysis.

Recovered from the general vicinity of Features 8, 9, and 10 were three items identified through metal detecting. These included a machine cut nail fragment, a brass cuff-link button measuring about 12.5 mm in diameter, and a .69 cal. shot for smoothbore muskets.

Feature 9

This feature consisted of a partially excavated semi-subterranean hut which had never been completed. In the fill of this feature the only historic item identified was a fragment of polychrome hand painted whiteware (Figure 52a).

Table 1.
Artifacts Recovered from Feature 8

	Cleaning	E½	W½
Whiteware, undecorated	2	3	
Burnt refined earthenware	2	9	5
"Black" bottle glass			3
Green container glass	1		
Clear container glass	1		1
Tin container fragments		8	
Tin container lid		1	
Machine cut nails	1	6	11
Machine cut nail fragments		32	36
UID nails	6	6	
UID iron fragments	3		1

Feature 10

This feature represents the semi-subterranean hut built by Confederate soldiers stationed at Secessionville. As previously described, the structure was encountered after stripping and was then removed by natural zones within the east and west halves. The artifacts recovered from the excavation are listed in Table 2.

Quickly scanning this table will reveal that although the quantity of materials present in the structure are not great (the total number of specimens is 449), there is considerable diversity. The materials present, largely small items that were likely lost on the floor, suggest that the structure was periodically cleaned out, with the debris likely taken to an abandoned well or privy for disposal. Alternatively, smaller quantities of trash may have been taken to one of the pits like Feature 8 and burned. The items which are present in the hut, however, begin to provide us with an interesting view of Confederate camp life at a post which saw relatively little action after June 1862.

The Kitchen Artifact Group accounts for 21.2% of the Feature 10 assemblage. Earthenwares are represented by the single fragment of polychrome hand painted whiteware — a

[3] Many argue that the subsistence department was the worst administered of all the various Confederate bureaus. Wiley observes that L.B. Northrop, the head of this division, in his "obstinate devotion to red tape, antagonized every general in the field" and "apparently took greater satisfaction in consistency than in delivering food to the army" (Wiley 1978:96).

Table 2.
Artifacts Recovered from Feature 10

		E½						W½					
	Stripping	Z 1	Z 2	Z 3	Z 4	Z 5	Cleaning	Z 1	Z 2	Z 3	Z 4	Z 5	Cleaning
Kitchen													
Whiteware, poly hand painted			1										
Ginger beer bottle frags		2	1	2				3					1
Alkaline glaze SW frags		1	1										
"Black" bottle	1												
"Black" bottle glass frags		1											
Aqua panel bottle											1		
Aqua bottle glass frags		25	1										
Iron spoon		1											
Iron container frags										8	41	4	
Architecture													
Window glass									1				
Machine cut nails	2	6	4			2		5	6			2	
Machine cut nail frags	2	30	6		2			17	3	2			3
UID nail fragments	3		17	29	15	30	1	7	32	19	6	46	3
Furniture													
Brass keeper			1										
Arms													
.577/.58 cal. bullet		1											
Wiper									1				
Clothing													
South's Type 22 shell button									1				
South's Type 23 porc. button					1								
South's Type 24 iron button		1											
Georgia regimental button									1				
plastic button frags		1											
Personal													
Automatic pencil frag		1											
Activities													
screw fragments								1					
Wire fragments		4											
UID iron frags		1						1	1				
soapstone fragments		11	4						1				
lead tube fragments		20											

fragmentary spout from a pitcher. Stonewares are more common, being represented by both alkaline glazed stonewares — probably fragments from a single storage container with a basal diameter of 6-inches — and ginger beer bottles — probably only two, perhaps three different bottles. The latter items are ubiquitous at military sites in South Carolina and probably contained ale.

Ale is a dense, bitter beer with an undecomposed sugar and alcohol content sufficient to preserve the beverage for fairly long periods (Switzer 1974:9). Ceramic bottles were not commonly produced in the United States and Kendrick (1971:69) suggests that these bottles were probably brought from England. The examples at Secessionville all lack shoulders and are cream colored with a brown slip on the upper half of the bottle.

The one intact "black" glass bottle is actually dark, olive green glass which appears black in reflected light (Figure 52b). The bottle is 8-inches in height and has a basal diameter of 3-inches. It is an example of Ricketts "2-piece mold" and probably held ale or stout (Switzer 1974). The "black" bottle fragments may represent ale or possibly wine bottles.

A single aqua panel bottle was recovered intact from the structure (Figure 52c). It measures 4-inches in height and the base is 1¼ by ⅝-inches. The side panel is molded "H S & C." although we have been unable to identify any information on the company.

Typically these panel bottles contained "patent medicines." While these concoctions frequently contained a high percentage of alcohol, Wilson notes that it would be a mistake to assume these preparations were primarily consumed for their alcohol. He notes that nineteenth century living conditions (especially during war) were such that there were a "plethora of fevers and aches" to which proprietary medicines were routinely applied (Wilson 1981:39).

Also present were a small quantity of aqua glass fragments which mended to reveal a cathedral style panel bottle about 9-inches tall and about 3-inches square (Figure 52d). The bottle was blown in a mold with a hand applied lip. This style of bottle is illustrated by Wilson (1981:Figure 323), who identifies it as a pickle bottle in a gothic or "cathedral" style.

Although we can't assume that the "black" glass, aqua glass, and ginger beer bottles all contained alcohol when brought into the hut (they could have been reused as containers for any type of liquid), curiously absent are clearly non-alcoholic soda and mineral water bottles. This suggests that the soldiers at Secessionville were acquiring at least small quantities of alcoholic beverages. Wiley observes that among Confederate troops:

> drunkenness continued to an alarming extent throughout the war. Prohibitive orders were issued periodically from the capital and from headquarters of the various armies, but these lost their effectiveness in many instances because of the poor example of lieutenants, captains, colonels, and even generals. A Southern editor changed that "a large number of the officers of our Southern Army are both profane and hard drinkers, where they are not drunkards" (Wiley 1978:41).

And Confederate General Braxton Bragg exclaimed, "we have lost more valuable lives at the hands of the whiskey sellers than by the balls of our enemies" (quoted in Robertson 1984:58). It's likely that Secessionville, in such close proximity to Charleston, saw a fair amount of alcohol pass through camp.

The iron spoon measures 5⅝-inches in length and was of ordinary quality. One of the veterans in Bernard explained that:

> Each mess purchased a mess chest, Ours was of oak, large and commodious, having several trays.

> We had in it a dozen knives and forks, two or three butcher knives, a dozen large and a dozen small spoons, several kitchen spoons . . . . (Bernard 1892:6).

It is likely that the spoon from Feature 10 originally came from such a mess kit, since Wiley observes that Confederate troops "typically prepare and consume their food in messes of from four to eight men" (Wiley 1978:106).

The architectural remains in Feature 10 account for 67.0% of the total assemblage, with all but one of the specimens representing nails or nail fragments. Architectural remains are the single largest category of materials present from the hut, although not all of these remains came from the hut itself.

Many of these nails (fully a third) were found in the vicinity of the hearth and were probably deposited as a result of burning wood from torn down buildings. Billings (1993: 87 [1887]) notes that often camped armies would burn hundreds of cords of wood. J.F.J. Caldwell in his *History of the Brigade of South Carolinians* explains:

> we could get wood with only the greatest difficulty. Long before the winter passed, we had cut every tree between the picket line and the breastworks, and we had finally to haul wood from a considerable distance in rear of the army. . . . We suffered for fire-wood. The growth about the camp, never heavy, was soon consumed by the troops; and for the last two months of our stay we were obliged to carry logs on our shoulders for the distance of a mile or more, in order to have any fire at all. What we did get was most generally green pine or swamp wood (Caldwell 1866:195-196).

Considering the constrained size of the Secessionville peninsula and the number of troops stationed there throughout the war, it is likely that the immediate area was fairly denuded after several years. Scrap lumber may have been a easy source of fuel.

Table 3.
Machine Cut Nails from Feature 10 by Size and Function

Pennyweight	SAE	Number
Small timber, shingles		
4d	1¼	1
5d	1½	2
Sheathing, siding		
6d	2	6
7d	2¼	8
8d	2½	1
Framing		
9d	2¾	2
12d	3¼	4
Heavy framing		
16d	3½	2
20d	4	1

It is useful to compare the measurable nails recovered from all proveniences of Feature 10 with those from only the hearth area. While the hearth produced about a third of the fragmentary nails, it contained only 15% of the measurable nails. Although inconclusive, this suggests that the intact nails were probably associated with the hut itself, rather than with any scrap wood burned in the fireplace.

The intact nails represent sizes from 4d to 20d, with a fairly clear unimodal distribution. The most common nails, in the 6d to 7d size range, are typically associated with sheathing or siding. This suggests that the hut was rather simply constructed with fairly little need for framing or heavy framing nail construction joints.

The Furniture Artifact Group, containing a single item, accounts for 0.2% of the assemblage. The item is a brass and ferrous keeper, such as might be used on a small chest (Figure 52e).

Arms related items account for 0.5% of the assemblage and include a .577/.58 cal. Minié ball for a rifled musket. The item has been impacted and may be either Union or Confederate. The other item is a fragmentary wiper, which was a tool used to clean the bore of the gun. Coates and Thomas explain that:

> it was attached to the threaded end of the ramrod. The two pointed prongs held a piece of cloth that "wiped" the bore as the ramrod was moved in and out of the barrel. In an emergency, he wiper was often used as a ball-screw [to remove a bullet from the bore when the charge failed to ignite] (Coates and Thomas 1990:69).

Clothing related artifacts account for 1.1% of the Feature 10 assemblage and include five buttons or button fragments. Of special interest is the Georgia regimental button which Albert (1969:133) identifies as his Type GA 1 (Figure 52f).

A number of Georgia regiments were stationed for various periods at Secessionville, including the Georgia 47th Infantry and the Georgia 51st Infantry. In addition, a number of Georgians were in Charleston area, often serving on harbor duty. Included are the Georgia 12th Heavy Artillery Battalion, the Georgia Chatham Artillery Battery, the Georgia 2nd Cavalry Battalion, the Georgia 1st Infantry, the Georgia 6th Infantry, the Georgia 18th Infantry Battalion, the Georgia 19th Infantry, the Georgia 23rd Infantry, the Georgia 27th Infantry, the Georgia 28th Infantry, the Georgia 32nd Infantry, and the Georgia 54th Infantry (see Sifakis 1995).

While it isn't possible to attach this button to a specific regiment, it is clear that at least some of these troops were at Secessionville and probably constructed the hut recognized as Feature 10. This may help account for the strong similarities between the Secessionville structure and those found in the Petersburg area which were used by South Carolinians and North Carolinians (Browning 1995:108). What isn't known is if the hut continued to be used by other regiments after the Georgians left.

Personal items are scarce, accounting for only 0.2% of the total assemblage. The single recovered item is a fragment of a sterling silver automatic pencil the barrel of which is engraved with a floral motif (Figure 52g). These devices were first manufactured in the late 1820s or early 1830s and were often highly decorated (such as the item found in Feature 10). They were intended to help protect the soft graphite, although many were so elaborate that they were almost jewelry items (Whalley 1975:118-120). This item suggests that its owner was not literate, but also wealthy enough to afford what would have been considered a very fine writing implement.

The Activities Group include 44 items, accounting for 9.8% of the total assemblage. These materials include miscellaneous hardware items, such as a screw and small quantity of wire fragments. Also present, and of special interest, are a series of soapstone fragments. Many of the items mend, revealing an item which has been worked with a knife. Although this specimen may have began its life as a fragment of a soapstone disk or perhaps even a vessel, it was apparently used by a soldier living in the hut for carving. While these items don't appear to have served any function, they reveal the boredom of camp life and demonstrate how any item could be adapted to help pass the time.

Also present in this collection are a series of lead fragments which mend to form half of a tube about 4-inches in length. Somewhat similar to lead caning for windows, no function has been determined for the specimens.

Not tabulated in the artifact pattern are a large number of worked bone fragments (Figure 52h). Many of these represent triangles cut from the ribs of cattle. The outline appears to have been sawn or cut in the bone, although sometimes this process only scored the bone, allowing it to be broken from its matrix. A few are cut from long bones, creating what might be called rings.. Virtually all appear to be polished to one degree

or another. These items are found both burned and also not burned.

Another type of worked bone, found in small quantities, are bone button blanks (Figure 52i). These are mentioned in several Revolutionary War contexts (see Calver and Bolton 1950:53 and South 1974:193-195), where the production seems to been something like a "cottage industry" conducted by the soldiers during their off-duty time.

Similar bone button blanks, partially completed buttons, and augers for cutting the bone disks, do not seem to be common at Civil War sites (or at least have not been reported in the literature). In spite of this Luscomb notes that these bone buttons continued to be made into the nineteenth century. She notes that:

> That used for buttons usually came from cattle. It was boiled, cleaned, and cut into lengthwise slabs from which disks were cut in varying sizes. Many bone buttons were strictly utilitarian, such as underwear and trouser buttons (Luscomb 1967:25)

The presence of these blanks at Secessionville suggests that the Confederate troops, at least one or more of those living in this hut, were engaged in making buttons. Whether they were for personal use, sale to colleagues, or for military use, isn't known.

Post Holes

Of the nine post holes identified in Area B (where Features 8, 9, and 10 were found), only two produced materials. Post hole 1 produced four fragments of alkaline glazed stoneware, while post hole 6 yielded a machine cut nail fragment.

About Camp Life

In general the historic remains at Secessionville are sparse. In some cases we learn more from what isn't present than from what is. For example, the absence of trash in the ditches described as Feature 1 tells us that the Confederate military policed Secessionville as well or better than Union forces at sites on Hilton Head (Legg et al. 1991) or Folly Island (Legg and Smith 1989). While one would think that these deep ditches facing the Secessionville Creek marsh would make perfect repositories for the small trash that certainly accumulated at the camp, they were very clean.

Our best information on camp life comes from Features 8, 9, and 10. From these we find evidence that camp life was boring and monotonous. the occupants of the hut spent considerable time craving soapstone and, in particular, carving animal bone. There seems to have been little purpose in the worked bone, unless they were intended to be game pieces[4], other than to pass the time.

This, of course, is a theme which runs through both Union and Confederate accounts. Camps offered relatively few diversions. Wiley (1978:170) comments that "handicrafts," including simple whittling, was a common activity. A number of authors, including Wiley (1978) explore the frequent use and abuse of alcohol at camps, suggesting that we might include its use in the category of boredom. The features at Secessionville also reveal that alcohol, in one form or another, was at least present at Secessionville, if not actually common.

Curiously, the archaeological evidence for boredom is rather mixed. Worked bone, whittled soapstone and alcohol containers are fairly common at Secessionville, while Legg and Smith (1989:132) mention cut bottle glass, whittled bullets, and alcohol consumption. Higgins et al. (191995:71) also mention the discovery of intentionally modified animal bone at a Union camp. Other authors fail to mention much evidence of such activities. No mention of such

[4] This seems unlikely as Wiley observes that chess was not common and even checkers were played only "to a limited extent" (Wiley 1978:161). Apparently more to the Confederate taste were various card games, usually involving gambling.

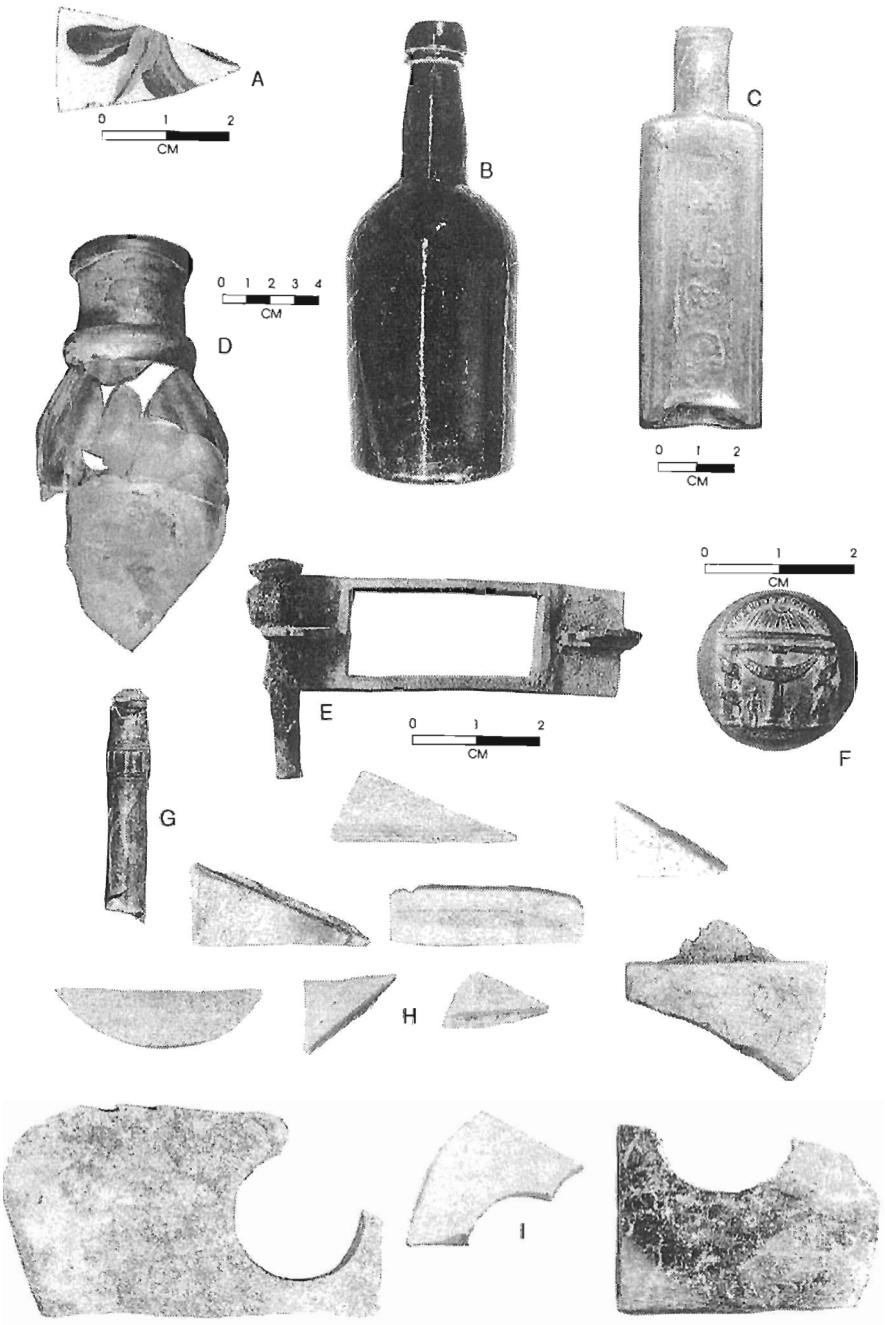


Figure 52. Historic artifacts from the Civil War assemblage at Secessionville. A, Whiteware, polychrome hand painted; B, "black" glass ale or stout bottle; C, aqua panel bottle; D, cathedral-style pickle bottle; E, brass and iron keeper from a furniture item; F, Georgia regimental button; H, silver mechanical pencil fragment; I, cut and worked bone fragments; J, bone button blanks.

activities is made by Bentz and Kim (1993) from the Union camp at Sevierville Hill outside of Knoxville or by McBride (1994) from the Union Camp Nelson. And from a Confederate context, Browning (1995) also fails to mention worked bone or other evidence of idle activities.

Of the few comparative studies perhaps the most appropriate is that provided by Browning, since it also recounts life in semi-subterranean huts by Confederate troops. There are, in fact, a number of interesting (if not startling) similarities. For example, Browning notes that nails are the most common artifact, ranging in size from about 6d to 10d in Hut 1 and from 6d to 12d in Hut 2. Although Secessionville presents a broader range of nail sizes, there does seem to be a consistent cluster in the mid-range.

Ceramics are uncommon in the Petersburg assemblage — no whitewares were recovered and only a few fragments of alkaline glazed stonewares were present (Browning 1995:103). In a similar fashion whiteware is uncommon at Secessionville and alkaline glazed stonewares, probably from the Edgefield area of South Carolina were being used for storage. More common in the Petersburg kitchen assemblage were "'black' glass beer bottles" and Browning even noted the presence of a cathedral pickle jar — paralleling the findings at Secessionville.

Ceramics may be especially interesting at military sites — there is certainly considerable diversity of findings. For example, ceramics were also sparse at Folly Island (Legg and Smith 1989:132) and at Gloucester Point (Higgins et al. 1995:70), both Union camps. In contrast, McBride (1994:140) found them to be very common at Fort Nelson in Central Kentucky, although he did seem to note some differences, finding them much more common in the Headquarters assemblage (McBride 1994:142). Perhaps additional research will reveal the use of ceramics to not only be associated with the proximity to civilian centers and the length of the encampment, but also to the force (Confederate or Union) and rank (officer or enlisted).

In spite of the similarities between the two Confederate assemblages, the artifact pattern derived from Browning's catalog sheets, with Kitchen Group Artifacts accounting for about 51% of his Hut 1 assemblage and Architecture Group Artifacts accounting for about 38%, shows little similarity to that from Feature 10 at Secessionville (where kitchen items account for 21% of the collection and architectural remains account for 67%).

Browning (1995:102) also notes that what isn't present is also interesting and specifically notes that no musical instruments were found and only two tobacco related items were recovered. He stops short of suggesting a reason, noting that, "Beyond the statement that they are barely present, it is inappropriate to read too much significance into the lack" (Browning 1995:103). Perhaps adding some degree of additional weight to his findings, both artifact types are absent at Secessionville.

Many authors focus on the unpleasantness of military life as revealed by their assemblages. Legg and Smith, for example, comment that the Folly Island artifacts suggest a "very isolated, Spartan life, filled with hard labor, boredom, tension, and fear" (Legg and Smith 1989:131). Of course, we hardly need archaeological excavations to conclude this.

What may be more interesting is what sites like Secessionville may be able to tell us about the supply of Confederate troops. The presence of tin cans suggests that some tinned food, probably coming into the Confederacy on blockade runners, was making its way to troops. It does, however, seem more likely that the tins were being purchased privately (either by the soldiers or by their families) than that they were being provided by the military. One of the more curious artifacts found in the assemblage — bone button blanks — suggests that at least some very simple, and essential, supplies were hard to come by.

Of everything that has been written regarding the artifact assemblages from Civil War camps, perhaps the most revealing, and most insightful is that by McBride:

> A larger sample of Union and Confederate encampment sites from different contexts, including front-line and rear-line sites and short-term and long-term sites, is needed to understand and interpret artifact and feature patterns on individual sites more fully (McBride 1994:156).

In spite of the great interest in Civil War sites, this continues to be the case. Hopefully, the data from Secessionville makes a small contribution.

DATING THE SITE

The Thom's Creek Feature

Feature 5, representing a shellfish steaming pit associated with the Thom's Creek occupation at Secessionville was the best, and most intact, feature identified in the prehistoric assemblage. As previously discussed, this feature was dominated by Thom's Creek Plain pottery (98.7% of the assemblage), with *very* minor quantities of Thom's Creek Finger Impressed (1.1% of the assemblage) and Thom's Creek Dowel Stamped (0.1% of the assemblage) pottery.

A date was obtained from Zone 1 of the east half of this feature by collecting hickory nutshell from the water screening. Submitted to Beta Analytic, Inc. the resulting date is 3940 ± 120 B.P. (Beta-96188; wood charcoal; $\delta^{13}C$= -26‰). The resulting calibrated date is cal B.C. 2580 to 2270 (Figure 53).

Taken from a sealed feature, submitted within days of being collected, using only one type of wood charcoal, and processed using extended counting time, we have a very high level of confidence for this date.[1] If accepted, it places the site in the early range of Thom's Creek material along the South Carolina-Georgia coast. In fact, it will represent the fourth oldest date for Thom's Creek pottery.

Older are those from Rae's Creek (Beta-35189, 4370 ± 110 B.P., associated with Stallings and Thom's Creek), Spanish Mount (UGA-584, 4170 ± 350 B.P., associated only with Thom's Creek), and Rae's Creek (Beta-35191, 4100 ± 110 B.P., associated with Stallings and Thom's Creek). At least some researchers are skeptical of the Spanish Mount date (see, for example, Cable 1993:176) and the other two dates represent a mix of fiber and sand tempered wares. Consequently, the Secessionville date is the earliest for solely Thom's Creek pottery found in a secure context.

More interesting, we believe, than the site's claim to an especially early date, is that this is the second date for Thom's Creek Finger Smoothed wares. The only previous date was 2930 ± 160 B.P., obtained from the Venning Creek midden (UGA-3116, Trinkley 1980b:287). Taken together, these dates rather effectively disprove the assertion that the finger smoothing motif was the "last gasp" of the Thom's Creek potter. Instead, this motif (if it may actually be called one) appears rather early, and always as a minority ware.

