

ARCHAEOLOGICAL RECONNAISSANCE OF THE WACCAMAW MITIGATION BANK, HORRY COUNTY, SC



Chicora Research Contribution 548

ARCHAEOLOGICAL RECONNAISSANCE OF THE WACCAMAW MITIGATION BANK, HORRY COUNTY, SC

Prepared By:
Michael Trinkley, Ph.D.

Prepared For:
Mr. David Godley
Environmental Banc & Exchange, LLC
604 Greene St. – Suite 100
Camden, SC 29020

CHICORA RESEARCH CONTRIBUTION 548



Chicora Foundation, Inc.
PO Box 8664
Columbia, SC 29202
803-787-6910
www.chicora.org

October 5, 2012

©2012 by Chicora Foundation, Inc. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, transmitted, or transcribed in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise without prior permission of Chicora Foundation, Inc. or the Environmental Banc & Exchange, LLC except for brief quotations used in reviews. Full credit must be given to the authors, publisher, and project sponsor.

MANAGEMENT SUMMARY

This study reports on reconnaissance level investigation of a 754 acre tract intended to be used as a wetland mitigation bank and may eventually be given to the SC Department of Natural Resources to be incorporated into their Lewis Ocean Bay Heritage Preserve Wildlife Management Area (WMA). This WMA consists of nearly 9,700 acres that consist of extensive longleaf pine savannahs and 23 Carolina bays, with dense shrub layers. Bald Cypress-Tupelo Gum Swamp and Shrub/Scrub areas are secondary habitat types. Unusual plants found in the WMA include Venus fly traps, Pogonia orchids, white-fringed orchids, pine lilies, and green pitcher plants.

The study area consists of an outparcel in the northeast corner of the tract. There are 527 acres of wetlands and 226 acres of uplands. Two Carolina bays comprise the central portion of the study area. A wildfire of 2009 burned some of WMA, as well as the study tract, so much of the vegetation is in successional recovery.

The work was conducted to assist the Environmental Banc & Exchange, LLC in complying with Section 106 of the National Historic Preservation Act and the regulations codified in 36CFR800. The only activity proposed by the client on the property is the construction of fire breaks in order to control future wildfires. These firebreaks would be about 10 feet in width and periodically plowed to a depth of about 10 inches. No new roads would be constructed, although those currently present would be maintained. There is currently a power line easement crossing the lower third of the tract.

ArchSite, the South Carolina GIS archaeological and historical database, was consulted for any previously recorded archaeological or architectural sites. None were identified, although some research has found Carolina bays to be attractive to Native American settlements.

Prior communication with Dr. Jodi Barnes, SHPO Archaeologist, confirmed a reconnaissance strategy that would examine approximately 50% the existing roads to identify any archaeological or historical sites.

This survey consisted of the pedestrian examination of about 2.2 miles of dirt roadways (out of the total of 4.3 miles). Additional portions of cleared power line easement were also included in the survey.

As a result of these investigations no archaeological sites were identified, although one isolated find was identified on a power line easement consisting of the base of a rhyolite Savannah River Stemmed point. Found on high ground in proximity to wetlands, this probably represents an isolated extractive site. The absence of prehistoric sites cannot be easily explained given the use of these locations by Native Americans along the southern coast. The absence of sites, however, is likely associated with differences in settlement patterns on the northern coast. No historic sites were anticipated given the sparse population present in the area during the eighteenth and nineteenth centuries.

A survey of public roads within a 0.25 mile of the proposed undertaking was conducted in an effort to identify any architectural sites over 50 years old which also retained their integrity. None were identified.

Finally, it is possible that archaeological remains may be encountered in the project area during fire plow activities. Crews should be advised to report any discoveries of concentrations of artifacts (such as bottles, ceramics, or projectile points) or brick rubble to the project engineer, who should in turn report the material to the State Historic Preservation Office or to Chicora Foundation (the process of dealing with late discoveries is discussed in 36CFR800.13(b)(3)). No construction should take

place in the vicinity of these late discoveries until they have been examined by an archaeologist and, if necessary, have been processed according to 36CFR800.13(b)(3).

TABLE OF CONTENTS

List of Figures		iv
Introduction		1
Natural Environment		5
<i>Physiography</i>	5	
<i>Geology and Soils</i>	6	
<i>Floristics</i>	8	
<i>Climate</i>	9	
Prehistoric and Historic Synopsis		11
<i>Previous Research</i>	11	
<i>Prehistoric Synopsis</i>	11	
<i>Historic Synopsis</i>	15	
Methods and Findings		21
<i>Reconnaissance Methodology</i>	21	
<i>Results</i>	23	
Summary		25
Sources Cited		27

LIST OF FIGURES

Figure

1. Vicinity of the study tract in Horry County	1
2. Topographic map showing the vicinity of the Waccamaw Mitigation Bank tract	2
3. Map of the Lewis Ocean Bay Heritage Preserve Wildlife Management Area	3
4. Existing roads and proposed fire plow lanes	4
5. Study tract showing extensive wetlands	5
6. Study tract showing soil types	6
7. View of high ground	8
8. View of the road running between two Carolina bays	9
9. Overview of South Carolina archaeological periods	13
10. Chronology for coastal North Carolina	16
11. Portion of Mills' <i>Atlas</i> of 1826	18
12. Portion of the 1918 <i>Soil Survey of Horry County</i>	15
13. Portion of the 1939 <i>General Highway and Transportation Map of Horry County</i>	19
14. Areas subjected to pedestrian survey	22
15. Base of a Savannah River Stemmed point	23

Introduction

This investigation was conducted by Dr. Michael Trinkley of Chicora Foundation, Inc. for Mr. David Godley of the Environmental Banc & Exchange, LLC (EBX) in Camden, South Carolina. The work was conducted to assist this company comply with Section 106 of the National Historic Preservation Act and the regulations codified in 36CFR800.

otherwise limit its potential development and/or destruction) and 226 acres of uplands (Figure 2).

Topography is relatively level with shallow elliptical or oval depressions called Carolina bays interspersed across the tract. Of uncertain origin these are freshwater wetlands that fill with rainwater during the winter and spring, but tend to be dry during the summer months. The property is surrounded by the Lewis Ocean Bay Heritage Preserve Wildlife Management Area (WMA) operated by the South Carolina Department of Natural Resources (SCDNR) (Figure 3). It is anticipated that eventually SCDNR may obtain the property and incorporate it into the existing WMA.

An existing Santee Cooper power line passes across the lower third of the property and this corridor has suffered landscape alteration, including clearing, subsequent erection of the poles, erecting lines, and long-term maintenance. This may have caused

damage to existing archaeological sites, but the line has been in existence since at least 1994 based on aerial imagery. Also present within the 100 foot easement are easements for the Grand Strand Water Line Authority and AT&T. Both of these lines are subterranean and would also have caused damage to any existing archaeological sites they passed over.

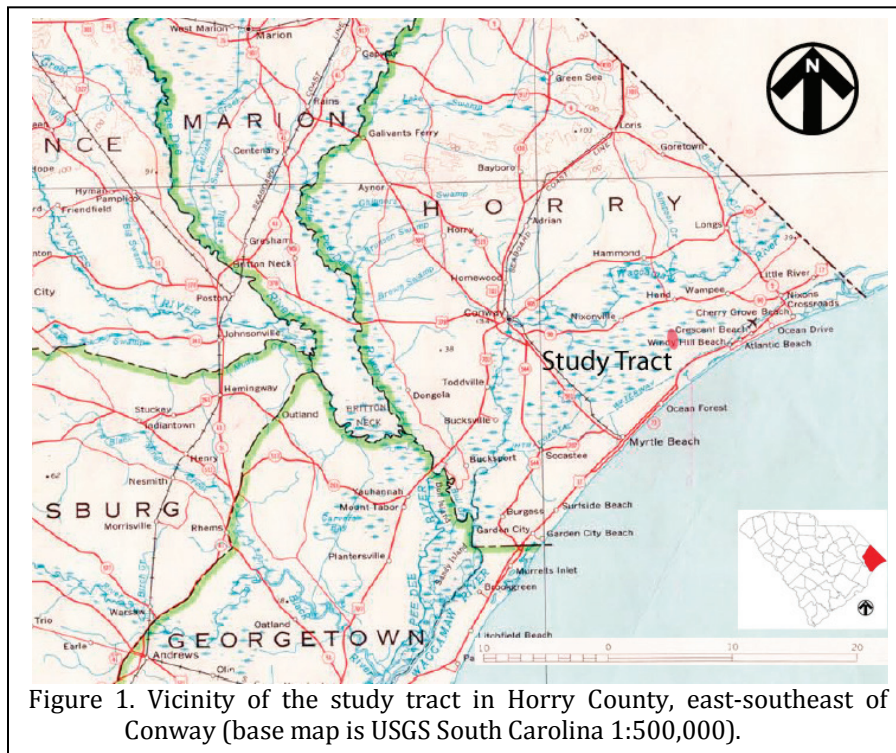
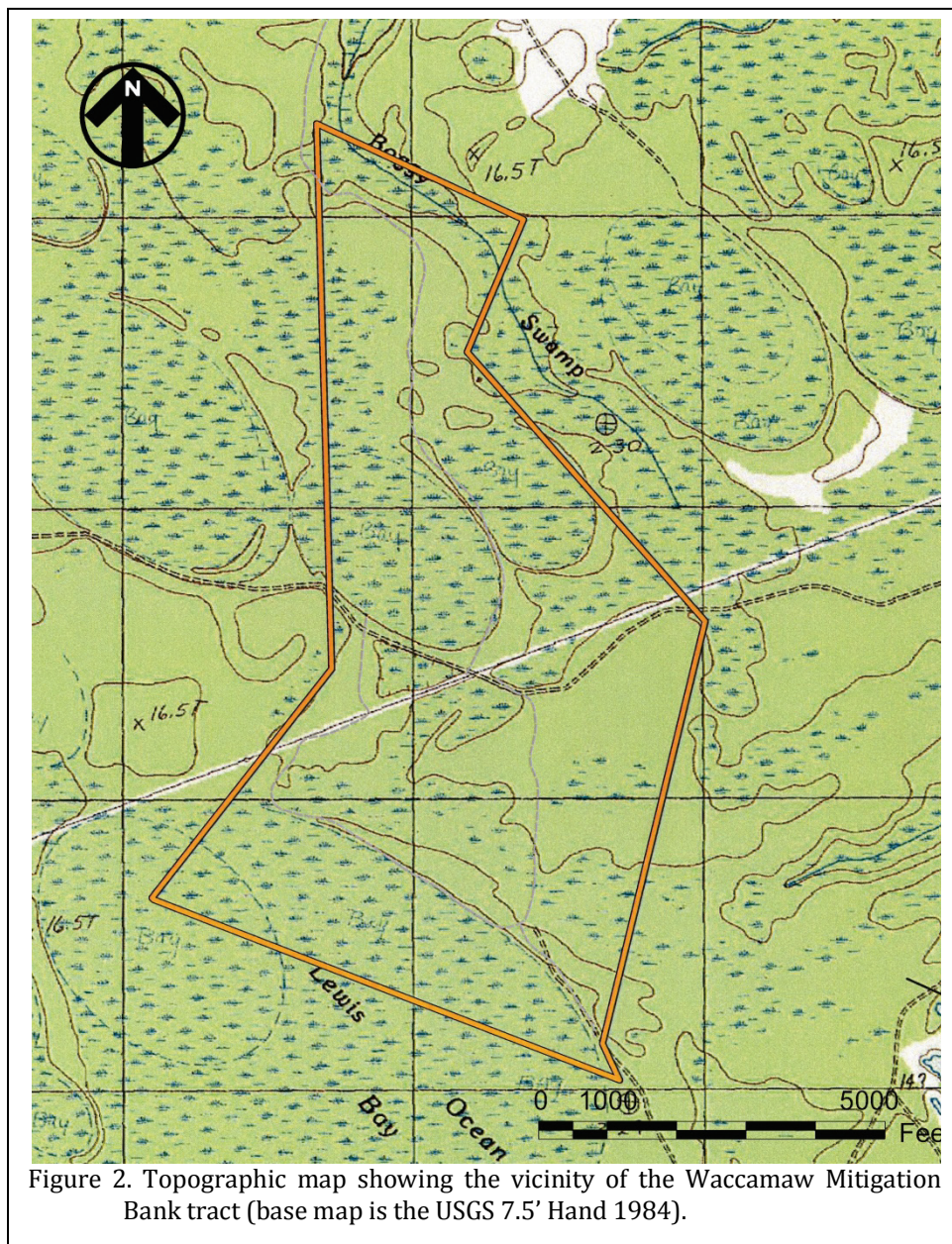


