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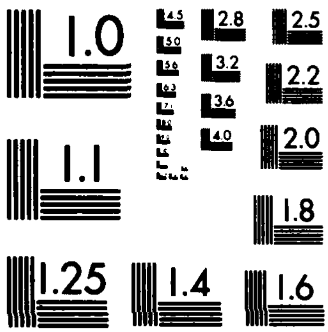

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CULTURAL RESOURCES RECONNAISSANCE STUDY OF THE BLACK WARRIOR-TOMBIGBEE SYSTEM CORRIDOR, ALABAMA

VOLUME I
ARCHAEOLOGY

by
David S. Brose, Ned J. Jenkins,
and
Russell Weisman

With Contributions by
George Lamb,
Michael G. Lelong,
and
Victoria L. Rivizzigno

Prepared for the
U.S. Army Corps of Engineers, Mobile District

Department of Geology and Geography
University of South Alabama Mobile

1983

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report includes eight chapters and five appendices dealing with the prehistoric and historic archaeology from Demopolis to Mobile Alabama. The Tombigbee River in this part of Alabama is viewed from an archaeological perspective concentrating on subsistence, settlement patterns and human use and occupation in general. The investigation level does not exceed the Reconnaissance effort. The time period covered covers from appoximately 10,000 BC to AD 1700.		

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Submitted to the
U.S. Army Corps of Engineers, Mobile District
by the
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University of South Alabama
Mobile

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In spite of some inevitable logistics problems, here I would acknowledge, for whatever achievement there was of the ambitious goals I originally envisioned, my debt to the indomitable field crew, Ned Jenkins, Rusty Weisman, and Baxter Mann, sometimes assisted by Ali Morss and Janet Klute. My gratitude must also be expressed to the many previous field archaeologists who have provided me with their data and their interpretations, both of which I have reused in light of my own understanding of the problems and potential solutions: J. Bense, McD. Brooms, B. Coblentz, C. Curren, D. DeJarnette, R. Fuller, N. Holmes, W.B. Jones, V.J. Knight, G. Lankford, K. Little, C.B. Moore, C. Moorehead, M. Rushing, A. Saltus, W. Sears, C. Solis, G. Spies, N.R. Stowe, B. Trickey, H. Tourtelot, J. Walthall, and S. Wimberly. Without question the research and support (to say nothing of the hospitality) of N. Read Stowe should be singled out for acknowledgement.

I should not minimize the patience, the valuable monitoring, as well as the overall structure of the archaeological effort, maintained by Charles Moorehead and Jerome J. Nielsen of the U.S. Army Corps of Engineers, Mobile District. Nor should anyone minimize the thankless administrative burdens and the fiscal scheduling nightmare faced and overcome by the Principal Investigator, Eugene Wilson, of the University of South Alabama. For his role in shaping these investigations, no acknowledgement of my gratitude would be too great.

Perhaps my final thanks are due to the staff of the Office of Archaeological Research (OAR) of The University of Alabama: to Tim Mistovich and Eugene Futato for their unflappable work with us in the labrythine State site files, to Carey Oakley for his constant support and interest, and to Gloria Cole, who served as our report editor and document verifier, our grammarian and orthographer, and, all too frequently, as our translator, epigrapher, and last line of defense against arithmetic error. That this volume is legible at all, and to the extent that it is intelligible, I am in her debt.

Except for the drawings of the lithic artifacts by C. Maggiora of the Cleveland Museum of Natural History, the technical production of this report was accomplished by the OAR staff. The cover design was prepared by Richard Walling. The figures were prepared by Polly Futato and David Zeanah. Kemp White and Jackie Redding entered the handwritten draft on OAR's IBM System 6 Information Processor and metamorphosed that draft through several revisions into this final report.

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Project Archaeologist
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PART I: PROJECT BACKGROUND

CHAPTER I

PLAN AND SCOPE OF THE BWT ARCHAEOLOGICAL RECONNAISSANCE

David S. Brose

INTRODUCTION

The Black Warrior-Tombigbee Cultural Resources Reconnaissance (BWT) study area lies within the upper and lower Coastal Plain physiographic province of southwestern Alabama. The project area consists of a five mile wide corridor along the Tombigbee River extending from Demopolis to Jackson and a ten mile wide corridor from Jackson south through the Mobile Delta to Mobile. The study area encompasses a linear distance of 200 miles and an area of over 1000 square miles (2.5 billion square meters). Portions of the Mobile Delta, the majority of the Tombigbee floodplain, and adjacent uplands (Figure 1) were included within the study area. The Black Warrior-Tombigbee (BWT) cultural resources reconnaissance was to involve those portions of Greene, Sumter, Hale, Choctaw, Marengo, Clark, Washington, Mobile, and Baldwin Counties within the designated corridor study area. Greene and Hale Counties were subsequently deleted from the list of counties to be involved in the project.

In 1979 the United States Army Corps of Engineers, Mobile District, initiated a cultural resources reconnaissance of the Black Warrior-Tombigbee (BWT) System Corridor. As stated in the contract Scope-of-Services:

> The approach is a multidisciplinary one and the products of this effort will be a report of findings. This report will have several distinct parts dealing with the various areas covered as well as a synthesis of the data collected. It is essential that the geology and environment, archeology, history, and cultural geography sections complement one another in a coherent fashion so as to accurately portray the human-use and occupation of this part of Alabama (Scope-of-Services, Appendix A:1).

The results of the multidisciplinary cultural reconnaissance of the BWT project area are presented in five separate volumes. This volume, Volume I, describes the archaeological reconnaissance aspects of the project. Volumes II, III, IV, and V present the ethnohistory (Lankford 1983), history (Weaver 1983), special studies (Wilson 1983a), and management summary (Wilson 1983b), respectively. Together with the present report, these volumes describe the cumulative research efforts of the BWT cultural resources reconnaissance.

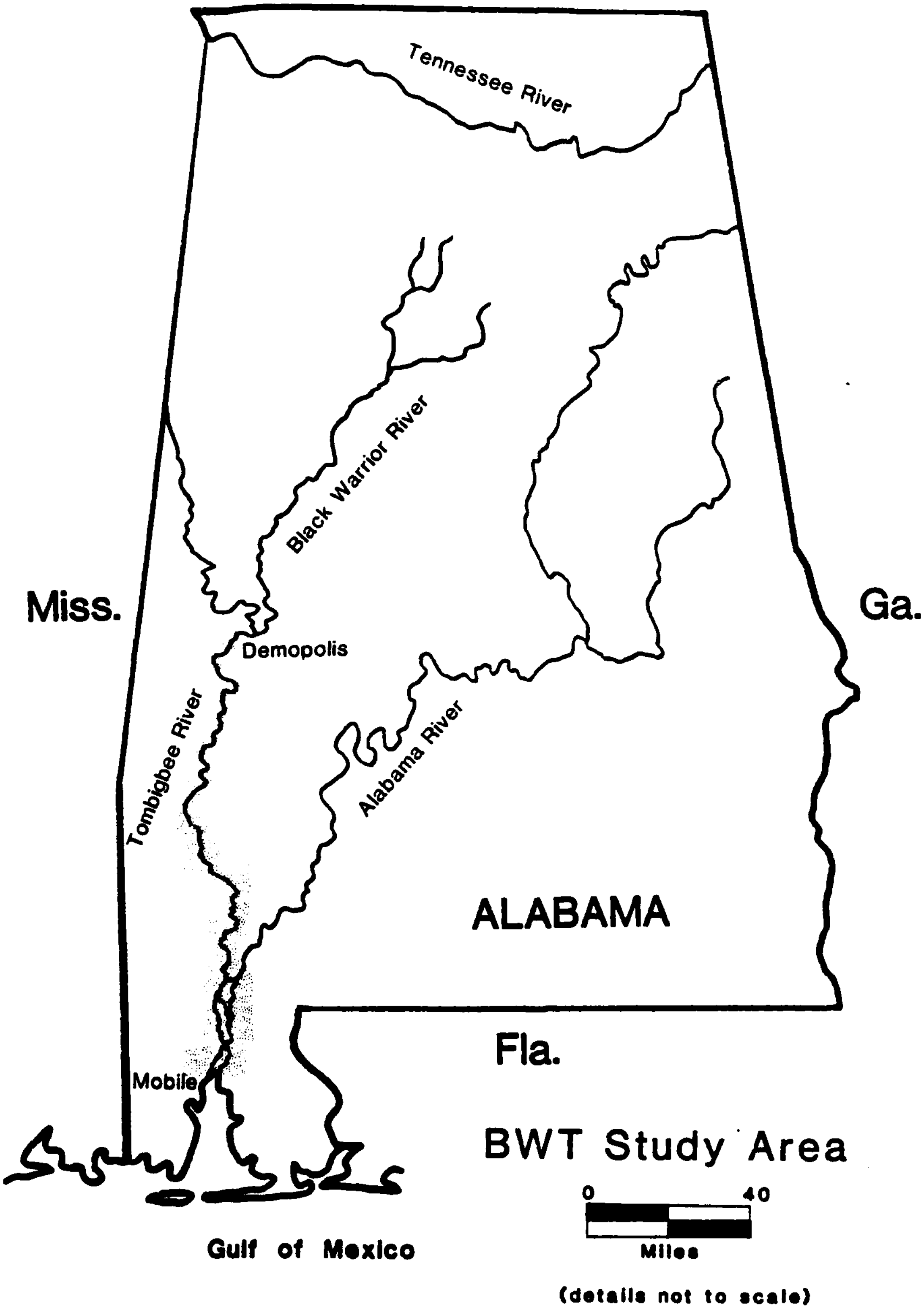

Tennessee River
Black Warrior River
Miss.
Ga.
Demopolis
Tombigbee River
Alabama River
ALABAMA
Fla.
Mobile
Gulf of Mexico
BWT Study Area
0
40
Miles
(details not to scale)

Figure 1.

The goal of the archaeological portion of the BWT cultural resources reconnaissance was to develop a predictive model of site locations based on previous studies for this area and to identify a representative sample of the predicted sites. The contract states that:

> Specifically, this "scope" is intended to provide the following:
>
> a. Sufficient cultural resource data to assist with the planning of phase two survey efforts, should such work be desired.
>
> b. Data useful for locating and predicting the physical evidence related to the topics of geology, environment, archaeology, history, and cultural geography.
>
> c. Synthesis of local and regional history.
>
> d. Parallel information which is comparative from one geographic area to another.
>
> e. A predictive model for site location, type, and distribution.
>
> f. Information useful for the development of Corps interpretive cultural resource studies, and public information material (Scope-of-Services, Appendix A:12).

Recognizing the limited intensity possible in a cultural resources reconnaissance (as defined in the Scope-of-Services, Appendix A, Section 1.2), the following proposal was submitted by Dr. David S. Brose of the Cleveland Museum of Natural History and Dr. Eugene Wilson of the University of South Alabama:

> This proposal is a multi-phase, multi-discipline approach to the inventory and evaluation of cultural resources in the Black Warrior-Tombigbee Valley. In response to the Scope-of-Work, this proposal is focused upon the development of models for predicting archaeological and historical site density and distributions. Since some base data already exists, we will proceed by initially compiling all available archaeological, historical, geochronological, and ecological data for the Black Warrior-Tombigbee Valley and surrounding region. Sites of all periods for which the data base is adequate should be analyzed to determine whether statistically significant patterns of site locations can be related to modern ecological parameters. For earlier cultural periods, for which small sample sizes and modern ecological parameters may not provide significant predictive capability, a reconstruction of paleoecology should be made and a tentative model of site locations will be developed. For historic sites, a reconstruction will be made through the investigation of extant historical documents, investigation of known site locations, and the analysis of historic architectural and engineering surveys. This information will be integrated with interpretations of black and white, color infrared and low altitude aerial photography of the project area and shown on 1:24,000 maps. From this, a sampling program will be designed to investigate the predicted archaeological site densities and distributions. This program will be refined as needed by the archaeological, cultural, and historical field surveys.

Following analysis of the initial field survey results, there will be a statistical evaluation and a refinement of both model and maps. Limited archaeological field sampling will be implemented to confirm the revised predictive maps. Finally, all site locations and descriptions and a composite predictive map of site distribution and density will be integrated into the final report.

An annotated bibliography describing primary and secondary data which are of potential use will be compiled by the historians and integrated with the archaeological field survey so that documented plantations, towns, landings, etc. of various periods can be investigated archaeologically.

. . .

General Research Design

The general approach taken here to organize the research, reduced to its least complex level is outlined as follows.

Theory

The theoretical natural region, identified by the association of distinctive geology, landforms, drainage, vegetation, soils, and climate, is the basis for dividing up the Black Warrior-Tombigbee into physiographic units.

Hypotheses

A. That distinctive culture traits were developed in each natural region;

B. That it is possible to obtain an ideal or 'model' of certain types of sites in each area from known data in order to predict other site locations (Brose and Wilson 1980:12,5).

ARCHAEOLOGICAL SITE DATA

Systematic archaeological research has been limited in the Mobile Delta portions of the Black Warrior-Tombigbee (BWT) project area (Stowe 1981). In the upper riverine portions of the project area it was limited to preliminary sampling or to small excavations and nonsystematic surveys. Therefore, this present survey can probably be considered the most comprehensive such undertaking done to date.

Data on prehistoric archaeological sites were sought from the following sources: The National Register of Historic Places (1980); available records of the planning commissions of all contingent counties; records of the Alabama Historical Commission; records on file at the University of Alabama, Office of Archaeological Research at Moundville; and from some local historic societies; county libraries; and members of the Alabama Archaeological Society.

Additional sources consulted during the compilation of this report, including the reports by Moore (1901b, 1905a, 1905b), Sears (1962a, 1977), Trickey (1958) and others, are more fully discussed in Chapter II. The historic and prehistoric listings at The University of Alabama Office of Archaeological Research (OAR) were reviewed for site locations. All of the historic properties mentioned in this report were identified in this way. Additional prehistoric sites in the Mobile Delta area were identified by N.R. Stowe of The University of South Alabama Archaeological Laboratory at Mobile. Some 26 sites were identified from a report of the the Gulf Research Institute survey (Saltus et al. 1977) of the BWT project area and from portions of DeJarnette's (1936-1942) W.P.A. progress reports describing survey and testing of sites in Clarke county. The results of a search made through additional archaeological and historical literature which also resulted in new data and in some additional site locations are discussed in Chapter II.

CHAPTER II

PREVIOUS ARCHAEOLOGICAL STUDIES OF THE BWT PROJECT AREA

Russell M. Weisman and David S. Brose

INTRODUCTION

This chapter includes a discussion of the use of historic documents for archaeological research and summarizes the archaeologically significant research that has been produced within the lower Tombigbee Valley and Mobile Delta prior to the present investigations. The information here was compliled from site records and reports on file at the Office of Archaeological Research, in Moundville, Alabama; at the Alabama Historical Commission in Montgomery; and the Archaeological Research Laboratory of the University of South Alabama in Mobile. Site and survey reports were also made available by the U.S. Army Corps of Engineers, Mobile District. Additional site information was obtained from a large number of primary and secondary sources reviewed during the literature search.

NOTES ON THE USE OF HISTORIC DOCUMENTS FOR ARCHAEOLOGICAL RESEARCH

Two major histories, Hamilton (1897, reprinted in 1976) and Higginbotham (1977), specifically discuss the locations of historic archaeological sites for the BWT area. The aboriginal and colonial history of the BWT project area is documented in Lankford (1983) and Weaver (1983), BWT Volumes II and III. A wealth of archaeologically significant site information exists in earlier historic observations, accounts, and maps. Some archaeologically important implications which may be drawn from historic accounts remain largely undeveloped in those volumes. Often details in accounts of historic events may be archaeologically useful, but otherwise shed little light on the economic, political, social, or military importance of those events. Some examples are discussed in this section.