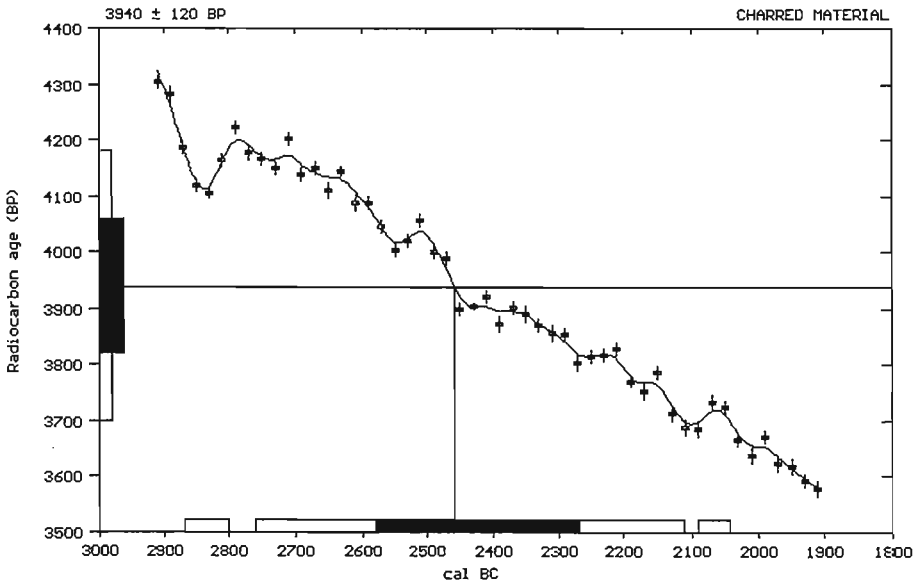
Beyond that, this date also strongly suggests that Thom's Creek pottery was well established by 3900 B.P. and was being used in contexts which do not include fiber tempered pottery. While the assemblage from Secessionville is similar to Sassaman's Group I fiber tempered wares in some ways (plain pottery dominates and multiple designs are absent), the differences (the near absence of both flanged lips and simple stamping and the complete absence of reed punctation) are likely more important. In other words, there seems to be little potential to expand Sassaman's(1993:106)well-developedparadigmatic classification for fiber tempered pottery to the Thom's Creek Series.

Moreover, the Secessionville collection from Feature 5 seems to defy placement in the temporal ordering suggested by Cable (1993:174-175). While the current data should certainly not be interpreted as adequate to refute his "new and perhaps revolutionary model of Late Archaic occupation sequencing" (Cable 1993:191), they should focus additional caution on the subject. The

[1] Even if this feature has been used several times, as suggested by its stratigraphy, resulting in the mixing of charcoal from the various use episodes, this mixing would only have served to average the different periods of use, perhaps helping to account for the one sigma range of 120 years.

(Variables:C13/C12=-26:lab mult.=1)

Laboratory Number:	Beta-96188
Conventional radiocarbon age:	**3940 ± 120 BP**
Calibrated results: (2 sigma, 95% probability)	**cal BC 2870 to 2800 and cal BC 2760 to 2110 and cal BC 2090 to 2040**
Intercept data:	
Intercept of radiocarbon age with calibration curve:	cal BC 2460
1 sigma calibrated results: (68% probability)	cal BC 2580 to 2270



References:

Pretoria Calibration Curve for Short Lived Samples
Vogel, J. C., Fuls, A., Visser, E. and Becker, B., 1993, Radiocarbon 35(1), p73-86
A Simplified Approach to Calibrating C14 Dates
Talma, A. S. and Vogel, J. C., 1993, Radiocarbon 35(2), p317-322
Calibration - 1993
Stuiver, M., Long, A., Kra, R. S. and Devine, J. M., 1993, Radiocarbon 35(1)

Figure 53. Calibration of the Feature 5 radiocarbon age to calendar years (courtesy Beta Analytic Radiocarbon Dating Laboratory, Miami, Florida)

paste (coupled with the thickness), it seems, would tend toward the late end of Cable's continuum, while the dominance of plain pottery (and this radiocarbon date) tends toward the early end. In fact, the data from Secessionville may strongly suggest that researchers go back to the original suggestions by Anderson et al. (1979:94-95) and Trinkley (1980b:196) and examine more carefully the possibility that design elements are associated with different ethnic or social units rather than being temporal indicators.

The Civil War Hut

Radiocarbon dating was inappropriate to date Feature 10 because of the feature's very recent age. A new technique, however, has been developed which is claimed to have applicability to more recent sites and features.

For several years researchers have been examining the charcoal and soil humic material found in features and buried soil profiles throughout the eastern United States. The studies suggest that the recycling of carbon and organic matter follow a linear progression through time. In other words, charcoal and soil humic material appear to be recycled at a slow, but measurable rate.

The effect of this degradation of charcoal and soil humic material is measured by the ratio of the total carbon tot he readily oxidizable carbon in the sample. The ratio, called the Oxidizable Carbon Ratio or OCR, also gives the technique its name. To determine an age for a sample, a systems formula was designed to account for the influences of oxygen, moisture, temperature, and pH of the soil. Residual influences are included through a statistically derived constant.

The sample used for this dating technique is a small quantity of soil. The smaller the sample and more tightly constrained the sample within the vertical and horizontal site plain, the more accurate the date. A variety of tests seem to suggest that the standard error for the OCR technique is 3% (see Frink 1992, 1994, and 1995 for additional details).

It is certainly fair to note that the technique is not yet widely accepted, although the major scholarly criticism appears to be that it is new and hasn't been widely examined. In addition, there seem to be relatively few blind tests on which skeptics can evaluate the technique's performance. From a logistically perspective the major problem is that soil samples are best collected with this dating technique in mind, providing the appropriately constrained sampling area.

A series of four samples from Feature 10 were submitted for OCR dating. From the eastern half of the hut samples were submitted from Zones 2 and 4, while from the western half samples were submitted from Zones 2 and 3. The OCR dates are shown in Table 4.

The older dates, of 77 years B.P. would provide a date of 1873 — about a decade too recent based on the historical evidence. Clearly the date of 44 years B.P. or 1906 is not remotely appropriate for this feature (since there is no evidence of intrusion, rodent holes, or other contaminates. Even when all four figures are average together the resulting date, of 1884 is still not especially appropriate, being about two decades too recent.

Table 4.
OCR Dates for the Civil War Hut, Feature 10

Sample	Provenience	Calculated Date
ACT-2189	E½, Z. 4	72 BP ± 2
ACT-2190	E½, Z. 2	44 BP ± 1
ACT-2191	W½, Z. 3	70 BP ± 2
ACT-2192	W½, Z. 2	77 BP ± 1

Nevertheless, it is very important that we admit that the soil samples collected for these dates came from 5 gallon buckets of soil and were not collected in as tight a matrix as the system protocol requires. Consequently, the inaccuracy may be the result of collection techniques.

It seems inappropriate to dismiss this approach based on this test. In fact, the date within

a decade of the feature's age is rather impressive and suggests that additional work is appropriate.

At the present time, however, better dating of Feature 10 is achieved through historical documentation and the recovered artifacts. It is still not possible to determine when during the period from 1861 through 1864 the hut was actually used.

PHYTOLITH ANALYSES AT SECESSIONVILLE

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Introduction

Phytolith analysis was conducted on four soil samples collected at the Secessionville Site, 38CH1456, South Carolina. The samples were taken from a prehistoric Thom's Creek Phase (ca. 2300 BC) feature thought to be cooking or shellfish steaming pit and a Civil War period semi-subterranean hut. Specifically, phytolith recovery was used to address the issue of the use of plant material, e.g. leaves, grasses, as part of the cooking/steaming process in the Thom's Creek pit feature and, as residues of the construction materials and/or floor litter/food refuse during the occupation of the Civil War period structure.

Methods

Analyses conducted included phytolith extraction from soil samples; microscopic scanning of extracted phytolith assemblages for identification, recording and image storage on videotape; and compilation and interpretation of data. Videotape images were made by mounting a TV camera in the photo ocular to record significant, characteristic and/or interesting phytoliths. This also provides a convenient record to review in conjunction with development of a phytolith reference database for the region in the future.

Phase 1: Phytolith Extraction from the Soil

Conventional soil extraction procedures for all soil samples were initially used with modifications employed as required by the nature of specific samples. Standard procedures generally followed those found in Rovner (1971, 1983). The soil was initially "cleaned" to promote disaggregation of all particles — inorganic, organic and biolithic - as follows:

1. About 20ml volume of soil placed into clean beaker.

2. distilled water added, stirred, and either placed in a centrifuge at moderate speed for 20 to 30 minutes, or let settle for a minimum of 4 hours. Piperno (1988) suggests one hour is sufficient for tropical soils. The additional time provided here was an arbitrary caution procedure given possible factors of soil differences. Only small to very small amounts of macrobotanical fragments, fibers or particles were observed.

3. The aliquot with suspended fine particles and very light fraction material, e.g. floating rootlets, fibers, charcoal, etc., was decanted and discarded.

4. To oxidize and eliminate (sticky) organic residues, the soil was treated with 5.25% sodium hypochlorite solution (i.e. commercial household bleach). This precludes the use of concentrated hydrogen peroxide or nitric acid solutions which are more difficult to handle and far less environmentally benign.

5. Following oxidation, soil samples were rinsed 2-3 times with distilled water, stirred,

settled or centrifuged and decanted.

6. Dilute HCL (20 ml) was added to each sample to remove carbonates. Samples were allowed to settle, the aliquot decanted and discarded.

7. Each sample was rinsed 3 times with distilled water.

8. The soil was re-suspended in distilled water to which a deflocculant (i.e. Calgon) was added to suspend very fine silt particles. After centrifuging or settling overnight, the aliquots with suspended fine particles were decanted and discarded. Step 8 was repeated as necessary until aliquot was clean.

9. Soil was placed in a drying oven set at 90° C until dry.

10. Heavy liquid for flotation separation was prepared by dissolving zinc bromide powder in slightly acidified distilled water until a specific gravity between 2.3 and 2.4 was achieved. This was easily determined using a commercially-made calibrated hydrometer.

11. A 5ml, approximately, volume of dry soil was added to heavy liquid in a bent clear tygon tube which was squeezed gently to "wet" the soil. The bent tube was inserted into a (lightly greased) centrifuge shell and centrifuged at moderate speed for 30 minutes to float phytoliths.

12. After centrifugation, clamps were placed on both vertical arms of the bent tube just below the flotant surface in the tube. A wash bottle stream of water was used to rinse the flotant from the tygon tube into a 50 ml centrifuge tube.

13. Distilled water was added to the centrifuge tube to about 40 ml level. Centrifugation precipitated the phytoliths. The aliquot was decanted. This step was then repeated.

14. Phytoliths were then decanted to a shell vial and placed in a drying oven to remove excess liquid.

Phase 2: Microscope Scanning

The phytolith extracts were quick-mounted in distilled water and viewed in an optical microscope at 400x. Mounts were prepared by pressing a slide over the mouth of an open vial which was then inverted. The extract was allowed to settle on the slide and the reverted to it's original orientation, the slide quickly removed retaining a drop of fluid with a portion of extract included.

Whole slides were scanned at 100x to find clusters of particles which were then scanned at 400x to determine the character of individual particles. Particles of interest, especially those of morphological and taxonomic significance, were recorded in videotape using a high-resolution CCD television mini-camera mounted on the microscope. While Canada Balsam is used to mask inorganic silica while viewing, past experience indicated that this also has the negative effect of decreasing the contrast between particle and background. For purposes of contrast with background, distilled water mounts appeared superior.

Representative and especially taxonomically significant phytoliths and other biosilica bodies (e.g. diatoms and sponge spicules) in each slide mount were noted and recorded on videotape. This makes assemblages of particles used in the current study available for re-study

when local taxonomic reference work is conducted.

Phase 3: Compilation and Interpretation of Data

No phytolith reference database developed from phytolith extracts of living plants in the site's region was available or specifically prepared for this study. This severely limits taxonomic specificity in interpreting phytoliths present and, predictably, leaves a substantial number or morphologically distinctive (and sometimes frequent) phytolith types in the category of "unknown". However, recent publications, especially Rapp and Mulholland (1992), provide substantial verification for both general and specific taxonomic assignments of phytoliths.

In the absence of a regional phytolith database, published typological information was employed for classification of phytolith types. For grasses, the three tribe classification of Twist et al. (1996) into festucoid (wet, cool habitat), panicoid (wet, warm habitat), and chloridoid (dry, warm habitat) phytolith classes is the conventional standard, along with elaborations by Brown (1984).

For angiosperms (e.g., deciduous tress and shrubs) and conifers, Rovner (1971), Geis (1973), Klein and Geis (1978) provide some guidance for eastern woodland flora content. The most elaborate work to date in these taxa has been done by Japanese experts (Kondo 1974, 1976, 1977; Kondo and Peason 1981; Kondo and Sase 1986; Kondo et al. 1987) primarily on Asian flora. However, considerable similarity of illustrated phytolith forms at the genus level between American and Japanese plants provide confident guidance in the taxonomic assignment of distinctive phytoliths in these categories.

Most recently studies by Cummings (1992) and Bozarth (1992) have confirmed and refined the typology and taxonomy of phytoliths in dicotyledonous taxa. Distinctive material can now be attributed specifically to Asteraceae (Compositae) — a dicotyledonous group well represented and ethnobotanically significant in the eastern United States. While soil phytolith studies in the general region of the mid-Appalachians and Atlantic seaboard are few in number, general comparisons can be drawn from studies at such eastern historic period sites as Monticello, VA (Rovner, 1988b); Hampton, VA (Rovner, 1989); Harpers Ferry, WV (Rovner 1994); Jordan Site (31NH256), NC (Rovner, 1984); and 31MK683, NC (Rovner 1995). Moreover, the number of sites tested in this region is increasing and recent reports (Rovner, 1997, Owens and Rovner 1997) provided a basis for general patterns of land use and botanical history for the seventeenth through nineteenth centuries of the historic period, in conjunction with archaeological history.

Results

The Thom's Creek Steaming Pit

There is no significant evidence in the soil samples provided indicating the use of silica-producing flora in the cooking/steaming process evident in the Thom's Creek pit feature. Most significantly, this may suggest that grasses were not used to separate the coals from the shellfish being steamed.

Civil War Structure

The Zone 4 sample from the Civil War hut, recovered from the area in front of the hearth, exhibited a moderately dense, well preserved phytolith assemblage. Non-grass particles were present, but did not show any readily observed dominance over grass particles. Even in light of the generally spare nature of the microscopic slide mounts (both a first and second mount for confirmation), non-grass, e.g. trees, were not strongly represented. For example, only one palmetto sphere was observed. A total of 13 aquatic bioliths - 11 sponge spicules and two diatoms - reflect the presence of open water in the vicinity, likely the nearby Secessionville Creek only a few hundred yards to the south.

The grass phytolith assemblage was unusual inasmuch as diagnostic short cells were more abundant than the "general grass" forms such as elongates, bulliforms (water storage cells), and trichomes. Comparative short cells frequencies indicate a clear dominance of Panicoid forms over

Festucoid and Chloridoid forms combined in an otherwise low frequency population; e.g., 17 Panicoid, 5 Festucoid and 4 Chloridoid.

Phytolith assemblages dominated by Chloridoid short cells followed by Festucoids with Panicoids having the lowest frequency was the "typical" grass profile encountered by in a detailed study of recent phytolith assemblages on Skidaway Island, GA. (Owens and Rovner, 1997) It is interesting that chloridoids, probably *Spartina* in this case, prefer warm, dry conditions, while festucoids dominate in cool, wet conditions. Thus, at Skidaway Island the extremes were well represented while the intermediate panicoids were a clear minority. It is likely that strong seasonality is represented here, i.e., the festucoids representing cool, wet season grasses (winter, spring) while chloridoids dominate during hot, dry summer and fall seasons.

Clearly the assemblages from the Civil War hut do not follow the Skidaway Island pattern. There are several possible conditions providing a panicoid dominance:

1. The presence of a domesticate grass can be ruled out tentatively because most of the panicoid short cells were simple bilobates — quite distinct from the more varied, complex lobates along with cross-bodies found in maize.

2. Panicoid dominance represents a distinct climatic context compared to the Skidaway Island conditions. For example, strong seasonality may have moderated favoring panicoid grasses as the expense of festucoid and chloridoid grasses. This must be confirmed in the context of other paleoecological data.

3. Panicoid dominance represents a local, microenvironmental condition favoring panicoid grass. For example, a nearby localized source of ground water would favor panicoid grass during a summer dry season which would normally favor chloridoid grasses. This would not necessarily be reflected in other paleoecological data systems, such as pollen, and would be difficult to confirm.

4. Panicoid dominance represents a behavioral selection of (mostly) panicoid grasses as part of the domestic activities in the hut. This could be confirmed by analysis of soil samples of same age from other contexts, which might, for example, match the typical Skidaway Island phytolith profile. Such a situation suggest cultural bias for the presence of mostly panicoid grass phytoliths in the hut.

Other samples from the hut, specifically those from the general floor area (Zone 2 west and east) and the sandy matrix over the hearth (Zone 3), were virtually identical in the general impoverishment of the phytolith assemblages. Such a condition is typical of subsoil extracts, i.e., from middle to low B horizons, C horizons, etc. In the context of a semi-subterranean house, the excavated depth of 3 feet would be appropriate for an impoverished phytolith assemblage.

Only three general grass particles, no short cells and one sponge spicule represented the total of distinctive phytoliths in two microscope slide mounts for Zone 3. A scattering of rare non-grass globules, plates, and one epidermal leaf segments constituted the remainder of the assemblage. Zone 2 west produced one general grass phytolith, two sponge spicules, rare (i.e. three) dicot-hair cells and a few general dicot particles from two mounts. Zone 2 east produced one panicoid cross-body of large size, large enough to be classified as maize in the tropics. However, one isolated particle in the absence of other grass phytoliths of any kind is not sufficient for a competent interpretation. Rare general, non-grass particles along with a high incidence of sand/quartz grains

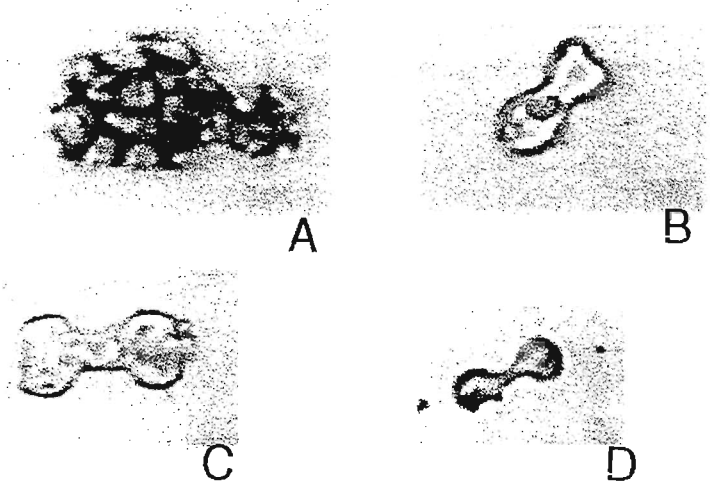

Figure 54. Examples recovered from the Civil War hut. A, dicot epiderm (hair base); B, simple bilobate phytolith; C, variant bilobate phytolith; D, simple bilobate phytolith.

complete the assemblage. There is no significant presence of phytoliths in these samples.

Conclusions

Only the samples from immediately adjacent to the hearth of the Civil War semi-subterranean house shows any active floral residues. The grass assemblage favoring panicoid dominance is atypical, although both festucoid and chloridoid particles occur. This suggest either a microenvironmental condition or cultural selection; e.g. straw litter on a dirt floor. The panicoid forms are not typical of maize and probably derive from a local, wild panicoid grass.

The other three sample extracts from the hut show little to no floral residues, suggesting botanical inactive subsoil deposits or fill.

Finally, as previously mentioned, the Thom's Creek feature failed to produce phytoliths, suggesting that plant materials were not generally incorporated in the steaming process.

POLLEN ANALYSES AT SECESSIONVILLE

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Introduction

Seven soil samples were provided for analysis, including both a Thom's Creek phase pit (Feature 5) and a Civil War era hut (Feature 10). From Feature 5 three samples were submitted from different locations within Level 1, identified as a shell matrix. Each sample was retained in the body whorl of a whelk. These were designated A-C. From Feature 10 four samples were submitted, two from the western half of the excavation and associated with the Zones 2 and 3, and two from the eastern half of the feature and associated with Zones 2 and 3.

All slides were prepared using standard palynological procedures as described in detail by Traverse (1988). This included treatment with potassium hydroxide, hydrochloric acid, zinc chloride (flotation), and hydrofluoric acid followed by bleaching, staining, and mounting (first on coverslips and then on slides with Clearcol and Elvacite, respectively).

Because of the scarcity of palynomorphs in these samples, 10 mounts of each of the seven samples were prepared (two on each of five slides). In addition to the time required to prepare the samples, considerable time was required to scan all 10 mounts under 400x magnification. Palynomorphs described (if present) would include not only pollen and spores, but also algae, fungal remains, and plant tissue fragments.

Results

Feature 5

The residue from all three samples consists, for the most part, of flocculated clusters of very fine grained (clay-size) organic particles in a matrix of dispersed clay-size organic particles. Within this matrix are scattered occasional lenticular cellular fragments, a few root fragments, and some angular noncellular, translucent fragments.

No palynomorphs (i.e., no pollen, spores, fungi, algae, phytoliths, etc.) were found in any of the samples from this Thom's Creek feature.

Feature 10

West Half, Zone 2. The residue consists of angular pieces of solid, translucent organic matter containing no cell structure. Some of these pieces are darkened (oxidized), but probably from microbiological processes rather than fires (i.e., the lacked the characteristic structure of charcoal). In addition to these angular fragments, the residue contains flocculated masses of fine-grained, clay size organic debris.

No palynomorphs were found.

West Half, Zone 3. The residue was the same as noted for the Zone 2, west half, except for the presence of a few woody tissue fragments.

Only one corroded pollen grain was found in all ten mounts. The specimen is black walnut (*Juglans nigra*). In addition, a few corroded fungal spores were also present.

East Half, Zone 2. The residue was the same as noted for Zone 2, west half, except for the presence of a slight bit more oxidized debris. In spite of this, no cellular plant remains were

identified.

No palynomorphs were found.

East Half, Zone 4. The residue was the same as noted for Zone 2, west half, except for the presence of a few woody tissue fragments.

No palynomorphs were found, although a few corroded fungal spores were present.

FAUNAL REMAINS FROM SECESSIONVILLE

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Introduction

The faunal remains from two archaeological components excavated at Secessionville (38CH1456), James Island, Charleston County, South Carolina, were analyzed for this study. The first collection represents the prehistoric aboriginal faunal remains recovered from a trash pit (Feature 5) associated with the Thom's Creek complex, a Late Archaic cultural sequence (see Trinkley 1980b and this study).

In addition to this prehistoric component 38CH1456 yielded three historic features designated as Features 1, 8, and 10. These features are thought to date during the time of the Civil War. Feature 1 represents the archaeological remains of trash deposits left by the Confederate army occupation of the area. The other two features, Features 8 and 10, are very likely associated with each other. Feature 10 is a semi-subterranean house and Feature 8 was identified as a trash burn pile probably used by the house occupants.

Analysis of the faunal assemblages recovered from the Secessionville excavations provides an opportunity to further examine patterns of animal exploitation in the coastal region of South Carolina. Unfortunately, the faunal collections represent two totally different cultural and temporal sequences, therefore they can not be compared to each other to address certain questions particularly those relating to culture change. For this reason the analysis of the prehistoric and historic faunal samples will be presented separately and comparative data will be integrated from other sources whenever possible.

Materials and Methods

The vertebrate faunal remains recovered from the Secessionville excavation were studied using standard zooarchaeological procedures. The comparative faunal collection housed at Cobb Institute of Archaeology, Mississippi State University, was used to expedite the identification of bone elements. Ed Jackson, Department of Anthropology and Sociology, University of Southern Mississippi, Hattiesburg, Mississippi, aided in the identification of many fish elements. The faunal material was sorted to class, suborder, and/or species with individual bone elements identified by side whenever preservation permitted. In addition, the bones were weighed (in grams) to assess the relative abundance of each species (class or suborder) represented in the sample. Attempts were made to record age (immature/mature) and bone modifications such as burning, butchering, and rodent gnaw marks were also noted.

The minimum number of individuals (MNI) (see Grayson 1973) for each animal category was estimated using paired bone elements and the age determined by the epiphyseal union (immature or mature). Determination of MNI is a standard zooarchaeological procedure, but unfortunately this method generally provides a conservative estimate of the species represented at a given site due to differential representation of skeletal elements and preservation of species (Hogue et al. 1995, 1996; Reitz and Weinand 1995).

Not only does MNI reflect a conservative count of the species but it is problematical in other ways. Small animals are emphasized over larger ones but their overall contribution to the diet may

be considerably less. One pig or cow, for example, would have provided more meat yield then 10 mice. A related problem concerns the resource use of animals at the site. Representation of an animal does not presume its use in entirety at the site (Reitz and Weinand 1995). Certain cuts may have been sold or traded elsewhere (Scott 1981; Thomas 1971; Welch 1991) affecting the representation of certain bone elements at the site. For the Secessionville collection, MNI was computed separately for the faunal remains recovered from each feature and zone if applicable.

Additionally, the biomass weight for each animal was calculated to approximate the meat yield. This model is based on the allometric principle that ratios of body mass, skeletal mass, and skeletal measurements change when size increases. Biomass weight is thought to provide a better estimate of animal representation then MNI (Reitz and Weinand 1995). Biomass is determined using the least squares analysis of logarthrithmic data. The basic premise of this method is that bone weight can be used to calculate the amount of soft tissue being supported by the skeleton (Casteel 1978; Reitz 1982, 1985; Reitz and Cordier 1983; Reitz and Scarry 1985; Reitz and Weinand 1995; Reitz et al 1987; Wing and Brown 1979). The relationship between body weight and skeletal weight is expressed by the equation $Y + aX^b$, which can also be depicted as $Y = \log a + b (\log x)$ (Simpson et al. 1960:397).