Figure 1. Vicinity of the study tract in Horry County, east-southeast of Conway (base map is USGS South Carolina 1:500,000).

The project site is situated in southeastern Horry County, about 14 miles ESE of the city of Conway and 11 miles northeast of Myrtle Beach (Figure 1). It consists of a parcel containing just over 754 acres, including 527 acres of jurisdictional wetlands (i.e., a wetland which can be regulated by a government agency whether it is a state or federal agency for the purpose of preservation, protection, or to



The only actions anticipated on the property are the creation of new fire plow lanes. These will be about 10 feet in width and the plow will potentially turn over about 10 inches of soil. Fire plow locations typically do not change, but are maintained. No new roads are proposed, although existing roads will also be maintained as needed to ensure access. Figure 4 shows the location of the existing roads and the proposed

fire plow lanes.

The proposed actions on the property will not be visible from surrounding tracts and will therefore not create any visual impact. As a result, this investigation uses an area of potential effect (APE) about 0.25 mile in diameter around the tract. However, no structures can be seen from any of the examined areas on the parcel and it is likely that none exist since the study tract is entirely surrounded by the existing WMA. Nor is it likely that the project will have any secondary impacts.

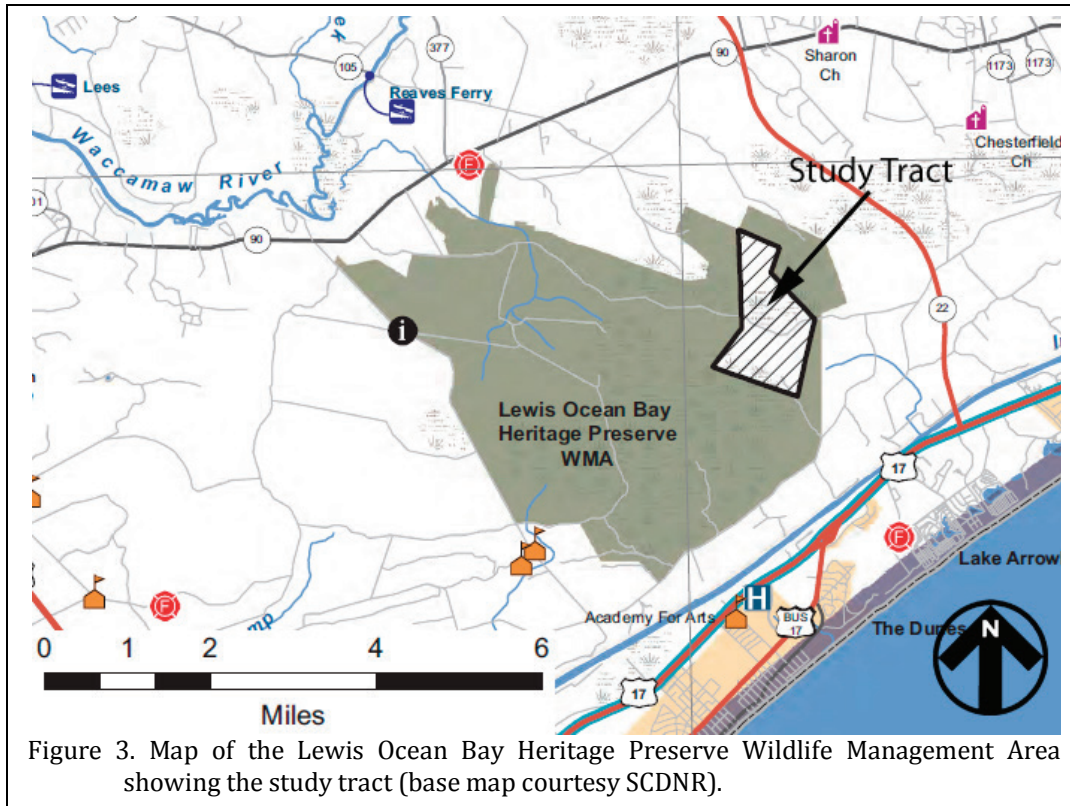
We were requested by Mr. Godley to provide a proposal for a reconnaissance survey in late September. A proposal was provided with the recommendation that it be approved by the SHPO Archaeologist, Dr. Jodi Barnes since there was some ambiguity in the SHPO request for

additional investigation on the tract.

During that discussion, it was decided that the reconnaissance study would involve a pedestrian examination of approximately 50% of the available road network. Some effort would also be given to ensure that roads in proximity to the Carolina bays were incorporated in the study.

A proposal to accomplish this was approved by Mr. Godley and the work was conducted on September 26 and 27, 2012 by Dr. Michael Trinkley and Ms. Debi Hacker. It was not possible to conduct the necessary background work until the completion of the field investigations and ArchSite, which provides

pedestrian survey, findings, and recommendations concerning the project.



information on previously recorded archaeological and architectural sites, was examined on October 1, 2012. As a result of this work, no previously identified archaeological or historic sites were identified on the property or within 0.25 miles. The only previous archaeological investigations were a 2000 DOT project examining the relocation of Watertower Road on the eastern edge of the study tract. This investigation found no archaeological or historic sites (Sanders 2000).

Archival and historical research was limited to a review of secondary sources available in the Chicora Foundation files.

This report provides information on the



Figure 4. Existing roads and proposed fire plow lanes on the Waccamaw Mitigation tract (base map courtesy of EBX).

Natural Environment

Physiography

The project area is situated in southeastern Horry County, about 5.5 miles southwest of the Waccamaw River. A portion of Boggy Swamp runs through the northeastern edge of the study tract and Long Branch is situated to the east. There is, however, no consistent freshwater access in the study tract. Level topography in the area is interrupted by only occasional shallow swamp sloughs, small wetland depressions, and several larger Carolina bays.

Horry County is bounded to the north by Brunswick and Columbus counties, North Carolina, to the east by the Atlantic Ocean, to the south by Georgetown County, and to the west by Dillon and Marion counties. It lies within the Lower Coastal Plain, which is made up of fluvial deposits that contain varying amounts of sand, silt, and clay (Dudley 1986). This is also the area known as the Atlantic Coast Flatwoods which extends from the sea shore inland about 30 to 70 miles.

The area is characterized by broad flats and depressions. While there are areas of well drained soils, much of the flatwoods consist primarily of poorly drained soils with clay subsoils, especially near the coast and in the



project area (Ellerbe 1974:18).

Elevations may range from sea level to about 100 feet above mean sea level in the Lower Coastal Plain. In general, the topography of the study tract is level with elevations ranging from 45-50 feet above mean sea level (AMSL) in the depressions and bays to about 52 feet AMSL in high ground areas. Topography slopes to the south, toward the Intracoastal Waterway, where a range of 20-40 feet AMSL is common. Elevations also fall toward the Waccamaw River; at Bear Bluff to the northwest elevations are only about 21 feet AMSL, while the Waccamaw swamp averages about 3 feet AMSL.

Of considerable interest are the region's Carolina bays, elliptical depressions ranging in size from 1 to several hundred acres that are consistently oriented in a northwest-southeast direction.

Geology and Soils

The geology of the Lower Coastal Plain has been well described by Cooke (1936) who notes that from the Cape Fear River in North Carolina to Winyah Bay in South Carolina, the coast forms a "great arc scooped out by waves" (Cooke 1936:4). This area has been described by Brown (1975) as being an arcuate strand. In this area, salt

marshes are poorly developed or absent and few tidal inlets breach the coast (Smith 1933:20-21). The situation is the result of an erosional history about 100,000 years ago. In general, however, the geology of the Lower Coastal Plain is less complex than that of other sections of the state.