In 1778 and 1779 the international boundary between the United States and Spanish Florida, established at the 31st parallel by the Treaty of San Lorenzo, was surveyed and marked. This event had considerable military, political, and economic consequences, the historical significance of which may be adequately discussed without addressing its archaeologically relevant effects. Primary accounts of the boundary survey are preserved in the journals of the American surveyor, Andrew Ellicott (1803, 1962) and of the Spanish government observer, Sir William Dunbar (1900). These journals provide two archaeologically important bits of data. A celestial observation was made at Fort St. Stephens, establishing its latitude at $31^{\circ}33'44''$ (Ellicott 1962). This observation should prove to be an invaluable aid in locating the archaeological remains of the historic fort. Both Dunbar (1900:189, Brevard 1924:I:11) and Ellicott (1962) also described the erection of earthen mounds as permanent markers along the boundary line, especially near river crossings. Archaeologists working in the Stockton area could easily mistake old boundary markers for Indian mounds, especially since William Bartram in 1778 (Harper 1958:256) reported seeing "many artificial mounds of earth" in the general vicinity. Problems concerning the interpretation and evaluation of these mounds, which might otherwise have required expensive testing or excavation to resolve, can be avoided through our awareness of these historically trivial, yet archaeologically significant, details gleaned from the primary historic accounts.

Historic documents may also contain data pertaining to the destruction or disappearance of archaeological sites. The perspective supplied by historic accounts is of particular importance for reconstructing settlement and subsistence patterns from the archaeological record. Success in understanding the economic and social patterns of the past is ultimately limited by the fragmented archaeological record. Differential preservation will limit archaeological recovery, but one means of expanding that limit is through the analysis of historic accounts that describe the alteration, destruction, and disappearance of old sites, as well as the creation of new sites.

In addition to cultivation, destructive elements in the BWT study area were bank slumping and lateral channel migration in the riverine section and commerical mining of shell midden deposits in the Mobile Delta area.

Bank erosion and lateral channel migration are generally slow processes, but rates in excess of 100 ft per century can be documented by comparing the present charts with the 1887 USACOE river maps. Where the channel is stable most of the optimal site locations may have been in existence long enough to have attracted sites and these locations will have less site loss due to erosion. Such areas may exhibit high site density when compared to unstable areas where sites are more susceptible to destruction. Historic accounts can occasionally provide information to improve estimates of the distribution of sites across the landscape. The accounts of Bartram (Harper 1958:259), Iberville (McWilliams 1981:38), and Penicaut (McWilliams 1953:10) provide pertinent examples.

Historical evidence for the mining and cultivation of shell midden sites in the Mobile Delta dates to 1701. Buildings constructed at the French Settlement at Twenty-seven Mile Bluff were ". . . Wood or wooden frames filled in with plaster made from the native shell lime . . ." (Hamilton 1897, 1976:84). Shell midden sites may have been exploited as sources of building material, although in the vicinity of Twenty-seven Mile Bluff no shell middens have been recorded.

In 1711, shell was used in building the new town of Mobile. The 1711 map of Sieur Cheuillot noted that:

> The houses are 18, 20 to 25 feet in height or more, some lower, constructed of a kind of plaster (mortie) made of earth and lime. Note: This lime is made from oyster shells found at

the mouth of the river on little islands which bear that name (Hamilton 1897, 1976:86-87).

The shell midden sites described at the mouth of the Mobile River have long since disappeared. The practice of mining shell middens, however, has continued. Hamilton (1897, 1976:256) stated that during the British period in Mobile, Major Farmer was burning shells to produce lime. The location of Farmer's kilns, and the sites he mined to supply them remain unknown.

Nineteenth century American inhabitants of Mobile used shell to pave Mobile's streets. The source of this shell probably included archaeological sites (See Gaines and Cunningham 1878 and Mohr 1883). From an early travel account (Powers 1835 in Summersell 1949:49) we learn that by 1835, "The streets of Mobile are covered with a kind of shell that abounds in the neighborhood, this binds with the fine sand and makes the cleanest, best road possible, and is besides very durable." The practice of paving with shells has, to varying extents, continued up to the present although much of the shell in contemporary use is no longer derived from archaeological contexts. Records of the companies that mined and used shell may provide additional site data pertaining to the location and description of midden sites which were removed and are no longer available for study.

In addition to historic accounts, there are a large number of early maps and charts which may contain archaeologically useful information concerning the location and cultural affinity of historic as well as prehistoric sites. The use of such maps presents special problems, many of which have been outlined by Cumming (1958), DeVorsey (1961, 1971), and Skelton (1965).

Historic documents are the major source of information for the period of early European-Indian contact and are useful for dating artifacts of European manufacture found at Indian sites. These artifacts were, however, subject to dispersal through native American excange networks so that the presence of European artifacts at a site cannot be used to infer that Europeans visited that location.

EARLY OBSERVATIONS: 1750-1900

The eighteenth century account of Romans (1775) described aboriginal towns and groups who at that time occupied the BWT project area. William Bartram (1791 in Harper 1958:259, 405) was among the first to record archaeological sites--the remains of then past events--within the Mobile district. No archaeological sites have been recorded from the Tensaw Bluff (?) area described by Bartram, but a mound, shell midden, and several historic native American sites (1Ba212, 1Ba213, 1Ba438) have been recorded (Stowe 1981) from the bluff between Hastie Lake and Bartow Landing (Live Oak Landing).

While exploring up the Tombigbee at or near Nannahubba Bluff, Bartram observed "vestiges of a rampart and other traces of a fortress." Bartram predicted that, "In all probability it will not remain long visable, the stream of the river making daily encroachment on it by carrying away the land on which it stood" (Bartram 1971, in Harper 1958:407-408, Hamilton 1897, 1976:229-230). A recent archaeological survey of Nannahubba Bluff (Rushing 1975) seems to confirm Bartram's prediction, because no site answering to his description was located. Bartram's account provides historical perspective on the ephemeral nature of archaeological sites and documents one of the continuous processes acting to limit the population of sites available for contemporary study.

Hutchins (1784), geographer to the United States, was one of the first to perceive that the shell middens of the Mobile district were the "vestiges of ancient inhabitants."

During the first half of the nineteenth century, a few archaeologically sensitive descriptions of the BWT area were produced but some observations during the later half of the century focused directly upon archaeological sites, their description, and interpretation.

Rev. C.S. Hale's (1851) "Observations on the Gnathodon beds around the Head of Mobile Bay" was the first nineteenth century scientific account and explanation of these local curiosities. "These remains have long attracted the attention of various individuals, none of whom however have favored the public with any results of their observations" (Hale 1851:164). After a careful study, contrary to Hutchins' (1784) assessment, Hale (1851) concluded that the shell middens of the Mobile area were of natural geologic origin and that their frequent aboriginal artifact content was intrusive. Hale's conclusions were generally incorrect, although some part of the shell middens may be the result of natural accumulation by geologic processes, the bulk of these deposits are of cultural origin.

Hale's work focused archaeological attention on the region and it described several sites which otherwise might remain unknown. On the southwest end of Twenty-one Mile Bluff on the west bank of the Mobile River, Hale visited a large deeply buried shell midden. This description corresponds to Site 1Mb62, a multicomponent site located south of the I-65 right-of-way investigated by Stowe (et al. 1975). A four foot thick shell midden consisting of stratified masses of sand and shells near the mouth of Three Mile Creek described by Hale has not been relocated. Hale described a circular shell midden 20 ft thick and 100 to 140 yards in diameter in the Delta Marsh near the junction of the Raft and Tensaw Rivers in stratigraphic detail. Site 1Ba192, located about two miles north of the river junction, may be the site described by Hale but it is possible that this impressive site remains undiscovered, or that it has been removed by mining subsequent to Hale's visit.

Two summaries produced near the end of the nineteenth century, Thomas (1894) and Owen (1901), reference archaeological observations within the BWT area that followed Hale's (1851) work. One of these, Cyrus Thomas (1894) summarized 20 years of field investigations by Bureau of Ethnology archaeologists. Thomas, however, referred to only one site within the BWT area: the Cedar Hummock Mound Group, which Moore (1901b) called Mounds near West Paces Landing (BWT Site 1Su97). This site encompasses at least 15 small sand mounds that are probably the product of a Late Woodland Tuckabum occupation (See Jenkins, Chapter V, this volume). A small Tuckabum occupation, BWT Site 1Su98, was identified in the cultivated field on the north edge of this mound group.

A second summary of nineteenth century archaeology, Owen (1901) summarized the published accounts of "Aboriginal and Indian Remains in Alabama," on a county by county basis. Among the sources consulted in Owen's summary, in addition to Bartram (1791, Harper 1958), whose observations within the BWT area were described above, were Bigelow (1853), Toumey (1858), Gaines and Cunningham (1878), Ball (1882), Mohr (1883), Thomas (1894), Hamilton (1897), and Moore (1900b).

Bigelow (1853) described and illustrated artifacts and features from the Mississippian multimound complex at Bottle Creek, Site 1Ba2. Bigelow was a careful observer and noted the provenience of many of the artifacts he described. He distinguished between coarse and fine shell tempered ceramics and described engraved and black filmed varieties of the latter. In addition to maps and measurements of the mounds, Bigelow's (1853) report described the historic artifacts found at the Bottle Creek site--large globular bluish colored glass beads, rings of brass, "carbine" barrels, and swords, including a nearly complete example bearing an embossed image of Ferdinand and Isabella (Bigelow 1853:192). Bigelow believed these to be DeSoto relics. The glass beads, described from a burial in Mound F, suggest a late seventeenth or early eighteenth century provenience (Brain 1979:96-133) in agreement with French accounts of the site in 1702. The embossed sword may be a DeSoto relic, but Ferdinand V (1452-1516) and Isabella, predate much of the period of discovery and exploration and the sword may therefore date from any portion of this period. The present location of the artifacts described by Bigelow is unfortunately unknown. At the time of Bigelow's visit, the Bottle Creek site (1Ba2) had been under cultivation for a long time and was superficially disturbed. Today the site area has reverted to forest. Vandalism and erosion have further degraded it, but the site still retains a large volume of significant cultural deposits.

Bigelow (1853) also briefly mentioned some large rectangular mounds (6 ft high) and ridges located on the east side of the Tensaw River five miles above the head of the bay. These mounds probably correspond to the Blakeley Shell Middens, Site 1Ba229 = Sites 1Ba26, 1Ba27, 1Ba28, 1Ba29, 1Ba30 (Moore 1901b, Jones 1934, Stowe 1977, Walthall 1980:266ff).

Michael Toumey produced the first geological map of Alabama in 1849 and was the first of several geologists (another was Walter B. Jones, who negotiated The University of Alabama's acquisition of the Moundville site) associated with the Geological Survey of Alabama to describe and encourage the preservation of archaeological sites. Toumey (1858) mentioned the "Gnathodon Beds" of the Mobile Delta described earlier by Hutchins (1784) and by Hale (1851). Toumey described several large shell mound sites, some covering several acres and others in the form of 10 or 20 ft high truncated cones, where he found charcoal ashes, fragments of pottery, and the bones of birds and other animals. In one mound Toumey found a cut marine shell implement and some pottery fragments 10 ft below the surface. The sites described by Toumey are difficult to identify today. Many of these deposits have apparently been completely mined away subsequent to his description (Mohr 1883).

Gaines and Cunningham (1878) described numerous shell heaps on the Mobile River which were used as sites for market-gardens and for paving railroad stockyards and yards surrounding cotton warehouses. A shell midden on Simpson Island which belonged to the Mobile and Ohio Railroad was the focus of their (1878) article. Cunningham recovered 14 human skeletons, 5 vessels (urns and covers), bone tools (awls?), and "thousands of fragments" of pottery from this urn burial site. These were apparently part of a collection donated to the Smithsonian Institution (Holmes 1903). The ceramics included shell tempered (?) types apparently similar to those from Bear Point, Site 1Ba1, illustrated by Holmes (1903) and Moore (1901b) and to those recently recovered by Stowe (1982, Fuller and Stowe 1982) from a site on Pine Log Creek, 1Ba462. At both Pine Log Creek and Bear Point, European artifacts were found in association with this type of burial urn, however, Cunningham makes no mention of European materials at this site.

C.B. Moore (1905b) attempted to relocate this site and although he investigated three sites on Simpson Island it is unclear whether the shell midden site described by Gaines and Cunningham (1878) was among them. None of Moore's sites produced the quantity of ceramics noted by Cunningham, and none produced urn burials although at one site a burial was found with a vessel inverted over its skull. Stowe (1981) believed he had relocated one (or two) of Moore's Simpson Island sites, Site 1Ba441, but the site described by Cunningham remains lost. If they have survived, sketches and letters sent to the Smithsonian Institution by Cunningham may help to relocate this site and perhaps others. The Smithsonian's letter files and collections were not examined by the BWT reconnaissance.

The Rev. T.H. Ball's (1882) history of Clarke County contains an enormous volume of archaeologically interesting data of variable quality. Ball described a number of sites including: Hollingers Ferry, Fort Mims, Fort Stoddart, and Mitchells Reserve as well as caves outside the project area near Bashi Creek where Spanish artifacts were reportedly found (Lankford 1983). Wimberly (1960) apparently identified the location of the Beckum Village, Site 1Ck24, as the upper confederate salt works from Ball's (1882) research.

Charles Mohr (1883) described the imminent destruction of the Mobile shell beds, mentioned by Toumey (1858) 25 years earlier, and made a plea for their scientific investigation. Mohr (1883) also reported ancient burial grounds near Mt. Vernon Arsenal about three and one-half miles from the Alabama River. Few sites have been recorded in the Mt. Vernon area, and the burial site referred to by Mohr remains unknown.

Peter J. Hamilton's (1897, 1976) Colonial Mobile contains numerous direct and indirect references to archaeological sites within the BWT project area (See Owen 1901, Lankford 1983). Peter J. Hamilton (1901), in an article "The Importance of Archaeology" lamented,

> The white man as a rule cares nothing for antiquity . . . every year something is blotted out by the plow or by vandals, and as the state grows in prosperity she will loose in marks of the past (Hamilton 1901:265).

Hamilton urged the participation of state and local governments in the purchase and preservation of archaeological sites in the region.

Hamilton's (1901) article signaled a change in the local and national scientifically educated community's awareness towards the value of historic preservation. Five years later, on June 8, 1906, the Federal government adopted the Antiquities Act protecting sites on public lands. In 1915 the State of Alabama declared sovereignty over the antiquities within the state. Historic preservation societies were founded in Baldwin County in 1923 and in Mobile in 1935.

In 1928, a brief history of Baldwin County was written and compiled by Lidia J. Newcomb Comings and Martha M. Albers (1928), President and Secretary of the Baldwin County Historical Society. In a section titled "Some Historical Facts About Tensaw," Dr. Herbert Hilary Holmes made the first reference to the important Pine Log Creek site, 1Ba462, recently rediscovered by Stowe (1982).

> A skeleton unearthed by my father and uncle on the banks of Pine Log Creek, together with the copper buttons and insignia (?) on the casket (?), was identified as that of a soldier of DeSoto. Near by was an oak tree, felled at the same time, which was completely petrified, the lower trunk showed the ax marks of a long past era (Holmes 1828:61).

The protohistoric Pine Log Creek burial mound (?) has produced urn burials in association with Spanish trade goods (Stowe 1982, Fuller and Stowe 1982), but the location of the petrified oak has not been discovered.

MODERN RESEARCH: 1900–1970

Clarence B. Moore, a wealthy Philadelphia antiquarian, spent more than a quarter of a century exploring the mounds and antiquities of the Southeast and his investigations were the first systematic inventory and exploration of sites in the BWT area. Moore characterized the excavations prior to his own (somewhat unfairly) as "limited to ignorant search for treasure or to the spasmodic digging of the seeker after relics" (1900a: 290). Although his field techniques were crude by modern standards, Moore published and illustrated his findings, and an enormous body of valuable site data is preserved in the Journals of the Philadelphia Academy of Natural Sciences as a result. In 1899, he made the first of four visits (1900a, 1901b, 1905a, 1905b) to the BWT project area.