In the first formula, Y represents the biomass in kilograms, X is the bone weight in kilograms, a is the Y-intercept for a log-log plot using the method of least squares regression, and b is the constant of allometry, or the slope of the line defined by the least squares regression and the best fit line (Casteel 1978; Reitz and Cordier 1983; Reitz and Weinand 1995; Reitz et al. 1987; Wing and Brown 1979). Allometric values used in this study to determine biomass are summarized in Reitz 1985.

The determination of MNI and biomass weight can be restricted by the size of the collection. Several studies have proposed using a sample size of at least 200 individuals or 1400 bones for reliable use of these methods (Casteel 1978; Grayson 1979; Wing and Brown 1979). According to Reitz and Weinand (1995) small faunal samples tend to be biased towards one species over another. In addition to sample biases caused by excavation procedures and potential spacial differences in bone presence, differential preservation of certain bone elements, as well as different species, could lead to incongruent representation. Unfortunately, archaeological excavations do not normally yield the ideal sample size for faunal analysis and little can done to correct for the biases inherent in the small faunal assemblages.

Recording the presence or absence of bone elements in an archaeological faunal assemblage provides useful information on butchery patterns and animal husbandry. Elements identified for domestic mammals were classified as "head" (cranial fragments and teeth), "vertebra" (vertebrae and ribs), "forequarter" (scapula, humerus, ulna, and radius), "forefoot" (carpals and metacarpals), "foot" (phalanges), "hindquarter" (innominate, femur, tibia, fibula), and "hindfoot" (tarsals and metatarsals). According to Reitz and Zierden (1991) in an unmodified complete cow skeleton the percentages of these categories are head, 25.8%; vertebra, 28.6%; forequarter, 3.2%; forefoot, 5.7%; foot, 24.2%; hindquarter, 6.9%; and hindfoot, 5.7%. For the historic features at Secessionville, these figures are compared with the frequency of bone representation from other sites.

Observations of bone modifications classified as sawed, clean-cut, burned, chopped/hacked, gnawed, and worked were included in the analysis. If bone had been both burned and cut, burned and worked, etc., it was classified accordingly. Sawing is distinguished where parallel striations are observed on the outer layer of compact bones. Clean-cut marks are generally produced by sawing but the striations are absent. Burned bone was modified by exposure to fire while cooking and/or after discard. Cuts were defined as shallow incisions on the bone and are generally associated with cutting meat from the bone especially near the joint area. Chop/hack marks are typically deep, irregularly-shaped cuts created by a meat cleaver or ax. The presence of

gnawed bone indicates bone that was not buried immediately following disposal and consequently was exposed to animals. Worked bone is defined by human modifications on bone that are not associated with butchering (Reitz and Weinand 1995). Bone tools would be placed in this latter category.

Identified Fauna

A discussion of the general use and habitat preference for each species identified from Secessionville will be presented before discussing the results of the zooarchaeological study of the faunal assemblages. Identified fauna are generally classified as wild or domestic by animal group (mammal, birds, reptiles, fish and crabs, and commensal species).

Domestic Mammals

Two domestic mammals, cow (*Bos taurus*) and pig (*Sus scrofa*), were identified in all three historic features at Secessionville. Domestic mammals were primarily used as food resources and represent the largest contribution to the total biomass for taxa for which MNI could be calculated. Cattle have been an important meat source in the Southern United States but they are less efficient to raise than other domestic mammals such as the pig (Hilliard 1972; Rouse 1973; Towne and Wentworth 1950, 1955). Since cattle are large herbivores, they require large quantities of grain and grasses to keep weight on. Furthermore, beef does not preserve as well as other meats such as pork. Clearly, greater food and labor resources are required to make cattle production profitable (Tomhave 1925). Despite their cost, cattle supply other important resources such as milk products and hides, providing additional economic incentives for keeping herds (Hilliard 1972; Rouse 1973; Towne and Wentworth 1955).

Although cattle are an important commodity for many reasons, it is unlikely that the Confederate soldiers actually raised them but rather bought beef from nearby farmers and/or relied on beef that was army issued. The historic accounts from Secessionville suggest that cattle on James Island may have been rounded up and used by the Confederate forces, although it is not clear how much actually made its way to the troops on the island. Other historic sources suggest that military rations were minimal and often supplemented by a range of other sources.

For the historic features (1, 8, and 10) pigs represent about the same percentage of the total MNI as cow but less of the total biomass. Pigs have been one of the most important domestic animals used for food in the Southeast (Hilliard 1972). In general, they require little care and can roam freely scavenging naturally available food resources such as seeds, roots, fruits, eggs, and small mammals. Unlike beef, pork preserves very well and because of its high fat content, is very appetizing. Additionally, pork is a very good source of thiamine (Towne and Wentworth 1950), a nutritional source important for the prevention of beri-beri (Wing and Brown 1979:38-39).

Domestic Birds

The only domestic bird species identified in the Secessionville faunal remains was the chicken (*Gallus gallus*). Chicken are relatively easy to keep. Like pigs, they can feed themselves scavenging for available foods or they can be kept in pens and cared for by humans. Chicken was a popular food resource for both slave and plantation owners in the eighteenth and nineteenth centuries so soldiers may have been able to purchase them regularly from nearby farms. In addition to meat, they provided eggs for food and cooking (Hilliard 1972:46-47), as well as feathers which would have been useful for bedding.

Wild Mammals

Several wild mammals presumably used for food were identified in the prehistoric and historic Secessionville faunal collections. These include deer (*Oldocoileus virginianus*), raccoon (*Procyon lotor*), rabbit (*Sylvilagus floridanus*), gray squirrel (*Sciurius carolinensis*), and opossum (*Didelphis virginiana*). All of these mammals can be found in forest habitats but several are more likely to occupy specific areas of the forest. Deer prefer the edge of deciduous forests and open forests. Raccoon are quite adaptable to all types of

forested environments, but prefer wooded areas along streams and rivers. The eastern cottontail also occupy a variety of habitats especially overgrown fields and forest edge. The gray squirrel prefers heavily forested habitats with large stands of mature hardwoods with an under story of smaller trees (Wilson 1983: 519-523).

Wild Birds

Turkey (*Meleagris gallopavo*) and the American oystercatcher (*Haematopus palliatus*) represent the wild bird species recognized in the Secessionville collection. Turkey has continued to serve as a valued food item in the Southeast (Hilliard 1972:80-81) so its presence in both prehistoric and historic settings is not surprising. The American oystercatcher is found in all coastal environments including the marshlands (Perrins and Middleton 1985). The minimal representation of this species in Feature 5 probably reflects its insignificance as a food item. Its presence represents probably represents use for something other than food.

Reptiles

Four reptile species were identified in the Secessionville collection. These species consisted of river cooter (*Pseudemys florida*), box turtle (*Terrapene carolina*), black racer, (*Coluber constrictor*), and water snake (*Natrix sipedon*). The river cooter, box turtle, and water snake are found primarily in and around bodies of fresh water such as ponds, swamps, rivers, canals, and on occasion brackish waters (Obst 1986:109). Both turtle species are often seen on land sunning themselves or looking for areas to nest. According to Hilliard (1972:89), the river cooter was used as a food resource in the South during the eighteenth and nineteenth centuries. The black racer is usually identified as forest dweller and with the water snake probably represents a commensal species rather than a dietary component.

Pisces and Crab

Fish species were identified in both prehistoric and historic collections. The species identified include two fresh water species, bowfin (*Amia calva*) and bass (*Micropterus salmoides*) as well as several marine species, catfish (*Arridae* sp.) both Gafftopsail and Hardhead catfish; drum (*Sciaenidae sp.*) including red, black, Atlantic croaker, and spotted sea trout (*Cynoscion nebulosus*); and southern flounder (*Paralichthys lethostigma*).

The bowfin is commonly found in sluggish clear waters of the Carolina Coastal Plain and average between 45 and 87 cm in length. (Lee et al. 1980:53). The largemouth bass prefers clear, quiet waters with aquatic vegetation and can range from 12 to 79 cm in length (Lee et al. 1980: 608). Drum and young catfish are commonly found in bays and estuarine environments, as well as tidal shores (Boschung et al. 1983; Marrinan 1974). The two sea catfish species, gafftopsail and hardhead, are both used for food. Hardhead catfish is the larger of the two species weighing around 12 pounds while gafftopsail catfish average about 5-6 pounds. Hilliard (1972:85-86) notes that catfish were a very important food source throughout the South that could be taken with a variety of techniques including traps, trot lines, and set hooks that could be left untended. Southern flounder are bottom dwellers found along the North Carolina coast to Florida (Robbins et al. 1986). Of the drum species, black drum is the largest weighing up to 109 pounds followed closely by red drum at around 92 pounds. Atlantic croaker and spotted sea trout are much smaller species weighing 4 and 15 pounds respectively.

William Elliott, who lives on Beaufort's sea islands before the Civil War, discusses drum fishing at length (Elliott 1994:110-116 [1846]). Although the fish were available every month of the year except December and January, April (when they spawned) was the only month during which they could be taken by hook. He observed that in one season the Beaufort planters "succeeded in taking . . . at least twelve thousand of these fish; and when I add, that except the small number consumed in their families, the remainder were salted and distributed among their slaves" (Elliott 1994:112 [1846]). For the time, they were among the largest fish taken, with the average about 3 feet in length and weighing 30 to 40 pounds. A sport fish among those on the coast, it

was also one of the few fish with any commercial value and it may have been procured for sale to the troops at Secessionville.

The blue crab (*Callinectus* sp.) was observed only in the prehistoric faunal assemblage. This species can be found in many coastal habitats. They are especially abundant in estuaries and at the mouths of tidal creeks (where other predatory species congregate). The average size of the blue crab is 130 to 160 cm and they have an average live weight of about ¼-pound (Freeman and Walford 1976:11; Larson 1969:135). During the warm months crabs frequent the shallow estuarine waters, but during cold months (December through February, when the water temperatures are below 50°F) they seek deeper water and would be less available to Native American gatherers.

Commensal Species

Commensal species include animals found near or around human habitations but are not generally consumed by humans. These animals include pets, pest, vermin and animals that feed on them. Dogs, snakes, amphibians, rats and mice are common examples of commensal species. Snakes (discussed earlier), mice, moles, and voles were identified in the collection. Moles often frequent open or thin woods and cleared areas of all kinds. Mice generally prefer forested areas but can also be observed in other habitats including forest edge, clearings, and overgrown clearings (Wilson 1983:526).

Thom's Creek Prehistoric Feature 5

The Late Archaic component at the site is represented by Feature 5. This circular feature measured 12.5 feet by 12 feet but only the east half was excavated. Two zones were observed during the excavation and the faunal materials were kept separate according to the zone in which they were recovered. Zone 1 was observed as a crushed shell layer while Zone 2 consisted of brown sand at the base of the feature.

The analysis of Feature 5 includes two levels of investigation. The first involves an inventory of the animal remains associated with the entire feature and each of the zones, and the determination of their representation in the diet. This is followed by a second study where comparisons are made between the faunal assemblages recovered from the two different screening techniques in order to identify possible biases against certain faunal groups.

A total of 2189 bones were present in Feature 5 faunal assemblage representing 23 identified species and 116 minimum number of individuals (MNI). Table 5 lists the various species identified in Feature 5 including the MNI and biomass calculations for the entire collection. Biomass was computed using only those species or species categories where MNI could be determined. This procedure was used to eliminate possible sample bias created by the unidentified mammal, aves, and pisces categories.

For Feature 5 the greatest minimum number of individuals (MNI) was observed in pisces (74) and which also represented 63.79% of the total MNI for the feature. At least eight fish species were present in the collection. *Callinectes* sp. (blue crab) is the next most common species with at least 26 MNI making-up 22.41% of the total MNI. Mammal (10 MNI), aves (2 MNI), and reptiles (4 MNI) represented 8.6%, 1.72%, and 3.45% of the total MNI percentages of Feature 5 respectively.

In contrast to the minimum number of individuals represented biomass percentages for each faunal category indicated that mammal provided the most meat yield (53.47% of total biomass) followed by pisces species (23.5%), blue crabs (14.17%), reptile (7.24%), and finally aves (1.4%).

Niche Use

The micro habitats likely used by the Thom's Creek inhabitants include maritime hardwood forests, pine barrens, the estuary, tidal creeks, shallow near shore open bay, coastal strand, and offshore (Quitmyer 1985). The tidal creek environ constantly fluctuates with the tidal conditions. At high tide the water covers a large

Table 5.
Feature 5, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %	Biomass % Of Total	MNI % Of Total
Mammal							53.47	8.6
Deer, Odocoileus virginianus	1	0.86	93	171.14	2.6916	50.59		
Raccoon, Procyon lotor	1	0.86	9	2.51	0.0602	1.13		
Rabbit, Sylvilagus floridanus	1	0.86	3	0.52	0.0146	0.27		
Gray Squirrel, Sciurius carolinensis	2	1.72	17	2.15	0.0524	0.98		
Opossum, Didelphis virginiana	1	0.86	1	0.14	0.0045	0.08		
Eastern Mole, Scalopus aquaticus	2	1.72	3	0.64	0.0176	0.33		
New World Mice, Peromyscus sp.	1	0.86	1	0.1	0.0033	0.06		
Vole, Microtus sp.	1	0.86	3	0.06	0.0021	0.03		
Unidentified Mammal	-	-	47	10.31				
Aves							1.49	1.72
Turkey, Meleagris gallopavo	1	0.86	9	4.11	0.0739	1.39		
American Oyster Catcher, Haematopus palliatus	1	0.86	1	0.25	0.0058	0.1		
Unidentified Aves	-	-	18	1.99				
Reptile							7.24	3.45
Cooter, Pseudemys floridina	1	0.86	4	2.39	0.0567	1.07		
Box Turtle, Terrapene carolina	1	0.86	80	22.15	0.252	4.74		
Black Racer, Coluber constrictor	1	0.86	77	4.37	0.0612	1.15		
Water Snake, Natrix sipedon	1	0.86	2	1.1	0.0152	0.28		
Pisces							23.5	63.79
Unidentified Sea Catfish, Arridae sp.	18	15.52	275	16.9	0.2927	5.5		
Hardhead Catfish, Arius felis	6	5.17	110	16.16	0.2805	5.27		
Gafftopsail Catfish, Bagre marinus	3	2.59	45	8.37	0.1502	2.8		
Unidentified Drum, Scianidae sp.	21	18.1	63	6.27	0.1513	2.8		
Red Drum, Sciaenops ocellatus	2	1.72	5	2.55	0.0777	1.46		
Black Drum, Pogonias cromis	1	0.86	2	0.72	0.0305	0.57		
Atlantic Croaker, Micropogonius undulatus	16	13.79	31	4.62	0.1207	2.27		
Spotted Seatrout, Cynoscion nebulosus	5	4.31	45	2.14	0.0683	1.28		
Southern Flounder, Paralichthys lethostigma	1	0.86	36	1.65	0.0411	0.77		
Bowfin, Amia calva	1	0.86	15	1.53	0.0416	0.78		
Unidentified Fish	-	-	979	35.38				
Crab, Callinectes sp.	26	22.41	179	43.97	0.754	14.17	14.17	22.41
Unidentified	-	-	36	3.7				
Total	116	99.95	2189	367.89	5.3197	99.87	99.87	99.97

area while at low tide the marsh grasses are exposed extending sometimes for miles.

Many mammalian species other than humans rely on the marshes and tidal creeks for food. Crabs are a staple source of food for raccoon. Additionally, deer and rabbits use marsh grass in their diet (Marrinan 1975: 74) so their presence in the sample is not unexpected. Avian species are commonly found in the area many being permanent residents while others seasonal. The American Oystercatcher prefers all types of coastal environments including marshlands. There they are able to feed on mollusks, crabs, and echinoderms (starfishes, sea urchins) (Perrins and Middleton 1985: 186).

Using the minimum number of individuals (MNI) as an indicator of habitat use, it appears that the estuarine near-shore and shallow tidal creek micro environments were probably the most important. Evidence for the exploitation of these environments was found in the predominance of young drum (*Sciaenidae* sp.) and young marine catfishes (*Ariidae* sp.) which are known to be abundant and most accessible in these areas at certain times during the year (Quitmyer 1985: 88).

The large percentage of these marine fish in the faunal assemblage raises some interesting questions. All but one fish species bowfin (*Amia calva*), are associated with the tidal creek biotope. Bowfin usually inhabit freshwater environments but may enter brackish waters. It is possible that this species identified in the collection was associated with semi-permanent water sources that may have existed during the time of habitation. These semi-permanent ponds can be found on islands where rainfall is plentiful (Marrinan 1975: 74). The presence of fresh water turtle species (*Pseudemys florida* and *Terrapene carolina*) in the faunal assemblage may support this notion.

Turkey, deer, racoon, rabbit, gray squirrel, and opossum prefer forests and pine barren habitats. Their small representation in the faunal collection indicates the continued importance of the forests and pine barrens for foraging as these areas are where they are likely to be found.

Seasonality

Drum are known to occupy the estuarine system during the warmer months of the year. Atlanta croaker (*Micropogonias undulatus*) was the most common drum species identified. Variation in the size of the otoliths indicated a range of sizes with some probably representing early arrivals to the area. Croaker enter the estuarine sometime after early spring and reach their maximum availability in the late fall (Quitmyer 1985: 89). The availability of this fish resource may reflect a seasonal occupation of the area extending from spring to late fall. Even though fish species are not as dense throughout the year winter occupation of the area could have been supported by mammal species exploited in the forests and pine barrens. Since no winter indicators such as migratory water fowl were identified in the collection it is highly likely that Feature 5 represents a seasonal (spring to late fall) occupation of the area.

Screening

Wing and Quitmyer (1985:49) have questioned the validity of screening techniques when analyzing the faunal remains from coastal sites. They maintain that the diet of coastal inhabitants focused on the acquisition of invertebrates and very young fish using the estuarine system during the earlier stages of their life. If young fish make-up a large percentage of the resource base than larger screen size used in archaeological recovery would bias against them in the sample. As a similar pattern of estuarine exploitation was proposed for the faunal assemblage recovered from Feature 5 this provides an opportunity to examine the biases associated with screening techniques used in the recovery of faunal materials at Secessionville.

The archaeological procedure used for this study included screening samples of each zone from Feature 5 using course sieving (¼-inch screen), medium sieving (¼ and ⅛- inch screens) or fine sieving (¼, ⅛, and 1/16-inch screens). The zones were analyzed as separate units providing comparative data across zone fill and screen size. The faunal content of the zones were then

combined to compare total recovery by screen size.

Zone 1 was observed as a crushed shell layer. Of the 71.5 cubic feet of this fill, 18.3 cubic feet (or 25%) was subjected to water flotation (fine sieve) with the heavy fraction being caught by 1/16 inch mesh. An additional 7.3 of the cubic feet (10%) was processed by water screening through ⅛-inch mesh (medium sieve). The remaining fill was dry screened through ¼-inch mesh (course sieve).

Zone 2 consisted of brown sand. Of the 69.5 cubic feet of Zone 2, 18.3 cubic feet (26.3%) was floated and 18.3 cubic feet (26.3%) was water screened through ⅛-inch mesh. As with the Zone 1 fill, the remaining fill was screened using ¼-inch mesh.

Comparisons were made between the samples for the number of individual species represented in each sample, the minimum number of individuals present, and biomass percentages for each faunal group. Unfortunately no zone fill screened through ¼-inch mesh yielded faunal remains so this study is limited to comparing the results of medium and fine screening. Of course, this failure to recover faunal material in the ¼-inch screening may itself be an important suggestion that failure to conduct fine screening dooms analyses to an exceptionally high level of investigator introduced bias.

The data used in this study are summarized in Tables 6-9. They include the minimum number of individuals represented by each species identified in the sample, the number of fragments, the total weight of fragments, biomass weight, and biomass and MNI percentages represented by each faunal category.

According to Wing and Quitmyer (1985: 50-51) several possible results might be expected by comparing faunal representation from the different samples. Fine screen may not recover anything not already recovered using course or medium screen. It is possible that the fine sieving may recover the same species in the same proportion as the larger sieve, only more smaller individuals would be represented in the former. It is also possible that additional species would be recovered using the smaller screen or that additional bone elements (presumably smaller) would be present. Analysis and subsequent interpretations of faunal collections should reflect these possibilities.

For Feature 5 the number of individual species (NISP) recovered is greater for the fine screened (NISP=24) when compared to the medium screened materials (NISP=19). For mammals, seven species were identified in fine sieve and five in the medium. The two additional species represented in the fine screened sample are the eastern mole and vole, both very small rodents. In the aves faunal group, one unidentified species was recovered in the medium screen in Zone 1 (Table 7) but obviously this species could have been already identified in the fine screened materials. Within the reptile group, two species were represented in both samples but one additional different species was observed in each of the samples.

Since exploitation of fish, especially young fish, may have been important to the prehistoric population studied here, it was expected that more species would be recovered using fine sieving over medium. The red drum was identified in the fine sample and not the medium, but it could be represented in the unidentified drum species category. When comparing NISP for Zones 1 and 2 (Tables 6-9) in most cases the higher NISP is seen in the fine screening. From this study, it does not appear that the fine screening provides significant difference in species representation.

Next biomass and MNI percentages are considered for the two Zones. These data are summarized in Figures 55 through 58. Biomass will be considered first. For Zone 1 (Figure 55) aves, reptiles, and fish represented greater percentages of the total biomass in the fine screened sample. When compared to the sample recovered using a medium sieve the mammal and crab faunal categories are greater. For Zone 2 (Figure 56) fish make up a greater percentage of the total biomass weight in the medium sample when compared with the fine. Unexpectedly, the percentage of biomass for mammals is greater in

Table 6.
Feature 5, Zone 1, Fine Sieving, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %	MNI %
Mammal						36.83	5.4
Deer, Odocoileus virginianus	1	1.35	37	49.78	0.8858		
Raccoon, Procyon lotor	1	1.35	5	1.87	0.0462		
Rabbit, Sylvilagus floridanus	1	1.35	3	0.52	0.0146		
Gray Squirrel, Sciurus carolinensis	1	1.35	6	1.42	0.0361		
Opossum, Didelphis virginiana	-	-	-	-	-		
Eastern Mole, Scalopus aquaticus	-	-	-	-	-		
New World Mice, Peromyscus sp.	-	-	-	-	-		
Vole, Microtus sp.	-	-	-	-	-		
Unidentified Mammal	-	-	36	8.76	0.1855		
Aves						4.56	2.7
Turkey, Meleagris gallopavo	1	1.35	9	4.11	0.0739		
American Oyster Catcher, Haematopus palliatus	1	1.35	1	0.25	0.0058		
Unidentified Aves	-	-	15	1.89	0.065		
Reptile							
Cooter, Pseudemys floridina	-	-	-	-	-	7.62	2.7
Box Turtle, Terrapene carolina	1	1.35	65	15.85	0.2014		
Black Racer, Coluber constrictor	1	1.35	60	2.9	0.0404		
Water Snake, Natrix sipedon	-	-	-	-	-		
Pisces						37.99	68.92
Unidentified Sea Catfish, Arridae sp.	9	12.16	114	9.72	0.1731		
Hardhead Catfish, Arius felis	6	8.11	58	8.67	0.1553		
Gafftopsail Catfish, Bagre marinus	3	4.05	13	6.66	0.1209		
Unidentified Drum, Scianidae sp.	11	14.86	33	5.02	0.1284		
Red Drum, Sciaenops ocellatus	1	1.35	2	1.63	0.0558		
Black Drum, Pogonias cromis	1	1.35	2	0.72	0.0305		
Atlantic Croaker, Micropogonius undulatus	13	17.57	25	3.54	0.0991		
Spotted Seatrout, Cynoscion nebulosus	5	6.76	20	1.44	0.0509		
Southern Flounder, Paralichthys lethostigma	1	1.35	24	0.84	0.0225		
Bowfin, Amia calva	1	1.35	8	0.9	0.0271		
Unidentified Fish			494	20.08	0.3412		
Crab, Callinectes sp.	15	20.27	105	21.54	0.412	12.99	20.27
Unidentified							
Total	74	99.98	1135	168.11	3.1715	99.99	99.99