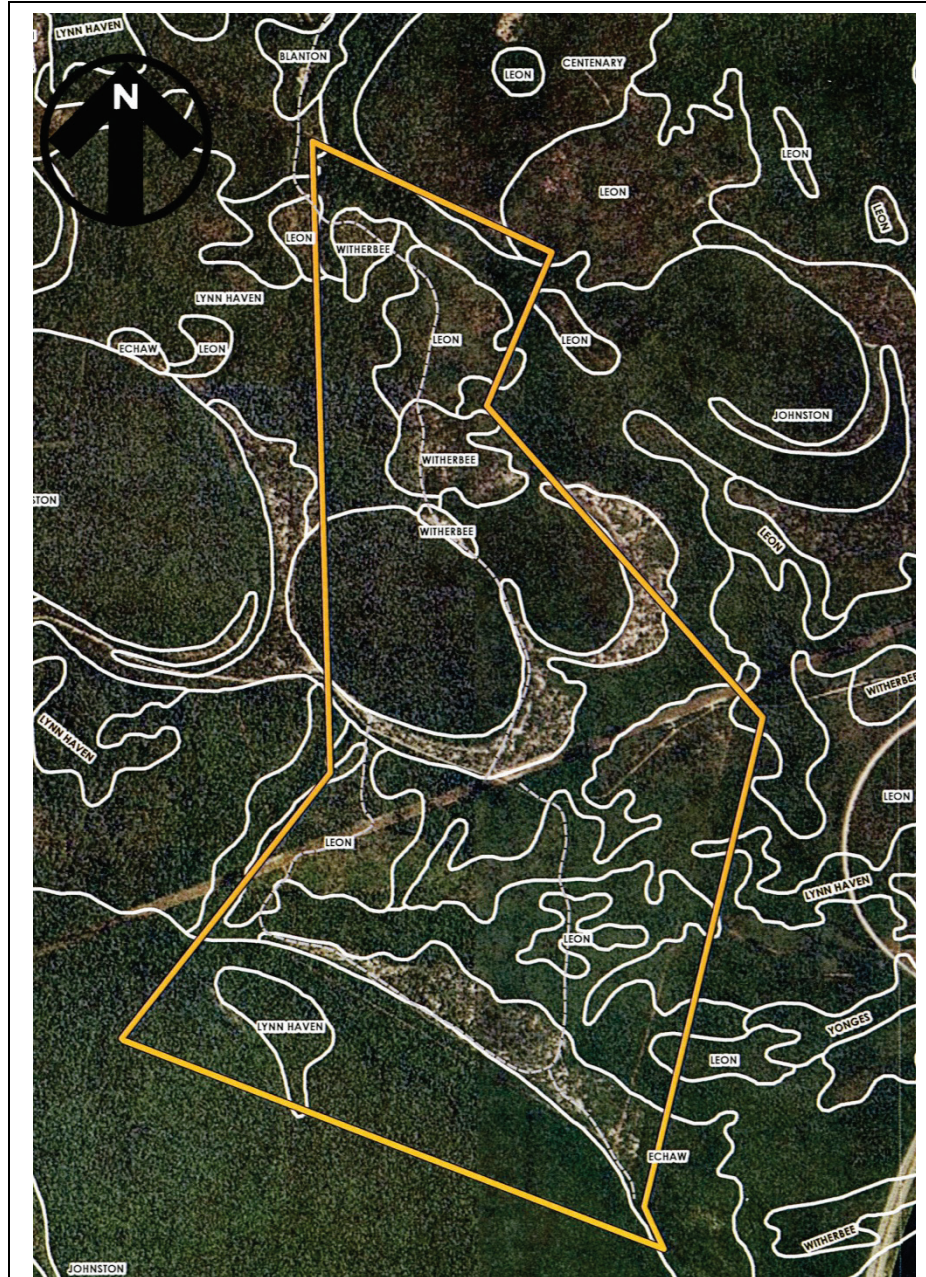


Figure 6. Study tract showing soil types (base map courtesy EBX).

As previously mentioned, the area is dominated by fluvial deposits of unconsolidated sands and clays. Rocks are almost totally absent from the area, although Mills (1972[1826]:584) does note that some compact shell limestone was found on the Waccamaw between Gaul's Ferry and Bear Bluff (west of the current study tract).

Various theories have been presented to explain Carolina bays, including the now largely repudiated concept that they were formed by extraterrestrial impact. Many Quaternary geologists and geomorphologists believe the bays can be easily explained by various terrestrial processes and repeated modification by eolian and lacustrine processes of them over the past 70,000 to 100,000 years (May and Werne 2004).

Soils were primarily formed during the Pleistocene epoch and several terraces were deposited (Dudley 1986:85). The project vicinity is characterized by the Lynn Haven-Leon Association (Dudley 1986). This association, which occurs on nearly level and gently sloping soils, consists of poorly drained soils that are sandy throughout, even in drainages.

The survey area includes six soil series, consisting of mostly poorly (Leon and Lynn Haven) to very poorly drained soils (Johnson), but also containing the moderately well drained Centenary and Echaw soils, as well as the somewhat poorly drained Witherbee soils (Figure 6). Each of these is briefly discussed below.

Johnson loams are very poorly drained soils found in shallow depressions and along streams. The A horizon, found to a depth of 2.5 feet consists of black (10YR 2/1) loam. Below is a Cg1 horizon of grayish brown (10YR 5/2) to a depth of about 3.8 feet. These soils are frequently flooded to depths of a foot or more.

Leon fine sands consist of poorly drained, moderately rapid permeable soils found in broad, nearly level areas. The profile consists of an A horizon of black (10YR 2/1) fine sand about 0.4 foot overlying an E horizon of light gray (10YR 6/1) sand to a depth of about 0.8 foot. Below this is a Bh1 horizon of black (N 2/0) sand. The high

water table is found within a foot of the surface.

Lynn Haven sands are also poorly drained, moderately rapid permeable soils found in broad, nearly level areas, as well as depressional areas. A typical profile consists of about 0.8 foot of black (10YR 2/1) sand over an E horizon of gray (10YR 5/1) sand to 1.1 foot. This rests on a Bh1 horizon to a depth of 3.3 feet that is normally a very dark brown (10YR 2/2) sand. Like the Leon soils, these exhibit a high water table within a foot of the surface over much of the year.

Witherbee sands are somewhat poorly drained soils found on broad interstream divides and flats. High water tables may be within 1-2 feet of the surface. Their A horizon consists of very dark gray (10YR 3/1) sand to a depth of 0.4 foot. The underlying E1 horizon, to a depth of 1.3 feet, is a yellowish brown (10YR 5/4) sand.

Centenary fine sands are moderately well drained and rapidly permeable. They are found on broad ridges and flats. Water tables are rarely higher than 3.5 feet below the surface and may be as deep as 5 feet. Soils consist of an A horizon of dark gray (10YR 4/1) fine sand to a depth of 0.4 foot. Below is an E1 horizon to 1.8 foot consisting of brownish yellow (10YR 6/6) fine sand.

Echaw soils are similar, but tend to be found on broad interstream divides and on flats. They are also moderately well drained, but high water may occur within 2.5 feet of the surface. The upper 0.3 foot consists of dark grayish brown (10YR 4/2) sand overlying an E1 horizon to 1.3 foot of light yellowish brown (10YR 6/4).

In 1826 Robert Mills commented that soil was rich and productive adjacent to Horry's rivers. Even the uplands were well suited for cotton with their light sandy soil underlain by clay. But he commented that a great deal of swamp land was found in the district, "fit only for cattle ranges" (Mills 1972[1826]:585). Edmund Ruffin, who managed to visit much of South Carolina's coast in the mid-1840s, never sought to go to Horry, commenting that:

I would have gone to Horry,

which is called the “dark corner” of the state, but for having no expectation of finding anyone acquainted with or feeling interested in the objects of explorations (Mathew 1992:215).

Little farming was conducted in the interior areas and, where present, was of a modest subsistence type. Naval store production was far more common and even into the twentieth century the region was a major timber area.

Floristics

Vegetation in Horry County is characterized in relation to the previously broad topographic patterns of poorly drained floodplains and lowlands, and the better drained uplands.

The vegetation in Horry County has been classified by K  chler (1964) as part of the Oak-Hickory-Pine forest, based on potential natural vegetation. This would consist of

tupelo gum, and black gum. Less water tolerant trees, such as pines, occur on the uplands or on better-drained slopes. Also found in the bottomlands, floodplains, and Carolina bays are red maple, ash, water oak, elm, and sweet gum. On the better-drained uplands, pine dominates, with loblolly and longleaf pines being indigenous and the slash pine introduced.

In 1826 Mills in describing the Horry District vegetation, notes:

The long leaf pine abounds, also the cypress, live oak, water oak, white oak, &c. The fruit trees are, peaches, apples, pears, plums, cherries, figs; besides strawberries, which grow wild, whortleberries, &c. The forest trees begin to bud in the latter part of March, and the fruit trees in April. The pine and cypress are mostly used for buildings (Mills 1972[1826]:582).

The poorly drained swamps and flatwoods of Horry County were not particularly attractive to early settlers and much of the area was not actively farmed for a number of years.

Carolina bays are rich in biodiversity, often including rare and/or endangered species. Many also represent ecotones where multiple environmental resources are found in close proximity. Nevertheless, the bays have many different vegetative structures, based on the depression depth, size, hydrology, and subsurface. It is reasonable to assume that

medium tall to tall forests of broadleaf deciduous and needleleaf evergreen trees. More specifically, however, the floodplains are covered by mixed hardwoods, including bald cypress,

prehistoric environmental conditions also varied; thus, the presence of prehistoric sites at one Carolina bay may not be a good indication that similar remains will be found at others.



Figure 7. View of high ground in the study tract and an example of the area’s dirt roads.



Figure 8. View of the road running between two Carolina bays on the study tract.

In the study area the bays are isolated freshwater wetlands, filling with rainwater in the winter and spring, but drying during the summer months. During this study, very little water was evident anywhere on the tract. Dense thickets of plants cover the bays and mingle with sweet bay, catbriar, and gallberry. A thin canopy of pond pine and loblolly bay trees usually surrounds the bays. Lewis Ocean Bay has been described as a "recovering" pine plantation now managed for a longleaf pine ecosystem. There is documentation that in the past former owners in the immediate area converted much of the acreage to pine plantations, intensively preparing the site using root-raking and bedding. These actions likely affected archaeological sites that may exist in the area. The tract is also recovering from a significant wildfire in 2009.