In 1899, Moore (1900a) investigated two sites in Mobile County within the BWT project area: a mound at Twenty-one Mile Bluff and a mound near Twenty-four Mile Bend. Moore's site near Twenty-one Mile Bluff has not been reexamined, primarily because the present landowner has prohibited archaeological investigations on this property. Artifacts recovered from this site, however, indicate that a historic component, inferred from large glass beads, and possibly Bayou La Batre and Porter components are represented. At the mound near Twenty-four Mile Bend, Moore found nothing. A large multicomponent occupation at Site 1Mb60, however, has been recorded by Curren and Stowe (1971) near this location.

Between 1900 and 1901, Captain J.S. Raybon, the skipper of Moore's flat bottomed steamer, THE GOPHER, surveyed the Tombigbee River and recorded an extensive list of mounds and campsites (Moore 1901b). Moore (1901b, 1905a) did not test all of these sites, but he did list (1901b: 500-502) 45 sites "for the use of any future explorer." Miller (1940), Trickey (1958), Sears (1962a), and the BWT project have reexamined a few of these sites. Some sites changed names between Moore's (1901b) list and the (1905a) report. Some of the locations, such as the mounds near Moscow Landing, were found to contain more than one site, and others such as the mound below Horse Creek at Site 1Cw41 (Moore 1905a: 269), were found to contain no archaeological remains.

In 1901 Moore investigated the following sites between Demopolis and Bickleys Landing: two mounds at Spragins Mill; three mounds southwest of Simmons Landing; 3 of 15 mounds near West Paces Landing, the Cedar Hummock Group previously described by Thomas (1894:289) and recorded by the BWT as Site 1Su97; 9 mounds near Moscow; one mound near Sucarnoochee Creek; one mound at Bryans Burn; and 10 of 40 mounds near Bickleys Landing. Moore concluded his 1901 field season at Bickleys Landing. Investigations of the lower Tombigbee were not resumed again until 1905, when many of the sites below Mile 187 were tested.

Of the sites excavated by Moore in 1901, only the mounds near West Paces Landing, BWT Site 1Su97, and the mounds near Bickleys Landing, visited by Sears (1962a:57), have received additional professional attention. The BWT archaeological reconnaissance was usually successful in relocating those of C.B. Moore's sites which were sought in the field. Although the mound near Sucarnoochee Creek may have been removed by lateral channel migration, the remainder of Moore's sites should be recoverable.

On Moore's (1905a) return to the BWT project area he completed his investigation of sites in the lower Tombigbee Valley and Mobile Delta. Twenty-seven sites were investigated (1905a:246-147).

The mound near the Cut-off, BWT Site 1Ba381, is in Baldwin not Clarke county as recorded by Moore. The mounds near Three Rivers Landing, BWT Site 1Wn76, and the associated occupation area were tested by Trickey (1958). The location of the mound near Gaines Landing, BWT Site 1Wn81 (?), has not been adequately verified. Additional survey is required between Site 1Wn81 and the mouth of West Bassetts Creek.

The mounds at Jackson Landing and the mound in Kimbells Field may have been relocated by Carl Miller (1940). Miller assigned the site number 1Ck18 to a location in the Jackson Landing area. The number 1Ck22 (DeJarnette 1936-1942: March 1942) assigned to a site near Jackson may be Moore's mound in Kimbells Field.

The mound(s) opposite Peaveys Landing may have been relocated by Miller (1940) and assigned the number 1Ck20 but there is no record for this number in DeJarnette's (1936-1942) progress reports. The site apparently had two mounds in Moore's day. The large mound he described has been nearly removed by lateral channel migration, only a portion of its eastern slope remains. Approximately two-thirds of the smaller mound remains intact although it is threatened by lateral migration of the river channel. This mound was investigated and photographed by the BWT in November 1981.

The mound near Malones Gin has not been identified, but the occupation site described by Moore is well known. Wimberly (1960:18) reported that flooding subsequent to Moore's visit removed more than two feet of topsoil from this site and the mound was only one foot high when Moore recorded it. Carl Miller (1940) reexamined the occupation area now known as the James Village site, Site 1Ck5 (DeJarnette 1936-1942).

The mound near Coxs Landing has not been relocated. The number 1Ck14 was assigned by Miller (?) in 1940, apparently to a site near Jackson, but other site records place Site 1Ck14 near Coffeeville. No records or field notes to support an association between Coxs Landing and the 1Ck14 site number were found.

The dwelling site near Upper Thorntons Landing was relocated by Coblentz (1979) and two site numbers, 1Ck73 and 1Ck74, were assigned. The mound near Powes Landing has not been relocated. Coblentz (1979) looked for this site but could not find it. Lateral channel migration may have removed it, but it also may not have been an aboriginal feature, as Moore failed to find any artifacts there.

The mound near Nobles Gin has not been relocated. Miller (1940) recorded an impossibly large mound and village, Sites 1Ck13 and 1Ck14, which were apparently located in the vicinity of this site. The BWT archaeological reconnaissance revisited the area briefly and could find no trace of either Moore's or Miller's mound although a number of anomalous ridges were noted in the woods nearby.

Moore's mound below Bashi Creek has not been relocated. The site records for Site 1Ck6 place this number near the reported location of Moore's mound. The number 1Ck6 may have been assigned to an extensive lithic site which was also described by Moore but DeJarnette (1936-1942) recorded only that Site 1Ck6 was near Jackson. Saltus (et al. 1977) mentioned a lithic site, 1Ck16, exposed in the riverbank in the vicinity of Moore's mound but the site number 1Ck16 was used by Miller (1940) and Wimberly (1960) for the Deas Village site. The BWT archaeological reconnaissance revisited this location and could find no trace of the mound located by Moore in 1905. An extensive lithic site exposed in the riverbank was assigned the number 1Ck6. Saltus' (et al. 1977) 1Ck16 is now 1Ck75.

The mounds below Beaver Creek have not been relocated. They are reported by the landowner, Mr. Compton of Nanifalia, however, to be near a gas pipeline crossing.

The mounds near the mouth of Beaver Creek were relocated by Sears (1962a) who made a sketch map of the site and referred to it as the Smith Lumber Company mounds. In Sears' (1962a) NSF report the Smith Lumber Company and Carters Old Field Mound groups have had either their sketches or descriptions transposed.

Moore's mounds near Breckenridge Landing, now designated Site 1Mo9, is actually a mound group and surrounding occupation area. This site was revisited by Sears (1962a), Jenkins and Ensor (1981), and by the BWT. The group of mounds southeast of Breckenridge Landing described by Moore was named the McAlpine Place Mound Group by Sears (1962a), and was designated Site 1Mo8 by Jenkins and Ensor (1981).

The mound near Steiners Landing has not been relocated but DeJarnette et al. (1980) recorded Sites 1Cw22, 1Cw23, 1Cw24, 1Cw26 in the vicinity of this mound.

The remaining sites listed by Moore (1905b:146-147) have not been relocated. Moore recovered no artifacts from the mound near Santa Bougue Creek, the mound near Bass Landing, or the mound below Horse Creek. These mounds may not be archaeological sites.

In his examination of "Certain Aboriginal Remains on Mobile Bay and on Mississippi Sound," C.B. Moore (1905b) described three mounds on Simpson Island: two shell middens on the southern end of the island, the shell deposit at Blakeley, and the site at Bottle Creek.

Of the two shell midden sites on Simpson Island, one, Site 1Ba169 on Raft River, recorded by W.B. Jones in 1935, was investigated by Curren and Stowe (1971) and Stowe (1981). The site on Grand Bay could be any one of the four large middens recorded by Curren and Stowe (1971) as Sites 1Ba191, 1Ba197, 1Ba198, or 1Ba199.

The shell deposit at Blakeley, first mentioned by Bigelow (1853), was investigated by Moore and later was assigned a series of numbers, 1Ba26, 1Ba27, 1Ba28, 1Ba29, 1Ba30, by W.B. Jones in 1933. Stowe (1977) conducted test excavations at this site and renumbered it 1Ba299 (See Radiocarbon Dates, Appendix D). The Blakeley shell midden is located within the 3,800 acre Blakeley Historic District which is listed on the National Register of Historic Places.

The Bottle Creek site, Site 1Ba2, has received considerable attention since its first description by Bigelow (1853) and Moore (1905b). In 1932 David DeJarnette conducted test excavations in the plaza and midden areas at Bottle Creek. Holmes (1963) and, more recently, Lankford (et al. 1976) have summarized previous investigations and disturbances. Stowe (1981) included this site in his survey of the Mobile Delta. Site 1Ba2 is probably far larger than the seven acres listed on the National Register of Historic Places.

In addition to Moore's accumulation of archaeological data, the first major ceramic synthesis appeared soon after the turn of the century. William Henry Holmes' (1903) <u>Aboriginal Pottery of the Eastern United States</u> is of particular interest to the BWT project area, for it is here that "Mobile-Pensacola Ware" was first defined, mainly from a large ceramic collection obtained by Parsons in 1899 from the excavations at the Bear Point Mound, Site 1Ba1 (Sternberg 1876, Moore 1901a:423-432). The vessels from Bear Point were mostly shell tempered incised and punctated burial urns which are believed to date to the sixteenth or seventeenth century based on their frequent association with European trade goods.

Between 1929 and 1935 the geologist, Walter B. Jones, and E. G. Nicar of The Alabama Museum of Natural History recorded a number of sites in the Mobile Delta and marsh portions of the BWT project area but no comprehensive report was ever produced concerning them. Jones' (1934) *Aboriginal History of the Mobile District* contained little specific information on these sites. Stowe (1981), Stowe (1977), Curren and Stowe (1971), Trickey and Holmes (1971), and others have reexamined many of the sites originally recorded by Jones and Nicar.

Carl F. Miller (1940) conducted an archaeological survey along the Tombigbee River in Clarke County to locate Mauvila. Attention was directed towards sites bearing shell tempered pottery. These were, however, found to be scarce. A total of 15 sites were recorded.

Miller's survey was the prelude to WPA sponsored Alabama Museum of Natural History excavations in the BWT area. These excavations are described in a series of quarterly progress reports compiled by David L. DeJarnette between 1936 and 1942 (here designated DeJarnette 1936-1942). Ceramics from the WPA excavations were analyzed and described by Steve B. Wimberly (1960).

Of 14 sites discussed and listed in the WPA progress reports (1Ck1, 1Ck2, 1Ck5, 1Ck6, 1Ck10, 1Ck14, 1Ck16, 1Ck18, 1Ck21, 1Ck22, 1Ck24, 1Ck25, 1Ck26, and 1Ck27), five unnamed sites (1Ck6, 1Ck10, 1Ck14, 1Ck18, and 1Ck22) were only briefly described but some of these may correspond to sites identified earlier by Moore. Wimberly (1960) described eight others, most of which were excavated under the supervision of Harry A. Tourtelot. The McQuorquodale Mound, Site 1Ck25, was discussed in a separate volume (Wimberly and Tourtelot 1941).

Site 1Ck6, (DeJarnette 1936-1942:March 1942), described as a mound near Jackson, Alabama, was tested by Miller in 1940. This site may correspond to Moore's (1905a) mound below Bashi Creek. Site 1Ck10, the White site (?), (DeJarnette 1936-1942:March 1942), described as a "village" in the woods on "the back slope of the Tombigbee River levee on the edge of Boggy Gut," has not been relocated. Site 1Ck14, near Jackson, Alabama (DeJarnette 1936-1942:March 1942), from its location recorded in the State site files, may refer to Moore's (1905a) mound near Coxs Landing. Site 1Ck18 (DeJarnette 1936-1942:March 1942) was described as "near Jackson, Alabama." Since the ° mound symbol was used, Site 1Ck°18 may refer to a mound. The recorded location in the State site files suggests that this number may refer to Moore's (1905a) mounds at Jackson Landing. Site 1Ck22 (DeJarnette 1936-1942:March 1942) was described only as a site near Jackson in Clarke County, Alabama. This number has been tentatively assigned by the BWT archaeological reconnaissance to Moore's (1905a) mound in Kimbells Field, although it was indicated as a v village site. The exact location of this site remains uncertain.

The remaining nine sites listed in DeJarnette's (1936-1942) WPA progress reports were excavated and a sample of sherds from each site were later analyzed by Wimberly. The McVay Village, Site 1Ck1 (DeJarnette 1936-1942, December 1940, March 1941, June 1941; Wimberly (1960:12-14), was originally believed to have been the site of Mauvila, but no evidence to support this thesis was found. Wimberly (1960:Table 1) analyzed a selected sample of 5,884 sherds from Site 1Ck1. Wimberly (1960:Table 2) analyzed a sample of 8,405 sherds from the McLeod Site, Site 1Ck2, (DeJarnette 1936-1942:June 1940, Wimberly 1960:14-17). The James Village, Site 1Ck5, excavations (DeJarnette 1936-1942: June 1940, September 1940, December 1940, Wimberly 1960:17-24, see radiocarbon dates Appendix D, this volume) were initially supervised by Carl F. Miller. Additional excavations were conducted under the supervision of Tourtelot. Wimberly (1960: Table 3) analyzed 52,205 of the sherds recovered from the site.

The site number of the Deas Village, Site 1Ck16, (DeJarnette 1936-1942:December 1940, Wimberly (1960:24-28), originally included the mound symbol--a reference to a supposed shell mound at this site. Wimberly (1960), however, more correctly refered to Site 1Ck16 as a village site which was excavated under the supervision of Carl F. Miller. Wimberly analyzed 4,951 of the sherds recovered from the site.

Wimberly (1960) analyzed nearly the entire sample, 42,381, of the sherds recovered from the Porter site, 1Ck21, (DeJarnette 1936-1942:March 1941, June 1941) and 5,852 sherds from the Beckum Village site, Site 1Ck24, (DeJarnette 1936-1942: June and September 1941, Wimberly 1960: 30-32, Table 6).

The Rocky Ford site, Site 1Ck26, (DeJarnette 1936-1942: September 1941, Wimberly 1960:33) does not include a mound as stated by Wimberly. The site, southeast of Site 1Ck25, on a point extending into a narrow meander of the Salt Gut, was investigated under the supervision of Tourtelot. The WPA work at Rocky Ford, Site 1Ck26, was limited to a surface collection and the removal of an exposed burial. Wimberly (1960:Table 7) analyzed 2,095 of the sherds from Rocky Ford. The sherds are listed on the table for the Beckum-Wilson Village site and the names, numbers, photographs, and sherd counts have all been transposed between Rocky Ford and the Beckum-Wilson village in Wimberly's (1960) report.

The Beckum-Wilson Village site, Site 1Ck27, (DeJarnette 1936-1942: September 1941) is located south of the McQuorquodale Mound, Site 1Ck25. Tourtelot supervised the brief WPA excavations. A reduction in WPA funding halted these excavations. Excavation at Site 1Ck27 consisted only of a 5 ft wide trench 20 ft (?) long from which 281 sherds were recovered. Wimberly (1960) analyzed 243 of these sherds (presented incorrectly on his Table 8, as coming from the Rocky Ford Mound).

The McQuorquodale Mound, Site 1Ck25 (DeJarnette 1936-1942: September 1941, March 1942; Wimberly and Tourtelot 1941, Wimberly 1960), was located in the vicinity of the Beckum-Wilson Village site, Site 1Ck27. The report of the McQuorquodale Mound excavations (Wimberly and Tourtelot 1941) was the only WPA report produced before the end of the Second World War.