Table 7.
Feature 5, Zone 1, Medium Sieving, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %	MNI %
Mammal						58.35	9.37
Deer, Odocoileus virginianus	1	3.12	7	47.69	0.8523		
Raccoon, Procyon lotor	1	3.12	2	0.43	0.0123		
Rabbit, Sylvilagus floridanus	-	-	-	-	-		
Gray Squirrel, Sciurius carolinensis	1	3.12	4	1.09	0.0284		
Opossum, Didelphis virginiana	-	-	-	-	-		
Eastern Mole, Scalopus aquaticus	-	-	-	-	-		
New World Mice, Peromyscus sp.	-	-	-	-	-		
Vole, Microtus sp.	-	-	-	-	-		
Unidentified Mammal	-	-	4	0.3	0.0089		
Aves						0.1	3.12
Turkey, Meleagris gallopavo	-	-	-	-	-		
American Oyster Catcher, Haematopus palliatus	-	-	-	-	-		
Unidentified Aves	1	3.12	1	0.06	0.0016		
Reptile						6.92	6.25
Cooter, Pseudemys floridina	-	-	-	-	-		
Box Turtle, Terrapene carolina	1	3.12	12	5.91	0.104		
Black Racer, Coluber constrictor	1	3.12	1	0.23	0.0031		
Water Snake, Natrix sipedon	-	-	-	-	-		
Pisces						19.59	53.12
Unidentified Sea Catfish, Arridae sp.	-	-	-	-	-		
Hardhead Catfish, Arius felis	2	6.25	16	3.95	0.0736		
Gafftopsail Catfish, Bagre marinus	1	3.12	19	0.92	0.0165		
Unidentified Drum, Scianidae sp.	8	25	21	0.57	0.0257		
Red Drum, Sciaenops ocellatus	-	-	-	-	-		
Black Drum, Pogonias cromis	-	-	-	-	-		
Atlantic Croaker, Micropogonius undulatus	3	9.37	5	0.93	0.0369		
Spotted Seatrout, Cynoscion nebulosus	1	3.12	20	0.63	0.0276		
Southern Flounder, Paralichthys lethostigma	1	3.12	5	0.38	0.0111		
Bowfin, Amia calva	1	3.12	2	0.22	0.0086		
Unidentified Fish	-	-	129	4.65	0.1028		
Crab, Callinectes sp.	9	28.12	63	10.45	0.2321	15.01	28.12
Unidentified	-	-	-	-	-		
Total	32	99.94	311	78.41	1.5455	99.97	99.98

Table 8.
Feature 5, Zone 2, Fine Sieving, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %	MNI %
Mammal						40.28	26.08
Deer, Odocoileus virginianus	1	4.34	7	6.11	0.1341		
Raccoon, Procyon lotor	-	-	-	-	-		
Rabbit, Sylvilagus floridanus	-	-	-	-	-		
Gray Squirrel, Sciurius carolinensis	1	4.34	6	0.53	0.0148		
Opossum, Didelphis virginiana	-	-	-	-	-		
Eastern Mole, Scalopus aquaticus	2	8.71	3	0.64	0.0176		
New World Mice, Peromyscus sp.	1	4.34	2	0.05	0.0018		
Vole, Microtus sp.	1	4.34	1	0.1	0.0033		
Unidentified Mammal	-	-	-	-	-		
Aves						0.23	4.34
Turkey, Meleagris gallopavo	-	-	-	-	-		
American Oyster Catcher, Haematopus palliatus	-	-	-	-	-		
Unidentified Aves	1	4.34	2	0.04	0.001		
Reptile						8.89	13.04
Cooter, Pseudemys floridina	-	-	-	-	-		
Box Turtle, Terrapene carolina	1	4.34	3	0.39	0.0168		
Black Racer, Coluber constrictor	1	4.34	4	0.43	0.0059		
Water Snake, Natrix sipedon	1	4.34	2	1.1	0.0152		
					0.0379		
Pisces						42.95	52.17
Unidentified Sea Catfish, Arridae sp.	5	21.76	40	2.11	0.0406		
Hardhead Catfish, Arius felis	2	8.71	11	1.24	0.0245		
Gafftopsail Catfish, Bagre marinus	1	4.34	1	0.16	0.0035		
Unidentified Drum, Scianidae sp.	2	8.71	9	0.68	0.0292		
Red Drum, Sciaenops ocellatus	-	-	-	-	-		
Black Drum, Pogonias cromis	-	-	-	-	-		
Atlantic Croaker, Micropogonius undulatus	1	4.34	1	0.15	0.0096		
Spotted Seatrout, Cynoscion nebulosus	-	-	-	-	-		
Southern Flounder, Paralichthys lethostigma	1	4.34	7	0.43	0.0124		
Bowfin, Amia calva	-	-	-	-	-		
Unidentified Fish	-	-	87	2.57	0.0632		
Crab, Callinectes sp.	1	4.34	3	0.95	0.0325	7.62	4.35
Unidentified							
Total	23	99.97	189	17.68	0.4639	99.97	99.98

Table 9.
Feature 5, Zone 2, Medium Sieving, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %	MNI %
Mammal						33.48	25
Deer, Odocoileus virginianus	1	5	4	6.91	0.1498		
Raccoon, Procyon lotor	1	5	2	0.21	0.0064		
Rabbit, Sylvilagus floridanus	-	-	-	-	-		
Gray Squirrel, Sciurius carolinensis	1	5	1	0.01	0.0004		
Opossum, Didelphis virginiana	1	5	1	0.14	0.0045		
Eastern Mole, Scalopus aquaticus	-	-	-	-	-		
New World Mice, Peromyscus sp.	1	5	1	0.01	0.0004		
Vole, Microtus sp.	-	-	-	-	-		
Unidentified Mammal	-	-	7	1.25	0.0321		
Aves							
Turkey, Meleagris gallopavo	-	-	-	-	-		
American Oyster Catcher, Haematopus palliatus	-	-	-	-	-		
Unidentified Aves	-	-	-	-	-		
Reptile						2.55	10
Cooter, Pseudemys floridina	1	5	1	0.04	0.0036		
Box Turtle, Terrapene carolina	-	-	-	-	-		
Black Racer, Coluber constrictor	1	5	12	0.81	0.0112		
Water Snake, Natrix sipedon	-	-	-	-	-		
Pisces						57.99	60
Unidentified Sea Catfish, Arridae sp.	6	30	66	3.12	0.0588		
Hardhead Catfish, Arius felis	2	10	25	2.3	0.044		
Gafftopsail Catfish, Bagre marinus	1	5	12	0.73	0.0148		
Unidentified Drum, Scianidae sp.	-	-	-	-	-		
Red Drum, Sciaenops ocellatus	1	5	3	0.92	0.0366		
Black Drum, Pogonias cromis	-	-	-	-	-		
Atlantic Croaker, Micropogonius undulatus	-	-	-	-	-		
Spotted Seatrout, Cynoscion nebulosus	1	5	5	0.07	0.0054		
Southern Flounder, Paralichthys lethostigma	-	-	-	-	-		
Bowfin, Amia calva	1	5	5	0.41	0.0143		
Unidentified Fish	-	-	269	8.08	0.1618		
Crab, Callinectes sp.	1	5	8	1.03	0.0347	5.98	5
Unidentified	-	-	-	-	-		
Total	20	100	422	26.04	0.5788	100	100

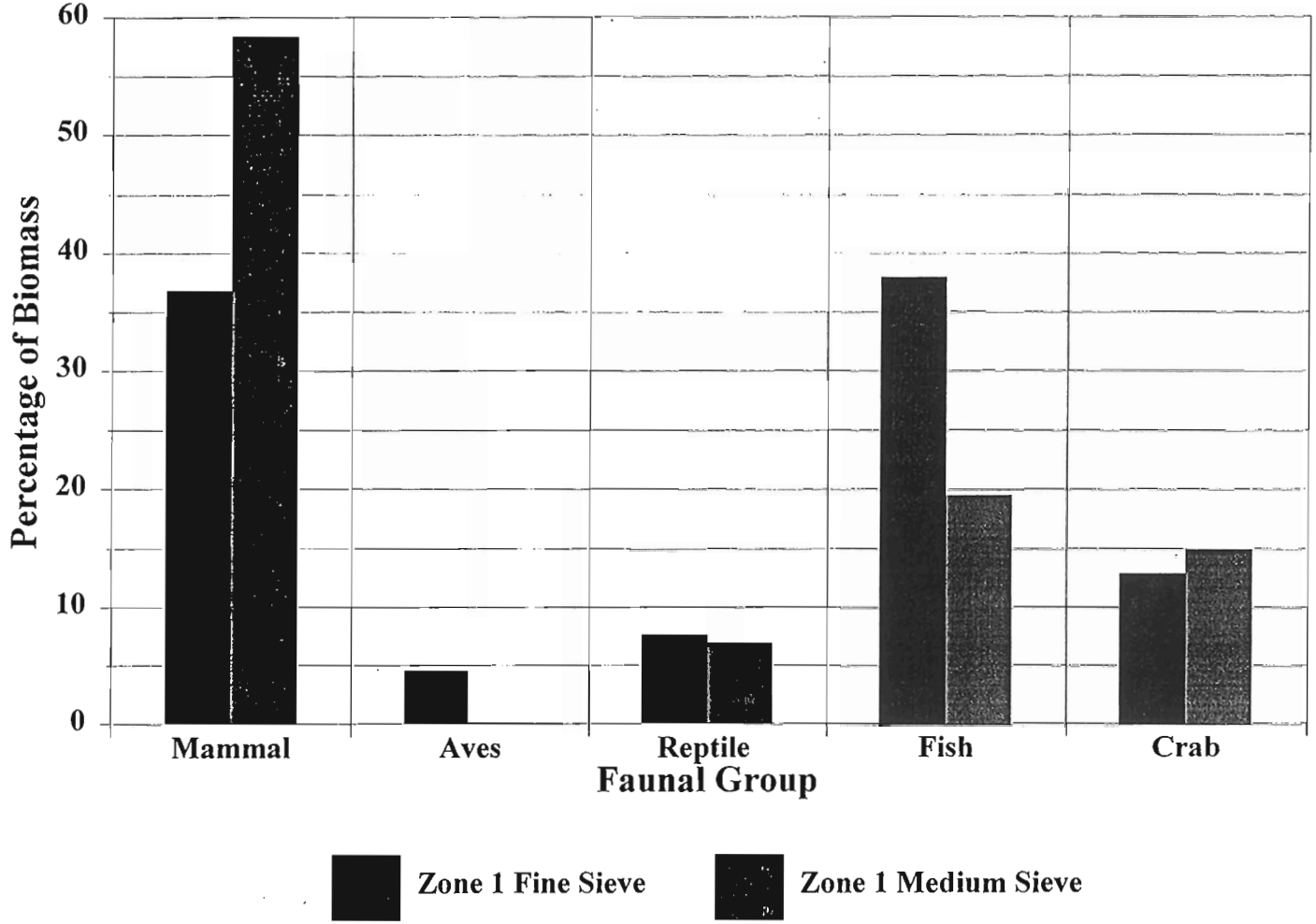

Figure 55. Biomass percentage of Feature 5, Zone 1.

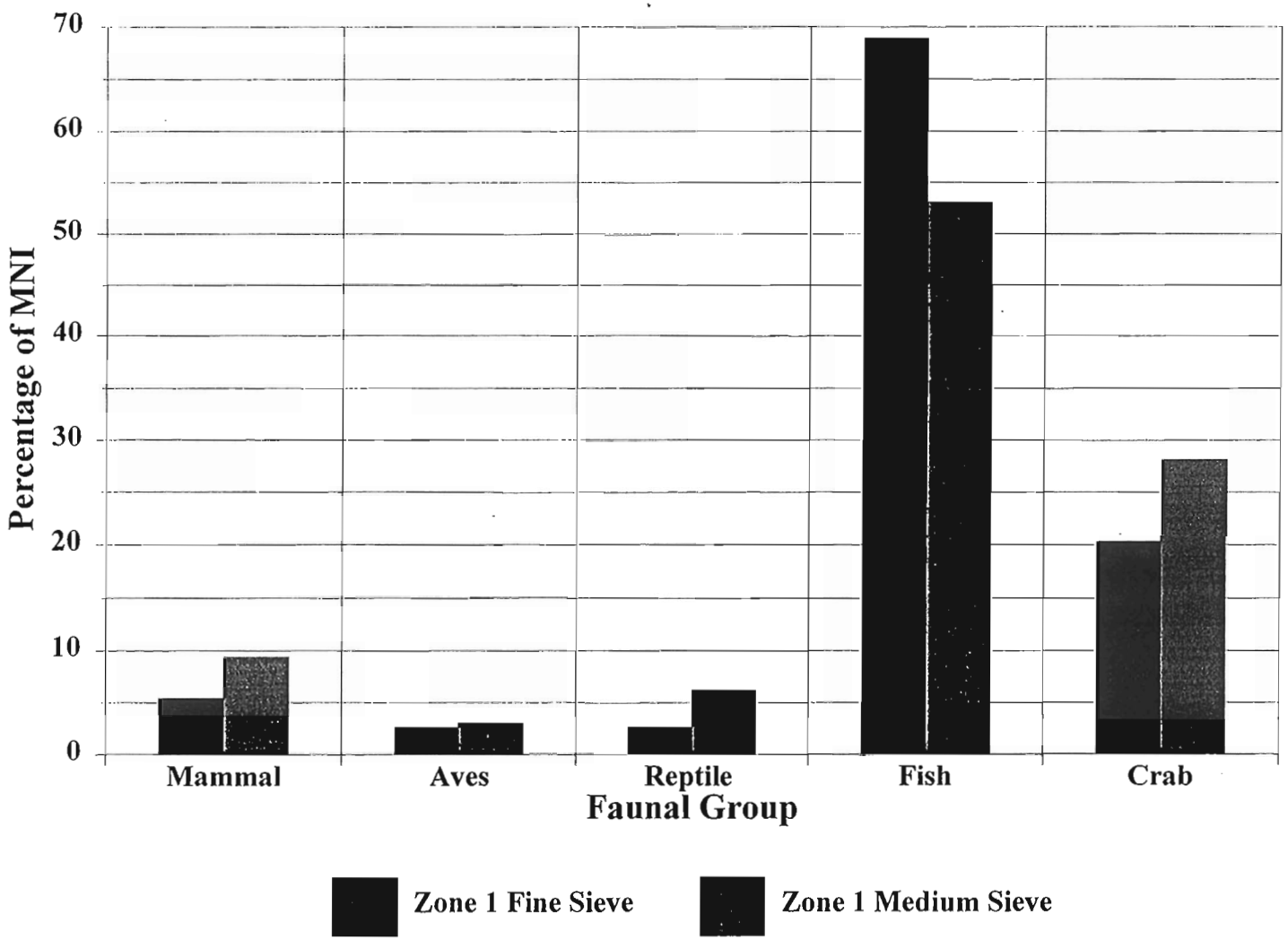

Figure 56. Biomass percentage of Feature 5, Zone 2.

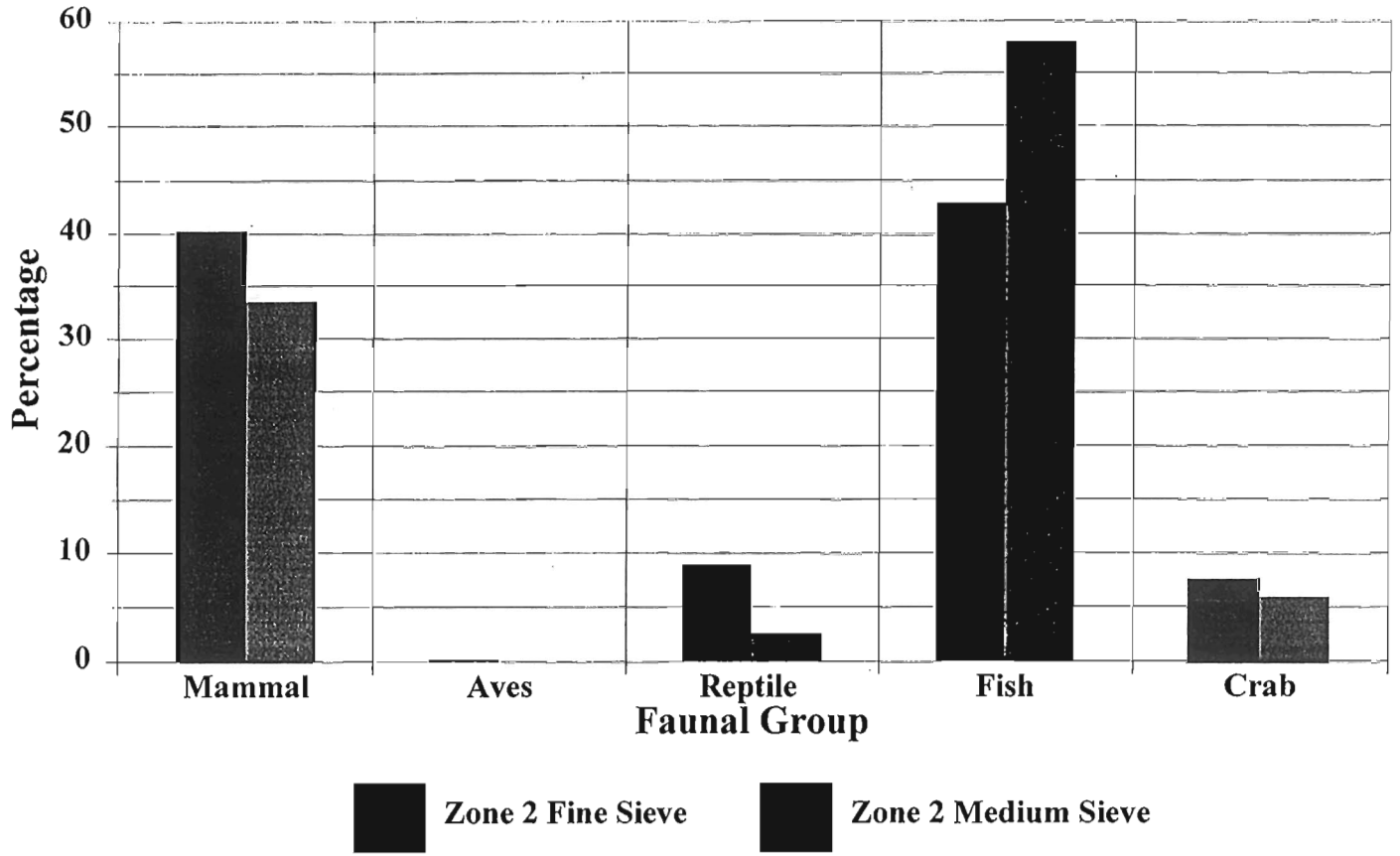

Figure 57. Minimum number of individuals percentage for Feature 5, Zone 1.

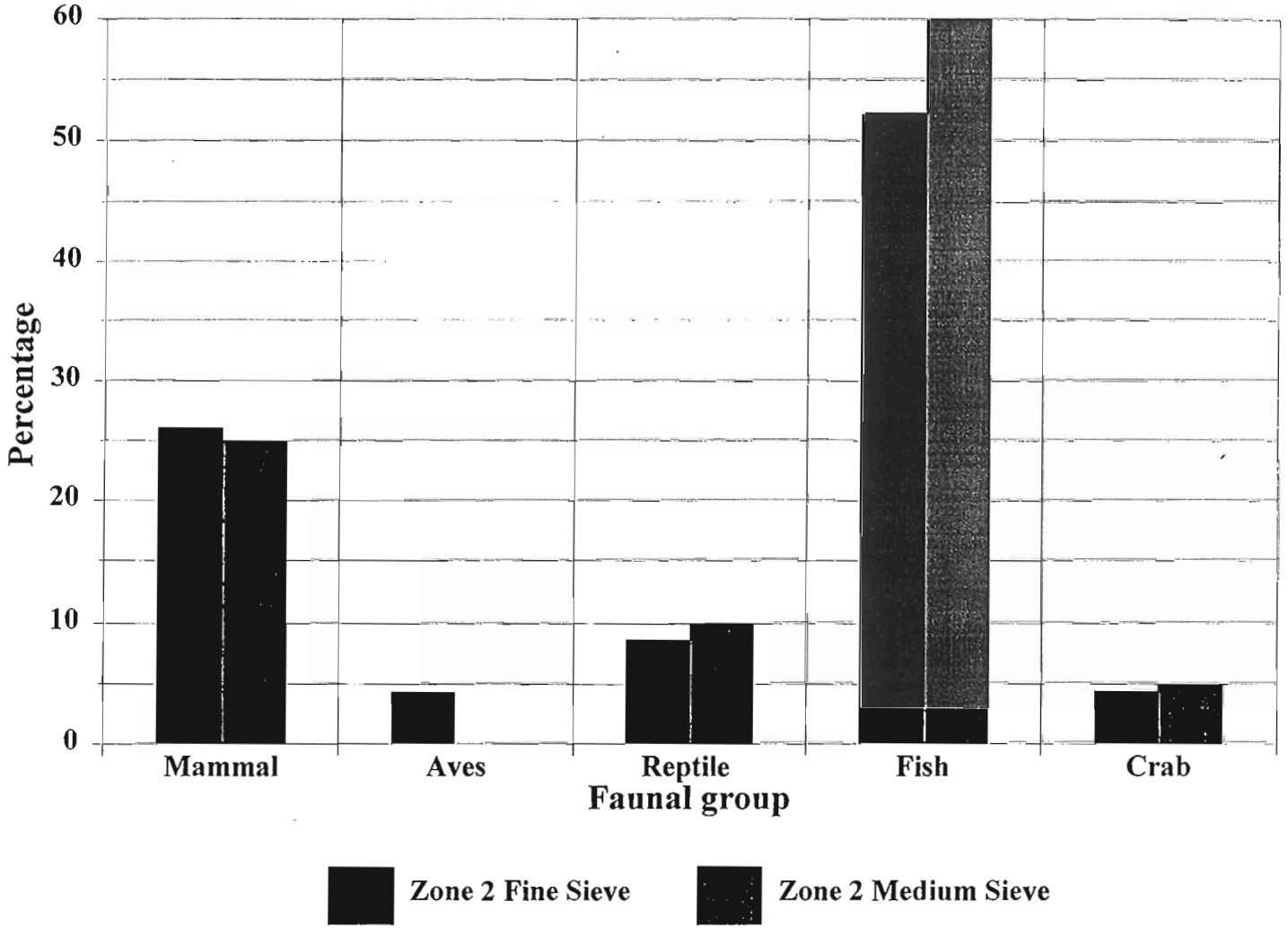

Figure 58. Minimum number of individuals percentage for Feature 5, Zone 2.

the fine screen than medium screened sample. Overall, fish and mammal comprise the greatest biomass percentages for both screen sizes. For Zone 1, more fish are represented in the fine screen sample while in Zone 2 the reverse is true. In contrast mammals make up a greater percentage of the total biomass in the Zone 1 medium screen and Zone 2 fine screen samples. It appears that in Zone 1 the expected pattern of more fish representation holds, while it does not in Zone 2. Probably the best explanation for the pattern observed in Zone 2 is a bias in the representation of the faunal groups.

The percentage of total MNI for each faunal group in each zone was also considered (Figures 57 and 58). For the most part, a pattern similar to that observed for biomass was seen when comparing percentage of MNI. For Zone 1 fish was represented more in the fine screened sample the opposite being true in Zone 2. Interestingly, there is a greater frequency of mammal and fish in Zone 2 while in Zone 1 fish and crab are important. Perhaps the two zones observed in Feature 5 reflect different niche use patterns with Zone 1 representing a more focal use of the estuarine/coastal environment.

Faunal categories of Feature 5 are next compared by screen size only. Both biomass and MNI percentages were compared. The results of this analysis are summarized in Tables 10 and 11 and Figures 59 and 60. Again it is expected that fish should occur with greater frequency in the fine screen sample when compared to the medium screened sample. This pattern does hold when comparing biomass and MNI percentages for the two screen sizes. What is important to note is that the presence of aves, although small, is greater in the fine sample for biomass percentage (Figure 59). Representation of the faunal groups by MNI yields a similar pattern for both screen sizes (Figure 60). The presence of these two patterns indicate the importance of integrating both biomass and MNI in the interpretation of faunal remains.

The patterns for biomass percentages and MNI for the combined samples support the use of fine screening in the recovery of faunal remains particular in coastal environments where fish are more likely to be exploited. Obviously, a minimum of medium size screen should be used in faunal recovery if fine screen is unavailable. The absence of any faunal materials recovered from course screening is evidence enough to adopt this strategy.

Historic Features 1, 8, and 10

The results of the analysis of the historic features included are provided in Tables 12-14. In addition to the general analysis presented in Tables 12-14, bone modifications and cuts were also recorded to aid in the identification of procurement patterns and animal use.

Although the features have been previously discussed, a brief description is provided in this section. Feature 1 (Table 12) included materials collected from different areas of filled earth ditches. It is thought that this feature represents ramparts that were pushed back into the ditches to open more area for cultivation. This probably took place soon after the turn of the century. The faunal materials recovered from Feature 1 probably represent military garbage form the Confederate occupation of the area during the Civil War. Six animal species were identified in the feature cow, pig, deer, chicken, box turtle, and black racer with the majority of the identifiable bone comes from beef cattle (91.4% of the total biomass). Interestingly, deer represents the second largest percentage of the total biomass (6.92%). Pig bone was also recovered but made up a small portion of the sample (.75%). The only bird species identified in Feature 1 was chicken (.46%). Reptiles included the black racer and box turtle (.47%).

Clearly the Confederate troops depended heavily on domestic species, especially cattle, for their food but may have been forced to subsidize their diet with wild foods such as deer.