Climate

Elevation, latitude, and distance from the coast work close together to affect the climate of South Carolina, although Horry is clearly dominated by its maritime location. Much of the weather is controlled by the proximity of the Gulf Stream, about 50 miles offshore. In addition, the more westerly mountains block or moderate

many of the cold air masses that flow across the state from west to east. Even the very cold air masses which cross the mountains are warmed by compression before the descent on the Coast.

As a result, the climate of Horry County is temperate. The winters are relatively mild with a mean temperature of 48°F and the summers are very warm and humid, with a mean temperature of 79°F and average humidity of 60%. Rainfall in the amount of about 51 inches is good for a broad range of crops. About 31

inches (or 60% of the total) occurs during the growing season, with until relatively recent periods of drought not being particularly common. Of course, there have been statewide droughts, such as the one in 1845, but more often the threat to Horry crops was flooding. Major floods have occurred in 1855, 1924, 1928, 1959, 1961, and 1973, with the September 1928 flood the largest known, reaching a stage of 12.75 feet above mean sea level (U.S. Army Corps of Engineers 1973:9).

The average growing season is about 234 days, although early freezes in the fall and late frosts in the spring can reduce this period by as much as 30 or more days (Dudley 1986:97). Consequently, most cotton planting, for example, did not take place until early May, avoiding the possibility that a late frost would damage the young seedlings.

Prehistoric and Historic Synopsis

Previous Research

Horry has received rather spotty archaeological attention. Derting and his colleagues list only 67 reports associated with the county, with 41 of these (or 61%) representing highway or sewer surveys (Derting et al. 1991). The SHPO list of studies, although limited to those for which architectural sites were a component, adds over 40 additional studies, most within the past decade (<http://shpo.sc.gov/programs/Documents/horry.pdf>). While representing an imperfect survey of sources, these reveal that professional attention has been focused on relatively narrow, contained corridors, with only minor attention devoted to the area's rich prehistoric and protohistoric resources.

Considerable, primarily unpublished, research took place in the Myrtle Beach area during the 1960s at the Ellsworth Site by Erika Fogg-Amed, then a student of Reinhold Englemeyer at USC-Conway. Several test units were placed within the site which yielded Stallings, Thom's Creek, Hanover, and Cape Fear sherds, as well as a Morrow Mountain component (Fogg-Amed n.d. a). No site boundaries were established and, in fact, no site form has ever been filed.

Fogg-Amed also tested the "Coates Site," located about 10 miles north of Myrtle Beach on a high bluff overlooking a freshwater pond. Testing at this site yielded a dense shell midden that produced only lithic debitage (Fogg-Amed n.d. b). Again, no site form was filed.

There have been larger, and more recent, surveys. For example, four involve housing developments (Sanders 2001; Reid 2004; Trinkley and Southerland 2005, and Trinkley and Southerland 2006) and all failed to identify any

archaeological sites, showing the sparse prehistoric and historic resources in the area.

In the 1980s, Tommy Charles of the South Carolina Institute of Archaeology and Anthropology, did a collections survey by enlisting private collectors from across the state to provide details of what they found and where they found it. Brief descriptions of some of these sites can be found in the SCIAA *Notebook* (see for example Pinson 1985).

Figure 9 provides an overview of archaeological periods typically used in South Carolina; Figure 10 provides a similar overview for the North Carolina coastal area, immediately to our north. There remain areas of confusion and uncertainty.

Prehistoric Synopsis

The Paleoindian period, lasting from 12,000 to 8,000 B.C., is evidenced by basally thinned, side-notched projectile points; fluted, lanceolate projectile points; side scrapers; and drills (Coe 1964; Michie 1977; Williams 1968). 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 towards the exploitation of now extinct mega-fauna" (Michie 1977:124).

Unfortunately, little is known about Paleoindian subsistence strategies, settlement systems, or social organization. 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 the isolated finds, is thought to have been low, Walthall suggests that toward the end of the period, "there was an increase in population

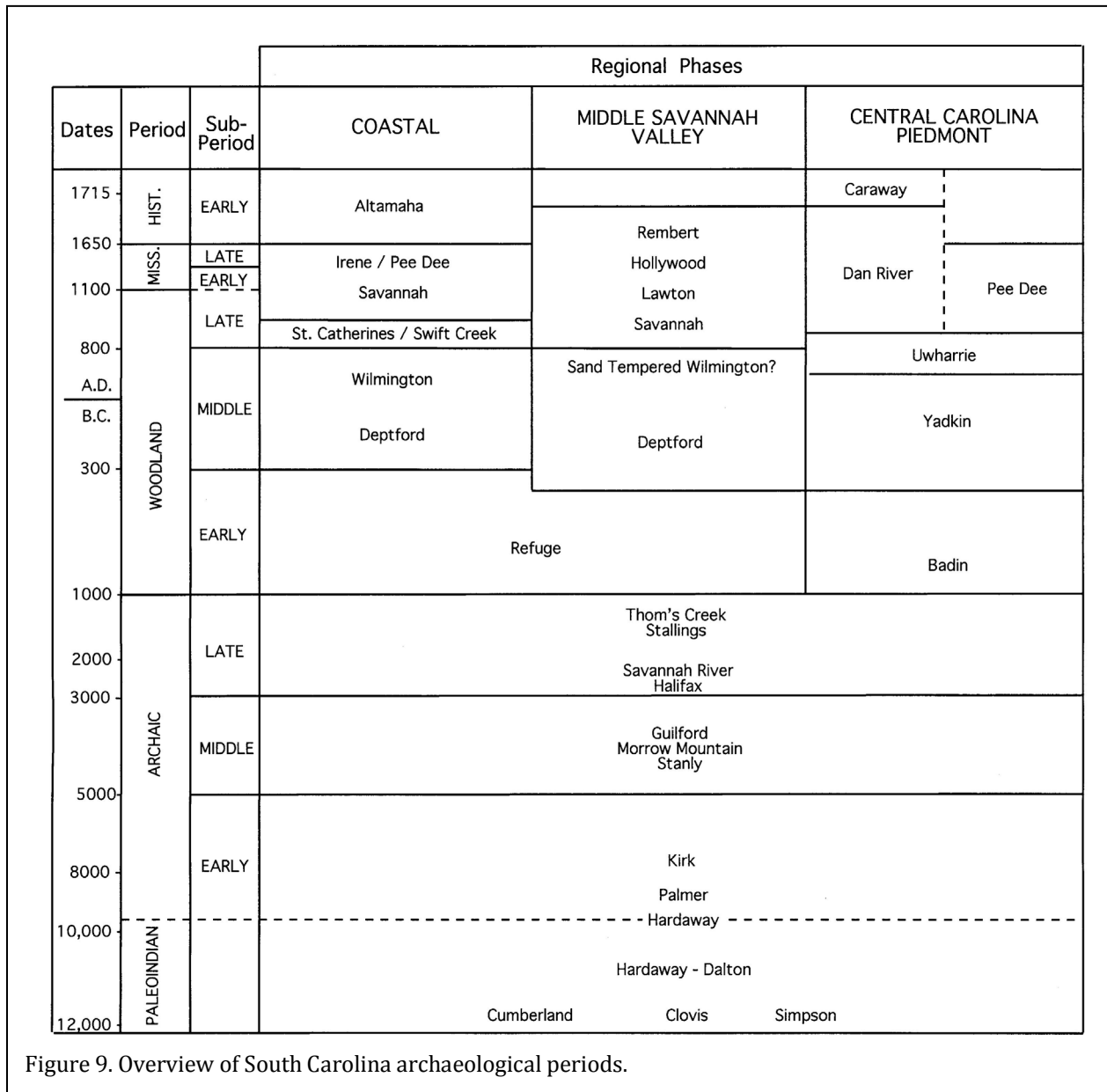


Figure 9. Overview of South Carolina archaeological periods.

density and in territoriality and that a number of new resource areas were beginning to be exploited" (Walthall 1980:30).

The Archaic period, which dates from 8000 to 2000 B.C., does not form a sharp break with the Paleoindian period, but is a slow transition characterized by a modern climate 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 mammal. The chronology established by Coe (1964) for the North Carolina Piedmont may be applied with little modification to the South Carolina coastal plain and piedmont. Archaic period assemblages, characterized by corner-notched and broad stemmed projectile points, are fairly common, perhaps because the swamps and drainages offered especially

DATE	CULTURAL PERIOD	COASTAL PLAIN			
		Northern Coast	Northern Coastal Plain	Southern Coast	Southern Coastal Plain
	Historic Tribe(s)	Carolina Algonkins	Meheem Tuscarora	Cape Fear Indians Waccamaw	Lumbee
	Contact				
AD 1500					
	Late Woodland / South Appalachian Mississippian	Colington	Cashie	White Oak	?
AD 1000					
	Middle Woodland	Mount Pleasant		Cape Fear	
AD 500					
	Early Woodland	Deep Creek		New River	
AD 1					
1,000 BC					
	Late Archaic	Savannah River			
2,000 BC					
3,000 BC					
		Guilford			
4,000 BC					
5,000 BC					
		Morrow Mountain			
6,000 BC					
		Stanly			
7,000 BC					
		Kirk			
8,000 BC					
		Palmer			
9,000 BC					
		Hardaway			
	Late Paleoindian				
	Middle Paleoindian	Cumberland - Suwannee - Simpson			
	Early Paleoindian	Clovis			
10,000 BC					

Figure 10. Chronology for coastal North Carolina (courtesy of the University of North Carolina – Chapel Hill Research Laboratories of Archaeology).

attractive ecotones.

In the Coastal Plain of the South Carolina, there is an increase in the quantity of Early Archaic remains, probably associated with an increase in population and associated increase in the intensity of occupation. While Hardaway

and Dalton points are typically found as isolated specimens along riverine environments, remains from the following Palmer phase are not only more common, but are also found in both riverine and interrivine settings. Kirks are likewise common in the coastal plain (Goodyear et al. 1979).

The two primary Middle Archaic phases found in the coastal plain are the Morrow Mountain and Guilford (the Stanly and Halifax complexes identified by Coe are rarely encountered). Our best information on the Middle Woodland comes from sites investigated west of the Appalachian Mountains, such as the work in the Little Tennessee River Valley. 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 South Carolina, where axes, choppers, and ground and polished stone tools are very rare.