The materials recovered during the WPA sponsored Museum of Natural History excavations in Alabama were typically neither completely analyzed nor formally reported because of the shortage of professionally trained personnel. The WPA excavations produced literally tons of raw data. During the years of the Second World War nearly every professional archaeologist left the state. Wimberly assumed the position of Director of the Archaeology Division of the Alabama Museum of Natural History and the responsibility of analyzing the WPA data.

The total number of sherds recovered during the WPA excavations did not necessarily correspond to the number of sherds analyzed. Wimberly (1960:210) noted that because of the way the ceramics were analyzed, ". . . the pottery tables in this paper if used in statistically comparing the pottery of a given stratigraphic level within a site to the pottery of another site, would provide frequent distortions to the 'pottery picture'." Wimberly's suggestion that this material should be resorted and reanalyzed should be adopted.

Wimberly's (1953a, 1953b, 1960) ceramic descriptions and those of Willey (1949) provided the foundation for much of the subsequent work in the BWT area. Willey (1949:452-470) used Holmes' (1903) description of Bear Point vessels as the basis for his "Mississippian" Pensacola ceramic series. Because the Bear Point vessels were virtually the only types considered by Holmes (1903) and Willey (1949), it is now conceptually difficult to isolate the local thirteenth and fourteenth century Mississippian ceramic complex from the cluster of ceramic types developed and designed primarily to describe later protohistoric ceramics.

A reassessment of local Mississippian and protohistoric types has recently been undertaken by Fuller and Stowe (1982) in response to a large collection of Bear Point-like ceramics acquired from the protohistoric Pine Log Creek site, 1Ba462. Fuller and Stowe (1982) have proposed separate but overlapping Bottle Creek and Bear Point complexes to deal with the temporal realities of the local Mississippian and protohistoric ceramic classification problem. This approach may eventually lead us out of the present classificatory paradox.

Trickey's (1958) ceramic study included a description of the following sites within the BWT project area: the Douglas Mound; Gin House Island, BWT Site 1Wn86; Boggy Gut; Salt Creek I; Salt Creek II; Horseshoe Bend; the Three Rivers Landing site, BWT Site 1Wn76 (see also Moore 1905a); and Old Blakeley, Site 1Ba229 (Stowe 1977, see also Moore 1905b).

The ceramic seriation produced by Trickey presents a remarkably accurate interpretation of the local ceramic sequence, but his time line was somewhat distorted for lack of absolute dates. Of particular interest is the placement of McLeod subsequent to the Tates Hummock phase Weeden Island/Wakulla peak. Both Brose and Weisman suggest that this position is verified by recently obtained radiocarbon determinations from the largest known Mcleod site, the James Village, Site 1Ck5, (See Appendix D) but Jenkins does not agree.

Except for Sears' (1962a, 1977) research in the BWT area between 1957 and 1962, the major publications of the 1960s are analyses and summaries of previous excavations such as Wimberly (1960, 1968), and Holmes (1963). Between 1957 and 1962 the National Science Foundation (NSF Grant 5019) sponsored W.H. Sears' research on the Gulf Coast. The results of Sears' (1962a) report were summarized in Sears (1977).

Sears reexamined Wimberly's collections of Mobile and Clarke County pottery in Moundville, he visited with Trickey and looked at sites in the Mobile Delta and bay area, and he investigated ten sites in the BWT project area above the delta (nine in Marengo County and one in Sumter County): the Center Ridge Creek Mound; the Bickley Landing site (See C.B. Moore 1901a); Blue Rock, an earth midden; the Tutt Mound; the Smith Lumber Company Mound Group; the Carters Old Field Mound Group; the McAlpine site; Hales Bend; the Allison Place Mound Group; and the Okchai Ball Ground, a site that reportedly covered at least 40 acres in Sumter County.

The Smith Lumber Company Mound Group, a group of ten mounds south of Beaver Landing overlooking Beaver Creek, may correspond to Moore's mounds near the mouth of Beaver Creek. Sears assigned this site to the Miller complex, but it and the Blue Rock midden may be Tuckabum complex sites. Sears' report of the Carters Old Field Mound Group is somewhat confusing, and the 1962 and 1977 reports conflict. This group of 8 (1977) or 13 (1962a) mounds is apparently nearer the mouth of Beaver Creek than the Smith Lumber Company mounds. Sears described Moore's (1901a, 1905a) mounds near Breckenridge Landing, which he called the Carter Group (Site 1Mo9), and the group southeast of Breckenridge Landing, which he called the Mc-Alpine Group (1Mo8). A large multicomponent site between these groups is partially contained in Site 1Mo10. Sears noted that he probably would have classified the Allison Place Mound Group mounds as tree falls, had not his informant, Mr. McAlpine, seen skeletons removed from them. Sears recovered 17 clay tempered plain, 2 shell tempered plain, and 3 Chickachae Combed sherds from a fire break at the Okchai Ball Ground site, along with nineteenth century European material.

Most of the sites described by Sears have not been assigned site numbers. Sears (1962a, 1977) provided only generalized locational information on these sites. Sears' original field records are not on file at Moundville and were not consulted by the BWT.

RECENT RESEARCH: 1971-1981

During the decade preceding the initial report of the BWT project in 1981 numerous surveys and test excavations, a few major site reports, and several regional summaries were produced concerning the BWT project area. Major (and minor) surveys were reported by Curren and Stowe (1971), Hardin (1974), Rushing (1975), DeJarnette (1976b), Saltus et al. (1977), Cottier (1978), Coblentz (1979), Stowe and Mercer (1982), Stowe and D. Jenkins (1980), Curren (1980), DeJarnette et al. (1980), and Stowe (1981).

Curren and Stowe's (1971) report of a survey in the Mobile Delta and marsh areas described a large number of both new and previously recorded sites. Some of these were subsequently investigated by Curren, Lankford, and Spies (1971) and Stowe (1981).

Dale Hardin (1974) conducted an archaeological survey in Clarke County outside the BWT project area, but the sites are of interest as several were possible quarry sources of the Tallahatta quartzite tools recovered within the project area at Sites 1Mb63, 1Ck45, 1Ck25, and 1Wn69. An earlier paper, Dunning (1964), described a number of Tallahatta quartzite quarry sites in Clarke County. The presence of nearby local quarries may in part explain the high frequency of stone tools at Sites 1Ck45, 1Ck25, and 1Wn69. Base camps such as Sites 1Wn69 and 1Ck45 may have been situated to take advantage of the Tallahatta quarries as well as other local resources.

Stowe and Rushing (Rushing 1975) directed a survey and some salvage test excavations on Nanna Hubba Bluff at Sites 1Mb83, 1Mb84, 1Mb85, 1Mb86, 1Mb87, 1Mb88, 1Mb89, 1Mb90, 1Mb91, 1Mb92, and 1Mb71. The occurrence of Washington projectile points (Cambron and Hulse 1964) at several of these sites calls into question the cultural affinity of this local type. Which cultural groups made these points and when is a topic for future research in the region, as is the identity and location of the type sites noted in Cambron and Hulse (1964).

David L. DeJarnette's (1976b) survey in the Bayou Sarah and Mobile River area of Mobile County recorded Sites 1Mb10, 1Mb11, 1Mb12, 1Mb13 but these numbers had been previously used by Wimberly (1960). Although no site forms were filed for the earlier sites, the later sites should be renumbered to avoid confusion with the published earlier site descriptions.

Saltus et al. (1977) submitted the first BWT cultural resource reconnaissance report based, in part, on a two week field study. This report provided data on eight previously undescribed archaeological sites.

Cottier (1978), as part of an evaluation survey, encountered a thin surface scatter of Gulf Formational to Weeden Island materials at Site 1Mb157 north of the Cold Creek-Mobile River junction.

Coblentz (1979) reported 15 archaeological sites in the Choctaw Wildlife Management Area in Choctaw County. Sites 1Ck73 and 1Ck74 are primarily Late Weeden Island/McLeod sites within the Turkey Town Reserve but no major Choctaw occupation is represented at these sites. Ceramics identified by Coblentz as Alexander Pinched are more probably the Late Woodland type, Deas Pinched. Alexander sites are quite rare in the lower Tombigbee Valley, and Deas Pinched is a Weeden Island/McLeod minority type.

Stowe and Mercer's (1982) reconnaissance of Black Bluff in Sumter County, Alabama located two previously unrecorded sites but failed to find any evidence of the Koasati occupation reported for the area ca. 1763-1768 (Romans 1775).

Stowe and D. Jenkins' (1980) cultural resources assessment in Jackson, Alabama identified two as yet unnumbered archaeological sites.

Curren (1980) surveyed a large portion of the Blakeley historic property. Previously unrecorded early nineteenth century, Civil War, and prehistoric sites were described in Curren's survey report.

Mercer, Mistovich, and Walling's (1980) survey in Mobile, Baldwin, and Escambia Counties yielded one previously unrecorded site for the BWT area, Site 1Ba431.

DeJarnette, Solis, and Keyser-Solis' (1980) survey of the Oakchai Land Use Area recorded six sites on the west bank of the Tombigbee River. Four of these, Sites 1Cw26, 1Cw22, 1Cw23, and 1Cw24, may correspond to Moore's (1905a) mounds near Steiners Landing. Romans (1775) also may have camped here. Sites 1Cw25 and 1Cw27 were also recorded. No evidence was recovered for the historically documented Oakchai/Koasati occupation in the area between 1763 to 1768.

Stowe's (1981) cultural resources assessment of the Mobile-Tensaw bottomlands, discussed 52 archaeological sites within the Delta Swamp and Delta Marsh physiographic zones of the BWT project area. This was the final reconnaissance study of the area prior to the present BWT archaeological investigations.

Test excavations within the BWT area in the decade prior to the present BWT reconnaissance were reported by Curren, Lankford, and Spies (1971); Stowe, Curren, and D. Jenkins (1975); DeJarnette, Rushing and Spies (1978); and Bense (1980). Test excavations of Sites 1Ba201 through 1Ba206 near the southeast corner of the project area, first recorded in the Curren and Stowe (1971) survey, were reported in Curren, Lankford, and Spies (1971). Stowe, Curren, and D. Jenkins (1975) conducted test excavations at Sites 1Mb62 and 1Mb68 in the proposed I-65 right-of-way along the west bank of the Mobile River.

DeJarnette, Rushing, and Spies (1978) reported the results of test excavations of two Bayou La Batre (?) sites near Black Bayou in the Mobile-Tensaw River bottomlands, in Mobile County. These sites remain ambiguously numbered since the numbers 1Mb14 and 1Mb15 were previously assigned to shell middens on the Portersville coast by Wimberly (1960). The grit tempered Bayou La Batre cord marked pottery, described in DeJarnette, Rushing and Spies' (1978) report, may actually be Late Woodland Tensaw Lake complex Mobile Cord Marked first described by Trickey and Holmes (1971) and confirmed as a local ceramic complex within the BWT area (See Jenkins, Chapter V).

Bense (1980) reported on the 1978 excavations at Site 1Mb95, a Bayou La Batre multicomponent site at the Dead Lake Fish Camp near Creola, Alabama within the BWT project area. No significant intact deposits were encountered within the tested portions of the impact zone but Bense made up for the deficiency of the site with her strong effort to integrate Site 1Mb95 with other Bayou La Batre sites in the region.

Excavations of major historic sites: Fort Louis de la Mobile, Site 1Mb94 (Harris 1970); Fort Conde (Harris and Nielsen 1972); Fort Mims (Stowe and Hoyt 1975); Fort Stoddart (Stowe 1975, Stowe and Jenkins 1980); Fort Montgomery, Site 1Ba266 (Parker n.d.); and the Blakeley shell midden, Site 1Ba229 (Stowe 1977), were reported in the decade preceeding the BWT cultural resources reconnaissance.

Harris and Nielsen's (1972) report of the results of five years of investigations at Fort Conde by The University of Alabama described the first major colonial period excavation in the region. The report contained a detailed analysis of both the colonial and aboriginal ceramics of the period, and described the major architectural features of the fort. Today, Fort Conde has been restored to its 1722 configuration and is open to the public.

Fort Mims, the site of an 1813 Indian massacre, has been archaeologically identified and investigated by Stowe (Stowe and Hoyt 1975).

Other forts have not been relocated or verified, but Weaver (1983) provided a complete list and Saltus (et al. 1977) provided their general locations which were also recorded on nineteenth century maps (Bail 1882, Jackson 1815 in DeVorsey 1971). These forts may be expected to look archaeologically similar to Fort Mims. Stowe (1975) conducted limited test excavations at Fort Stoddart, designated Site 1Mb100, and recommended it for nomination to the National Register of Historic Places.

In 1813-1814 the town of Blakeley was founded on the east bank of the Tensaw River. By the 1820s this new town was challenging Mobile as a port and commercial center. The archaeological remains of the Blakeley area, including native American shell midden and occupation sites, the early American town, and a Civil War battlefield, have received considerable attention (Moore 1905b; Curren and Stowe 1971; Stowe 1977; Carter, Borom and Powell 1978; Curren 1980; Spies n.d.; Powell et al. n.d.).

A number of different Civil War archaeological sites exist within the project area. The trenches and earthworks at Spanish Fort and Blakeley have been investigated by Stowe (1977) and Curren (1980). Stowe (1981) has also examined Confederate fortifications on the Blakeley River known as Battery Tracey, Site 1Ba432, and Battery Huger, Site 1Ba4. The triple ring of defense built around the City of Mobile has largely been destroyed by urbanization of the area. Portions of this defensive network remain intact, but none have been archaeolgically tested. The salt works in Clarke County, a shipyard at Oven Bluff, a battery known as Fort Sidney Johnson also located at Oven Bluff, and a battery known as Fort Gullet located on Carneys Bluff are other Civil War period sites located within the project area which may have archaeological potential.

Other recent site reports for the BWT area include Chase (1972) and DeJarnette (1976a). David Chase, Director of the Montgomery Museum of Fine Arts, described Site 1Ck45 (Chase 1972), a late Bayou La Batre site (See Appendix D). The presence of stemmed projectile points and Bayou La Batre ceramics at Site 1Ck45 was interpreted by Chase as evidence for Bayou La Batre-Archaic contact. (See Appendix D for an interpretation of the radiocarbon dates obtained from this site). Chase (1972) also referenced an Archaic site, 1Wn69, downstream from Site 1Ck45. This site, based on material in the Ben Griffin collection in Jackson, Alabama, apparently contains a Wheeler component.

DeJarnette (1976a) edited a report describing "Two French Colonial Period Indian Sites On Mobile Bay," Sites 1Ba196 and 1Ba251, which are outside of the BWT project area. Jenkins (1976) and Knight's (1976) conclusions in this report concerning the assignment of ceramics by temper group to historically documented native American populations, while intriguing, are debatable (See Brain 1979). [One reviewer noted that the erroneous 1976 conclusions were due to the fact that the sites are much earlier than judged in the report. They probably date to the middle or late sixteenth century rather than to the French Colonial period. See Jenkins, Chapter V, for further discussion of Sites 1Ba196 and 1Ba251. Ed.]

Regional summaries for the final decade of research within the BWT area prior to the present investigations include Trickey and Holmes (1971); Walthall (1975, 1980); Curren (1976); and Knight (1977).

Trickey and Holmes' (1971) chronological framework for the Mobile Bay Region is further discussed in Appendix D.

Walthall (1975) provided a summary of Porter and its regional posture although, as a result of typographical errors, the McVay site, 1Ck1, appears as the McKay site and the Porter site is incorrectly numbered 1Ck12. Its number is actually 1Ck21. Walthall's suggestion that Porter peoples were involved in Middle Woodland exchange of locally available red ochre, Tallahatta quartzite, chalcedony, and salt is intriguing. The local evidence for ochre mines and Middle Woodland salt production is undeveloped, but remains a good topic for future research. WPA excavations at the Beckum Village site, 1Ck24, in Clarke County encountered evidence of both historic and prehistoric Mississippian salt production. The assignment of the historic materials to a Civil War provenience (Ball 1882), however, was apparently conjectural (Wimberly 1960). The Boggy Gut site and the Salt Creek Sites 1 and 2 described by Trickey (1958) and Site 1Ck30, another site on Salt Creek investigated by David Chase, are the only other prehistoric salt production sites recorded within the project area. Many others are likely to exist. Salt pan wares have been recovered from both of the Mississippian political and ceremonial mound centers (Bottle Creek, Site 1Ba2; Peaveys Landing, Site 1Ck20) in the region. Salt production and trade may have been important in the local Mississippian economy.