One other source of information worthy of discussion is the use of roasted or boiled meats by the Confederate soldiers. The study used here for comparison is a faunal assemblage associated with the Camp Baird Union Infantry occupation of Hilton Head Island, S.C. (Legg et al. 1991). Union

Table 10.
Feature 5, Fine Sieve, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %	MNI %
Mammal					1.2	37.59	10.42
Deer, Odocoileus virginianus	2	2.08	44	55.89			
Raccoon, Procyon lotor	1	1.04	5	1.87			
Rabbit, Sylvilagus floridanus	1	1.04	3	0.52			
Gray Squirrel, Sciurus carolinensis	2	2.08	12	1.92			
Opossum, Didelphis virginiana	-	-	-	-			
Eastern Mole, Scalopus aquaticus	2	2.08	3	0.64			
New World Mice, Peromyscus sp.	1	1.04	2	0.05			
Vole, Microtus sp.	1	1.04	1	0.1			
Unidentified Mammal	-	-	36	8.76			
Aves					0.1088	3.41	2.08
Turkey, Meleagris gallopavo	1	1.04	9	4.11			
American Oyster Catcher, Haematopus palliatus	1	1.04	1	0.25			
Unidentified Aves	-	-	17	1.93			
Reptile					0.2666	8.35	5.21
Cooter, Pseudemys floridina	-	-	-	-			
Box Turtle, Terrapene carolina	2	2.08	68	16.24			
Black Racer, Coluber constrictor	2	2.08	64	3.33			
Water Snake, Natrix sipedon	1	1.04	2	1.1			
Pisces					1.1817	37.02	65.62
Unidentified Sea Catfish, Arridae sp.	14	14.58	154	11.83			
Hardhead Catfish, Arius felis	8	8.33	69	9.91			
Gafftopsail Catfish, Bagre marinus	4	4.17	14	6.82			
Unidentified Drum, Scianidae sp.	13	13.54	42	5.7			
Red Drum, Sciaenops ocellatus	1	1.04	2	1.63			
Black Drum, Pogonias cromis	1	1.04	2	0.72			
Atlantic Croaker, Micropogonius undulatus	14	14.58	26	3.69			
Spotted Seatrout, Cynoscion nebulosus	5	5.21	20	1.44			
Southern Flounder, Paralichthys lethostigma	2	2.08	15	1.33			
Bowfin, Amia calva	1	1.04	8	0.9			
Unidentified Fish	-	-	581	22.65			
Crab, Callinectes sp.	16	16.67	108	22.49	0.4351	13.63	16.66
Total	96	99.96	1308	185.82	3.1922	100	99.99

Table 11.
Feature 5, Medium Sieve, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %	MNI %	
Mammal					1.0171	52.01	16.33	
Deer, Odocoileus virginianus	2	4.08	11	54.6				
Raccoon, Procyon lotor	2	4.08	4	0.64				
Rabbit, Sylvilagus floridanus	-	-	-	-				
Gray Squirrel, Sciurius carolinensis	2	4.08	5	1.1				
Opossum, Didelphis virginiana	1	2.04	1	0.14				
Eastern Mole, Scalopus aquaticus	-	-	-	-				
New World Mice, Peromyscus sp.	1	2.04	1	0.01				
Vole, Microtus sp.	-	-	-	-				
Unidentified Mammal	-	-	11	1.55				
Aves					0.0016	0.08	2.04	
Turkey, Meleagris gallopavo	-	-	-	-				
American Oyster Catcher, Haematopus palliatus	-	-	-	-				
Unidentified Aves	1	2.04	1	0.06				
Reptile					0.1188	6.08	6.12	
Cooter, Pseudemys floridina	1	2.04	1	0.04				
Box Turtle, Terrapene carolina	1	2.04	12	5.91				
Black Racer, Coluber constrictor	1	2.04	14	1.04				
Water Snake	-	-	-	-				
Pisces					0.5672	29.01	55.1	
Unidentified Sea Catfish, Arridae sp.	6	12.24	82	7.07				
Hardhead Catfish, Arius felis	3	6.12	44	3.22				
Gafftopsail Catfish, Bagre marinus	9	18.37	33	1.3				
Unidentified Drum, Scianidae sp.	-	-	-	-				
Red Drum, Sciaenops ocellatus	1	2.04	3	0.92				
Black Drum, Pogonias cromis	-	-	-	-				
Atlantic Croaker, Micropogonius undulatus	3	6.12	5	0.93				
Spotted Seatrout, Cynoscion nebulosus	2	4.08	25	0.7				
Southern Flounder, Paralichthys lethostigma	1	2.04	5	0.38				
Bowfin, Amia calva	2	4.08	7	0.63				
Unidentified Fish			398	13.45				
Crab, Callinectes sp.	10	20.41	71	11.48	0.2507	12.82		20.41
Total	49	99.98	734	105.17	1.9554	100		100

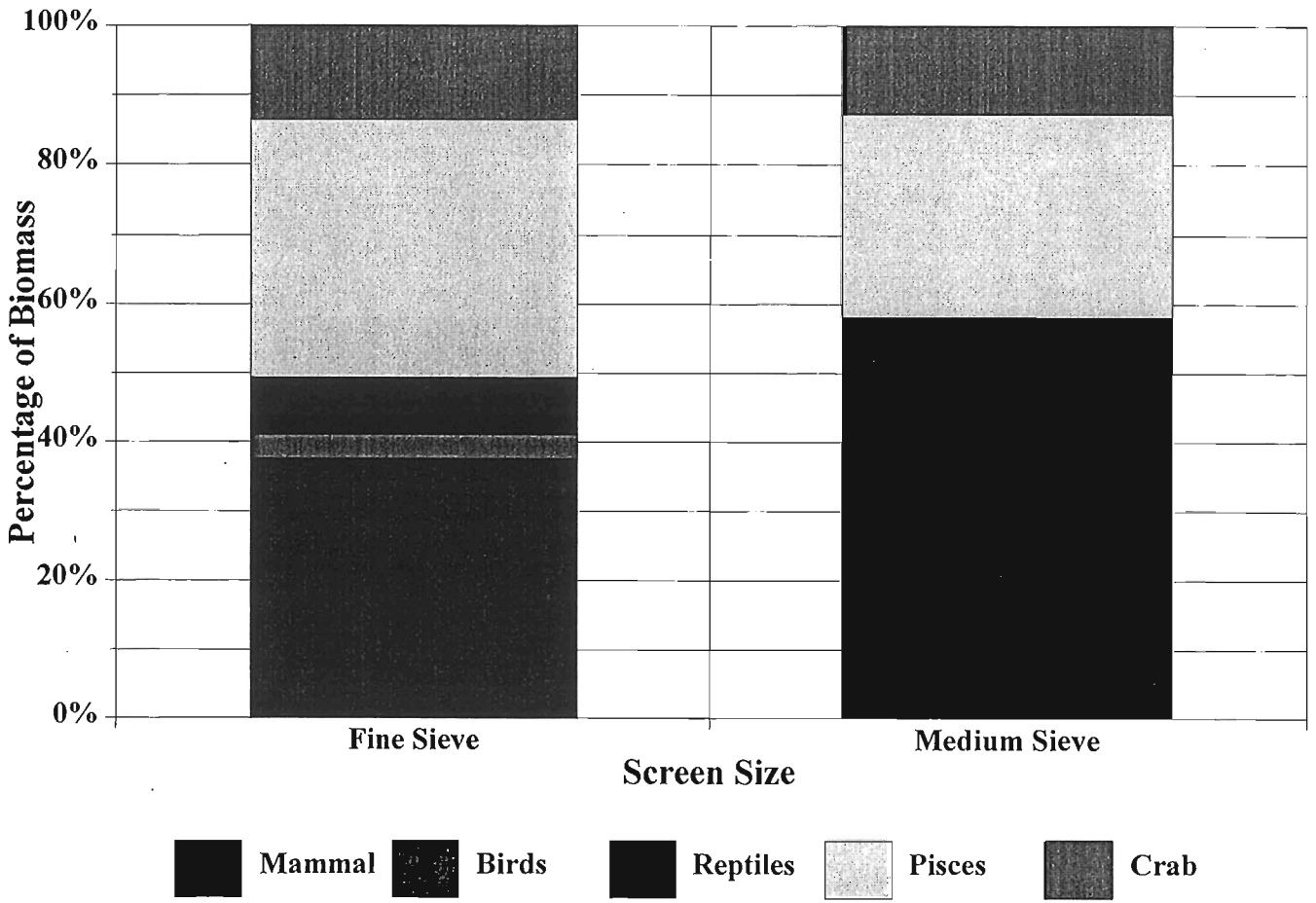

Figure 59. Percentage of total biomass in Feature 5, fine and medium sieves.

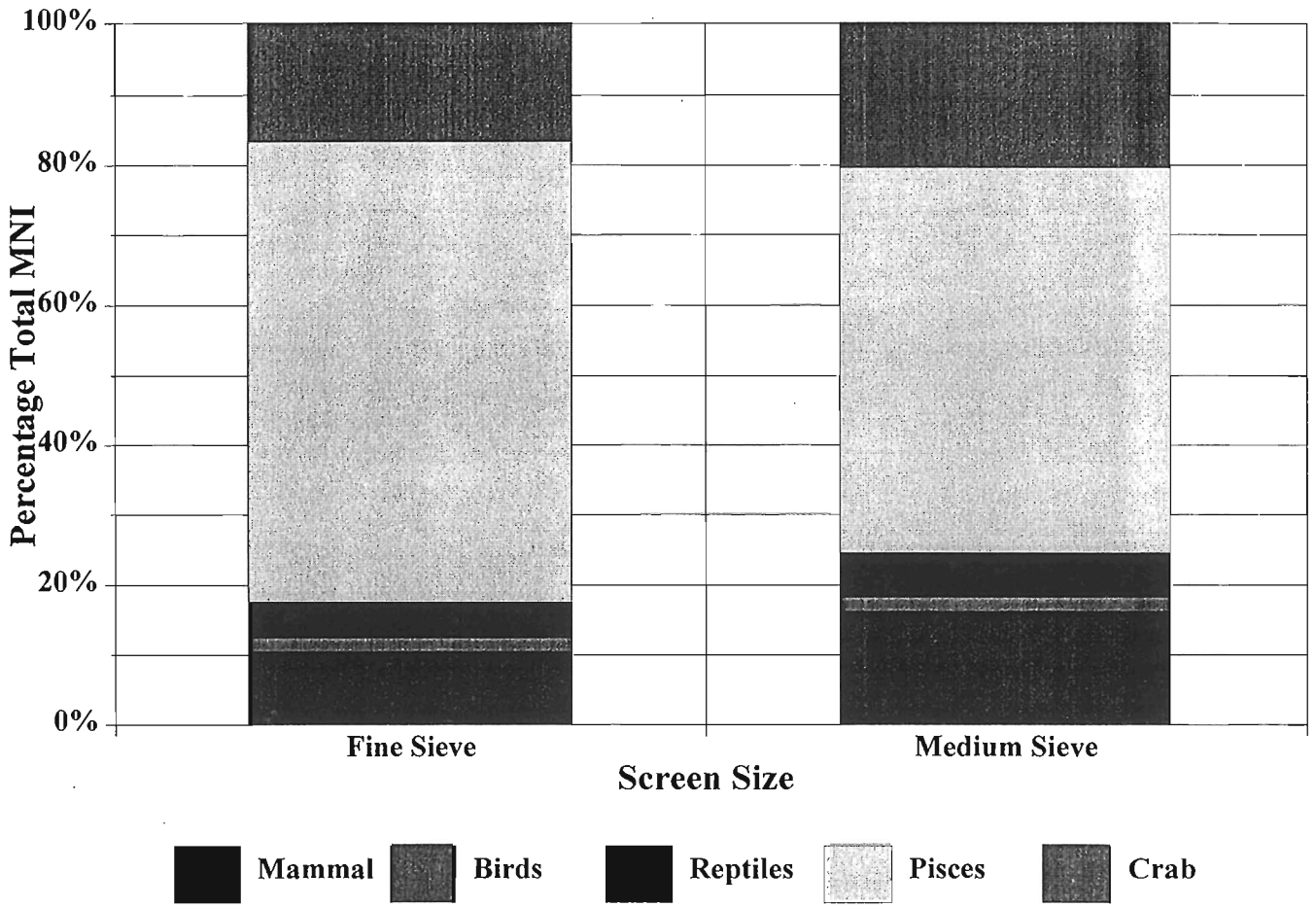

Figure 60. Minimum number of individuals percentage in Feature 5, fine and medium sieves.

Table 12.
Feature 1, Minimum Number of Individuals, Number of Bones,

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %
Mammal						
Cow, Bos Taurus	1	16.6	6	537.01	7.5332	91.4
Pig, Sus scrofa	1	16.6	2	2.57	0.0615	0.75
Deer, Odocoileus virginianus	1	16.6	2	30.55	0.5708	6.92
Unidentified Mammal			13	3.97		
Aves						
Chicken, Gallus gallus	1	16.6	2	1.97	0.0378	0.46
Reptile						
Box turtle, Terrapene carolina	1	16.6	3	1.19	0.0355	0.43
Black Racer, Coluber constrictor	1	16.6	1	0.24	0.0033	0.04
Total	6	99.6	29	577.5	8.2421	100

Sevierville Hill Camp near Knoxville, Tennessee, suggests that the soldiers were probably supplementing their diet by foraging in the surrounding area. This interpretation is based on the large percentage of chicken relative to cow and pig bones identified at the site (Young 1993:128-129).

Unfortunately, the small size of the faunal sample recovered from Feature 1 at Secessionville, limits investigations into this area. Army regulations emphasized roasting or boiling meats for health reasons. At Camp Baird the common occurrence of articulating joints, such as distal humerus/proximal radius-ulna, distal radius/carpals, and distal tibia/tarsals, were interpreted to reflect the use of boiled meat rather than smaller, individually cut meats used for roasting. The large segments of humerus diaphyses identified, instead of smaller pieces of cut bone, were interpreted to show further support for the notion that cooks at Camp Baird routinely prepared large quantities of boiled meats and stews for the troops (Legg et al. 1991: 212-213). According to Billings (1995) meat was more likely to be boiled than roasted if it fell into the hands of the company cook (Billings 1995:131).

Table 13.
Feature 8, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %
Mammal						
Cow, Bos Taurus	1	25	64	279.08	4.1798	75.98
Pig, Sus scrofa	1	25	36	69.46	1.1955	21.73
Deer, Odocoileus virginianus	1	25	1	3.49	0.081	1.47
Unidentified Mammal			414	369.72		
Aves						
Chicken, Gallus gallus	1	25	2	2.39	0.0451	0.82
Unidentified			1	2.07		
Total	4	100	518	726.21	5.5014	100

Identification of meat cuts at the Headquarters Complex of Camp Nelson in central Kentucky indicate the more extensive use of pork and beef cuts of high to medium quality that were roasted. The high proportion of Union officers posted at the Headquarters may explain the higher quality meats present. A similar pattern has been observed at a Union encampment at Folly Island, South Carolina (McBride 1994: 143). Young (1993) in her study of the Union encampment at the Sevierville Hill Camp near Knoxville, Tennessee, suggests that the soldiers were probably supplementing their diet by foraging in the surrounding area. This interpretation is based on the large percentage of chicken relative to cow and pig bones identified at the site (Young 1993:128-129).

For cow elements, no patterns similar to those seen at Camp Baird or Headquarters Complex were observed, however the higher frequency of deer bone provides possible evidence for the use of wild species to supplement the diet as was observed at Sevierville Hill.

Feature 8 (Table 13) is a large trash burn pile located near Feature 10, a semi-subterranean house. The materials recovered from Feature 8 are probably associated with the occupants of the dwelling. Although this feature yielded the largest number of bones (518), most of them could not be identified due to extensive burning. Of the 518 bones recovered 458 or 88% showed evidence of burning (See Table 16). Cattle bones make up the

majority of the faunal remains from this feature (75.98% of the total biomass) followed by pig (21.73 %). Deer is relatively sparse representing only 1.47% of the total biomass. Chicken was the only bird species present (.82%) .

Feature 10 (Tables 14-15) was the largest of the three features and was identified as a semi-subterranean rectangular dwelling measuring 13 by 9 feet. Trash had also been deposited in the house and excavation proceeded with the removal of fill by obvious zones. Since the bone samples from each zone are relatively small they were combined and analyzed as a single unit (Table 14) and then considered separately (Table 15).

Table 14.
Feature 10, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

Species	MNI #	MNI %	Number of Bones	Weight gm	Biomass kg	Biomass %
Mammal						
Cow, Bos Taurus			120	617.56	8.543	80.25
Pig, Sus scrofa			47	98.32	1.6345	15.35
Deer, Odocoileus virginianus	1		3	10.42	0.2168	2.04
Rabbit, Sylvilagus sp.	1		1	0.14	0.0045	0.04
Unidentified Mammal			205	163.04		
Aves						
Chicken, Gallus gallus	1		8	2.38	0.0449	0.42
Turkey, Meleagris gallapavo	1		3	5.24	0.0922	0.87
Reptile						
Box turtle, Terrapene carolina	1		5	2.37	0.0564	0.53
Pisces						
Bass, Micopterus salmoides	1		3	0.35	0.0115	0.11
Drum, Sciaenidae sp.	1		3	1.1	0.0417	0.39
Unidentified fish			2	0.24		
Total			400	901.16	10.6455	100

Table 14 provides information on Feature 10 where the zones have been combined. Cow (80.25% of the total biomass) and pig (15.35%) are the most prevalent species followed by deer (2.04%). One major difference between Feature 10 and Features 1 and 8 is the number of species represented. Nine species in all were identified in Feature 10 including rabbit, turkey, and several fish species (bass and drum) suggesting that the occupants of the dwelling relied primarily on domestic animals for food but also used the wild game available to them from the numerous habitats in the vicinity.

The zones are considered as separate units (Table 15) in order to identify possible patterns that may reflect the behavior of the occupants. Zone 1 is a brown sand and shell fill placed in the house after its abandonment. It is likely, however, that the fill was found immediately adjacent to the structure. Interestingly, six animal species were identified form the 93 bone fragments recovered. Of the identified species, the majority of the biomass was from cattle (82.84%), followed by pig (11.15%) and deer (4.37%). Of the 37 identified cow bones, 15 had been cut and an additional 14 worked.

Zone 2 was a hard-packed floor which had built up during use. Five species were identified from 123 bones. This zone represents the largest sample from the feature. Cow (84.4%) and pig (13.22%) continue to dominate the collection followed by turtle (.92%), chicken (.78%), and bass sp. (.68%). Of the 29 cow bones recovered 9 had been cut and 11 worked.

Zone 3 was located near the chimney and consists of mixed brown and white sand. Sixty-two bones were recovered representing seven species. Again cow (86.8%) and pig (6.98%) are the most prevalent species. Twenty-two bones showed evidence of burning, 10 had been cut, three worked, six both burned and worked, and seven both burned and cut. Since 56% of the bones had been burned it seems plausible that Zone 3 was created by discard from the chimney area.

Zone 4 was located at the front of the chimney appearing as a zone of refuge accumulation. Only 25 bones were recovered from the area representing cow (96.91%) and pig (3.09%). Six of the bones had been burned, two burned and worked, one burned and sawed, and

Table 15.
Feature 10, Zones 1-5, Minimum Number of Individuals, Number of Bones, Weight, and Estimated Meat Yield.

	MNI	Number of Bones	Weight gm	Biomass kg	Biomass %
Zone 1					
Cow	1	37	228.18	3.008	82.84
Pig	1	11	20.86	0.4049	11.15
Deer	1	2	7.37	0.1587	4.37
Unid Mammal		36	27.17		
Chicken	1	3	1.76	0.0341	0.94
Box Turtle	1	3	1.95	0.0004	0.01
Drum sp.	1	1	0.55	0.025	0.69
Total	6	93	287.84	3.6311	100
Zone 2					
Cow	1	29	85.06	1.4347	84.4
Pig	1	9	10.85	0.2248	13.22
Unid Mammal		74	32.61		
Chicken	1	5	0.62	0.0132	0.78
Box Turtle	1	1	0.35	0.0156	0.92
Bass sp.	1	3	0.35	0.0115	0.68
Unid Fish		2	0.24		
Total	5	123	130.08	1.6998	100
Zone 3					
Cow	1	27	130.27	2.1055	86.8
Pig	1	5	7.92	0.1694	6.98
Deer	1	1	3.05	0.0715	2.95
Rabbit	1	1	0.14	0.0045	0.18
Unid Mammal		23	32.35		
Box Turtle	1	2	0.42	0.0177	0.73
Turkey	1	1	1.64	0.032	1.32
Drum sp.	1	2	0.55	0.025	1.03
Total	7	62	176.34	2.4256	99.99
Zone 4					
Cow	1	10	85.51	1.4415	96.91
Pig	1	1	1.86	0.046	3.09
Unid Mammal		14	11.76		
Total	2	25	99.13	1.4875	100
Zone 5					
Cow	1	7	43.33	0.7818	43.91
Pig	2	19	52.75	0.9332	52.41
Unid Mammal		21	26.99		
Turkey	1	2	3.6	0.0655	3.68
Total	4	49	126.67	1.7805	100

three just worked.

Finally, Zone 5 represents the ash, charcoal, and burned sand in the firebox area. Of the 49 bones recovered from this unit 46 (94%) had been burned. In contrast to the other zones, pig had the highest representation with 52.91% of the total biomass followed by cow (43.91%) and turkey (3.68%). Five cattle bones had been worked with two of them having been burned. Another cow bone had been sawed and burned as well. One turkey limb element had also been burned and cut.

In comparing the faunal remains from the five zones, several patterns do emerge, the most obvious being the high percentage of cattle bones present in the sample. Additionally, most of the identified worked bone were cow the sole exception being the turkey bone in Zone 5. All of the zones contained bones that had been worked for the production of bone buttons.

Modified Bone

A summary of the modified bone elements for each of the historic features is provided in Table 16. For Feature 1, all bones displaying some form of modification had been sawed. Two of the elements were vertebra which had been divided down the long axis of the centrum, a pattern seen when a carcass is split (Legg et al.. 1991:212). As mentioned earlier, most of the skeletal elements recovered from Feature 8 had been burned. This was the only bone modification observed for this sample.

Most of the worked bone identified in historic context comes from Feature 10. Of the 352 bones elements recovered from zone fill, 45% had been modified. Many of the modified cow bone associated with the feature had been used in the production of buttons. These included blanks where buttons had been removed and semi-circular pieces of carved bone that probably represent broken attempts that were discarded. The production of bone buttons involves boiling, cleaning, and shaping the bone into lengthwise pieces. Disks were then cut from the molds in varying sizes. Many bone buttons manufactured using this process were for utilitarian purposes such as use on underwear or trousers. These buttons can have anywhere between two to five holes used for attaching them. Carved buttons, such as those found at Secessionville, and inlaid buttons usually date after 1850 (Luscomb 1977: 25).

Cuts of Meat

One important question addressed in this study is the determination of whether meats were butchered on site or bought in from elsewhere. Meat purchased from a butcher shop can generally be identified in the faunal record by the presence of two characteristics. First, when meat has been "professionally" butchered there is a high percentage of skeletal elements from the body (vertebra, ribs, forequarter, and hindquarter) and fewer head and foot bones present. The second trend involves an unusually high frequency of skeletal elements which have been sawed (Reitz and Weinand 1995).

In order to pursue this investigation the individual skeletal elements (whole and fragmented) identified as cow were counted for each feature sample. The element frequencies observed in each feature are compared with available collections from two Union encampments and several sites in the Charleston vicinity. Comparative information on cow elements was available for Camp Baird (Legg et al. 1991), Folly Island (Snyder 1989), 66 Society Street (Frank 1988), Lodge Alley (Reitz 1983), Charleston Convention Center (Homerkamp et al. 1982), Princess Street Unit 1 (Hogue 1996) and the Nathaniel Russell House (Andrus Component) (Reitz and Weinand 1995: Table 20). This Andrus component dates from 1820-1870 (Reitz and Weinand 1995:156-157). Additionally, element percentages for the standard cow are also included (Reitz and Zierden 1991).

The two Union encampments are represented by Camp Baird (Legg et al. 1991) and Folly Island (Snyder 1989). Camp Baird was the encampment for the 32nd United States Colored Infantry occupied in September and October of

Table 16.
Modified Bones from Features 1, 8, and 10.

	Sawed	Clean Cut	Burned	Cut	Chopped	Gnawed	Worked	Burned/ Worked	Burned/ Cut	Burned/ Sawed
Feature 1										
Cow	3									
Total	3									
Feature 8										
Cow			53							
Pig			32							
Unidentified Mammal			373							
Total			458							
Feature 10										
Cow			3	34			34	10	6	2
Pig			21							
Deer			1							
Turkey										2
Unidentified Mammal			50							2
Total			72	34			34	10	6	6

1864. The soldiers provided the primary labor force for the construction of nearby Fort Howell earthwork located on Hilton Head Island in South Carolina (Legg et al. 1991). Folly Island represents a Union winter camp occupied in 1863 during the siege of Charleston. Human skeletal remains recovered form the site indicated that at least 19 black soldiers had died there. These soldiers were probably form the 55th Massachusetts, 1st North Carolina, and the 2nd U.S. Colored Infantry (Legg and Smith 1989).

Lodge Alley (Reitz 1983) and the Charleston Convention Center (Homerkamp et al. 1982) are both associated with lower-class residency in the Charleston area while Nathaniel Russell (Reitz and Weinard 1995) and 66 Society Street (Frank 1988) reflect a more middle-class. Unit 1 from Princess Street (Hogue 1996) was associated with a dual-function of domestic and commercial use.

The percentages computed for cow elements are given in Table 17 and Figure 61. The most obvious pattern that can readily be observed is that no cranial bones were associated with Features 1, 8, and 10, and no foot bones with Features 1 and 10. Both indicating the purchase of meat. The absence of cranial and foot bones has been associated with the butchering practice of selling heads, feet, and other butchering debris to contractors (Legg et al. 1991: 212). Interestingly, when patterns are compared in Figure 61, Feature 1 is very similar to Princess Street Unit 1 and Folly Island.