The Late Archaic is characterized by the appearance of large, square stemmed Savannah River projectile points (Coe 1964). These people continued the intensive exploitation of the uplands much like earlier Archaic groups. The bulk of our data for this period, however, comes from work in the Uwharrie region of North Carolina.

The Woodland period begins, by definition, with the introduction of fired clay pottery about 2000 B.C. along the South Carolina coast (the introduction of pottery, and hence the beginning of the Woodland period, occurs much later in the Piedmont of South Carolina). It should be noted that many researchers call the period from about 2500 to 1000 B.C. the Late Archaic because of a perceived continuation of the Archaic lifestyle in spite of the manufacture of pottery. Regardless of terminology, the period from 2500 to 1000 B.C. is well documented on the South

Carolina coast and is characterized by Stallings (fiber-tempered) pottery. The subsistence economy during this early period was based primarily on deer hunting and fishing, with supplemental inclusions of small mammals, birds, reptiles, and shellfish.

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, Coastal Plain, and up to the Fall Line. The sites are found into the North Carolina Coastal Plain, but do not appear to extend southward into Georgia.

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.

The Deptford phase, which dates from 1100 B.C. to A.D. 600, is best characterized by fine to coarse sandy paste pottery with a check stamped surface treatment. The Deptford settlement pattern involves both coastal and inland sites.

Inland sites such as 38AK228-W, 38LX5, 38RD60, and 38BM40 indicate the presence of an extensive Deptford occupation on the Fall Line and the Coastal Plain, although sandy, acidic soils preclude statements on the subsistence base (Anderson 1979; Ryan 1972; Trinkley 1980b). These interior or upland Deptford sites, however, are strongly associated with the swamp terrace edge, and this environment is productive not only in nut masts, but also in large mammals such as deer. Perhaps the best data concerning Deptford "base camps" comes from the Lewis-West site (38AK228-W), where evidence of abundant food remains, storage pit features, elaborate material culture, mortuary behavior, and craft

specialization has been reported (Sassaman et al. 1990:96-98).

Throughout much of the Coastal Zone and Coastal Plain north of Charleston, a somewhat different cultural manifestation is observed, related to the "Northern Tradition" (e.g., Caldwell 1958). This recently identified assemblage has been termed Deep Creek and was first identified from northern North Carolina sites (Phelps 1983). The Deep Creek assemblage is characterized by pottery with medium to coarse sand inclusions and surface treatments of cord marking, fabric impressing, simple stamping, and net impressing. Much of this material has been previously designated as the Middle Woodland "Cape Fear" pottery originally typed by South (1976). The Deep Creek wares date from about 1000 B.C. to A.D. 1 in North Carolina, but may date later in South Carolina. The Deep Creek settlement and subsistence systems are poorly known, but appear to be very similar to those identified with the Deptford phase.

The Deep Creek assemblage strongly resembles Deptford both typologically and temporally. It appears this northern tradition of cord and fabric impressions was introduced and gradually accepted by indigenous South Carolina populations. During this time, some groups continued making only the older carved paddle stamped pottery, while others mixed the two styles, and still others (and later all) made exclusively cord and fabric stamped wares.

The Middle Woodland in South Carolina is characterized by a pattern of settlement mobility and short-term occupation. On the southern coast it is associated with the Wilmington phase, while on the northern coast it is recognized by the presence of Hanover, McClellanville or Santee, and Mount Pleasant assemblages. The best data concerning Middle Woodland Coastal Zone assemblages comes from Phelps' (1983:32-33) work in North Carolina. Associated items include a small variety of the Roanoke Large Triangular points (Coe 1964:110-111), sandstone abraders, shell pendants, polished stone gorgets, celts, and woven marsh mats. Significantly, both primary inhumation and cremations are found.

On the Coastal Plain of South Carolina, researchers are finding evidence of a Middle Woodland Yadkin assemblage, best known from Coe's work at the Doerschuk site in North Carolina (Coe 1964:25-26). Yadkin pottery is characterized by a crushed quartz temper and cord marked, fabric impressed, and linear check stamped surface treatments. The Yadkin ceramics are associated with medium-sized triangular points, although Oliver (1981) suggests that a continuation of the Piedmont Stemmed Tradition to at least A.D. 300 coexisted with this Triangular Tradition. The Yadkin series in South Carolina was first observed by Ward (1978, 1983) from the White's Creek drainage in Marlboro County, South Carolina. Since then, a large Yadkin village has been identified by DePratter at the Dunlap site (38DA66) in Darlington County, South Carolina (Chester DePratter, personal communication 1985) and Blanton et al. (1986) and have excavated a small Yadkin site (389SU83) in Sumter County, South Carolina. Research at 38FL249 on the Roche Carolina tract in northern Florence County revealed an assemblage including Badin, Yadkin, and Wilmington wares (Trinkley et al. 1993:85-102). Anderson et al. (1982:299-302) offer additional typological assessments of the Yadkin wares in South Carolina.

Over the years, the suggestion that Cape Fear might be replaced by such types as Deep Creek and Mount Pleasant has raised considerable controversy. Taylor, for example, rejects the use of the North Carolina types in favor of those developed by Anderson et al. (1982) from their work at Mattassee Lake in Berkeley County (Taylor 1984:80). Cable (1991) is even less generous in his denouncement of ceramic constructs developed nearly a decade ago, also favoring adoption of the Mattassee Lake typology and chronology. This construct, recognizing five phases (Deptford I-III, McClellanville, and Santee I), uses a type variety system.

Regardless of terminology, these Middle Woodland Coastal Plain and Coastal Zone phases continue the Early Woodland Deptford pattern of mobility. While sites are found all along the coast and inland to the Fall Line, shell midden sites evidence sparse shell and artifacts. Gone

are the abundant shell tools, worked bone items, and clay balls. Recent investigations at Coastal Zone sites such as 38BU747 and 38BU1214, however, have provided some evidence of worked bone and shell items at Deptford phase middens (see Trinkley 1990).

In many respects, the South Carolina Late Woodland may be characterized as a continuation of previous Middle Woodland cultural assemblages. While outside the Carolinas there were major cultural changes, such as the continued development and elaboration of agriculture, the Carolina groups settled into a lifeway not appreciably different from that observed for the previous 500 to 700 years (cf. Sassaman et al. 1990:14-15). This situation would remain unchanged until the development of the South Appalachian Mississippian complex (see Ferguson 1971).

The South Appalachian Mississippian period, from about A.D. 1100 to A.D. 1640, is the most elaborate level of culture attained by the native inhabitants and is followed by cultural disintegration brought about largely by European disease. The period is characterized by complicated stamped pottery, complex social organization, agriculture, and the construction of temple mounds and ceremonial centers. The earliest phases include the Savannah and Pee Dee (A.D. 1200 to 1550).

Historic Synopsis

The earliest activity in the Horry County area may have been the Spanish Ayllon movement from Rio Jordon (Cape Fear River) to San Miguel de Gualdape, 45 leagues distant. Some have argued that Fort San Miguel may have been at the mouth of Winyah Bay, although Paul Hoffman suggests the fort was in Beaufort County, South Carolina or Chatham County, Georgia.

While the English settled Charleston in 1670, the northern frontier was initially ignored, except for the Indian trade. However, in 1731 the first Royal Governor of Carolina, Robert Johnson, directed 11 townships be laid out, including Kingston on the west bank of the Waccamaw.

Kingston covered much of Georgetown and Horry counties and by 1734 the town of Kingston, later known as Conwayboro and eventually Conway, was founded. The township, however, was never transformed into a parish, but remained part of the Parish of Prince George, Winyah until 1785. In that year Prince George was divided into four districts and by 1801 Horry District was formally separated from Georgetown (Rogers 1972:9). The designation of "county" was not used until 1868. A variety of townships were established, including Simpson Creek and Little River on the south side of the Waccamaw River.

Prior to the Revolution there were few residents in Kingston and it was not until the late eighteenth century that English, French, Scotch, and Irish settlers began coming into the area. Many settlers in the early nineteenth century came from North Carolina and the northern seaboard states.

In spite of Horry's coastal plain situation, the area developed along vastly different lines than its southern neighbors Georgetown and Charleston. Horry District was always isolated from the remainder of South Carolina and had much stronger connections with North Carolina (Rogers 1972:3). The major traffic artery was the Waccamaw River and this reliance on river transport did not change until the highway development of the 1930s. Subsistence farming was the main occupation in the early 1800s and the farms were small, specializing in peas, wheat, rice, cotton, and corn, most for home consumption (Rogers 1972:5). Mills notes that the population was,

mostly engaged in cultivating the soil. There are a few mechanics, such as blacksmiths, shoemakers, taylors [sic], halters, etc. (Mills 1972[1826]:583).