Curren's (1976) important article concerns Mississippian and protohistoric settlement patterns in the Mobile Delta and bay region. There is still a long way to go before we understand the local settlement subsistence patterns, but this paper was a major step in the right direction, if only in terms of the question it asks.

Knight's (1977) synthesis is the most recent summary of research in the Mobile Bay and Mobile Delta region. Walthall's (1980) Alabama Archaeology discusses many of the sites within the project area.

SUMMARY AND CONCLUSIONS

In all, over 200 archaeological sites had been described in the previous archaeological studies of the BWT area. Some of those reported in the nineteenth century were in the process of destruction at that time. Certainly many more were destroyed with no contemporary reports. Many of these sites were revisited, and on occasion, new names or numbers were assigned. Too often also, sites previously recorded could not or can not be certainly relocated, further confusing the numbers which State and local institutions have used to identify them.

The BWT reconnaissance revisited some of these previously reported sites, but others which may be potentially significant were not within or adjacent to our sampling units and therefore were not relocated. The location of these sites should be verified to update information on their condition, and to reassess their temporal and cultural assignment. This work was neither a requirement nor a goal of our present study. It should become both a major requirement and goal of future investigations within the BWT study area.

CHAPTER III

THE PHASE I SITE SELECTION MODEL

David S. Brose

BACKGROUND

It is a maxim of the biocultural sciences that organisms interact with their environment. Biological communities arrange themselves in relationship to other communities and to abiotic parameters which together constitute the effective environment. Human populations also organize themselves to maximize advantageous environmental interactions. Since neither the behavior of prehistoric human communities nor the communities with which they interacted was random, there must be regular and discernible patterns in the distribution of these communities and those circumscribed or limited environmental variables whose proximity was (or was considered to be) essential. These assumptions underlie the study of prehistoric settlement patterns.

Within the past decades, statistical techniques developed by quantitative geographers have been used to discern changing cultural patterns from the location of prehistoric sites and the effective environmental parameters that governed prehistoric selection of those locations (e.g. Willey 1966). It should therefore be possible to investigate the distribution of prehistoric archaeological sites, to determine the relevant environmental ecological parameters, and to arrive at statements of preferential or, at least, effective combinations of environmental variables that co-occur with such sites. From these data a predictive statement concerning the locations of yet unknown archaeological sites within specific environments can be made.

As required by the scope-of-servies (Section 4:3), following the review of existing archeological site data for the Black Warrior-Tombigbee study area (Chapter II), the next task was to develop a predictive model (this Chapter) and a field sampling design (Chapter IV) based upon the known site data. As summarized in discussion with the U.S. Army Corps of Engineers, Mobile District representatives, this was to be a tentative model for the location, type, and distribution of archaeological sites constructed from previous reports as well as from information we might acquire from visiting selected study area sites. The general predictions that could be made from such a tentative model would be less than accurate. Environmental data which could be securely associated with any site type or period, would require subsequent modification when the field survey data were analyzed.

Since the sampling strategy was created to assess this initial model, the model, including its now obvious errors, is presented below. I have added the following editorial marks: Following any predictive statement which was not adequately adressed by the data, but which seems to be incorrect I have placed * [one asterisk]. Following any predictive statement which was not adequately supported by the field data, and which is probably incorrect I have placed ** [two asterisks]. Following any predictive statement which appeared to be refuted by appropriate field data, and which is almost certainly wrong, I have placed *** [three asterisks]. Those statements in the initial model with none of these editorial marks seem to still show some validity even though future and more intensive investigations in this study area will no doubt call some of these into question. The model necessarily raises a large number of questions that could not be addressed at the reconnaissance level of investigation. These questions will require the data provided by future investigations for their resolution.

THE PHASE I SITE SELECTION MODEL

The BWT region would have provided abundant seasonally available resources for prehistoric and historic exploitation. Limited areas on terraces and natural levees were ideal for maize-beans-squash horticulture (Harper 1943). A large variety of nuts, acorns, wild fruits, and berries were available throughout the summer and fall. Plant associations vary according to soils, slope, drainage, and exposure producing a mosaic vegetational pattern on the uplands adjacent to the floodplain (Harper 1943).

It is difficult to reconstruct the precontact distribution of animal species for this region, but from the earliest historic accounts (Swanton 1922), forests sheltered an abundance of wild game including deer, racoon, bear, and beaver, as well as large numbers of turkeys and passenger pigeons. Seasonally migrating waterfowl could be found in quiet areas along the Tombigbee River and in greater variety and abundance along the Mobile River and delta.

Scattered references to fish in historical documents do not offer any evidence to suggest that the precontact distribution of species was different from that in the immediate preindustrial modern period. Therefore many different mollusc species and varieties of fish could be taken.

The large volume of subsistence data produced by the Gainesville and Lubbub Creek excavations (Caddell 1981a, 1981b, Scott 1981, Woodrick 1981a, 1981b) provide specific inventories of floral and faunal species including a variety of mollusc species that were exploited by prehistoric groups in the area just north of the BWT. Detailed catchment studies (Caddell 1981a, Cole 1981a) for that area show that ample and diversified subsistence resources were exploited throughout the prehistoric period. During the Late Woodland, however, local, essentially nonhorticultural, populations apparently exceeded the carrying capacity of the local environment. This critical evolutionary episode is dramatically reflected the bioarchaeological analysis of terminal Woodland through early Mississippian cemetery populations, probably representing a single catchment area (Cole et al. 1982). Most of these data were compiled concurrently with preparations for the present project and were, unfortunately, not incorporated into the Phase I model. In the absence of similar population pressures, subsistence resources in the BWT project area, although seasonally and geographically variable, appear to have been more than adequate to maintain aboriginal populations.

Paleo-Indian and Early Archaic Site Locations

Models of Paleo-Indian and Early Archaic settlement-subsistence systems used to derive hypotheses concerning site locations for this survey included Bense's (1979) model of Early Archaic settlement, Chapman's (1977) depositional model of Early Archaic base camp site location, Morse's (1971) dispersed base camp, Judge and Dawson's (Judge 1973) overlook model, and Luchterhand's (1970) model of Early Archaic hunting patterns.

Although current studies suggest that man may have been present in the New World for as long as 25,000 years, the earliest unequivocal archaeological sites, at least in this portion of the Eastern Woodlands, may be related to Paleo-Indians with a Clovis or Clovis-related lithic technology at about 12,000 years B.P. Subsequent early occupations, to about 8000 years B.P., all appear to display a Clovis-derived technology. Such early sites have been identified (1) on knolls or high bluffs that command the surrounding landscape and permit faunal observation, (2) at rockshelters near game trails, (3) near locations where both water and a variety of other resources are available, and (4) near high quality lithic resources suitable for the production of stone tools. A similar early man settlement pattern, with priority given to overview areas near water sources, has been noted in the Southwest (Dawson and Judge 1969). These locations may represent favorable areas of postdepositional preservation, or of modern observability as much as they represent favored locations of Paleo-Indian settlement (Schiffer 1975a, 1975b).

Within the lower 35 miles of the BWT project area the ancestral Mobile River flowed to the Gulf some 14 miles south of the present shore. At about 9500 B.P. sea levels began to rise. By about 5500 B.P. the Mobile Delta appears to have begun prograding. At present alluvial sediments as much as 130 feet in thickness overlay the entrenched valley cut to lower Pleistocene sea levels (May 1976). In the delta region any small archaeological sites characteristic of the period prior to 9500 B.P. will therefore likely have been lost either by lateral stream migration or by marine transgression. Any sites that survived these disturbances, may now be deeply buried, discoverable only by intensive mechanized excavation techniques.

The upper Tombigbee River Valley surveys recovered evidence for late Paleo-Indian occupations, usually consisting of a single fragmentary fluted projectile point of the Clovis type with no stratigraphic context (Bense 1982; Jenkins 1975a, 1982; Muto and Gunn n.d.; Sheldon et al. 1980). These finds indicate that early transient hunting-gathering bands did utilize the high terraces, tributary river valleys, and uplands for their subsistence activities but no campsite of this early period is presently documented in this portion of Alabama.

Recent excavations at the Hester site (Brookes 1979), at a number of midden mounds (Bense 1982, Muto and Gunn n.d.), and elsewhere in the Southeast at a number of buried floodplain sites (D. Anderson and Cable, personal communication, Gardner 1974, and personal communication) indicate that Paleo-Indian occupations may be preserved on Holocene terraces, frequently along the outside of a meander bend, and usually within 500 m of a major tributary. These sites may represent multipurpose seasonally occupied base camps.

During the Early Archaic period, an increased number of groups with similar material culture were adapting to the modern Eastern Woodlands. There is some evidence for big game hunting, but most evidence suggests seasonal hunting and gathering (Ahler 1971, Goodyear 1974, Griffin 1967, Jenkins et al. 1975, Bense 1982). These populations were presumably quite small and possibly quite mobile. In spite of similar tools, the seasonal exploitation of resources differs radically across the Eastern Woodlands and the sites indicate a number of different types of seasonal settlements. Southeastern variations from Ford's (1977:167-170) generalized model of Early Archaic ecosystems for the Midwest may be highly significant.

From 8000 to about 5000 B.P. in southwest Alabama mobile groups apparently increased in size and density. Subsistence activities were seasonally scheduled within well-exploited, small geographically circumscribed territories with increasingly modern flora and fauna (Jenkins et al. 1975, Walthall 1980). Sea levels appear to have reached their modern elevations and present drainage patterns became established. Around 7000 B.P. within the Gainesville Lake area, at Site 1Gr1 and the adjacent extention 1Gr1X1, a small family group established a semipermanent campsite near a spring on a wide terrace overlooking a series of shoals along the Tombigbee River (Jenkins et al. 1975).

Early Archaic projectile points have been recovered from the surface of upland fields and secondary tributary terraces in some sections of the project area (N.R. Stowe, J. Walthall, personal communications). Several Early Archaic projectile points have been recovered from deep stratigraphic trenches dug in knolls on the first terrace of the Tombigbee River in the central portions of the Columbus, Gainesville, and Aberdeen lake areas in the middle and upper Tombigbee River Valley. Several rockshelters with components from this period are known (Nielsen and Moorehead 1972, Ensor 1980a, Jenkins 1978, O'Hear et al. 1981, Walthall 1980). Similar lithic materials have been recovered on the Tombigbee uplands as far south as Baldwin and Clark counties (Sheldon et al. 1980, Coblentz 1979, Trickey and Holmes 1971).

Archaeological sites in the Mobile Delta region floodplain dating from 9500 B.P. to 5500 B.P. may also represent small, seasonally occupied campsites. Most such restricted purpose or transitory (Sheldon et al. 1980) sites should be located to maximize resource recovery in specific environmental zones. Larger or reoccupied sites or base camps may have been located on the floodplain where subsistence resources were most dense and most easily available during all but late spring (Curren 1978). In the delta, the period from 9500 B.P. to 5500 B.P., would have been marked by prograding deltaic formation. Based on distances from the lower delta distributaries to radiometrically dated oyster reefs, archaeological sites of this time period in the delta floodplain were projected to be no farther south than River Mile 11, and to be quite deeply buried by sediments. Those few recoverable Early Archaic sites were most likely to be found in the uplands flanking the delta, especially on eastern terraces cut by tributaries.* [This proposition would require a deep testing program beyond the scope of this reconnaissance and was not explored, but in the light of the recovered data it does not now appear to adequately describe the distribution of early sites in the delta].

To identify areas which were likely to represent environments occupied during the Paleo-Indian and Early Archaic period, a rank order score was developed for those variables which the various models agreed to have been of significance in predicting the location of Paleo-Indian and Early Archaic sites (Table 1). Because of the probable low population densities for Paleo-Indian and Archaic prehistoric periods, our small sample sizes were almost certain to result in potentially unacceptable large confidence limits so that high probability early prehistoric site locations could not effectively be reflected in any statistically controlled attempts at field verification especially in the delta.

Table 1. Ranking for Paleo-Indian and Archaic Areal High Probability Zones.

	Preserved Overlook Situation	Possible Buried Site Situation
Valley paleoecotones near steep ravines along bluffs	+3	+2
Ravines along bluffs	+2	+1
Paleoecotones in valley	+1	0

It was our hypothesis that the areas with higher rankings would yield more of the Paleo-Indian and Early Archaic sites.

Middle Archaic Site Locations

Between 6000 B.P. and 4500 B.P., modern environmental conditions were established throughout the Southeast (Delcourt and Delcourt 1978a). For this period three different adaptive situations can be distinguished within the BWT area: the northern Black Prairie zone, that portion of the project area below the Black Prairie and above the delta, and the delta itself.

In the Black Prairie riverine region the vegetational zones were relatively undiversified although locally mosaic patterns existed. In this section, the fluvial system was relatively immature (Flint 1971) and was almost exclusively restricted to single channel, mixed load types

(Schumm 1977:153-164) displaying a surprising degree of channel stability (Muto and Gunn n.d.). This geomorphic situation suggests a relative reduction of post-Pleistocene ecological diversity along tributaries. Brown (1977: 162) suggested that more fixed river channels with more pronounced natural levees may have resulted in larger, more productive floodplains but this appears to conflict with Schumm's (1977) theoretical models and experimental data. Any climatic developments favorable to ecological diversity may have been of short duration (Delcourt and Delcourt 1978a, Ford 1977:167-171) but there were significant seasonal variations in the availability of flora and faunal resources. In order to fully exploit available resources, macrocatchment zones (Brose 1976) must transect valley and upland areas.* [This assumption was not addressed in the field reconnaissance].

Below the Black Prairie and above the delta, the Tombigbee River was unstable or fluctuating, carrying mixed loads (Muto and Gunn n.d.). A large number of microenvironments within a relatively small area characterized the narrow floodplain. Throughout most of this section seasonal variations in the yield of resources was minimal (Ford 1977). Prehistoric populations may have exploited long stretches of river valley with little or no exploitation of the minor subsistence resources in the interfluvial regions (Larson 1970). This situation suggests that most interaction was between groups along the main valley.* [This proposition was not addressed in the field reconnaissance but now seems questionable].

As in the Black Prairie region, the models of Middle Archaic site location are predicated upon insufficient and, admittedly, biased data (Walthall 1980). Seasonal reoccupation of either general site loci (Struever 1971) or specific sites (Ford 1977:172) may be hypothesized both in this central riverine section of the BWT (Jenkins 1978, 1982) and to a far lesser extent in the delta (Stowe 1977, 1978).

The Mobile Delta was characterized by multiple intersecting and diverging distributaries. Channels were frequently slowed from transport to depositional velocities by new gradient and load changes and, to a lesser extent, by tidal fluctuations and seasonal storms. Even minor differences in elevation or salinity might have produced variability in microenvironment distribution and resource yield similar in scale to the northern Black Prairie section. Site location models derived from farther west (Aten 1981) or from embayments along the Florida Gulf coast (Tesar 1980, Milanich and Fairbanks 1980) suggested increasing prehistoric exploitation of estuarine and marine resources along the delta margins but increasingly extraregional nonsubsistence resources could have been critical.* [The preliminary field data did not support this assumption]. Seasonal restrictions in resource procurement, and indeed, in habitability, would be limited but severe with late spring flooding (Knight and Adams 1981). The Mobile Delta was thus the most highly mosaic of all of the ecosystems within the BWT project area. Prehistoric populations would have had a range of exploitive options (DeJarnette 1952).