The patterns observed for Feature 8 and 10 are worthy of discussion. These two features appear to have an inverse relationship to each other with a high frequency of foot bones associated with Feature 8 and hind quarters associated with Feature 10. These differences could be related to the bone button production identified with Feature 10. Because of their large size, hind limb bones would have been ideal for creating button slabs and a higher frequency of hindlimb bones would be expected. The high frequency of hindfoot elements associated with Feature 8 is much greater than that seen in any of the other collections. Feature 8 could have served as an area for discarding bone elements not being used the production of bone buttons.

Conclusions

Prehistoric Feature 5

Analysis of the faunal materials recovered from Feature 5 indicate seasonal use of the tidal and estuarine environments augmented by mammals that inhabit the more forested environments. This foraging pattern was supported by the large percentage of fish elements and the diversity of mammals identified in the collection.

Comparisons were made between the sample recovered using course, medium, and fine screening to better understand the reliability of the archaeological recovery process especially in light of the large percentage of fish remains. The results of this study support the use of fine

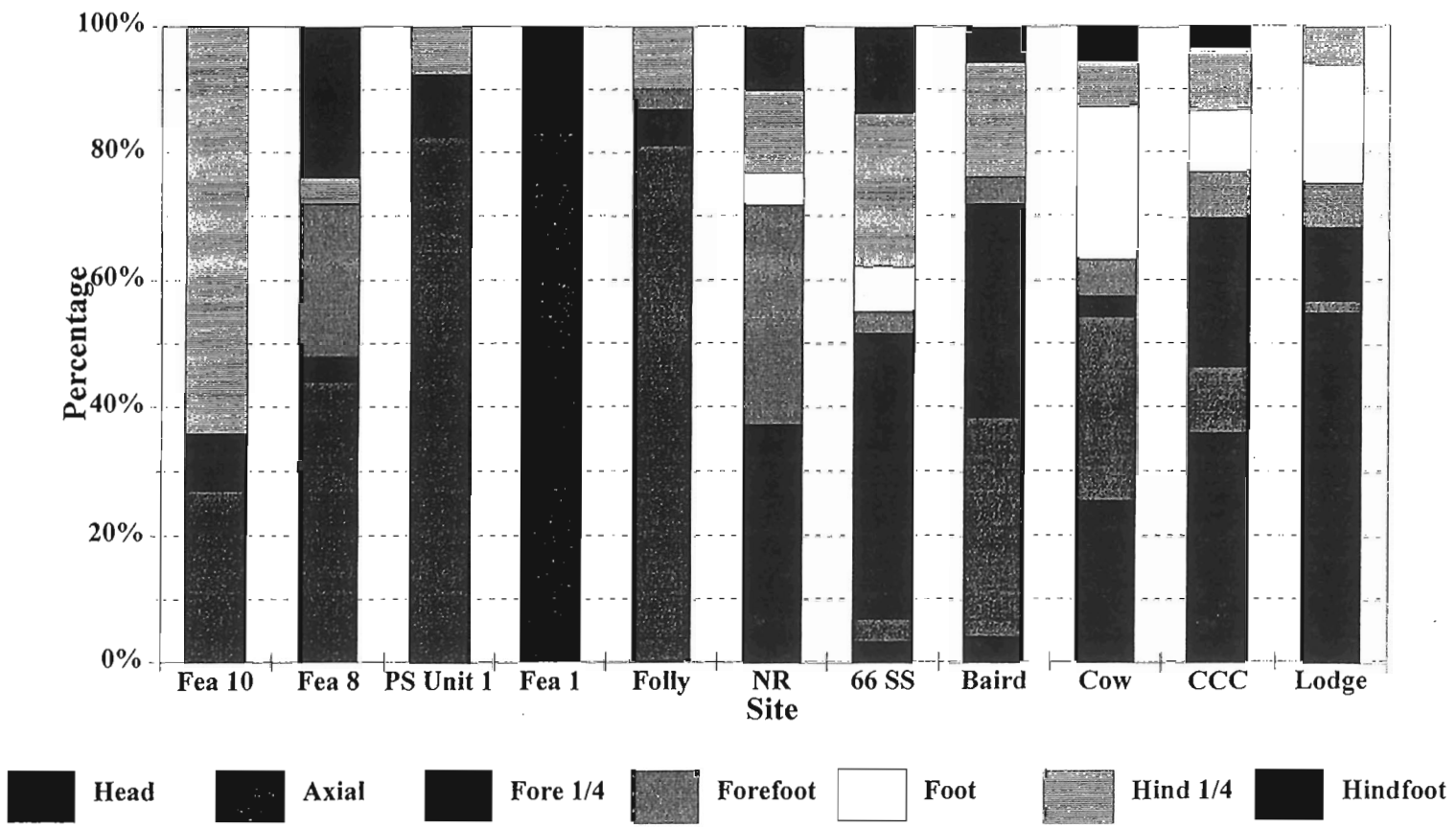

Figure 61. Percentage of cattle bone elements.

Table 17.
Cattle element percentages from various sites.

	Head	Axial	Fore 1/4	Forefoot	Foot	Hind 1/4	Hindfoot
Feature 1	0	83	17	0	0	0	0
Feature 8	0	44	4	4	24	24	0
Feature 10	0	27	9	0	0	64	0
Princess Street Unit 1	0	82.5	10	0	0	7.5	0
Nathaniel Russell	1.3	0.03	36	34	5	13	10
66 Society Street	3.46	3.46	44.8	3.46	6.91	24.1	13.81
Lodge Alley	49.4	1.6	10.4	6	17	5.2	10.4
Standard Cow	25.8	28.6	3.2	5.7	24.2	6.8	5.7
Camp Baird	4.25	34.27	33.57	4.25	0	17.97	5.67
Folly Island	0.57	80.57	5.71	3.43	0	9.71	0
Charleston Convention Center	36.2	10.3	23.5	7	9.9	9.5	3.6

screening in the recovery of faunal remains especially in coastal areas where fish are more likely to be exploited.

As no materials were recovered from the course screen, it is recommended that a minimum screen size of ⅛ inch be used if fine screen (1/16 inch) is not available.

Historic Features

The faunal collection associated with the Secessionville historic features were inventoried and analyzed for MNI (minimum number of individuals) and biomass percentages. In all three features, cow was identified as the most significant contributor to the total biomass and presumably the diet as well. Analysis of Feature 1, demonstrated that deer may have also been an important food item suggesting that the Confederate soldiers stationed in Secessionville may have supplemented their "army rations" by hunting. This pattern of foraging has been observed in at least one Union encampment located in Tennessee (Young 1993). Confederate soldiers stationed by streams procured fish and small game such as rabbits, squirrel, possums as well as birds for food. Troops positioned in the coastal areas often augmented their diet with foods such as crabs, oysters, and alligator. Foraging has been documented as a widely used and effective way to replenish low food supplies (Wiley 1978: 101-102).

Analysis of the modified bone and cow elements recovered from the Features yielded some interesting patterns. In Feature 1 the modified bone had been sawed. Additionally, no bone elements associated with the foot or head were present in this sample. The combination of these two patterns indicates that the meat was probably butchered elsewhere.

Low morale among the Confederate soldiers is attributed to two major factors. The first is the shortage of rations, the second being shortage of clothing. The unusually large frequency of bone blanks used for the production of buttons identified in Feature 10 may indicate the Confederate Army's inability to supply new buttons to the troops. Within the structure identified as Feature 10, all discernable zones contained debris associated with this process. The long marches without shoes and heavier clothing in the winter definitely was discouraging (Wiley 1978:135). Such stories no doubt included the lack of simple functional items such as trouser buttons.

The frequency of cattle bone elements were then compared between the three features and faunal samples recovered elsewhere. Interestingly, the absence of cranial elements suggests that the beef was probably supplied by the army after it had been processed (butchered) elsewhere. It has been documented that Confederate soldiers purchased foodstuffs directly from farmers when rations provided by the army were low (Wiley 1978: 100). Whether cuts of beef were roasted or boiled could not be addressed

using the faunal collections recovered.

ETHNOBOTANICAL REMAINS

Introduction

Ethnobotanical remains were recovered from a number of excavation proveniences associated with both the prehistoric and historic assemblages at Secessionville, including handpicked samples from ¼-inch dry screening, as well as a water floated sample from the Thom's Creek shell pit (Feature 5). Virtually all of the available samples were included in this study and the number was limited only by the nature of the site and recovery techniques.

Flotation samples, offering the best potential to recover very small seeds and other food remains, are expected to provide the most reliable and sensitive subsistence information. Samples of 10 to 20 grams are usually considered adequate, if no bias was introduced in the field.

Popper (1988) explores the "cumulative stages" of patterning, or potential bias, in ethnobotanical data. She notes that the first potential source of bias includes the world view and patterned behavior of the site occupants -- how were the plants used, processed, and discarded, for example. Added to this are the preservation potentials of both the plant itself and the site's depositional history. Of the materials used and actually preserved, additional potential biases are introduced in the collection and processing of the samples. For example, there may be differences between deposits sampled and not samples, between the materials recovered through flotation and those lost or broken, and even between those which are considered identifiable and those which are not. In the case of Secessionville the soil samples were each 5 gallons in volume and were water floated (using a machine assisted system) during the excavations.

Handpicked samples may produce little information on subsistence since they often represent primarily wood charcoal large enough to be readily collected during either excavation or screening. Such handpicked samples are perhaps most useful for providing ecological information through examination of the wood species present.

Such studies assume that charcoal from different species tends to burn, fragment, and be preserved similarly so that no species naturally produce smaller, or less common, pieces of charcoal and is less likely than others to be represented — an assumption that is dangerous at best. Such studies also assume that the charcoal was being collected in the same proportions by the site occupants as found in the archaeological record — likely, but very difficult to examine in any detail. And finally, an examination of wood species may also assume that the species present represent woods intentionally selected by the site occupants for use as fuel — probably the easiest assumption to accept if due care is used to exclude the results of natural fires.

While this method probably gives a fair indication of the trees in the site area at the time of occupation, there are several factors which may bias any environmental reconstruction based solely on charcoal evidence, including selective gathering by site occupants (perhaps selecting better burning woods, while excluding others) and differential self-pruning of the trees (providing greater availability of some species other others). These factors are of particular concern at historic sites where there is evidence of wood selection being guided by heat production, quality of the fire, ease of igniting, and a whole range of other factors (for a brief review from an urban perspective, see Zierden and Trinkley 1984).

At a historic site hand picked charcoal may tell us more about cultural factors than it does about the natural environment. For example, there is abundant documentary evidence to suggest that

the Confederate troops exhausted ready fire wood and began to search further afield, as well as began to use building lumber late in the war. Smart and Hoffman (1988) provide an excellent review of environment interpretation using charcoal which should be consulted by those particularly interested in this aspect of the study.

Procedures and Results

The one flotation sample from Feature 5, east half, zone 1, was prepared in a manner similar to that described by Yarnell (1974:113-114) and was examined under low magnification (7 to 30x) to identify carbonized plant foods and food remains. Remains were identified on the basis of gross morphological features and seed identification relied on Schopmeyer (1974), United States Department of Agriculture (1971), Martin and Barkley (1961), and Montgomery (1977).

The float sample consisted of a 21% sample of the charcoal obtained from 5 gallons of soil (by volume). In addition, a sample of waterscreened materials from the same provenience was also examined in order to compare the results of flotation and waterscreening for this particular feature type. The results of this analysis are provided in Table 18. In both cases the sampled material is well over the 20 gram "threshold" typically proposed as adequate.

In the waterscreened sample (ARL 42187) wood charcoal comprises the majority (by weight in grams) of the remains, followed by shell fragments and uncarbonized remains, primarily rootlets and similar "trash." A small quantity of hickory nutshell (*Carya* sp.) is found in the sample, as are two unidentified carbonized seed fragments.

The other sample (ARL 42186), reflecting the results of traditional water flotation, produced about equal proportions of wood charcoal, shell fragments, and hickory nutshell. It, too, yielded a single fragmentary carbonized seed coat. This sample was surprising clean, with uncarbonized materials accounting for only 4.2% of the sample.

Although we are typically told that waterscreening will reduce the likelihood of recovering seeds, this does not seem to be the case with this particular Thom's Creek sample. There is, however, a very clear difference in the proportion of wood charcoal and food remains, with the flotation sample appearing to provide a greater sample of food remains such as nutshell. While the flotation sample is not as clean as the waterscreened material, the difference in content seems to overweigh convenience.

There are four hickories common to the Charleston area -- bitternut (*Carya cordiformis*), water (*C. aquatica*), mockernut (*C. ovalis*), and pignut (*C. glabra*). These species occur on a variety of soil types, from dry woods to rich or low woods to swamp lands. In South Carolina they fruit in October, although seeds are dispersed from October through December (Radford et al. 1968:363-366). Good crops of all species are produced at intervals of up to three years when up to about 16,000 nuts may be produced per tree (Bonner and Maisenhelder 1974:271). Complicating this simple seasonality is the ability of the nuts to be stored for up to six months.

Recalling one of the few other detailed ethnobotanical studies of Thom's Creek sites, hickory nutshell seems to be the only food remains present in any appreciable quantity (Trinkley 1975). This study, incorporating Daw's Island (38BU9), Spanish Mount (38CH62), and the Sewee Shell Ring (38CH45) revealed that hickory comprised between 2% and 14% of the samples. A more recent study of flotation samples from Bass Pond (38CH124) found that hickory nutshells comprised between 17% and 37% of each sample (Trinkley 1993:201) — far more in the line with the results from Secessionville. Consequently, while hickory nuts commonly supplemented the prehistoric diet, their use at Thom's Creek sites seems to varied dramatically. This variation may be the result of different sampling procedures, although we should not immediately discount subsistence strategy differences between the various sites.

The near absence of seeds in the flotation and waterscreening collections likely speaks more to the process of preservation than it does to either the presence or absence of seeds in the vicinity of

Table 18.
Analysis of Feature 5 Flotation and Waterscreened Samples,
weight in grams

Provenience	Wood wt	Wood %	Uncarb Organic wt	Uncarb Organic %	Shell wt	Shell %	Bone wt	Bone %	Hickory Nutshell wt	Hickory Nutshell %	Seeds wt	Seeds %	Total
E½, Z. 1, Flotation	7.37	31.7	0.23	4.2	1.71	31.1			7.67	33.0	1-t	t	23.22
E½, Z. 1, Waterscreen	40.67	89.5	0.84	1.9	3.37	7.4	0.27	0.6	0.27	0.6	2-0.01	t	45.42

t = trace

Table 19.
Wood Charcoal Identified in Handpicked Collections,
by percent

Provenience	Oak	Ironwood	Pine	Beech	Maple	Hickory	UID
Fea 1, Cut 9	100.0						
Fea 8, E½	20.0		80.0				
Fea 8 W½	20.0		80.0				
Fea 10, E½, Z 1			50.0				50.0
Fea 10, E½, Z 2	40.0	40.0	20.0				
Fea 10, E½, Z 3	50.0		10.0			30.0	10.0
Fea 10, E½, Z 4	80.0		20.0				
Fea 10, E½, Z 5	100.0						
Fea 10, W½, Z 1			20.0	20.0	20.0		40.0
Fea 10, W½, Z 3	100.0						
Fea 10, W½, Z 5	33.0		60.0				7.0

the Thom's Creek pit. Since relatively few plants seed in the winter, it is probable that even these few remains are indicative of the pit being open in the spring or summer.

The handpicked samples were also examined under low magnification with a sample of the wood charcoal identified, where possible, to the genus level, using comparative samples, Panshin and de Zeeuw (1970), and Koehler (1917). Wood charcoal samples were selected on the basis of sufficient size to allow the fragment to be broken in half, exposing a fresh transverse surface. A range of different sizes were examined in order to minimize bias resulting from differential preservation. The results of this analysis are shown in Table 19 as percentages.

Wood charcoal from the waterscreened sample (ARL 42187), was similarly examined, although it produced only oak (*Quercus* sp.). This reliance on a single species seems unusual and has not been previously reported.

The historic assemblage reveals the use of at least seven different genera of trees, most likely for fuel, including oak (*Quercus* sp.), ironwood (*Carpinus caroliniana*), pine (*Pinus* sp.), beech (*Fagus grandiflora*), and maple (*Acer* sp.), as well as unidentified woods. Of these the most common is oak, although pine does run a very close second in frequency. The other woods seems to be isolated episodes of use, with none occurring in more than a single sample.

Discussion

The Thom's Creek Assemblage

The materials recovered from the Thom's Creek shell steaming pit reveal a complex mix of fuel wood, accidentally carbonized material, and food remains. As previously mentioned, the reliance on one wood is unexpected. One might assume that whatever wood was readily available would have been collected and used for the fire. Yet, it seems possible that there was a specific quest for oak. Although it is possible that oak was especially plentiful, oak is not a particularly good self-pruner, so it seems unlikely that other woods might not be used. Yet they apparently were not.

This finding seems to open a new avenue of research, although it leaves unanswered the question of whether it was simply plentiful or whether it possessed specific qualities that were considered desirable.

The abundance of hickories at this site, as well as at the Bass Pond site on Kiawah, seems unusual when compared to other seemingly similar Thom's Creek sites. The simple conclusion may be that the sites (or selected features) represent different seasonal deposits. Those, like Secessionville, that contain abundant hickory remains may represent fall periods of use (focused on October through November), while those with a reduced reliance may have been used either earlier or later in the season. Alternatively, we may simply be seeing evidence of the cyclical nut mast production that characterizes hickories.

Again, the data from Secessionville suggests that considerably more ethnobotanical research is warranted at coastal Thom's Creek sites. In general flotation is always thought to yield better samples than waterscreening — the former provides the opportunity to recovery small food remains, such as seeds, while the later tends to be more aggressive, causing increased damage and reduced recovery of small items. These truisms are, to some degree, reflected by this study. Of even greater interest, however, is that the waterscreening sample seemed to under-represent the importance of hickory. This is perhaps the result of some selection against hickory nutshell as the charcoal is being picked up. Regardless, at least for this sample, there were dramatic differences.

The presence of only a very few seeds in the collection should not be interpreted as indicative of the landscape, but rather as part of the seasonal indicator. Since the abundance of hickory suggests the feature was used in October or November, there would have been a greatly reduced range of seeding plants capable of contributing to the feature. Those which are present are highly fragmented. While this may indicate damage during the flotation or sorting process, the damage may more likely date from the

period of deposition and may reflect the condition of the material several months after the normal fruiting time.

The Historic Assemblage

The most common wood, oak, includes at least one specimen (from Feature 1) which is definitely live oak (*Quercus virginiana*). In the Charleston area there are at least 22 different species of oak, although only a few are abundant. They occur in a variety of environmental conditions, ranging from moist poorly drained soils (such as the overcup oak, *Q. lyrata*) to well-drained sandy soils (such as the laurel oak, *Q. lauriflora*). Some, such as the live oak, can be found on very widely varying soil and moisture conditions. The prevalence of this wood in the collection, however, may speak to more than the commonness of the species and its accessibility. Oak is also an excellent fuel wood. When air-dried it offers, on average per cord about 84% of the heat provided by a short-ton of coal (Graves 1919:Table 8). When green, as might have been the case at Secessionville, the heat value drops to 76% — lower, but still a very good wood. Because of the constituents, oak is among the more decay resistant woods, so it was often incorporated into structures.

Pine is also very common, although there are only seven species found in the Charleston area. Pine also exhibits an incredible range of conditions under which it thrives. The loblolly pine (*Pinus taeda*), for example, tends to favor flat, poorly drained areas. In contrast, the longleaf pine thrives on light, sandy soils which exhibit excessive drainage. Characterized as either a fire sub-climax or second-growth tree, pines are common in old fields and would likely have been available in a number of areas around Secessionville. Although not considered as good a fire wood as oak, dry pine offers about 80% of the heat provided by coal. Even when green it offers about 74% of the heat — nearly equal to that of oak. Pine, however, burns with more smoke than oak, so is considered less satisfactory. However, heartwood exhibits exceptional insect and decay resistance and might have been used extensively for earthwork fortifications and even crude structures.

The other species are a little more problematical. Ironwood is found throughout the coastal area, usually in areas of low, rich soils, most frequently associated with some water source. The tree is often found as little more than a short shrub, although it can grow up to 20 or 30 feet in height. The wood is exceptionally tough (hence its name), although it is usually crooked and of little commercial importance. It was used for handmade tool handles and levers. In addition, the wood is an excellent fuel, providing (even green) 90% of the heat of coal.

Beech also favors very rich, damp woods, being found as single specimens, often associated with other hardwoods such as maples and magnolias. Beech, because of its shallow root system, often sends up suckers, forming a thicket of small beech trees surrounding a single large tree. It may have been these smaller trees that were selected, rather than the larger tree, which is usually a very tough wood (rivalling ironwood). Alternatively, beech was often used as boxes and crates and even as slack cooperage for food barrels (Panshin and de Zeeuw 1970:559). Given the small amount found the collections, it may be that this wood found its way into the collection not from a local source, but from containers being burned as fuel by the Confederate troops at Secessionville. This is perhaps supported by its recovery within the structural remains of Feature 10. Beech is also a very respectable fuel wood, providing 80% of the heat of coal.

Maple, most likely red maple (*A. rubrum*) is most often found on very wet or very dry soils, preferring the extremes. However, the maple also exhibits a number of commercial uses, and is used extensively in the manufacture of furniture, boxes, crates, and food containers (especially butter tubs). Like the beech, the small quantities of maple at Secessionville and their recovery from the troop structure may indicate secondary use of wood packing materials for fuel (although it has a fuel efficiency of only 73%, among the lowest of the different species identified).

The final wood identified is hickory, of which there are at least six in the coastal area, with four being most common. These occur in a wide

range of environmental settings. The bitternut hickory is fond on wet soils, while the pignut hickory is most common on light, well drained sands. Some, like the water hickory, are most often found on poor soils where other hardwoods can't grow, but are equally adapted to well drained soils. Hickory wood is strong, hard, and resilient. It is not, however, resistant to insects or decay, so it rarely found its way into architectural use. As a fuel wood hickory is exceptional, providing on average 97% of the heat of coal. It seems likely that hickory, where encountered, would have been a favored wood for burning at Secessionville.

SEASONAL DATING OF THOM'S CREEK CLAM REMAINS

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The quantity of quahog shells (*Mercenaria mercenaria*) was adequate for growth line work only from one shellfish steaming pit, Feature 5, dating to the Thom's Creek phase. Although Feature 5 may have been reused on several occasions, the shells submitted for analysis came from an area of the feature filled in a single episode and that these quahog shells can be assumed to be a single death assemblage.

A marginal piece of the 14 individuals from Feature 5 was ground to a high luster (the valves were broken when whole) and examined under low magnification or macroscopically for color at the margin — white/brown or gray. Relative amount (width) of that color band compared to the width of the same color in the previous year of life was recorded as well using three categories: one third as wide, two-thirds as wide, three-thirds as wide. The color was then *interpreted* as to whether the animal was in an annual cycle of fast growth (white or brown shell) or slow growth (gray shell), known as the fast/slow technique. The amount of growth was also recorded as opaque (fast) 1, 2, or 3 (O1, O2, O3) or translucent (slow) 1, 2, or 3 (T1, T2, T3), known as the opaque/translucent technique.

Growth controls are essential for the second stage of interpretation, that of when in the 12 month calendar year the shells were harvested. The controls used by this author were built on a set of 1846 quahogs collected from Bird Shoals, North Carolina from July 1980 through September 1988. There are large samples from at least six months for six years. These controls emphasize a biological axiom — that there is a great deal of variation in the way individuals respond to stimuli. It is incumbent upon the researcher to capture variation at the level of the population, not the individual.

To interpret death time of a single shell would be meaningless. If it died in fast growth, in most years that could be any one of ten months. If it died in slow growth, in could have been harvested in any one of twelve months. If one measures the amount of growth, one can find that in every month there will be individuals less than 10% grown and individuals more than 60% grown. Counting daily lines evidences the same amount of variability in any calendar month. There is no absolute measure or guide by which a researcher can match an individual shell and an individual month.

Since it is necessary to interpret a population of shellfish, it is necessary to investigate a population of archaeological shellfish, or a single death assemblage. There are two ways that confidence can be gained that a single death assemblage is being sampled — by considering only shells from a single sealed pit, or, less reliably, by taking the shells from a very small volume of matrix, such as a column sample level. The shells from 38CH1456 were assembled from a single shellfish steaming pit and should represent a single death assemblage.

Through extensive research and blind testing, this author has found that calendar months are best typified by the fast/slow and opaque/translucent percents of populations of quahogs. Table 20 presents this information for the Bird Shoals, North Carolina control used to interpret the set of quahogs in Feature 5 at 38CH1456.

Table 20.
Mercenaria Dying in Fast Growth in the Bird Shoals Control
percent of all animals

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1980							5					
1981		93		95		19		0		0		88
1984	100	100	100	98	86	8						
1985									10	56	77	86
1986	100	97	97	100	54	6	0	4	31	33	92	97
1987	94	97	90	100	60	4	0	0	6	48	77	58
1988	100	91	100	94	90	34	0	0	28			
Range												
Max	100	100	100	100	90	34	5	4	31	56	92	97
Min	94	91	90	94	54	4	0	0	5	0	77	58
n	149	144	127	161	170	190	172	151	196	134	120	105

The set of 12 readable shells contained 6 (50%) shells in fast growth and 6 (50%) in slow growth. It would appear, from comparison with monthly growth controls, that the shells were harvested sometime during the month of either May or October (see Table 20).