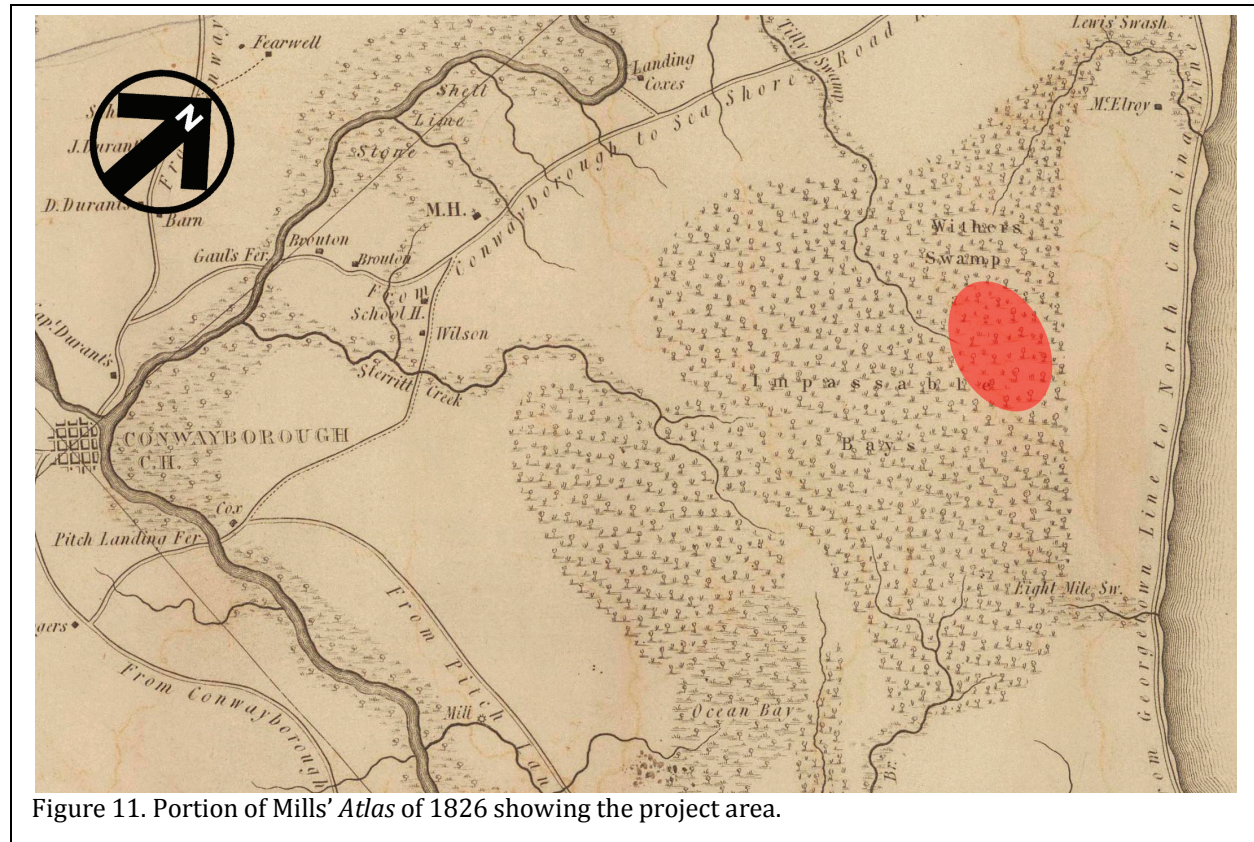


Figure 11. Portion of Mills' *Atlas* of 1826 showing the project area.

For Mills' *Atlas* of 1826, the Horry District was surveyed by Harlee in 1820. No settlements are shown in the project area (Figure 11). While the absence of settlements on Mills maps often suggests little more than that there were no subscribers, the project vicinity was shown as "impenetrable bays," suggesting that there really was no early settlement. Nevertheless, the subsistence farmers of Horry District may either have been unable to subscribe or may have had no need to let others know their location. The 1860 census for Horry District indicates that many of the farmers in Kingston, for example, could neither read nor write, further reducing the benefits of listing in an atlas.

The emphasis on subsistence farming appears to be the result of topography. Only 20% of the land is subject to the type of tidal overflow necessary for wet cultivation of rice. Mills (1972[1826]:581) notes that the river floodplain soil was productive where it could be reclaimed by drainage, while the upland soils were much less productive. This difference in quality is reflected in the prices for the land. Mills states that,

the low land swamps, when secured from the freshets, will sell for 40 or \$50 an acre. The uplands are valued at from \$4 down to 25 cents per acre (Mills 1972[1826]:581).

Interestingly, the price of "improved farms" ranged from \$20 to \$50 an acre as late as 1918 (Tillman et al. 1919:340). The few plantations found in Horry District were primarily located in All Saints Parish, east and south of the Waccamaw River. It was from this area that a small quantity of rice was exported throughout the nineteenth century (Rogers 1972:13).

Because the soils of Horry District were not able to support plantation agriculture a unique distribution of population and a very low percentage of slaves were found in the region. Horry County also continued to play a minor role in state politics. The area, prior to the Civil War, was oriented to smaller farmers and never

developed an aristocratic plantation society with political and economic powers. Most of the farms, including the larger ones, were situated in Kingston Township. The 1860 census indicates that of the 782 farms, 560 were in Kingston (Rogers 1972:12). In 1860, the population was 2,606 and there were only 708 slaves. This ratio of 70% white and 30% blacks has not only remained stable into the twentieth century, but also stands in contrast to Georgetown District where about 12% of the population was white and 88% was black until the 1880 census, when the white population increased to about 20% (Rogers 1972).

By the 1830s, a new industry was competing with farming in the Horry area. Northern immigrants from Maine, coupled with "pine woods speculators" from North Carolina began to exploit the forest products of both the uplands and swamp areas (Tillman et al. 1919:330; Berry 1970; Rogers 1972:14). The Horry District was the leading turpentine producer in South Carolina by 1860, producing products valued at \$392,643. The lumber and turpentine industry continued to grow rapidly after the Civil War. Tobacco was introduced about 1850, but was not an important crop until after the Civil War, lead by the Green Sea Township.

Horry District never sided with the radical secessionists, possibly because of the influence of northern immigrants or because of the resentment of the political and economic power of slave owners. In any event, Horry County responded "enthusiastically" to the call for volunteers at the outbreak of the Civil War (Rogers 1972:35).

Horry District saw little involvement in the Civil War, although 925 of the 1,000 men in the voting population volunteered for duty and served (Rogers 1972:35). Fort Randell was established at Clardy's Point on the Little River and saw skirmishes in 1863 and 1865. The salt works of Peter Vaught, Sr. at Singleton Swash were raided in April 1864, and in 1865 a Union expedition was led up the Waccamaw to destroy ferries at Bull Creek and Yahannah (Rogers

small farmers who live on their farms and superintend the work" (Tillman et al. 1919:335).

The 1918 soil survey map fails to show any structures in the survey area (Figure 12). The community of Vaught, to the southeast of the project disappeared by 1942 when the 15' Nixonville topographic sheet was published.

1900s plowing was seldom more than 2 to 3 inches deep because of the poor machinery. It is suggested that this lack of equipment was not entirely related to a lack of prosperity, but rather was largely the result of cheap labor. Tillman et al. report that, "negro men receive 75 cents to \$1.25 a day . . . while negro women are paid 50 to 65 cents a day" (Tillman et al. 1919:340).

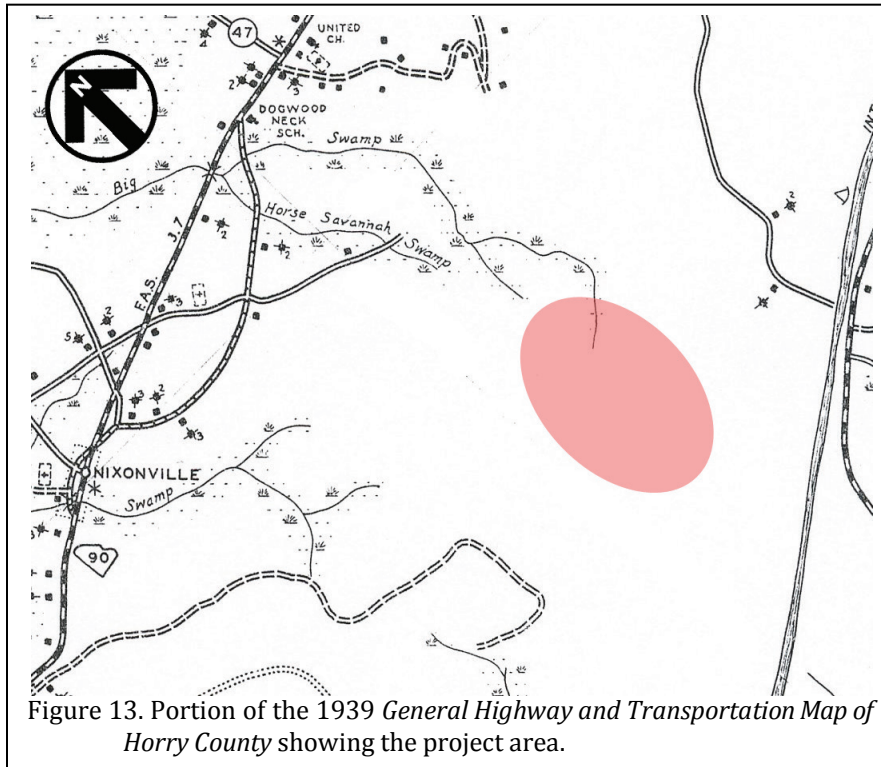


Figure 13. Portion of the 1939 *General Highway and Transportation Map of Horry County* showing the project area.

In the early twentieth century, hogs were the principle source of livestock income. These animals were usually slaughtered in the fall for home use or sale on the local market. Cattle were mostly scrub stock and dairying was neglected. Farm equipment was largely inadequate in the early 1900s and most of the plowing was done with one ox or mule. On many small farms the adequacy of farm equipment did not appreciably improve into the 1940s, when the probate inventory for one small Horry farmer listed only one mule, a one-horse wagon, one disc, four plows, one lot hoes, one guano distributor, a tobacco sprayer, and a corn planter (Trinkley and Caballero 1983:8). Tillman et al. (1919:338) indicate that in the early

Horry County, in 1910, had a relatively low rate of farm tenancy. The 1939 *General Highway and Transportation Map of Horry County* (Figure 13) shows no structures on the property.

Tillman et al. (1919:340) indicate that 72.9% of the farms were operated by owners and 27% by tenants. The average size of such farms (each tenancy is classified as a farm) was 117.8 acres. This is contrasted with piedmont Spartanburg, where in 1920 32.1% of the farms were operated by their owners and 67.7% were operated by tenants. In Spartanburg, where cotton was still king, the average farm size was 49.4

acres (Latimer et al. 1924:419). This dichotomy documents the differences between tenancy in the Atlantic Coastal Plain, where there was a low "devotion" to cotton, and in the Black Belt and Upper Piedmont, where cotton was more important, tenancy rates higher, and farm size smaller (see Woofter et al. 1936).

Methods and Findings

Reconnaissance Methodology

EBX is proposing only very limited activities on the study tract; approximately 5.3 miles of 10 feet wide fire lanes will be created, each with disturbance to about 10 inches in depth. Given the likelihood that much of the area has been previously impacted by silvacultural activities, this represents very low impact. Nevertheless, the State Historic Preservation Office advised EBX that they were recommending, “a cultural resources survey because of the project areas location in a high probability zone for archaeological sites because of its proximity to Carolina Bays” (letter from Dr. Jodi Barnes to Mr. David Godley). The communication went on to explain that their office was “particularly concerned about the firebreaks on the bays, since archaeological research has shown that the bays have a high probability for archaeological features.”