Within these three sections of the BWT project area it is possible to see a greater Middle Archaic population density, or at least a larger number of relatively large sites, than during the earlier period. A diffuse economic adaptation (Cleland 1976; Ford 1977:171-174) within a number of seasonally exploited microenvironmental zones seems to characterize this period. There is evidence for the regionalization of prehistoric settlement-subsistence patterning during the Middle Archaic period (Caldwell 1958, Walthall 1980). A number of different adaptive traditions have been postulated within these sections of the BWT project area but we note rather homogeneous broad areal patterns (Brose 1979a). Within the BWT project area, Middle Archaic sites were expected on higher terrace margins of the delta and, in far lower frequencies, on old deltaic levees. In the upper portions of the Tombigbee Valley larger base camp sites were expected on former levees where tributary streams enter the main valley--especially at the locations of mollusc beds.** [This prediction was not addressed by the field data but is probably incorrect]. Smaller transitory camp sites might have been more common on the well drained upland soils where tributaries have cut into old terrace deposits (Coblentz 1979, Oakley and Watson 1977, Waselkov 1980). Many of these sites would probably be difficult to assign to precise chronological periods because of their limited diagnostic artifact assemblage.

Late Archaic and Gulf Formational Site Locations

The period of ecological change as the result of the Hypsithermal (Brown 1977, Ford 1977), termed the Late Archaic-Early Woodland transition (Stoltman 1978) or the Gulf Formational stage (Walthall and Jenkins 1976), sets much of the tone for the succeeding millennia in major portions of the BWT project area. There is little evidence for a decrease in population but in some regions along the Gulf Coast there appears to have been a relative decrease in the carrying capacity of the environment (Gagliano, personal communications; Delcourt 1978). There was also some evidence for increased regional specialization in settlement and subsistence patterns (Ford and Quimby 1945, Webb 1974, Griffin 1952). Indeed, territorially distinct groups appear throughout the region (Brose 1979a) but the populations still continued a diffuse economic adaptation (Cleland 1966, 1976; Ford 1977:174-176; Milanich and Fairbanks 1980; Walthall 1980; Brown 1977:167-169). Seasonally scheduled exploitation of microenvironmental zones continued. By the end of the period tropical cultigens were present (Ford 1977, Chapman 1977). The use of nonlocal lithic sources such as Tallahatta quartzite, combined with the localization of settlements and subsistence activities, suggest that interregional exchange was increasingly important (Ensor 1980b). Functionally similar tools show an array of stylistic variations (Hubbert 1977).

These increasingly territorial populations may have been coming into contact, and possible conflict, for exploitation of seasonally limited, ecologically restricted, subsistence resources. The observed stylistic variations might be interpreted as examples of "ethnic stylistic boundary markers" (Barth 1969:19, 26) which provided for unambiguous socially structured access to critical resources. Such boundary markers insulate other aspects of the culture from confrontation and modification. In the southern delta, relaxed seasonal variations and richer ecological patterning suggested less group interaction, and we projected that this pattern of stylistic microtraditions did not appear during the Late Archaic or Gulf Formational.** [This assumption was not supported by the field data and now seems incorrect].

Within the BWT project area the Late Archaic and early Gulf Formational period is difficult to define typologically, but several stratified sites have been excavated in the upper Tombigbee Valley (Jenkins et al. 1975, Bense 1982). More sites reflect larger somewhat more sedentary populations. Seasonally available subsistence resources, especially molluscs, were exploited within a geographically restricted but internally diversified environmental zones. Larger base camps were located on terraces and the number of small economically specialized sites in uplands and in tributary valleys increased, as did the technological inventory.

The Gulf Formational stage is marked in this area by the initial appearance of several types of ceramics (Walthall and Jenkins 1976). The earliest ceramics appear to make little socioeconomic difference in the cultural ecology (but see Munson 1976, Ozker 1977). In the upper Tombigbee Valley, small seasonally reoccupied base camps (Atkinson et al. 1980; Jenkins et al. 1975, Jenkins 1982; Bense 1982, personal communication) yielded an assemblage of Wheeler and Alexander ceramic types, first defined but less frequently encountered in the Tennessee River Valley to the north (Jenkins 1975b). Within the delta and along the Mobile Bay coast, Gulf Formational sites on well drained levees or beach ridges yielded Bayou La Batre series ceramics which are, stylistically, akin to the Tchefuncte materials of Louisiana (Ford and Quimby 1945, Willey 1949, Bullen 1974, Wimberly 1960, Trickey and Holmes 1971, Bullen and Stoltman 1972, Walthall and Jenkins 1976). We projected no great temporal differences between the Bayou La Batre and Alexander ceramic complexes.

In the Black Prairie riverine section, at this time, archaeological evidence for some degree of nonegalitarian ranking may exist in the context of developing mortuary ritual (Atkinson et al. 1980, Bense 1982).* [This proposition was not investigated but is probably incorrect].

A number of small sites have been investigated along the upper Tombigbee River floodplain and terraces which are characterized by a relatively broad range of typologically distinctive ceramics and possible ceremonial artifacts, such as bannerstones, gorgets, and projectile points of exotic stone. Few Poverty Point objects have been identified within the BWT area other than problematical clay balls from the Bryants Landing sites, 1Ba174-178 (Trickey and Holmes 1971), and a lapidary bead of Poverty Point origin from Site 1Wn69. Moore (1901b) reported several (ambiguous) ceremonial burials of the period.* [The location of these was not verified by the present study].

In summary, we postulated that the Late Archaic and Gulf Formational sites identified within the BWT project area could represent both large multifamily base camps and small single-purpose economic activity campsites. Although relatively few Late Archaic or Gulf Formational artifacts had been recovered in the earlier survey work in the Mobile Delta itself, rapid sedimentation within the last century probably buried deeply any sites which may have existed. Gulf Formational ceramics from The University of South Alabama's archaeological collections represented recovery from the delta area only as far south as the I-65 crossing. Farther south the majority of cultural materials appear somewhat later although Site 1Ba215 in the Delta Marsh contained an isolated Gulf Formational component. Some seasonally reoccupied sites or site areas could have been located on now destroyed levees in the river valley or, may have been denser in the adjacent uplands (Wimberly 1960; Trickey and Holmes 1971; Walthall 1980; Stowe 1977, 1981; DeJarnette 1952, personal communication). We predicted that specific economic activities and consequent settlement patterns would differ significantly between the Tombigbee River and the Mobile Delta regions of the BWT area for this period.

Middle and Late Woodland Site Locations

The Woodland period, to about about A.D. 900 or A.D. 1000, showed a pattern of major differences between the upper Tombigbee Valley and the Mobile Delta portions of the BWT project area similar to that of the earlier Gulf Formational stage. The northern Tombigbee River Valley, south perhaps to the northern border of Choctaw County, was represented by the three sequential Miller phases which are temporally related to the Middle and Late Woodland complexes farther north. The contemporary period of the coast, delta, and the lower Tombigbee Valley, north at least to central Clarke County (Wimberly 1960) was represented by Porter and McLeod ceramics. These complexes are temporally related to Deptford, Santa Rosa-Swift Creek, and Weeden Island in the lower Coastal Plain to the east, and to the Marksville, Troyville, and Coles Creek sequences in the lower Mississippi Valley to the west. The Tombigbee River Valley in the center of our project area lay between these previously defined Woodland site complexes and was virtually unknown (Walthall 1980).

It was projected that this unknown area was a prehistoric cultural frontier between the northern outcrops of Tallahatta quartzite and the southern occurrences of salt.*** [This prediction was refuted by the field reconnaissance data]. This overlap between the southernmost Miller and the northernmost Porter and McLeod Woodland complexes was projected as a special seasonally exploited localized resource procurement zone important to both northern and southern groups but permanently occupied by neither. *** [This prediction was also refuted by the field data]. This model drew on analogies to the similar buffer zone phenomena of the Isle Royale copper deposits of Michigan (Bastian 1963, Fitting 1972), the catlinite quarries of Minnesota and the Dakotas (Wedel 1964, Johnson 1969), or the salt deposits of the Mississippi River and its tributaries (Brown 1981b) or of Louisiana (Brown and Brown 1979). In east-central Alabama Waselkov (1980:1:31-39) had suggested that during the Woodland period in the Coosa River Valley the Hillabee Greenstone represented a similar localized geological resource which also coincided with a cultural frontier between the coast and interior characterized by few large sites of either coastal or interior cultural groups.

Throughout the Southeast, following the Gulf Formational stage, the archaeological record shows increasing elaboration of the ceremonial exchange and mortuary rituals. In the Tombigbee Valley the Miller materials, found in numerous ritual burial mounds of varying sizes, were the local Middle Woodland expression (Jenkins 1979, Walthall 1979). Elaborately decorated minority pottery of several types have Hopewellian prototypes in the Mississippi Valley. <u>Curcurbita</u> (squash or pumpkin) and the limited presence of some <u>Zea mays</u> suggested the beginnings of limited village horticulture but these cultigens probably were not of significant economic or settlement scheduling importance at this time (Brose and

Greber 1979). The mounds reported by Moore (1904b, 1905a), Jennings (1941), Sears (1962a), and others in the northern portions of the BWT project area appear to have been Miller I and Miller II constructions. Few of the materials from those sites have been reported in detail. The National Park Service had investigated several mounds apparently of the Miller I and Miller II phases within the valley north of Demopolis (Cotter and Corbett 1951). Jenkins (1979) recorded Miller II components and mounds in the Gainesville Lake area. In the upper Tombigbee Valley, there were usually Miller II materials in villages and campsites in the immediate vicinity of mounds (Sears 1962a, 1977; Bohannon 1972). Most of these were on the higher river terraces of broad meander belts, but surveys along the Tennessee-Tombigbee Waterway indicated that Miller I and II materials were also present at small, possibly transitory, campsites (Jenkins et al. 1975, Sheldon et al. 1980). These small campsites occurred throughout a variety of topographic and environmental zones in the upper Tombigbee River Valley (Jenkins et al. 1975; Nielsen, O'Hear, and Moorehead 1973; Curren 1975; Jenkins 1978, 1979, 1872; Walthall 1980; Sheldon et al. 1980).

After approximately A.D. 600 significant subsistence and settlement pattern changes are reflected by larger and more frequent Miller III sites. These were often located on high levees below tributary streams where gravel riffles supported mollusc colonies (Jenkins et al. 1975) or on terraces where waterfilled abandoned channels offered diverse resources (Rafferty and Baker, personal communication 1978). Small base camps were located on upland terraces or high levees near tributaries (Sheldon et al. 1980:140). The intensified use such local subsistence resources was interpreted as evidence of continued population growth first seen in the Gulf Formational stage.

Jenkins (1979) noted a tendency toward more nucleated settlements and greater geographic regionalism for this period. Limited evidence suggested the importance of horticulture, but the basic subsistence pattern still appeared to be one of semisedentary hunting and gathering. In this Miller III period Hopewellian mortuary ceremonialism, with its elaborate large multiple burial mounds, status-differentiated burials, and exotic artifacts, was terminated. Local Miller III sites do not yield elaborate ritual artifacts. Populations increased in density. There appeared to be a consistent economic intensification which placed minimal reliance on maize agriculture. Late Miller villages represent substantial and increasingly self-sufficient sociocultural groups (Jenkins 1980).

Weeden Island cultures centered on the Florida Gulf Coast were known to extend inland throughout large portions of the Coastal Plain in North Florida, Georgia, and Alabama. The largest number of investigated early Weeden Island sites had been located along the Gulf Coast itself but numerous large early Weeden Island mounds and domestic sites had been recorded along most of the major rivers. Indeed, several of the larger and more complex Weeden Island sites were 50 to 100 miles upstream from the Gulf. Some early Weeden Island materials occur in ceremonial mounds assigned to Porter by Walthall (1980) and some later Weeden Island materials occur in village middens assigned by Walthall to McLeod.** [These assignments were not supported by the field data].

East of the BWT project area, settlement-subsistence models for early through late Weeden Island had been developed for western Florida and similar models have been proposed for the Marksville, Troyville, and Coles Creek complexes to the west (Phillips 1970; Toth 1979, Brown 1977, 1981). Models for the Porter and McLeod complexes of the lower Tombigbee Valley and delta were embryonic (Walthall 1979:205-208, 1980:155-170). It was projected that in the BWT project area, the Mobile Delta Porter and later occupations would approximate those of Weeden Island on the Florida Gulf Coast and those of Marksville to Coles Creek in coastal Louisiana. The Porter and McLeod occupations of the lower Tombigbee Valley would approximate those of Weeden Island on the Apalachicola, Chattahoochee, or Alabama Rivers to the east and the similar Marksville to Coles Creek occupations in the lower Mississippi Valley. Based on the preliminary data, we postulated two parallel sequences of at least two phases for the delta and river valley during this period.

During the earlier phase (ca. 100 B.C. to 500 A.D.) in the delta we expected to find summer through late winter base camps from which a number of mosaic ecotones were exploited. These base camps would be located on slight elevations at the interface of the marginal terrace flatwoods and alluvial swamps near large distributary channels. Spring to midsummer occupations were likely to be represented by fewer but larger sites along larger streams on a variety of soils or on the upland terraces relatively far from the delta floodplain itself.** [This proposition was not supported by the field data]. These sites should be characterized by the presence of one or several large mounds, some of which might be multistage constructions with internal structuring, multiple burials, and strong status differences marked by typically Hopewellian exotic materials.** [This proposition also was not supported by the field data.]

This early phase in the Tombigbee River Valley above the delta was likely to look quite different in much of its settlement patterning. On higher levees of the broad floodplain a relatively small number of large multifamily villages would be clustered about a large group of a smaller mounds. Within the mounds the social structuring of individual status and the material goods should be similar to the delta terrace sites described above. A nearly random distribution of such sites, marked by a low density artifact distribution and few subsurface features, should be expected on the broad well-drained terraces away from the valley and on some levee segments near tributaries.* [This proposition was not addressed by the field data but now seems incorrect].

During the later Woodland phase (A.D. 500 to A.D. 1000) in both the delta portions of the BWT project area and along the lower Tombigbee River, north to the probable limit of Weeden Island related occupations, we expected increasingly semisedentary small scattered family groups exploiting a wide range of resources. Small extractive villages or camp sites were expected on the higher, well drained levees near tributary junctions.

During this latest Woodland period (A.D. 500-A.D. 1000) there appeared to be a relative population increase and an absolute increase in small seasonal occupation sites in rather homogeneous ecological zones such as the terraces of the delta. Clusters of small sites used for seasonal intensive mollusc collecting were expected throughout the delta on levees overlooking bays, bayous, or relic distributaries. Inland, most Late Woodland sites appeared to be clustered into large diffuse village midden areas on both levee segments and on upland well-drained terraces.

In the Mobile Delta large numbers of Late Woodland sites were known but ceremonial mounds remain rare (Stowe 1981). The model suggested major population increases and evidence for restricted long-fallow swidden agriculture on the well drained soils of the uplands.* Indeed, nearly permanent site occupation was considered probable along the eastern bluffs overlooking the Blakeley River.*

Mississippian Site Locations

It was difficult to produce a clear picture of culture dynamics for the development of the Mississippian period in southwestern Alabama (Brose 1981a, Knight 1981). South of Demopolis little attempt had been made to organize research along lines of model building or hypothesis testing. Late Woodland sites had been reported throughout the southern portions of the BWT area and quite different Miller related components had been reported in the upper portions (DeJarnette 1952; Walthall 1979, 1981). The pattern suggested a coast-interior dichotomy similar to that seen on most major river systems from the Sabine (Aten 1981) to the Suwanee (Milanich, personal communication). This cultural dichotomy, clearly marked at A.D. 1000, affected the archaeological interpretations of succeeding cultural developments during the early Mississippian period, from A.D. 1000 to A.D. 1250 or 1300 (Jenkins 1980, 1982).