OTHER SHELLFISH

The preceding section of this study has explored the ability of clams (*Mercenaria mercenaria*) to provide an indication of seasonality. There are, however, other shellfish present in the Thom's Creek assemblage at Secessionville and an examination of these species may help us to better understand not only the dietary choices present, but also the environmental variability of the site area.

Shellfish in the Thom's Creek Feature

Although oyster (*Crassostrea virginica*), was the most common shellfish found in Feature 5, small quantities of clam (*Mercenaria mercenaria*), Atlantic ribbed mussel (*Geukensia* [formerly *Modiolus*] *demissa*), common cockle (*Trachycardium muricatum*), stout tagelus (*Tagelus plebeius*), knobbed whelk (*Busycon carica*), and periwinkle (*Littorina littorea*) were also recovered from this large shellfish steaming pit.

Common Oyster

The oyster is adapted to waters having considerable variation in salinity and temperature, although reproductive functions are affected by extremes. The optimum salinity range is 10 to 28 ppt. A suitable substrate is critical and oyster shells or other hard materials are preferred. Approximately 95% of the oyster standing crop in South Carolina are intertidal (Lunz 1952) and are found as oyster clumps, formed by successive yearly sets of "spat" on older oysters. These oyster beds provide habitat for a variety of other invertebrates, such as crabs, ribbed mussels, and barnacles.

Vernberg and Sansbury (1979:275) note that the most common pelecypod mollusk in the Port Royal area of Beaufort County is the oyster, with the beds in that area producing about 0.25 bushel (about 200 oysters) per square yard, of which 39% are over 2 inches in length and 15% are over 3 inches. While these data must be carefully interpreted because of commercial oystering pressures, Bearden and Farmer observe that while commercial oyster production has decreased by 56% from 1967 to 1972, the "locations and characteristics" of beds have "changed insignificantly" (Bearden and Farmer 1972:211). Many other factors must be considered when determining why oyster quality and quantity may have changed. For example, residential and commercial development have likely changed drainage patterns and rain run-off, both of which affect habitat and productivity.

Prime areas for oyster beds are along the outside edge of bends in tidal stream channels (Larson 1969:123) and areas of tidal marsh with bottoms adequate to support oyster growth. Oysters grown on intertidal mud flats, where the substrate is marginally adequate, have long slender shells.

In Feature 5, oysters were very common, accounting for 56.8% of the shell volume by weight. Nearly half of this weight comes from crushed shells, suggesting either an unexpected amount of damage opening the oysters after steaming or that the shells "laid around," becoming fragmented prior to being replaced in the pit.

Periwinkle

Common at Late Archaic sites, periwinkle is tied with stout tagelus for the second most abundant shellfish in Feature 5, representing 12.3% of the collection by weight.

The periwinkle's only habitat is the salt marsh, since the snail is totally dependent upon brackish water. It feeds on algae found growing on marsh grass, shells, debris, and even the marsh surface. They are relatively easy to collect since they tend to move up and down *Spartina* in rhythm with the tides. Vernberg and Sansbury (1972:274) found a periwinkle density of up to 120 individuals

per square meter of marsh during the summer. During the cold winter months, however, periwinkles tend to be conspicuously absent from the marsh (Meyer 1991:51).

They may be prepared by steaming them for about 10 minutes and then picking the meat out with a small bit of wood. The snails may also be boiled to produce a broth, with the shells sinking to the bottom of the stew pot.

Stout Tagelus

The species accounts for 12.3% of the Feature 5 assemblage by weight. Given the lightness and fragility of the shell, it seems clear that this quantity indicates intentional collection on a fairly regular basis.

It is typically found in similar ecological settings as the ribbed mussel (discussed below), preferring sand-mud intertidal areas where it burrows into the bottom. Collecting the species requires that they be dug out and Larson (1969:125) questions the ease with which they could be obtained. Nevertheless, he notes that they contribute noticeable, if small, concentrations to Georgia middens, suggesting at least occasionally they were intentionally collected, perhaps in the process of also collecting burrowing clams. Quitmyer (1985a:31) indicates that the collection process is rather involved, indirectly suggesting that occasional collection with other species is more likely than direct exploitation.

It seems possible that the linkage with clams is valid, albeit backwards. Based on Feature 5, it seems that the tagelus was being actively sought and that the clams (in spite of their higher percentage by weight) may have been incidentally collected. Other researchers may have been mislead by the tagelus' fragile shell and the difficulty in accurately estimating its contribution.

Northern Quahog

Also known as the hard-shell clam, this species tends to most common in areas which have an abundance of shell in the substrate, such as along the bases of intertidal oyster beds and interspersed with intertidal oysters. They also tend to be found in the protected tidal creeks rather than in the bays or sounds. Quitmyer (1985a) reports a salinity range as low as 13 ppt, but an optimum salinity of about 27 ppt. Sandifer et al. (1980:180) report a clam density of about 83 clams per square yard in shelly substrate compared to about 0.2 clam per square yard in sandy bottom areas.

In Feature 5 clams accounted for 6.2% of the shellfish by weight. Given the nature of the clam shell this translates into relatively few individuals, suggesting that it was not a common food source.

Atlantic Ribbed Mussel

This is the third most common shellfish, tied with clam, on the basis of weight (6.3%). Yet, given the light, fragile nature of the shell, it seems almost certain that mussels were far more common in the assemblage than clams. This species is often represented by much lower percentages and Espenshade et al. (1994:170) have suggested that quantities as low as 0.8% may indicate intentional collection.

It is common in the salt marshes and brackish estuaries, usually buried in the mud among the roots of the marsh cordgrass *Spartina* or fastened to objects at the surface of the mud. Typically about an inch of its wide end sticks above the mud. At high tide it opens and feeds by siphoning water; at low tide the shell is closed tight. This shellfish is able to move, albeit very slowly. Even today ribbed mussels may be found interspersed in oyster beds. Although Larson (1969:126) notes that ribbed mussels can form single-species beds, a study in the Port Royal Sound area by Vernberg and Sansbury (1972) found them as single individuals in sandy mud flats or attached to oyster shells in clumps. Their density ranged from about 0.3 to 2 individuals per square meter in study plots (Vernberg and Sansbury 1972:274). Quitmyer (1985a:30) notes that they are often found localized in the high marsh grasses and mudflats — areas easily traveled and open to simple collection techniques.

Ribbed mussels, as suggested by their presence in the Secessionville feature, are edible, having what is often described as a chewier and fuller-flavor than oysters when steamed (Amos and Amos 1985:408; Meyer 1991:54). To many, however, their yellowish appearance is far from palatable.

Common Cockle

The cockle represents 3.7% of the shell weight from Feature 5. The uncommon presence of this species suggests accidental inclusion, likely in the process of gathering of other shellfish. The cockle is typically found very shallowly (under a half inch) buried in sand or mud below the mean low water in depths ranging from 1 to 30 feet (Amos and Amos 1985:398). Its preference is for sandy bottoms along beach and tidal areas.

Knobbed Whelk

Whelk comprised 1.2% of Feature 5 by weight. Given the thick, dense shell of the whelk, clearly relatively few individuals are present — making it a rare species.

Whelks are typically found on sandy bottoms in shallow waters, although they may also be found buried in sand flats exposed by the low tide and even in oyster beds, where they are a major predator of the oyster. In fact Larson noted that "these few large and edible snails would . . . have been picked up when found among the oysters" (Larson 1969:128). Quitmyer (1985a:32) observes that the whelk is a migratory species, with peak densities in fall and spring. During the winter and summer they typically move into deeper waters or the beach zones -- areas less likely to have been visited by the occupants of Secessionville.

Blue Crabs

Blue crabs are typically found in shallows and brackish waters from the low tide line to considerable depths. Its adaptability, however, is amazing and crabs are able to survive even in fresh water. The male blue crab spends its adult life in the brackish water of sounds and estuaries. The female resides there until her eggs are ready to hatch, when she travels into the open ocean and releases her eggs. The crab hatchlings are swept back into the estuaries where they reach one or two inches by their first winter. While at least some crabs will found in South Carolina marshes year round, the greatest numbers occur between April and November (Freeman and Walford 1976:11; Moore et al. 1980:16).

Larson (1969:135) notes that there are an average of three to four crabs to the pound of live weight, but of this only 10% to 15% is edible meat -- making the crab a rather poor (or at least expensive) dietary choice. This, in fact, may account for its very rare presence in the Feature 5 assemblage.

Table 21.
Allometric Values Used to Determine Biomass in kg Based on Shell Weight Expressed in kg

Shellfish	log a	b
Oyster	- 0.77	0.97
Clam	- 0.50	0.94
Mussel	- 0.22	0.80
Tagelus	0.29	0.99
Whelk	-0.12	0.84

Derived from Quitmyer 1985b:40.

Understanding the Shellfish Diet

Just as allometric formula are useful for understanding the biomass contribution of different vertebrate remains, they may also be used in the analysis of shellfish. Allometry, as previously discussed, is the biological relationship between soft tissue and bone mass. Biomass is determined using the least squares analysis of logarithmic data in which bone weight is used to predict the amount of soft tissue that might have been contained in the shell. The relationship between body weight and shell weight is expressed by the allometric equation $Y = aX^b$, which can also be written as $\log Y = \log a + b(\log X)$. In this equation, Y is the biomass

in kilograms, X is the shell weight in kilograms, a is the Y-intercept for a log-log plot using the method of least squares regression and the best fit line, and b is the constant of allometry, or the slope of the line defined by the least squares regression and the best fit line. Table 21 details the constants for a and b used to solve the allometric formula for a given shell weight X for each taxon identified in the archaeological record. In using allometric calculations to predict proportional biomass from shell weight it is important to note that the weight of shell used in the calculation obviously influences the results. There are a number of factors, such as differential preservation or discard practices, that may affect the weight of the shell recovered from an archaeological site. Thus, this technique of analysis may not give the precise results that the final numbers would appear to indicate.[1]

Table 22.
Shell Weight and Estimated Meat Yield for Shellfish in Feature 5

	Shell Weight		Meat Yield	
Shellfish	kg	%	kg	%
Oyster	25.73	56.8	3.98	22.9
Tagelus	5.57	12.3	10.72	61.6
Mussel	2.85	6.3	1.41	8.1
Clam	2.81	6.2	0.84	4.8
Whelk	0.54	1.2	0.45	2.6

Table 22 provides the biomass data for the shellfish recovered from Feature 5, although no figures are available for either periwinkle or cockle. Nevertheless, the absence of these two species should not dramatically affect our conclusions. Unexpectedly, oyster (which dominates the collection visually and by shell weight) falls a distant second to tagelus, which contributed 61.6% of the biomass in Feature 5. This may serve as a caution to researchers that what appears to be clearly important may not be. Oyster, which is large and does not tend to fragment, appears to dominate the collection. Yet, tagelus, often thought to be a minor, opportunistically collected species, was the major contributor, at least in this feature where considerable effort was devoted to sorting shell remains and weighing them.

Combined, these shellfish provided about 17.4 kg of biomass from the half of Feature 5 excavated during this research. In comparison, the mammalian faunal remains from the same portion of the feature contributed only 1.54 kg of meat. Of course, it is likely that this meat yield is somewhat underrepresented since, for example, it is unlikely that only portions of fish were deposited in the feature. Nevertheless, it seems clear that shellfish are, in fact, a major contributor to the Thom's Creek diet, at least as far as it is represented by Feature 5.

Shellfish, when compared to most mammals, supply relatively little protein. For example, 100 g of oyster provides approximately 66 calories and 8 g of protein, compared to 100 g of deer meat which provides 126 calories and 21 g of protein. A shellfish diet, supplemented with fish, hickory nuts, and deer meat, however, is not particularly wanting, as Table 23 reveals. In fact, shellfish as a dietary core is likely better in many ways than corn as the dietary focus, since corn provides (per 100 g) only 63 calories and 3 g of protein.

It is not our intention to proceed further with this analysis. The reconstruction of prehistoric foodways or the estimation of dietary composition is fraught with difficulties. The errors of any reconstruction are magnified and compounded with

[1] Kennedy and Espenshade (1992:85), using the allometric formula, comment that "to compensate for non-meat supporting shell, 82.62 percent of the total shell weight [is] utilized in the meat weight formula (Adams 1985:37)." In actuality, this adjustment was recommended by Quitmyer (1985b:37) to compensate for the dead oysters typically included in clumps. There does not seem to be any indication that he intended it to be a generalized corrective factor applied to all shellfish remains. Nor does there seem to be any particular reason to apply this factor unless there is clear and convincing evidence that the site occupants were collecting substantial amounts of dead shells. In the current study we have not used this factor, although it can certainly be applied by others using our data, if they wish.

Table 23.
Composition of Sample Foods and Nutritional Requirements

	Protein g	Calcium mg	Phosphorus mg	Iron mg	A IU	B1 mg	B2 mg	Niacin mg	C mg	Calories
Daily requirements of active male	54	800	800	10	5000	1.5	1.8	20	45	3000
Clams, 100 g	12.8	96	139	7	110	0.10	0.18	1.6	t	92
Oysters, 100 g	8.4	94	143	5.5	310	0.14	0.18	2.5	t	66
Mussel, 100 g	14.4	88	236	3.4		0.16	0.21			95
Corn, 100 g	2.7	5	52	0.6	390	0.11	0.10	1.4	8	63
Deer, 100 g	21.0	10	249	7.8		0.23	0.48	6.3		126
Hickory nut, 100 g	13.7		360	2.4						673

Compiled from Church and Church 1966; Sebrell and Haggerty 1967; Watt and Merrill 1963

every additional equation or assumption. We hope only to suggest here that many shellfish species — such as those found in Feature 5 at Secessionville — may comprise either a small, or large, portion of the diet based on our current data and level of understanding.

Summary

Several of the minor species found in the Thom's Creek assemblage at Secessionville are considered weak seasonal indicators. Periwinkles, for example, tend to be more common during all seasons except the winter. The blue crabs tend to be most common from late spring through late fall. The knobbed whelk would have been most readily available in the fall and spring. To this data can be added the information supplied by Claassen earlier in this study, with Feature 5 producing clams likely collected in either May or October. Taken together, these data seem to suggest that the feature was the result of a mid-fall activity, at a time when the weather so not so cold as to preclude the collection of periwinkles and whelk.

The data are more helpful when we consider exploitation of distinct habitats. Ribbed mussel, knobbed whelk, and even periwinkles and crabs may have been collected incidental to the gathering of oysters. All three were likely found on the intertidal mud flats. During the molting process crabs seek shelter and places to cling to, both of which are offered in the shallow tidal channels. They are much easier to collect here than in the more open, deeper waters, where they are much less restricted in their movements. Ribbed mussels will be found throughout this area, especially in the high marsh at the base of *Spartina* grass and even mingle with the oysters themselves.

Clams were similarly found in the process of collecting stout tagelus, frequently at the low water mark. Here the most interesting observation is that the tagelus are much more significant to the Thom's Creek diet than previously thought.

Only the cockle represent an unusual species, perhaps reflecting exploitation, or at visitation, of a different habitat. Cockle, however, are so uncommon that not much can be made of their occurrence.

In sum, the occupants of the Secessionville peninsula limited their visits to two distinct habitats — areas suitable for digging tagelus and clams (a primary activity) and areas suitable for collection of oysters (perhaps a secondary activity). In this respect they appear to be very focused, with relatively little apparent interest in diversifying their activities.

These comments must be tempered with the understanding that marshes are very complex

and can exhibit tremendous diversity in relatively small areas. For example, intertidal estuarine flats commonly occur in the irregularly flooded high marsh areas. In these areas intertidal oysters are nearly ubiquitous, forming clusters or "rocks." Clams and tagelus can be abundant in the lower intertidal zone of the same estuarine flats, perhaps only a few hundred feet away (Sandifer et al. 1980:263).

PETROGRAPHIC AND MINERAL CHARACTERIZATION OF THOM'S CREEK PLAIN SHERDS

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Introduction

Archaeological ceramics are an important guide to the culture, technology, and development of a civilization. By examining the forms and the methods of decoration, clues to cultural evolution or trade among cultures is suggested. However, many ceramics are of a type that do not allow easy or definitive separation by these methods.

When this situation arises, a common response is to subject the samples to analytical investigation via a variety of techniques (Sinopoli 1991). One of these techniques is petrographic investigation. This technique addresses the identification of the paste and the aplastic components of the pottery. This technique requires some sample destruction for the production of a thin-section and a skilled investigator to evaluate the components using optical mineralogy techniques.

This study addresses an archaeological investigation of Thom's Creek Plain ceramic sherds recovered from the Secessionville site, Charleston, South Carolina. In an earlier portion of this report, Trinkley and Hacker discuss the form and type of this pottery and supply information concerning the macroscopic investigation of similar sherds. In this portion, I have examined a small set of the prehistoric Thom's Creek sherds by petrographic techniques in order to compare the results of Trinkley and Hacker (this report) and see if there are any petrographic or mineralogic characteristics that would assist in the form and type separation of this pottery.

Petrographic Techniques

Petrographic analysis is the principal method of identifying minerals (and other substances) in archaeological pottery (Rice 1987). Standard (27 X 46 mm) petrographic thin-sections were prepared. The thin-sections were point counted using the techniques discussed by Stoltman (1989a, 1989b, 1992) so as to evaluate the percent contribution of each mineralogic component. In this study, the point step was 0.2 mm so as to allow statistically significant counts (more than 300 points per thin-section) and also to overlap with Trinkley and Hacker's (this volume) macroscopic evaluation of the size distribution of paste and aplastic materials. It is important to recognize that any point counting technique assumes that the component has a nearly spherical grain shape. With feldspar minerals (e.g., plagioclase feldspar or potassium feldspar) the influence of grain orientation can be very large and may account for some of the percentage differences (and ranges) that were observed. The point count categories used in this study were paste, quartz (separated by grain size), plagioclase feldspar, potassium feldspar, opaques, other (includes epidote/clinozoisite and biotite), grog (pottery fragments included as temper material) and ACF (argillaceous clots or fragments, see Whitbread 1986).

Although the percentage of void spaces is sometimes used as a characteristic, it is very difficult to use with these sherds (Whitbread 1989). Examination of the finished thin-section found that plucking of

mineral grains had occurred and it was concluded that an evaluation of total void space that is often used in petrographic ceramic investigation would be invalid in this case. Another problem associated with any thin-section (or macroscale) investigation is the different thicknesses of the sherds being analyzed, which may also result in differences in percentage of void space. Nevertheless, a strictly qualitative evaluation of void spaces was completed (during point counting) to allow the investigator to compare paste versus aplastic material distribution.

Petrographic Results

Baked Clay Objects

The baked clay objects (ARL 42174 [GHA-1] and ARL 42232 [GHA-2]) have an overall red appearance in thin-section, with none of the gray-black reduction color shown in the Thom's Creek sherds. The aplastic grains are subangular to subrounded and the grain sizes range from 0.1 to 0.4 mm, with few grains larger than these dimensions. The distribution of grain sizes is dominated by the 0.2 mm group (fine to medium), with smaller amounts in the 0.4 X 0.3 mm group (medium to coarse) and 0.1 mm (very fine) group.

The identity of the paste minerals is impossible to determine from petrographic methods due to the firing, which has transformed the clay minerals into an amorphous, isotropic substance. Rare relict paste grains (elongate) suggest mica as the major mineral component and allow a tentative grain size of much less than 0.1 mm to be assigned. X-ray diffraction or electron microprobe analysis might be able to discern some broad definition of the original mineral composition(s) of the paste, but these results would not be able to be definitive for provenance determination. Lastly, the paste and aplastic material show no regular orientation, suggesting that the working of the material into these objects was minimal.

In thin-section, the dominant aplastic minerals are quartz and the feldspars. Plagioclase and potassium feldspar in these objects are generally not twinned and are blocky in overall appearance. Without twinning the determination of the identity of plagioclase versus potassium feldspar depends upon the optical properties of 2V angle and optic sign. Using these criteria, both of these minerals were found in these objects, with plagioclase more abundant than potassium feldspar. In addition, neither of the feldspars display any secondary alteration (sericite or argillite), which often can be used to identify the type of feldspar. Rare, observable biotite mica (and no identifiable muscovite mica) was found as aplastic material (0.1 - 0.2 mm long dimension). In addition, several other minerals (epidote/clinozoisite and opaques - probably hematite or ilmenite) were observed but represent only a very small portion (<1%).

The quartz and the feldspars all show fracturing of the grains. This regularity of appearance suggests the possiblity of induced fracture during preparation of the clay material. The grain size range precludes fine working of the clay material prior to firing. This is evidenced by the medium to coarse fraction which would be large enough to have been easily removed during manufacture. This variation in grain size also suggests that these aplastic components were probably original to the clay material and should not be termed temper (i.e., temper as material added to enhance the workability of the clay material).

Thom's Creek Sherds

The thin-sections of the Thom's Creek sherds have a color that ranges from red to red-brown color as you move in from either the inner or outer sides of the sherds. The core region of the sherd is dark gray to black. The boundary between these two regions is sharp in sections GHA-6 and GHA-8, while the remainder (GHA-3 to GHA7 and GHA-9 to GHA-11) display a more diffuse boundary. This color variation is consistent with changes from more oxidizing to more reducing conditions during firing. On sherds GHA-6

and GHA-8, a thin black region (~0.2 mm) is found on the outside of the sherds. This may represent reduction conditions during firing as a result of the placement of the vessel in the kiln or later firing during useage. An interesting observation is that in these dark cores, the darker (black) color corresponds to sherds that have either larger void spaces or larger (coarse) grain sizes for the aplastic material. For example, GHA-6 and GHA-8, which have a sharp demarcation between red and black zones have larger void spaces in the core than the other sherds. Conversely, sherd GHA-11 has mainly coarse (>0.4 mm) feldspar grains in the core. These sherds have a black rather than a gray to grayish-black color in this core zone.

The paste is very fine grained (less than 0.1 mm) and optically isotropic with a few (much less than 0.5%) opaque minerals. As with the baked clay objects, the identity of the paste mineralogy is unknown. However, there are a few relict elongate (lathe-like) grains (~0.1 mm) that suggest micaceous material may have contributed the majority of the paste. Unlike the baked clay objects, the orientation of the paste particles with the aplastic components reveals an aligned internal microstructure. This microstructure probably reflects the working of the clay material prior to firing. In addition, the void spaces in the sherds are elongate and are oriented to the overall microstructure of the sherds.

The aplastic components of these sherds are dominated by quartz and the feldspars (untwinned; both potassium and plagioclase feldspar as determined by optical criteria, plagioclase greater than potassium feldspar). Neither of the feldspars display any secondary alteration (sericite or argillite). The aplastic grains are fine- to medium-grain (0.2 to 0.1 mm), subhedral and rounded to subrounded, with the feldspars often crudely tabular in overall appearance. For the most part, coarse grained feldspar or quartz are rarely found in these sherds and the overall grain size of the aplastic particles is more uniform than the baked clay objects. In thin-section there was also rare observable biotite mica grains (and no identifiable muscovite mica) found as aplastic material (0.1 - 0.2 mm long dimension). Several other minerals (epidote/clinozoisite and opaques - probably hematite or ilmenite) were observed but represent only a very small portion (<1%). Like the baked clay objects, the quartz and the feldspars all show fracturing of the grains.

Sherd GHA-4 is unique in this group as it has two coarse (2.5 X 3.2 mm; 1 X 0.8 mm) grog inclusions ("grog"; see Whitbread 1986 and Cuomo di Caprio and Vaughan 1993). These fragments are subangular and rounded to subrounded. They contain medium to fine aplastic grains of quartz and feldspar (plagioclase and potassium feldspar; untwinned) similar in size and shape to the aplastic components of the sherd. The paste of the grog fragments is highly isotropic and a deep brick red color. There is a separation space between the sherd paste and the grog fragments, probably as a result of the differences in thermal properties when cooling after firing.

These thin-sections also have a few argillaceous inclusions (ACF). They are fine- to medium-grained (0.1 - 0.5 mm), have a red (brick red to red black) color and are ellipsoidal to spherical in shape, with irregular surfaces that feather into the surrounding paste. These argillaceous clots are either composed totally of clay minerals or dotted with inclusions of quartz and feldspar (similar in size to the aplastic grains in the sherds). Although they are not found in all of the sherds, they are distinctive at both the macroscale and the microscale and were probably formed during vessel formation and are not considered to be tempering material introduced by the potter. In addition, the argillaceous clots do not contain inclusions that differ from those found in the paste nor do they have the distinctive appearance of the grog fragments.

Lastly, sherd GHA-11 is quite different from the other Thom's Creek slides.

It has two distinct aplastic grain sizes - fine (0.1-.2 mm) and coarse (0.4 - 0.5mm, with some up to 2.5 X 1 mm). The aplastic grains are quartz and feldspar (plagioclase and potassium feldspar; untwinned). They are more angular than the grains in the other Thom's Creek slides and less rounded. This difference in aplastic grain size and angularity may represent either cruder manufacturing criteria for this vessel or a source of aplastic material different from that for the other sherds.