While it would be very difficult to survey the placement of fire lanes, it might be possible to survey them after they were cut and had been rained on. Alternatively, there were approximately 4.3 linear miles of dirt roads on the tract that might be suitable for a pedestrian survey. Several of these roads traveled along the edges of the bays, providing some coverage that might help resolve the SHPO’s concerns.

Given the ambiguity of the recommendation, Chicora Foundation recommended consultation with Dr. Barnes to determine if a pedestrian survey covering 50% (about 2.2 miles) of the available roads would address her office’s concerns. A teleconference was held on September 17. As a result of that discussion it was decided to conduct a pedestrian

survey of about 2.2 miles of roads in the project, attempting to give additional weight to those roads in close proximity to Carolina bays.

Initially we assigned every 0.25 mile of road a discrete number. The beginning and end of each segment was identified by UTM coordinates so it could be found in the field. A random number chart was used to select road segments for survey. Approximately 60% of the segments were adjacent to bays, with the remaining 40% spread across the tract.

Individual segments would be walked, with any evidence of archaeological remains (defined by the presence of three or more artifacts from either surface survey or shovel tests within a 50 feet area) be identified, all cultural remains would be collected, except for mortar and brick, which would be quantitatively noted in the field and discarded. The location would be identified using mapping grade GPS. Archaeological site forms would be recorded with the S.C. Institute of Archaeology and Anthropology. Analysis of collections would follow professionally accepted standards with a level of intensity suitable to the quantity and quality of the remains.

Given that this was a reconnaissance level investigation, we did not anticipate that it would be possible to evaluate the National Register eligibility of identified sites. Rather, the goal was to ascertain the presence of archaeological sites and what environmental zone or zones in which they were found.

As previously discussed, we elected to use a 0.25 mile area of potential effect (APE) since the proposed work will have limited visual impact and the area has already been impacted by power lines and previously excavated fire lanes as a result of the 2009 wildfire.

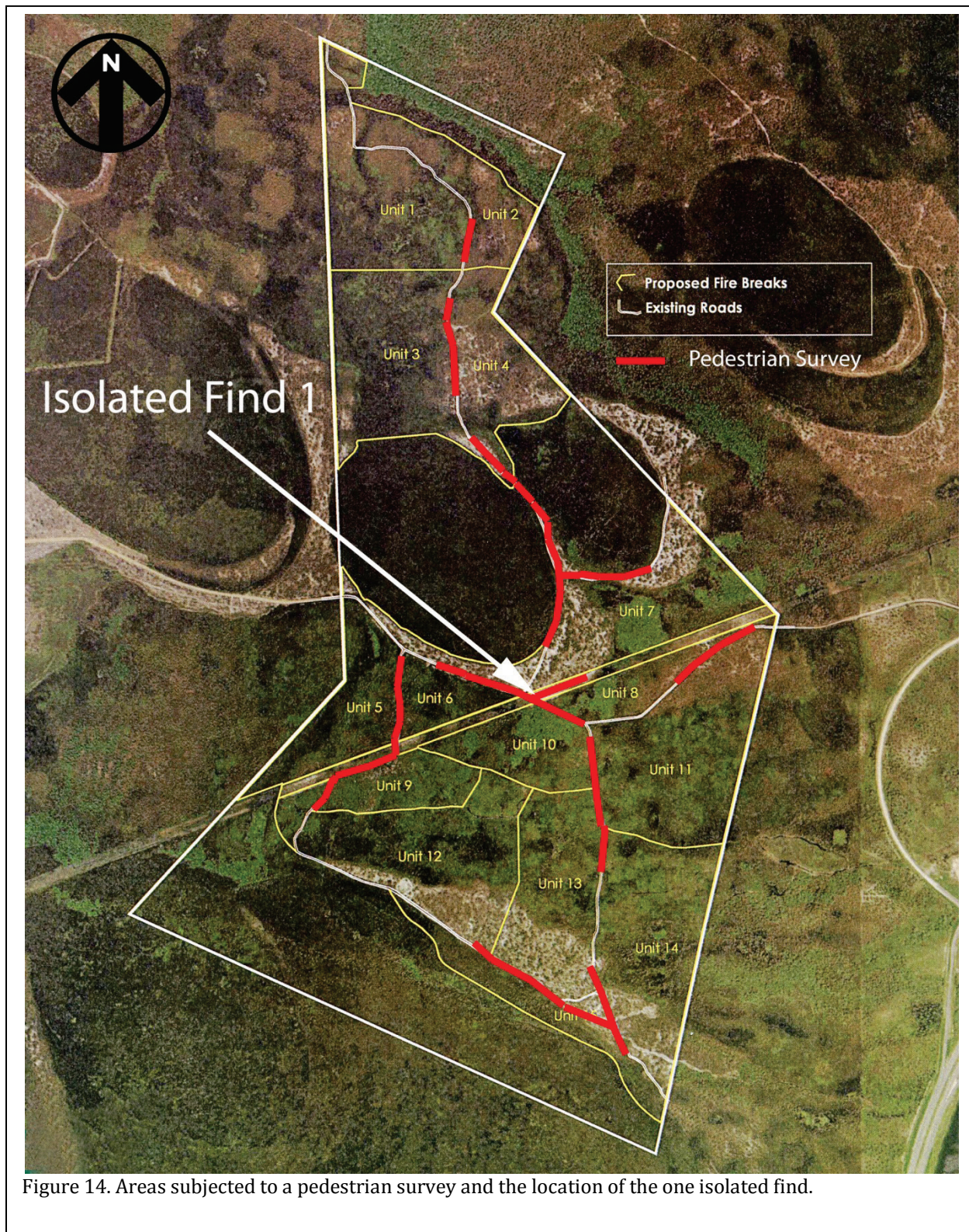


Figure 14. Areas subjected to a pedestrian survey and the location of the one isolated find.

The architectural survey would record buildings, sites, structures, and objects that appeared to have been constructed before 1950. Typical of such projects, this survey would record only those which has retained "some measure of its historic integrity" (Vivian n.d.:5) and which were visible from public roads.

For each identified resource we would complete a Statewide Survey Site Form and at least two representative photographs would be taken. Permanent control numbers would be assigned by the Survey Staff of the S.C. Department of Archives and History at the conclusion of the study. The Site Forms for the resources identified during this study would be submitted to the S.C. Department of Archives and History.

Results

The pedestrian survey did require modification once in the field. We found that not all roads were accessible. Roads in wetland areas typically consisted of fill sections, often topped with gravel. Some roads in highland areas, while walkable, had so little open ground that the effort was not productive.

As a result, as many of the initially proposed survey areas as possible were examined. To supplement for those areas where survey was not possible or appropriate, additional mileage was added to those areas where survey was possible. In addition, we incorporated area under the existing power line easement since there was abundant clear ground with good visibility.

The areas examined in this study are illustrated on Figure 14.

As a result of the reconnaissance a single isolated find was encountered on the northern edge of the power line easement just east of a crossing dirt road. The UTM coordinates are 702236E 3742439N. The recovered item is the base of a rhyolite Savannah River Stemmed point. The base measures at least 33mm in length, 37mm in width, and 9mm in thickness (Figure 15). Savannah River points date from the Late Archaic,

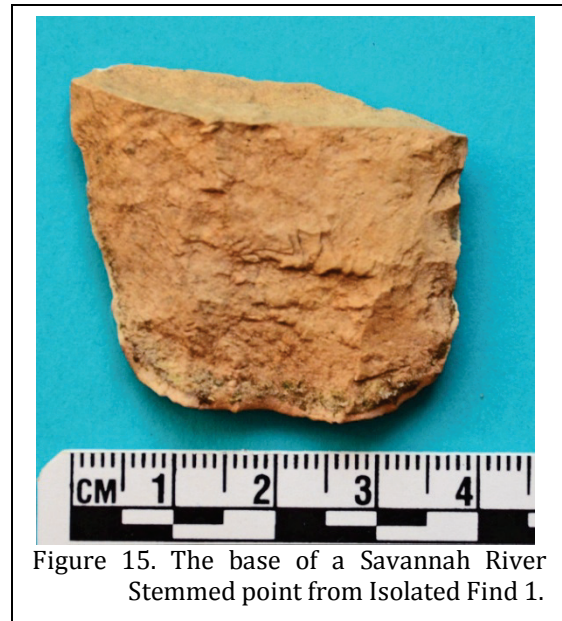


Figure 15. The base of a Savannah River Stemmed point from Isolated Find 1. perhaps from 1,000 to 3,000 B.C. No other flakes or tools were identified, so this likely represents a very limited use site. It is located about 300 south of the nearest bay, although it is only about 100 feet north of a wetland slough.

The survey failed to identify any structures either on the tract or in the APE.

METHODS AND FINDINGS

Summary

This study involved the examination of approximately 2.2 miles of dirt roads on the Waccamaw Mitigation Bank tract in Horry County. These roads incorporated highland areas, wetlands, and highlands in immediate proximity to several Carolina bays. This reconnaissance level investigation of the 754 acre tract was requested by the SC SHPO.

The investigations found only a single isolated Late Archaic fragmentary projectile point. The reason that more extensive remains were not encountered is not well understood but may involve complex interactions of topography, hydrology, and settlement patterns for the northern South Carolina coast.

While Carolina bays are very attractive loci for Native American settlement along the southern coast, those in the study area do not seem to have held the same degree of interest to prehistoric groups. Where prehistoric camps are found they appear to be much closer proximity to deeper, flowing water or coastal marshes. Although the bays may have been used for hunting forays – as evidenced by the single isolated find – they do not appear to have provided adequate resources for long-term settlement.

Based on this reconnaissance we do not recommend additional archaeological investigations for the proposed limited activity of creating fire lanes on the tract.

Of course, it is possible that archaeological remains may be encountered during the construction of the fire lanes. As always, contractors should be advised to report any discoveries of concentrations of artifacts (such as bottles, ceramics, or projectile points) or brick rubble to the project engineer, who should in turn report the material to the State Historic

Preservation Office, or Chicora Foundation (the process of dealing with late discoveries is discussed in 36CFR800.13(b)(3)). No further land altering activities should take place in the vicinity of these discoveries until they have been examined by an archaeologist and, if necessary, have been processed according to 36CFR800.13(b)(3).

A survey of public roads within 0.25 mile revealed no structures that retain the integrity for the National Register of Historic Places.