Brose and Percy (1974, 1978) had suggested that apparently mixed mounds in west Florida may contain regionally distinctive ceramic types of both the Weeden Island and Mississippian periods and cemeteries there seemed to show such transitional characteristics (Brose 1981a). The small number of such large mounds was interpreted as an indication of the rapid change from a ceremonial pattern of group mound burial to the characteristic Mississippian pattern after A.D. 1000 of socially segregated secondary temple mound and primary cemetery interment. As Brose (1979b, 1980) had previously hypothesized, many of the large accretional mounds associated with villages, such as possibly Bottle Creek, along the lower Tombigbee and Alabama Rivers may reveal such terminal Woodland mounds at their earliest construction stage. This hypothesis needed testing and may well be duplicated for Miller III regions.** [The hypothesis was not supported by the field data].

Brose felt that the only well-defined candidates for early southwest Alabama Mississippian may have been those few documented sites on lower Mobile Bay below the project area.* It was only in this region, therefore, that some of the essential parameters relating to "Mississippian acculturation" (Brain 1969), could be investigated. That this region appeared to have maintained a strong late Weeden Island (Willey 1949) or McLeod or Wakulla (Sears 1977) like complex was further justification for detailed archaeological analyses which could not be addressed by the present reconnaissance.

Many of the basic anthropological questions concerning the prehistory of the eastern United States were intimately connected with an understanding of the nature and tempo of Mississippian developments outside of its supposed heartland in the middle Mississippi Valley bottomlands, or on Macon Plateau, or in a vague area of western Tennessee. Several models had emerged for the development of Mississippian outside of these heartland areas.

One of these viewed Mississippian cultural complexes on the Coastal Plain as the implantation of socially stratified colonies with highly integrated agricultural sociopolitical systems. Such colonies, set in the midst of distinct local populations of hunting-gathering-horticulturalists, were represented as acculturative centers of secondary stimulus diffusion and, in some cases, centers of secondary population displacement.

Another model viewed Mississippian developments throughout the Southeast as the result of waves of expanding predatory populations whose integration of sociopolitical theocracy and settlement-subsistence system efficiency had allowed them to displace autochthonous cultural groups with lower population density. Even those who had argued for an internal regional development of Mississippian-level culture in their own area, had been willing to view the Mississippian cultures of southwestern Alabama as nonlocal cultural displacement. The source for such introduced Mississippian populations in this region had been invariably posited as Moundville on the Black Warrior River.

An alternative model of Mississippian-level development in northwest Florida proposed by Brose and Percy (1978) was used for the lower Tombigbee region. We assumed that upper BWT would duplicate in its settlement system the models proposed for the Gainesville Lake area (Jenkins et al. 1975). ** [In retrospect this assumption is probably incorrect].

Our model suggested that Mississippian systems in certain portions of the BWT area represented internal rearrangements following population pressures that built in Miller III and terminal Woodland in the southern section to create a system receptive to Mississippian models of social reintegration. The earliest manifestations of such adaptation toward a Mississippian socioceremonial pattern should occur in those regions of the BWT where the earlier populations practicing short-fallow swidden horticulture had expanded into diverse but restricted areas (Smith 1972). These criteria appeared to be met in both the upper delta and Black Belt. The gradual but consistent increase of the local population would produce no marked increase in site frequency or density from Late Woodland through Early Mississippian, and there would be no radical shifts in styles of ceramics, lithic manufacture, or domestic house architecture.** [This proposition was not supported by the field data]. Peebles' (1981b, Bozeman 1981) survey of the Moundville area yielded no evidence for major abrupt demographic changes. Models described by Ammerman and Cavelli-Sforza (1973:340-353) suggested that neither demic diffusion from an external source, nor colonization was an applicable explanation.

Assuming that this model for internal settlement-subsistence system development could be correct, we then predicted that the socioceremonial aspects of Mississippian culture might have been adopted in the upper BWT and upper delta independently and integrated into cultures with variant settlement-subsistence systems. Similar models had been suggested by Brain (1969, 1971) for late Coles Creek populations in the upper Yazoo region of the lower Mississippi Valley and by Brose and Percy (1978) for Fort Walton populations in northwest Florida. It would be possible to test the implications of this hypothesis as developed from the model in the Tombigbee River Valley and Mobile Delta.

Brain (1971), Brose (1975), Peebles (1971), Ward (1965), and Smith (1978) have demonstrated a correlation between demographic variables, site location, and the presence of culturally desirable agricultural land. Washburn (1974:324 ff) demonstrated that following population changes there may be a temporal lag of several generations in the readjustment of preferential site location strategies.

Following Ward's (1965) observation that most major Mississippian sites were located on silts or sandy silt loam alluvial bottom soils because of agricultural considerations, Larson (1970), argued further that the development of the characteristic Mississippian agricultural subsistence pattern leads to active competition for such prime lands. Larson (1972:384) excluded portions of the Gulf Coastal Plain from this picture, because of small stream size and lack of proper levee-bluff relationships. Critical areas of the Tombigbee River Valley, however, should follow his model.

Analyses of Mississippian site location at Moundville (Peebles 1979: 82, 88 ff; Steponaitis 1978, 1980a) have expanded this hypothesis to include suitable agricultural soils as the primary locational criteria. A later criterion, an ecologically and physiographically diverse resource catchment area (Jarman et al. 1972) of four to five km surrounding a site within which uncultivated floral and faunal materials are available had been emphasized by Smith (1978). Smith (1978) also suggested that the location of most large Mississippian sites will be within meander belt zones of major rivers, not merely because of culturally desirable soils for agrictulture, but because of the large numbers of migratory waterfowl and summer fish in drying backwater areas. Smith secondarily noted the desirability of locations with close proximity to ecological diversity to maximize the density of more endemic terrestrial food animals. Neither large numbers of migratory waterfowl nor summer fish-filled backwaters are common to the upper Tombigbee River Valley. Both, however, occur in portions of the delta. Smith's thesis added support to Peebles' general catchment hypothesis which has since been verified for the Lubbub Creek Mississippian settlement (Cole 1981a).

Based on analyses at Moundville and Lubbub Creek, Peebles (personal communication) has described a dendritic, or nomothetic divisive technique for the location of major Mississippian sites in the southeastern United States. Peebles suggested that from a general region one could concentrate upon major or secondary river valleys. From those one could eliminate all, save areas where sufficient soils consisting of loam, silt loam, of fine sandy silt loams exist. All such areas with elevations susceptible to deep flooding or with soils waterlogged at planting time can be eliminated. Finally, all such remaining zones which do not lie within

2 km of a 4 to 5 km area of ecological and physiographic complexity may be eliminated. Peebles suggested that each step in the divisive linkage represents a reduction factor of 0.1. Then only a select 0.0001 of a region should show a major Mississippian site location.

If Mississippian cultures of the Tombigbee River south of Demopolis represented either a direct implantation or population displacement by Mississippian groups, whether from Moundville (Willey 1949, Gardner 1966, Williams et al. 1971, Lazarus 1971, Brain 1971, Peebles 1981a) or from Florida (Bullen 1949, 1950, 1958; Fairbanks 1971; Goggin 1947; Griffin 1950; Milanich 1969; Sears 1954, 1958, 1962b, 1977; Knight 1981) the ecological model of settlement location proposed by Peebles should apply to the BWT area.

If, on the other hand, the model of Mississippian development proposed here for portions of the BWT area could be considered correct, a different nomothetic divisive dendrogram could be constructed and alternative hypotheses could be derived for testing. On the basis of the detailed ecological parameters of this model, early Mississippian in the Tombigbee River Valley would have the following hierarchy for major site locational preferences. From all areas of the region, only those areas with restricted availability of silty loam or fine sandy silt loam soils need be considered. Of such areas only those with access to both bluff and spring, and with access to large backswamp zones within a 4 km area need be considered. From such areas we could concentrate upon first rank river valleys as opposed to major or secondary river valleys. From the remaining potential locations we would predict major sites to be located in those areas where levees are naturally cut into relatively broad segments by backswamp flood channels less than 1 km apart along the river. As diagrammed in Figure 2, these ecological-settlement hierarchies are very different. A statistically controlled sampling strategy, ecologically stratified hierarchically to locate the optimal major site locations for either alternative model and normalized to account for relative availability of the various ecological strata for either model, would produce a manageable number of potential major site locations for testing these alternative hypotheses.

Peebles provided a further criterion for the acceptance or rejection of these alternative hypotheses. Peebles (1979:52-59) had stated that for Moundville there is a consistent spatial arrangement and relative density of major ceremonial center, minor ceremonial center, and hamlet, so that the size and location of the Moundville site itself, as the single major ceremonial center, cannot directly be predicted from its own ecological location, but only from that of its ceremonial service area (Peebles 1979: 88 ff). Not all major Mississippian centers in the Southeast follow the neat nested hexagon hierarchy of Moundville (Figure 3). The Lower Valley (Williams et al. 1971; Brain 1969, 1971) differs but the Georgia area (Larson 1972, personal commmication) and the middle Mississippi Valley (Ward 1965; Smith 1974) display a somewhat similar pattern.

If the alternative model proposed here for Mississippian site locations was correct, a testable hypothesis would indicate that major Mississippian BWT sites were major ceremonial centers whose loci could be predicted by the dendritic technique described. Furthermore, although local

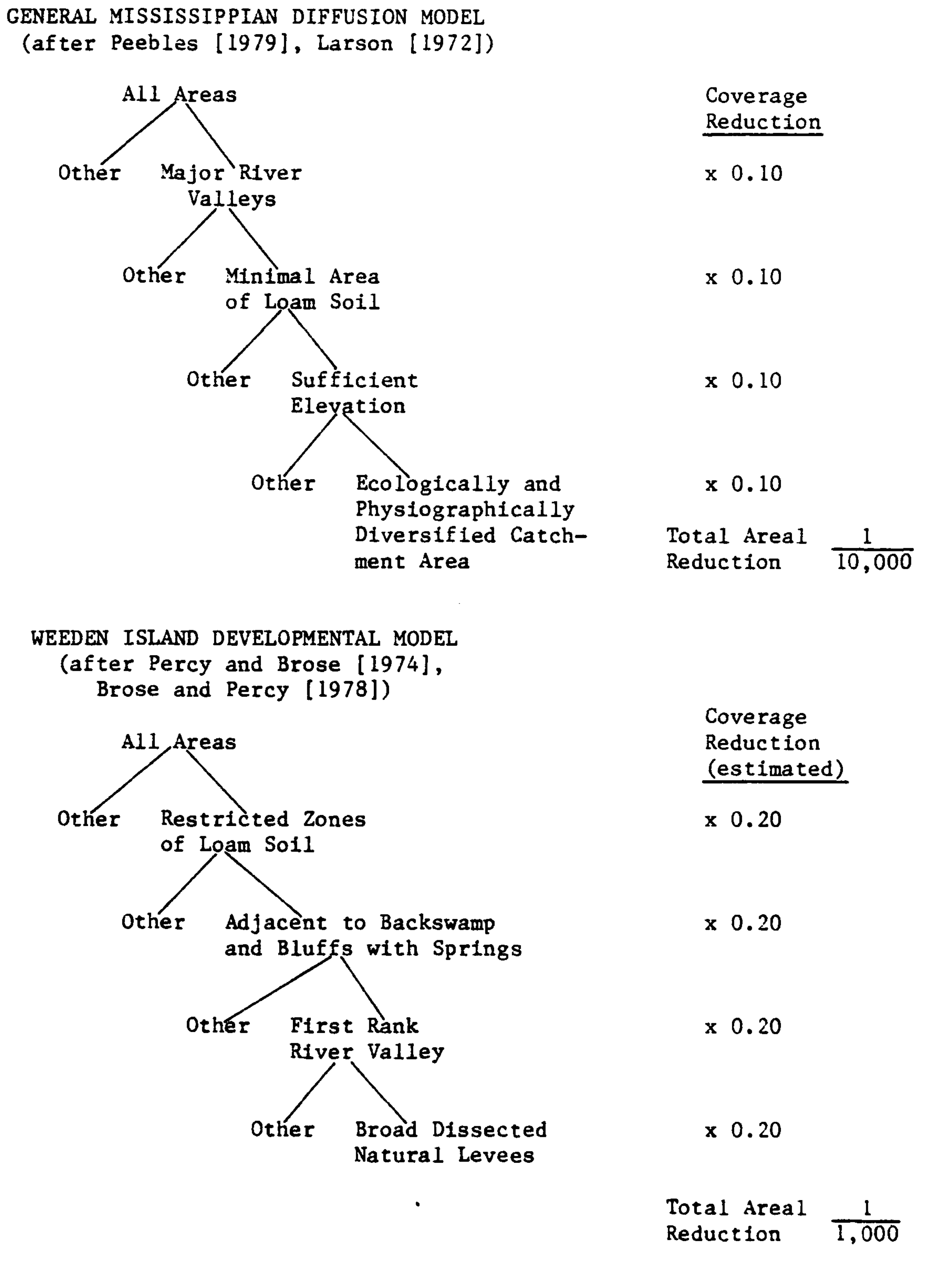
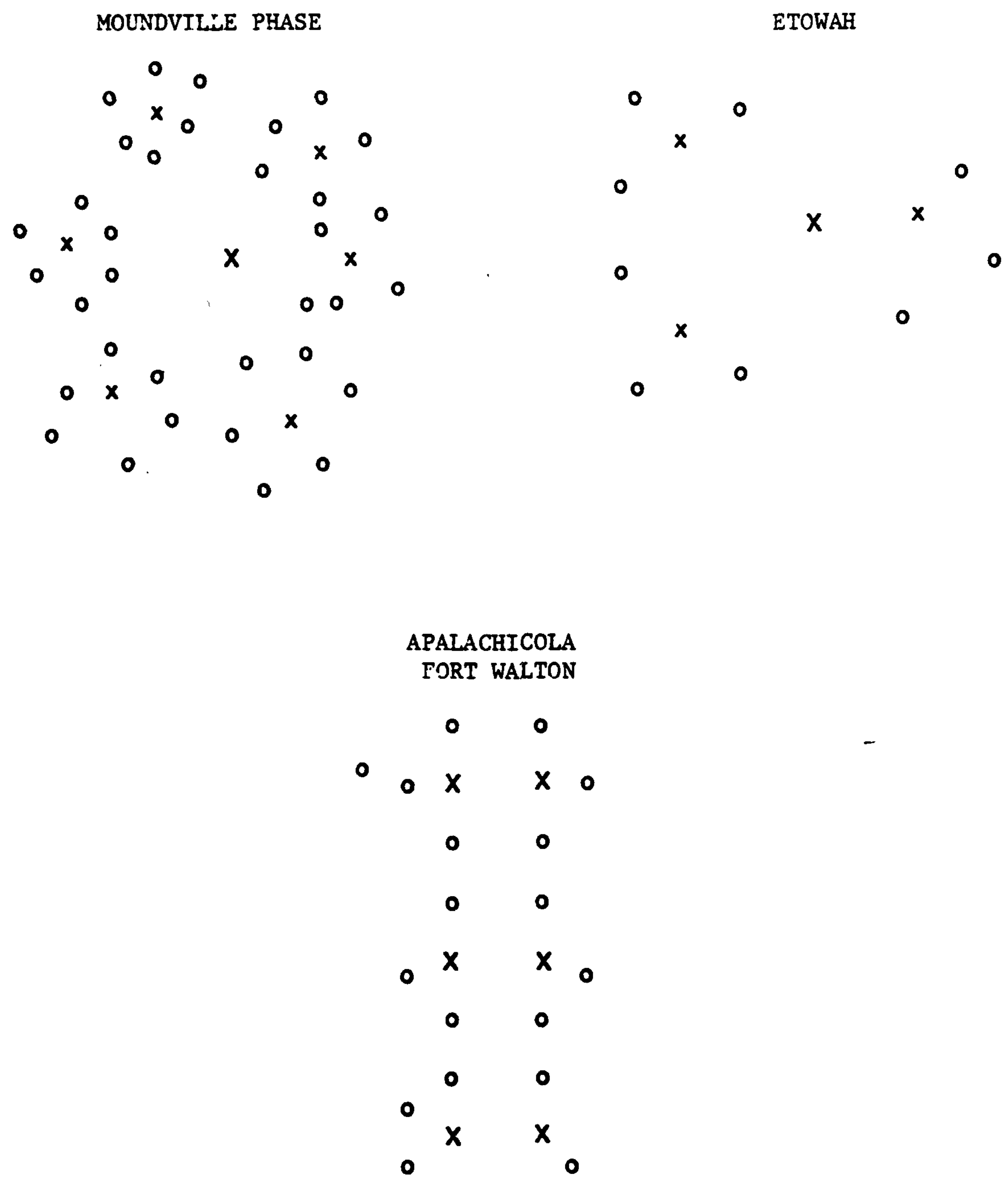


Figure 2. Alternative Predictive Dendritic Models for Major Mississippian Site Location.