Conclusions

The major observations and conclusions of this petrographic study are:

1. The mineralogy of the Thom's Creek sherds (except for GHA-11) and the baked clay objects are very similar - composed of quartz, feldspar (plagioclase for the most part - with quartz being much more abundant than feldspar), with statistically small amounts (<1%) of opague minerals, mica, and epidote/clinozoisite. The grains are subrounded to rounded, fractured (possibly during material preparation), and unaltered. The feldspar grains are more blocky, but still rounded to subrounded. The sherds and the baked clay objects do not show any secondary mineralization (such as calcite from groundwater infiltration). Identification of the paste is not possible due to the degree of firing. Paste content is about 55 - 60 % in the baked clay objects while the sherds contain 40 - 50% paste.

2. Grain size is different between the baked clay and the Thom's Creek sherds. The baked clay objects have a significant amount of medium to coarse quartz and feldspar grains, whereas the sherds rarely have more than a few coarse grains and more fine grained quartz and feldspar. This may represent a difference in manufacture - where the baked clay objects are quickly made and formed and sorting of the particle size by the maker is not as active a process as in the ceramic sherds. The relative constantcy of grain size for these sherds suggest grain size selection during formation.

3. One sherd (GHA-4) contains two fragments of grog (previously fired ceramic material, which is rounded to subrounded with subangular to rounded overall shapes). The composition of the aplastic material in the grog is similar in mineralogy and grain size to the sherd composition. This suggests that these fragments are just broken pieces of previously made ceramics from the same source/manufacture area and were incorporated into the vessel during formation.

4. The baked clay objects are uniformly oxidized with a red to brick-red color. The Thom's Creek sherds display gray to black core areas which suggest variation in oxidation and reduction during firing. The variation in sharpness of the oxidation - reduction boundary may be a result of the placement of the unfired ceramic in the kiln or a function of the size of the pot (or its walls).

5. Thom's Creek sherd GHA-11 is unlike the other sherds and may represent a different typological group. The coarse grained and angular nature fo the aplastic components may indicate a different source of clay material or a difference in manufacturing style.

6. Based on the mineralogy and the grain sizes, it is highly possible that the baked clay objects and the sherds (except GHA-11) have been formed from the same source of material. The presence of rare grog fragments (one sherd) may represent accidental material incorporated into the vessel. This suggests that the aplastic materials are not temper, per se, and represent the original clay material components. Thus, the difference in grain size represents some manufacturing selection during vessel formation and not an active inclusion of extraneous material to enhance the workability of the clay material.

SUMMARY OR WHAT WE'VE LEARNED

The preceding sections of this study have covered a range of topics. Some have focused on the historical documents, others have looked at the various items of material culture. The goal of these final few pages are not to recount these previous "revelations," but rather to briefly summarize some of the more important observations. It is hoped that this discussion will help place the research in perspective and provide, at least for the harried reader, some indication of what was learned as a result of the investigations at this portion of Secessionville.

Although the data recovery plan was originally devised to address questions concerning a posited Mississippian village, this resources was found not to exist at the site. Very early in the investigations, however, we discovered other resources that were clearly just as important and just as worthy of investigation. Some of these remains dated from the Late Archaic — Early Woodland transition and are related to the Thom's Creek phase. Others dated from the period when the site was occupied by Confederate troops stationed to defend adjacent Fort Lamar.

Although the data recovery techniques used (mechanical stripping totalling 28,250 square feet) may not have been exactly those proposed had the nature of the resources been fully realized, an exceptional amount of information was developed by these efforts. In fact, the vast majority of the findings at 38CH1456 are entirely new and provide entirely different insights into these two widely divergent assemblages.

About the Thom's Creek Phase

The investigations of the Thom's Creek phase are essentially confined to a single feature, what is typically called a shellfish steaming pit measuring about 12 feet in diameter and nearly 3 feet in depth. Excavation revealed this feature to have several lens, suggestive of multiple uses. Like similar pits found at other Thom's Creek sites (see Trinkley 1980b) the presence of lensed charcoal, dense shell, and earth suggest that it was used for the steaming or baking of shellfish. Artifacts and bones contained in the pit are generally not burned, indicating their deposition after the fire was cooled. Shellfish are likewise not burned, indicating that in the steaming process they were kept away from the fire or coals.

Although the feature type itself is relatively common at Thom's Creek sites, the method of excavation was unique in its care and detail. Meticulous accounts were maintained concerning the volume of materials removed and the sampled fill was subjected to either waterscreening or flotation. Recovery from the feature is exceptional.

One of the most-often analyzed materials, of course, is pottery. This sample of slightly over 100 sherds larger than an inch (the analysis of rim sherds included all pottery, not just these larger sherds), revealed that plain wares were the most common, with only very small quantities of finger impressed, dowel stamped, and perhaps cord impressed pottery being recovered.

The minor surface treatments of dowel and cord are typical of those found in any Thom's Creek collection, perhaps representing "experimental" or idiosyncratic motifs. The finger impressions are more common at what have been thought to be relatively late Thom's Creek sites.

Although plain pottery is most common, scraping was found on an unusually large number of sherds, primarily on the interior. This scraping probably represents an intermediate stage of the pottery finishing process and was obliterated by a final smoothing on most vessels.

More informative, however, may be the paste analysis. The study found considerable

uniformity, with very fine to fine aplastic inclusions in about three-quarters of the assemblage. Very fine to medium inclusions are found in nearly a quarter, with relatively few specimens exhibiting medium to coarse sand inclusions. Most of these inclusions, at least under low magnification, appeared to be subangular, although some rounded grains were also observed. Also present were reddish lumps or what are terms argillaceous clots, probably representing dried clay lumps integrated into the paste as part of the normal pottery making process. The quantity of temper is varied, with about equal numbers of sherds having moderate and abundant inclusions.

The sherds reveal a variety of firing conditions, perhaps suggesting a lack of care or an imprecise understanding of firing conditions. The size of the vessels ranges from about 18 to 40 cm, with the collections nearly evenly divided between shallow bowls and deep, straight sided vessels. Carbon deposits are rare, occurring only on the exterior of a few sherds.

This collection takes on added significance because of both the petrographic study of thin sections and also because of its early date. Although the thin section work was able to examine only a small sample of the collection, it provides exceptional information.

Fundamentally, the thin section work supports the macro-level paste study — for the Thom's Creek sherds it confirms the dominance of fine to medium grains that are subangular to slightly rounded. It also confirms the care used in preparing the clay, especially in contrast to the baked clay objects. The petrographic research confirms what has been suggested by other archaeologists in the past, that the range of aplastics are not tempering, but were native to the clay sources.

The study offers a potential correlation between the paste and the level of reduction, although this must be viewed cautiously in the context of a very small sample. In a similar manner, the study reveals that both fragments of other sherds ("grog") and clots of partially dried clay were occasionally integrated into the paste. As such they are likely reflective of the skill and care used by the potter.

One sherd, designated as GHA-11, has a distinctly different "feel." The paste consists of larger grain sizes and also the inclusions are also less rounded than the others. There are a variety of possible explanations for this anomaly. It, of course, may represent a distinctly different pottery series, although there is far too little evidence to support such an interpretation at this juncture. Other interpretations seems more viable, at least at present. One is that the sherd represents a learning exercise by a beginning potter. This has some support in its microstructure, which is perhaps best described as "ungainly." Alternatively, all of the grains seems to have nearly identical fracturing and this may suggest that the clay is from an entirely different clay source — off James Island, although perhaps from one of the more seaward barrier islands, such as Sol Legare.

The baked clay objects were found to likely represent the same source material, although the working was the objects was minimal. In virtually every respect, the petrographic study confirms that these objects were quickly formed and then repeatedly fired, to the point that the minerals have been transformed into an amorphous mass.

The study was not successful at documenting the source material for the Thom's Creek potters, although this was far above our modest hopes for the project. The most significant draw back was not the sample size, or the technique, but rather the failure to have sufficient data on regional soil types, specifically information on mineral identify and grain size, to allow meaningful comparisons.

To the best of our knowledge this is the first effort to use petrographic techniques to expand our understanding of the Thom's Creek wares. Results from this very preliminary, and provisional, effort have been rewarding and strongly suggest that archaeologists should expand on this technique, devoting greater attention, and funding, to such paste characterizations.

Charcoal from a sealed context provided the fourth oldest date for the Thom's Creek phase obtained in South Carolina or Georgia -- about 3920 B.P. In fact, when the other dates are examined, two are from contexts where Thom's Creek co-occurs with Stallings pottery and the third is from a site about which some skepticism has been expressed. Consequently, the Secessionville date is extremely important. It strongly suggests that very early, by at least 3900 B.P., Thom's Creek pottery was well established in contexts that contain no fiber tempered pottery.

This date, coupled with one other for finger smoothed pottery, also rather effectively disproves the assertion that the finger smoothing motif was the "last gasp" of the Thom's Creek pottery. Instead, the motif may prove to be the "birthing cry."

Moreover, this date coupled with this pottery assemblage, defies placement in the new scheme proposed by Cable (1993) from his examination of the Spanish Mount collection. In fact, these findings should serve to refocus attention away from the Thom's Creek paste and motifs being chronologically sensitive, toward the possibility that they are ethnic or social indications (Anderson et al. 1979; Trinkley 1980b).

Sherd abraders were also recovered from the feature. Probably associated with the manufacture of bone pins, the abrader:sherd ratios at shell ring sites range from 1:2 to 1:4, while at non-shell ring sites the ratio is much higher, typically 1:12. The Secessionville site yielded a ratio of 1:9, within the expected range of non-shell ring sites, suggesting that these tools are closely associated with activities more commonly undertaken at the rings. A reviewer has suggested that future studies might productively include either bone collagen chemistry or attempt to identify bone particles using a scanning electron microscope. Such work would help confirm our belief that the hones were used for shaping bone pins.

The examination of palynological, faunal, and floral remains were equally as interesting. The phytolith studies at first blush appear to provide no results. Yet, what they suggest is that grasses were not used in the steaming pit to separate the coals from the shellfish. The large quantities of soil traditionally found in these pits are likely the result of dirt being used to cover the coals, creating an earth oven. While effective, one can't help wonder why grasses wouldn't be used. Seasonal dating of the feature may supply the answer.

The faunal remains from the pit reveal that although a large number of different fish were exploited, mammals still contributed the majority of the vertebrate biomass. Will this finding be repeated at other Thom's Creek sites? That is not known. In fact, data from Lighthouse Point suggests that at shell rings fish are much more common than even found at Secessionville. However, neither data collection or analysis methods are comparable.

The faunal collection does tell us much about the micro habitats used by the Thom's Creek Indians. Although the estuarine near-shore and shallow tidal creek micro environments appear most important, a variety of others were also used, including the maritime forest and perhaps even more marine areas.

The shellfish from the feature held an unexpected discovery. When carefully collected, sorted, and analyzed, it became clear that while oyster is the most abundant shell, it provided substantively less biomass than the stout tagelus. Either, however, provided far more meat than the vertebrate remains. This feature, at least, suggests that the Thom's Creek settlement at Secessionville relied on the collection of shellfish for the bulk of their diet.

Seasonality indicated by the fish remains suggests the feature was deposited in the spring through late fall. The clams indicate either a May or October use. The ethnobotanical remains reveal a fall occupation. Other shellfish, such as periwinkle and whelk, indicate that the feature likely not filled during cold weather. Taken together, we are left to suggest that Feature 5 was probably deposited somewhere between September and November.

The investigation of the Thom's Creek component reveal not only answers, but also questions. For example, the research strongly suggests that while the more detailed paste analysis pleaded for by Espenshade (Espenshade et al. 1994) is essential, so too is the integration of thin section and petrographic examinations. If archaeologists hope to make meaningful advances in understanding ceramics, it seems essential that new techniques and approaches be embraced.

Likewise, while the efforts by Cable to explore a "a new ceramic order" are applaudable, it seems clear that his reconstruction does not work. Perhaps it would be better to abandon efforts to view differences in the Thom's Creek paste and surface treatment as chronological indicators and look at them as ethnic markers instead?

The research likewise pointed out the need to integrate a broad range of consistently applied subsistence research techniques. The use of biomass seems absolutely essential to the understanding of Thom's Creek dietary patterns and perhaps even settlement decisions. Although not all phytolith (or pollen) studies will provide useful data, we can't be sure which sites will and which ones won't. In a similar fashion, it is easy to become complacent regarding shellfish at coastal middens, viewing the remains as something that must be quickly sorted through in order to get at the "artifacts." Secessionville reminds us that the shellfish themselves are artifacts and may be capable of providing significant insight into the Thom's Creek diet.

About the Confederate Occupation

Although the Thom's Creek phase occupation is largely recognized by one feature, a series of seven features were identified that relate in one way or another to the military history of the Secessionville peninsula.

Perhaps the earliest, Feature 2, actually dates from the period when Riversville was a thriving little planters' community. This feature, a fairly shallow and narrow ditch, extends with precision from the east, makes a near 90° turn and continuing northward. In all, about 710 feet of the ditch were exposed. The 40 feet excavated provide nearly a 6% sample. Artifacts in the ditch were sparse and no military items were found. The profiles suggest that the ditch, dug by hand, had been carefully kept clean and then quickly filled. The most reasonable explanation is that this ditch represents either drainage or perhaps a boundary marker relating to the pre-Civil War occupation of the peninsula. With the coming of the Civil War and the Confederate efforts to defend the newly named Secessionville area, the ditch was found to be in the way and was quickly filled.

More interesting was Feature 1, a much wider, deeper, and more varied ditch. Found to encompass nearly 200 linear feet, the excavation of about 25 feet provided us with a 13% sample. This feature exhibited steep, and deep, excavations, often with ledges. The outline, as excavation continued, suddenly became clear. Feature 1 represented the Water Battery excavations constructed largely after the Battle of Secessionville to further enhance the Confederate defenses. Comparing Gillmore's (1868) map of the ditch lines, made just after the war, to the exposed sections of this feature reveal how meticulous Gillmore was in his recordation (compare Figure 28 with Figure 33).

The excavations reveal that the trenches tended to get less deep and less well constructed to the east, perhaps because the Confederates were so secure in the ability of the marsh to protect their flanks. Certainly the historical documents from the Secessionville battle suggest they had every right to be awed by the natural barrier presented by the marsh.

The excavation of Feature 1 also reveals that Confederate camp policing must have been as severe as that recorded archaeologically from Union camps (see, for example, Legg and Smith 1989). Almost no military trash was encountered on the slopes or in the base of the feature sections excavated. The one major exception is Feature 6, excavated into the side of a battery position. Here a donkey was buried. Perhaps this burial represents a casualty of old age, perhaps an unfortunate victim of war. Regardless, the animal was buried

(almost certainly because of the smell), not eaten.

A reviewer has questioned whether trash should be expected in the ditches, noting that soldiers on-duty in the trenches would not have been generating much trash. This is certainly true, but we believe that the proximity of structures was such that the ditches, without policing and military order, would have been seen as convenient, pre-dug trash pits. For example, the one hut investigated was only 200 feet from the marsh battery ditches.

Oral history informs us that the Secessionville trenches were largely filled-in during the early twentieth century as a convenience to agriculture. The archaeological excavations suggest that this was the case. The Feature 1 fill reveals some lensing in some areas. This implies that some trenches were left open and unattended for a number of years, gradually filling in with erosional deposits. On top of these, however, is evidence of very rapid deposition, likely intentional fill. Some trench sections, in contrast, suggest that they were very quickly filled in almost immediately after the Southern defeat.

Three features — Features 8, 9, and 10 — were found clustered together in the western portion of the study area. About 1,600 feet east of the Fort Lamar battery the excavations encountered one of the more startling Civil War finds — a semi-subterranean Confederate soldier's hut, a incomplete hut, and a trash burning area. Taken together these features suggest a small camp area for troops stationed at Secessionville.

Feature 10 was the hut. Very similar to winter encampments reported from both Virginia and Tennessee, as well as reported in historical documents, this is the first Confederate hut to be excavated in South Carolina and is of particular interest given its very large size — 9 by 17.8 feet (although useable space was limited to about 9 by 12 feet or 108 square feet). The hut included a ramped entrance on the narrow side and an opposite chimney. The hard packed floor evidenced that the roof leaked and that the hut was rarely cleaned out. The chimney included vertical supports at the interior edges of the firebox and the hearth was marked by a row of brick bats to contain the fire. Outside the house, at its entrance were several post holes, perhaps supports for an entranceway tarp.

Artifacts from the hut help us to understand the lifeway of the Confederate soldier at a post like Secessionville. Kitchenware items are sparse, but sufficient to suggest that the occupant or occupants were preparing and cooking their own meals (also suggested by the presence of faunal remains in the hut and scattered around the hearth area). The presence of alcoholic beverage bottle fragments suggests, but certainly can't prove, that alcohol was available to the troops stationed just outside of Charleston. As might be imagined, furniture and personal items were almost non-existent, although the presence of a very fancy, and costly mechanical pencil suggests that at least one residence was "well breed."

Phytolith samples from the hut reveal that however wealthy or literate its occupants were, life was likely dirty and flea infested. Samples from immediately in front of the hearth contained large quantity of phytoliths probably from straw used as bedding to cover the cold sand.

The presence of numerous soapstone fragments suggests that a prehistoric artifact may have been used for whittling. Certainly a very large number of cut and polished bones provide evidence of the extreme boredom that befell troops when not preparing for, or recovering from, battle.

While considerable time was spent in idle pursuits, there is also evidence that the Confederate forces also spent their time engaged in more productive pursuits. A number of bone button blanks were recovered, as well as waste products from bone manufacture. Apparently the Secessionville troops were pressed into making their own buttons, with what was normally a cottage industry taking on new dimensions during the war.

Even the nails recovered from the hearth were found to have a story. The bulk of those still intact probably related to the hut itself, while the

large number of fragmentary nails, primarily found in the hearth area, were suggested to be from boxes or crates broken up and used for firewood. This seems to be confirmed by the small quantities of more exotic or unusual carbonized woods found in the collection, compared to the anticipated pine and oak which comprised the majority of the fuel wood from Feature 10.

One of the most distinctive artifacts was a Georgia regimental button, likely from one of the occupants of the hut. Historical research reveals that at least 14 different regiments might have been at Secessionville during the war.

Nearby was another hut that had begun to be dug, but which was never completed (Feature 9). Also in this same cluster is a burned area (Feature 8) containing nail fragments, burned bone, and other burned artifacts. This appears to be a refuse disposal area — a shallow pit where trash was routinely burned to ash.

An attempt at OCR dating was not particularly satisfying, but this was almost certainly due to collection procedures and the technique itself is probably not at fault. More revealing, however, was the faunal analysis from materials both in the hut and also in the trash area. Cow was the most abundant meat, seemingly confirming suggestions in the documentary history that the Confederate Army took over large herds of cattle on James Island for military use. There are also indications that the beef distributed to the troops at Secessionville may have been butchered elsewhere and delivered to the different regiments. Also present, although in smaller quantities, were pork and chicken remains. These may represent items bartered from local planters.

Several features documented that Confederate troops sought wild animals such as deer, rabbit, turtle, and fish (including bass and drum) to supplement their military diet. The Secessionville troops were fortunate to be stationed in an area which not only relatively little conflict, but which also provided ready access to a wide range of habitats.

The research in the historic component of 38CH1456 revealed much about the lives of Confederate troops on a stable and relatively inactive front.[1] In particular it provided an exceptional example of a soldier's hut unseen before outside of vague written accounts. Sealed within the feature were a number of artifacts that were capable of providing us with a much clearer understanding of daily life. While much of this information serves to confirm historic documents, other parts, such as the faunal research and the identification of bone blanks, provides information unavailable from written accounts.

Previous camp archaeology in South Carolina has focused on Union troops, which in theory are often thought to be better supplied. The discoveries at Secessionville tend to both support and refute this belief. That Confederate troops were making their own bone buttons certainly suggests that at least some essential supplies were impossible for troops, even in proximity to civilian population centers, to acquire. On the other hand, food seems to have been plentiful and varied, at least in part because of the site's setting in an

[1] On several occasions we have commented that after the initial battle of June 16, 1862 the Secessionville works were on a relatively stable front and were not again attacked. Of course, there were two additional actions in the general area. On July 16, 1863 Confederate troops mounted an action in response to the Union troops that had landed on James Island. This Federal assault was a diversion to prevent Confederate reinforcement of Morris Island. The Confederate attack was designed to drive off the Union pickets and to flank the main body. Their efforts were at least partially successful and that evening the Union forces again left the island. Again on July 2, 1864 the Union forces attacked James Island, as part of what was described as a "demonstration" against Charleston and the nearby railroad. This was coordinated with the effort to take Fort Johnson. Like the previous efforts, this one also failed, largely due to the poor coordination of the Federal forces. Both of these actions are recounted in Major Edward Manigault's Civil War diary, edited by Warren Ripley (1986).

The point, of course, is that "relatively stable" means different things to different people. Secessionville never saw another attack to equal that of June 16, 1862, although the fortifications continued to be under Federal guns during the remainder of the war. Occasionally only a few shells were fired, while at other times the firing was maintained for most of the day. Certainly the forces at Secessionville may be viewed as being under siege. How a "siege mentality" may be different from simple boredom is difficult to assess, although clearly there may be some differences.

agricultural area on the edge of a major population center.

When it comes to camp cleanliness it seems that both Union and Confederate troops exhibited the same compulsive, military order. Earthworks were not used for widespread trash disposal. While littered, the hut was not filthy. Trash was being collected and at least some was burned. Additional research may have revealed the location of wells and privies, perhaps providing yet additional details.

About Field Methods

It seems appropriate to finalize this discussion by commenting on some of the methodological issues that were revealed during the investigations. Although archaeology ought not to get caught up in the ritual of field methods, we should certainly always be seeking to improve our approaches in order to better document the people, places, and things that are the objects of our study.

One of the primary lessons is how critical it is not to see only what you want to see while becoming blind to alternative explanations. At 38CH1456 a handful of complicated sherds, some straight lines were translated into a Mississippian village. This was only reinforced by the generally sparse nature of historic artifacts at a military site and the placement of small test units that completely missed the slopes edges of the earthworks. In spite of extensive historic research, the original team chose to focus on one scenario without consideration of alternative interpretations. Clearly the lesson here is that historic research must be integrated into the field research, otherwise it does little good. In addition, its always dangerous to become too convinced of your own explanations.

Causing further difficulties was the very deep plowzone, upwards of a foot and half. While both historic and prehistoric remains are present in this plowzone, they are of a low density and highly fragmented by plowing. Metal detector surveys provided little clue to what lay under the ground, since most instruments are unable to reliably penetrate the overburden. But even after stripping the study revealed that this area produced relatively few "hits," perhaps because of its low density of use or perhaps because the military was very clean. Regardless, conventional survey methods did not prove very effective at 38CH1452. The lesson, however, is not very clear. The discovery of both Features 5 and 10 represent the exceptional luck of finding "needles" in a "haystack." With the stripping of 28,250 square feet, relatively few features were encountered and we are extremely lucky that the ones found were so productive.

While this situation might be simplified to the axiom that mechanical stripping is good, we believe that is an oversimplification and fails to appropriate discriminate between different types of sites, different soil conditions, different survey techniques, different research approaches, and different goals. To always strip is somewhat akin to a surgeon always cutting. It may sometimes be necessary, but it is extreme and irreversible.

We can't but wonder if the site observations might have been different if the survey or testing incorporated close interval auger testing, or if geophysical survey techniques (ideally suited to large, open fields) had been employed. Although this is second guessing very competent colleagues, it does point out that there are always alternatives and our selection of those to use will almost always have long-range implications.

Another very interesting observation was made during the comparison of the waterscreening and flotation. Clear analytical results were found in both the ethnobotanical and vertebrate faunal remains. For animal bones, the study once again reveals that where fish remains are possible, it is absolutely essential that minimally ⅛-inch mesh be used, with even finer recovery (such as through waterscreening) producing even more representative collections. Use of screens coarser than ⅛-inch, however, is unacceptable if recovery of representative faunal materials is a research goal.

While relatively few projects have devoted

the time to carefully sorting and quantifying shellfish remains, this study revealed the benefit of this approach. Although oyster shells appear to dominate Feature 5 (and in fact do dominate in terms of weight), when biomass is calculated, the stout tagelus was found to be the primary meat producer, not oyster. This discovery dramatically shifts the attention away from those econiches where oyster and mussel dominate to those where tagelus and clam are common. Moreover, without this effort, if would be impossible to understand the overwhelming contribution of shellfish compared to vertebrate fauna. Without such understandings our dietary reconstructions would be little more than guesses.

This research also continues to reveal that there are no easy answers to the inclusion of pollen and phytolith research. Pollen at some historic sites has provided exceptional information while at other sites (such as Secessionville) has revealed virtually nothing. Phytolith research seems to be somewhat more consistently revealing, but even this approach offers no guarantees. Failure to explore these resources, however, leaves unexplored valuable avenues toward our understanding of the site occupants.

Thin sections of pottery sherds is another new area that may leave some wondering about the payback. As a new way of looking at old sherds, it seems to offer exceptional potential. This potential, however, won't be realized until the approach is more routinely integrated into research and more routinely reported.

Although the research at Secessionville leaves unanswered any number of questions, it has also made progress exploring and explicating many issues. In some cases we can make rather good judgements and educated interpretations, while in others the best we can do is point out possible directions for future research. Nevertheless, the Secessionville project incorporates a variety of new and exciting approaches.

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