SUMMARY

Sources Cited

- Anderson, David G.
 1979 *Excavations at Four Fall Line Sites: The Southeastern Beltway Project*. Commonwealth Associates, Inc., Jacksonville, Michigan. Submitted to the South Carolina Department of Highways and Public Transportation, Columbia.
- Anderson, David G., Charles E. Cantley, and A. Lee Novick
 1982 *The Mattassee Lake Sites: Archaeological Investigations Along the Lower Santee River in the Coastal Plain of South Carolina*. Commonwealth Associates, Jackson, Michigan.
- Berry, C.B.
 1970 The Colonial Period. *Independent Republic Quarterly* 9(1):13-15.
- Blanton, Dennis B., Christopher T. Espenshade, and Paul E. Brockington, Jr.
 1986 *An Archaeological Study of 38SU83: A Yadkin Phase Site in the Upper Coastal Plain of South Carolina*. Garrow and Associates, Inc., Atlanta.
- Brown, Paul J.
 1975 *Coastal Morphology of South Carolina*. Unpublished M.S. Thesis, Department of Geology, University of South Carolina, Columbia.
- Cable, John
 1991 *Archaeological Test Excavations on the Northeastern Perimeter of the Buck Hall Site (38CH644), Francis Marion National Forest, South Carolina*. New South Associates, Irmo, South Carolina.
- Caldwell, Joseph R.
 1958 *Trend and Tradition in the Prehistory of the Eastern United States*. *Memoirs of the American Anthropological Association* 88.
- Coe, Joffre L.
 1964 The Formative Cultures of the Carolina Piedmont. *Transactions of the American Philosophical Society* 54(5).
- Cooke, C. Wythe
 1936 *Geology of the Coastal Plain of South Carolina*. Bulletin 867. U.S. Geological Survey, Washington, D.C.
- Derting, Keith M., Sharon L. Pekrul, and Charles J. Rinehart
 1991 *A Comprehensive Bibliography of South Carolina Archaeology*. Research Manuscript 211. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
- Dudley, Travis A.
 1986 *Soil Survey of Horry County, South Carolina*. U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C.
- Ellerbe, Clarence M.
 1974 *South Carolina Soils and Their Interpretations for Selected Uses*. S.C. Land Resources Commission, Columbia.

SOURCES CITED

- Ferguson, Leland G.
 - 1971 *South Appalachian Mississippian*. Ph.D. dissertation, University of North Carolina, Chapel Hill. University Microfilms, Ann Arbor, Michigan.
- Fogg-Amed, Erika
 - n.d. a Sites dug Summer of 1964 (and Fall, 1963), Summer of 1965. Field notes on file, S.C. Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
 - n.d. b Notes on Archaeological Work Done on the Northeast Coast of South Carolina, 1963-1965. Field notes on file, S.C. Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
- Goodyear, Albert C., John H. House, and Neal W. Ackerly
 - 1979 *Laurens-Anderson: An Archaeological Study of the Inter-Riverine Piedmont*. Anthropological Studies 4, Occasional Papers of the Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
- Hanson, Glen T., Jr.
 - 1982 The Analysis of Late Archaic-Early Woodland Adaptive Change Along the Middle Savannah River: A Proposed Study. *South Carolina Institute of Archaeology and Anthropology Notebook* 14:1-38.
- Küchler, A.W.
 - 1964 *Potential Natural Vegetation of the Conterminous United States*. Special Publication No. 36. American Geographical Society, New York.
- Mathew, William M., editor
 - 1992 *Agriculture, Geology, and Society in Antebellum South Carolina: The Private Diary of Edmund Ruffin, 1843*. University of Georgia Press, Athens.
- May, James H. and Andrew G. Warne
 - 1999 Hydrogeological and Geochemical Factors Required for the Development of Carolina Bays Along the Atlantic and Gulf of Mexico, Coastal Plain, USA. *Environmental and Engineering Geoscience* 112:884-899.
- Michie, James L.
 - 1977 *The Late Pleistocene Human Occupation of South Carolina*. Unpublished Honor's Thesis, Department of Anthropology, University of South Carolina, Columbia.
- Mills, Robert
 - 1972 [1826] *Statistics of South Carolina*. Hurlbut and Lloyd, Charleston, South Carolina. 1972 facsimile ed. The Reprint Company, Spartanburg, South Carolina.
- Oliver, Billy L.
 - 1981 *The Piedmont Tradition: Refinement of the Savannah River Stemmed Point Type*. Unpublished Master's thesis, Department of Anthropology, University of North Carolina, Chapel Hill.
- Phelps, David A.
 - 1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 1-52. North Carolina Division of Archives and History, Department of Cultural

- Resources, Raleigh.
- Pinson, Kenn, editor
 1985 *Notebook*. Volume 17, April-June 1985, S.C. Institute of Archaeology and Anthropology, Columbia, SC.
- Reid, Dawn
 2004 *Archaeological Survey of the Bay Tree Golf Plantation Development Tracts*. Archaeological Consultants of the Carolinas, Inc.
- Rogers, James S., III
 1972 *The History of Horry County, South Carolina, 1850-1876*. Unpublished M.A. Thesis, Department of History, University of South Carolina, Columbia.
- Ryan, Thomas M.
 1972 *Archaeological Survey of the Columbia Zoological Park, Richland and Lexington Counties, South Carolina*. Research Manuscript Series 37. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
- Sanders, Joseph
 2000 *Archaeological Survey of the Watertower Intersection Realignment*. Brockington and Associates, Atlanta.
- 2001 *Cultural Resources Survey of the Stephens Crossroads Tract*. Brockington and Associates, Charleston.
- Sassaman, Kenneth E., Mark J. Brooks, Glen T. Hanson, and David G. Anderson
 1990 *Native American Prehistory of the Middle Savannah River Valley*. Savannah River Archaeological Research Papers 1. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
- Service, E.M.
 1966 *The Hunters*. Prentice-Hall, Englewood Cliffs.
- Smith, Lynwood
 1933 *Physiography of South Carolina*. Unpublished M.S. Thesis, Department of Geology, University of South Carolina, Columbia.
- South, Stanley A.
 1976 *An Archaeological Survey of Southeastern North Carolina. South Carolina Institute of Archaeology and Anthropology Notebook 93*.
- Stoltman, James B.
 1974 *Groton Plantation: An Archaeological Study of a South Carolina Locality*. Monographs of the Peabody Museum 1, Harvard University, Cambridge.
- Taylor, Richard L., editor
 1984 *Cultural Resources Survey of the Proposed Pee Dee Electric Generating Facility in Florence County, South Carolina*. Commonwealth Associates, Jackson, Michigan.
- Tillman, B.W., W.E. McLendon, H.H. Krusehopf, A.C. Anderson, Cornelius Van Duyne, and W.J. Latimer
 1919 *Soil Survey of Horry County, South Carolina. Field Operations of the Bureau of Soils 1918:329-376*.
- Trinkley, Michael
 1980a *Additional Investigations at 38LX5*. South Carolina Department of Highways and Public Transportation, Columbia.
- 1980b *Investigation of the Woodland*

SOURCES CITED

- Period Along the South Carolina Coast.* Ph.D. dissertation. Department of Anthropology, University of North Carolina, Chapel Hill.
- 1990 *An Archaeological Context for the South Carolina Woodland Period.* Chicora Foundation Research Series 22. Chicora Foundation, Inc., Columbia, S.C.
- Trinkley, Michael and Olga M. Caballero

 - 1983 *Additional Archaeological, Historical, and Architectural Evaluation of 38HR127 and 38HR131, Horry County, South Carolina.* S.C. Department of Highways and Public Transportation, Columbia.
- Trinkley, Michael and Nicole Southerland

 - 2003 *Cultural Resources Survey of the River Oaks 115kV Transmission Line, Horry County, South Carolina.* Chicora Research Contribution 381. Chicora Foundation, Inc., Columbia.
 - 2005 *Cultural Resources Survey of the Hidden Lakes – Phase IV Tract, Horry County, South Carolina.* Chicora Research Contribution 435. Chicora Foundation, Inc., Columbia.
 - 2006 *Cultural Resources Survey of the Carriage Lakes Extension Tract, Horry County, South Carolina.* Chicora Research Contribution 447. Chicora Foundation, Inc., Columbia.
- Trinkley, Michael, Debi Hacker, and Natalie Adams

 - 1993 *Life in the Pee Dee: Prehistoric and Historic Research on the Roche Carolina Tract, Florence County, South Carolina.* Research Series 39. Chicora Foundation Inc., Columbia.
- U.S. Army Corps of Engineers

 - 1973 *Flood Plain Information B Waccamaw River, Kingston Lake Swamp, Crab Tree Swamp, City of Conway, South Carolina.* Charleston District, Corps of Engineers, Charleston, South Carolina.
- Utterback, J. David

 - 1988 *Architectural and Historic Survey of Horry County, South Carolina.* J. David Utterback, Inc., Socastee, South Carolina.
- Vivian, Daniel J.

 - n.d. *South Carolina Statewide Survey of Historic Properties.* S.C. Department of Archives and History, Columbia.
- Waccamaw Regional Planning and Development Council

 - 1973 *Horry County Survey of Historic Places.* Waccamaw Regional Planning and Development Council, Georgetown.
- Walthall, John A.

 - 1980 *Prehistoric Indians of the Southeast: Archaeology of Alabama.* University of Alabama Press, University.
- Ward, Trawick

 - 1978 *The Archaeology of Whites Creek, Marlboro County, South Carolina.* Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.
 - 1983 *Whites Creek: The Second Time Around.* *South Carolina Antiquities* 15:63-65.
- Williams, Stephen B., editor

 - 1968 *The Waring Papers: The Collected Works of Antonio J. Waring, Jr.* Papers of the Peabody Museum of Archaeology

and Ethnology 58.

Woofter, T.J., Jr.

1936 *Landlord and Tenant of the Cotton
Plantation.* Research
Monograph 5. Division of
Social Research, Works Progress
Administration, Washington, D.C.

SOURCES CITED

**Archaeological
Investigations**

Historical Research

Preservation

Education

Interpretation

Heritage Marketing

**Museum Support
Programs**



Chicora Foundation, Inc.
PO Box 8664 • 861 Arbutus Drive
Columbia, SC 29202-8664
Tel: 803-787-6910
Fax: 803-787-6910
www.chicora.org