(X = major center, x = minor center, o = hamlet)

Figure 3. Schematic Models of Mississippian Ceremonial and Major Site Hierachies.

Mississippian sites would have served as major centers of population aggregation only seasonally, they would have been reoccupied for a number of years. They also would have been surrounded by a number of small, short-duration hamlets or special-purpose extractive camps with no suggestion of ceremonial activity and with no evidence at all for secondary ceremonial centers anywhere. There should thus be, for Mississippian sites, clear evidence for site location reflecting Late Woodland patterns and strongly differing from the Moundville model of Mississippian settlement. At the same time, Mississippian sociopolitical and ceremonial manifestations should show strong status differentiation, thus differing from Late Woodland structurally egalitarian or minimally ranked lineages. The evaluation of the results of the research proposed herein, in terms of the alternative hypotheses which they were designed to test, was projected to provide some limited but unambiguous evidence concerning the nature and tempo of the Mississippian phenomenon within the project area.

Protohistoric Site Locations

The protohistoric archaeological occupations of the lower Tombigbee River Valley and the Mobile Delta, from A.D. 1500 to A.D. 1700, had traditionally been assigned to the Burial Urn culture (Brannon 1939, DeJarnette 1952, Sheldon et al. 1980, Curren and Little 1981) or to a Pensacola variant of the Fort Walton culture (Brose and Percy 1978). There was some suggestion that these were more or less exclusive phenomena (Knight 1981), corresponding to a coastal-interior distinction.

Archaeological manifestations of the protohistoric period were to some extent known from the Black Warrior and Tombigbee River Valleys north of their junction at Demopolis or from the Alabama River drainage system to the east, or from the Gulf Coast below (and east of) Mobile Bay but these were quite different. Protohistoric sites on the Gulf coast were predominantly cemeteries, no villages and few specific protohistoric sites were known from the area between Demopolis and Mobile.

For the A.D. 1350 to A.D. 1500 period, both highly structured and less structured post-Mississippian societies in southwest Alabama were inferred from the earliest historic accounts (Curren 1978, Brose 1981a, Knight 1981). Their interrelationships were quite uncertain but the distinction between coastal and interior zones during a period beginning with mild climate with especially warm wet summers in the interior zone, but which rapidly shifted after A.D. 1450 into the "Little Ice Age" pattern of long very cold winters and short drier summers (Brose 1981a).

Throughout the A.D. 1350 to A.D. 1500 period the settlement patterns of the delta were again probably somewhat hierarchically structured, reminiscent of earlier Mississippian site distributions. The ceramic tradition in the delta and on the Gulf Coast itself during the protohistoric phase was dichotomized. Fort Walton ceramic attributes and techniques dominated in areas to the east of Mobile Bay but some Moundville-like Pensacola vessel modes were present. Ceramic assemblages were predominantly Mississippian in attribute and technique to the west along the coast but some lower Valley Mississippian and a few Plaquemine modes and occasional Coles Creek like ceramic attributes in certain motifs were present. We proposed, following the models developed for earlier Mississippian site location in the lower delta, that late Mississippian should resemble coastal Fort Walton with major ceremonial activities and population concentrations located on terraces above the floodplain. Studies by Curren (1978) and others reaffirmed the probability that limited horticulture supplemented hunting, gathering, and fishing.

We proposed that settlements in the upper delta throughout the period between A.D. 1350 and A.D. 1500 would have been similar in some aspects to the Pensacola or Fort Walton pattern inferred for the west Florida Coast (Brose and Percy 1978, Brose 1981a) with centers such as Bottle Creek surrounded by a number of small late summer to late fall farmsteads in small groups or hamlets along the marginal terraces near tributary streams.* [This proposition was not addressed by the field reconnaissance but it now seems inadequate]. Near these streams both backswamp and terrace resources would co-occur within a 3 to 5 km radius catchment area (Vita-Finzi and Higgs 1970, Peebles 1974; Brose 1974). Probable small spring to early summer seasonal hunting sites would occur in the adjacent uplands. ** [This prediction was not supported by the field data]. Fall, winter, and early spring gathering stations might have been randomly spaced along the levees of old distributary channels where bays or shoals create high-yield fish or molluscan resource zones.

Within the lower delta region we predicted a uniformly distributed scatter of small domestic sites along the active major distributary channels for riparian or deltaic resource exploitation, especially of molluscs (Stowe 1978, 1981) from late spring into midsummer. During late summer and into late fall larger sites would be located for agricultural activities on the limited broad sandy loam alluvial terraces marginal to the lower delta.* Ethnohistoric records (Swanton 1911, 1922; Knight and Adams 1981) suggested dispersal during late fall and early winter into small family or band upland hunting sites, possibly beyond the project boundaries. During late winter and early spring the resources exploited by small family groups were probably those located along the coasts of lower Mobile Bay or on the Gulf Coastal barrier islands and points (DeJarnette 1952, DeJarnette et al. 1978; Tesar 1973). The potential role of ceremonial centers or cemeteries could not be addressed at this stage of model development.

We suspected that the protohistoric period of the Black Warrior-Tombigbee river system above the Alabama River junction would probably be represented by the Burial Urn or Alabama River phase. We proposed as a model for the project, that above the Alabama junction the aboriginal settlement pattern prior to about A.D. 1500 would be similar to that reported for the Black Warrior above Tuscaloosa or the Tombigbee River between the Demopolis and Aliceville Reservoirs. That is, a relatively small number of late Moundville--Steponaitis'(1978) Moundville II-III--ceremonial centers, but no major center like Moundville, would have been centrally located in areas surrounded by broad, relatively well-drained levees or terraces. Most of these would have been located in tight-necked meander bends (Smith 1978) and all would be within 500 m of both backswamp and then active tributaries. Socially stratified cemeteries, but probably no new construction of mounds, were expected at such central sites. Small late Moundville hamlets or farmsteads would have occupied similar topographic zones and would also occur in proximity to resources such as nut producing trees, or outcrops of stone suitable for tool manufacture, or salt.** [None of these speculations was adequately addressed by the fieldwork].

Ethnohistoric Site Locations

For the ethnohistoric period, A.D. 1700-1830, early historical documents from the Mobile Bay and BWT region offered significant data for study of some aspects of Amerindian acculturation (Swanton 1922, 1946; Hudson 1979) but many of the material aspects of these rather unique historical sites could not be recovered by documentary investigation alone. Even locational studies of those sites would be hampered until archaeological confirmation of their locations had been performed.

From even a brief review of the historic documents, it was unreasonable to assume that by the mid-eighteenth century any aboriginal group in this area still occupied its original, precontact position. Therefore, ethnohistoric archaeological complexes recovered within the BWT project area could not be assigned confidently to ethnographically reported populations from the same area without the most stringent control (Hudson 1976).

Documented aborginal population movements required that archaeological components be dated accurately to the rather short time span specific groups were known to be inhabiting a particular location. Radiocarbon dating would be of too little precision in this respect. Even if dates for any archaeological component could be determined, that component could not be assigned simply to any ethnic group known to have occupied that area at that time. It must also be demonstrated that the component represented a particular documented site. To identify precisely any historic ethnic group, and to investigate its material culture with an aim of linking it to earlier prehistoric archaeological material, is the goal of the Direct Historic Approach (Setzler 1940). Lankford (1983) has shown how difficult the historical documentation of location is. The identification of distinct ethnic styles was also difficult to attain, although in the BWT project area there was some reason to hope that that goal might be realized.

Any solution to this problem lay in the excavation of sites representing identifiable preacculturated groups. Unfortunately, those archaeological sites which could be dated precisely displayed the least ethnically distinctive material from which to reconstruct the precontact identity of the group (Brose 1981a, Brain 1981).

The presence of European trade goods on an aboriginal site was no guarantee that the site represented contact of its occupants with literate Europeans (Adair 1775), since aboriginal trade of European goods and independent traders long preceded and far out distanced either official explorers or literate missionaries. It was conceivable that given the population movements reported for this area, a group may have received trade goods from other Indians or from a trader who left no record and that the same site was later occupied by distinct peoples for whom documentary evidence exists.

In general, archaeological sites representing early phases of acculturation could not be simply assigned to the earliest ethnographically known group in that area. Several Indian groups occupied the Tombigbee River and Mobile Delta in the early seventeenth century. Many of the latest sites of some portions of the prehistoric Fort Walton culture of west Florida had been assigned to some of the Apalachee with reasonable confidence (Griffin 1949; Boyd et al. 1957; Brose 1975, 1981a). The best candidates for prehistoric Apalachee villages may have been sites around Tallahassee, excavated by Griffin (1950) and Jones (n.d.) both of whom offered strong arguments that the Apalachee were never located farther west than the Ochlocknee River (Griffin 1950, Tesar 1980, Brose 1981a).

If any ethnic identity could be assigned to the late components of southern Alabama, we thought it may well have been that of the little-known Mauvila, as distinct from the Apalachee. Those late prehistoric sites in Southeastern Mississippi and Louisiana, previously assigned to the Pensacola culture, possibly represented the various groups of refugees described by Swanton (1911).** The late occupations at the Creek and Seminole sites in west Florida and eastern Alabama reflected considerable influence, if not some actual population movements, from late groups in central Georgia. Those groups, or at least some part of them, appeared to have been a portion of the central Muskogean populations which appear scattered across the pages of early history in the guise of Apalachee, Pensacola, Chato or Hitichi (Lankford 1983). The ability of the archaeologist to specifically identify any single prehistoric or protohistoric site with one of these ethnolinguistic groups was limited.

Even the ability of the historian to identify the location of some eighteenth century European posts referred to in the extant documents was questionable. Some of these within the BWT project area were the locations of forts during the eighteenth century. Between Fort Tombecbe, near modern Epps, Alabama, and Forts Louis and Conti, at and near Mobile, there were no permanent European military garrisons along the Tombigbee River (Winsor 1884, Lankford 1983). There were, however, a number of temporary French, Spanish, and British trading posts, as well as a number of impermanent Indian villages or camps.

The most precisely fixed of the historical aboriginal archaeological sites were described by Lankford (1983) as part of the cultural resources reconnaissance of the BWT project area. Three of these, Tomeh Town (1700-1763 A.D.), Tawasa Town (1705 A.D.), and Koasati Town (1763-1770 A.D.) were among the critical sites to be investigated. Knowledge of artifact styles and manufacture from such sites would permit historical archaeological sites encountered later to be assigned to the appropriate period and possibly to the appropriate European colonial economic system.

We hoped to distinguish Euroamerican from Indian sites, but we doubted that Amerindian ethnolinguistic distinctions (e.g. Naniaba vs. Choctaw) would be reflected by the mid-eighteenth century material culture or that some American and some Indian sites could be distinguished archaeologically. We predicted relatively little difficulty in identifying French posts, or pre-1763 French and mixed Indian sites, or Apalachee villages from contemporaneous Tomeh temporary camps.

From the protohistoric to the ethnohistoric phase, from A.D. 1700 to A.D. 1830, was a time of climatic change and cultural deterioration characterized by inadvertent and deliberate European induced aboriginal population displacement throughout North America. In the interior riverine zones within the BWT region there appeared to be an early precontact abandonment of many towns. (Based on the Entrada accounts, even some of the major population centers were abandoned). This was followed after contact by population decline (Crosby 1972) and Europolitical mandated aboriginal population resettlement and by further gradual, although occasionally catastrophic, aboriginal population decline. The lower delta and the Mobile Bay areas, more frequented by Europeans, and according to Knight (1981) with initially less hierarchically structured aboriginal populations, showed an initially slower but accelerating rate of population decline.* Throughout the region this demographic picture accompanied or was caused by aboriginal economic clientism within the European colonial systems.

Prior to the eighteenth century coastal ceramics reflected a short lived triumph of Mississippian ceramic technology, attributes, and modes whose eastward distribution along the Gulf Coast was probably terminated by the destructive presence of early Europeans. In the interior riparian zone of southeast Alabama, this latest phase was represented initially by ceramic assemblages characterized by a combination of Moundville and Fort Walton designs and vessels with Mississippian and a few south Appalachian attributes. This ceramic assemblage was gradually replaced by assemblages reflecting a mixture of introduced vessels and attributes from areas throughout eastern North America. European, East Asian, and for some, even African, ceramic modes, in Rouse's (1939) sense, were introduced. Ethnohistoric aboriginal settlement patterns, at that point, were best considered within the model from the perspective of historical archaeological sites (Lankford 1977, 1983).

Historic Site Locations

We proposed that a predictive model of historic archaeological site densities and distributions could be attained by integrating information from historical documents and from recorded historical archaeological sites to show the location of all documented historic loci such as such as towns, roads, landings, and forts within the BWT area. Field investigations could then concentrate on the discovery of undocumented historical archaeological sites and the evaluation of specific documented locations. Historic sites within the Mobile Delta had received greater attention than those farther north within the project area but similar details of construction history and socioeconomic status were being investigated in the upper BWT area at the time (see also Adams 1980).

The archival data from the period following 1697, compiled by Weaver (1983) for the historic study of the BWT would provide data for the archaeological investigation of a number of types of historical sites from several subperiods in representative geographical situations and conditions of preservation. In addition, there were a number of undocumented historical archaeological sites of the 1790 to 1880 period which had been reported but not yet investigated at the time of these pre-field phases of the survey (Wilson, personal communication). Those sites appeared to represent relatively small domestic structures and it seemed most likely that they represented short-term occupations. Thus their archaeological potential for social and chronological interpretations is considerable. We suspected that a number of such undocumented occupations would be present within the project area.

The presently known historical sites represented only a portion of those which might have been present. We sought methods to predict the probability of still unobserved archaeological sites from documents, the mapped locations of previous towns, trails, roads, landings, bridges, quarries, mills, cemeteries, and domestic structures (Weaver 1983, Lankford 1983, Wilson 1983a).** [These data were compiled concurrently with the archaeological phases of the BWT investigations and therefore were not available for use during the preliminary reconnaissance]. This use of historical documents would be more accurate than blind statistical sampling (Haggett et al. 1977) or theoretical model building (Ucko et al. 1972; Wharton 1969; Von Thunnen 1826; Chisolm 1970; Brose 1981a).

The procedures used to obtain ecological data to model the probable locations of sites in as yet unsurveyed areas are described in Chapter IV. We proposed to factor out the recent historic alterations, and integrate the in situ environmental features as signatures for use in delineating the potentially critical sampling strata for historic deposits.* These map mosaics would be used to identify the recent culturally imposed vegetation anomalies which obscured earlier historical archaeological site locations.**

An annotated bibliography compiled as part of the historic study of the BWT (Weaver 1983) would be integrated with the results of the proposed archaeological field survey so that known plantations, towns, and landings of various periods could be investigated to obtain criteria for evaluating undocumented historical archaeological sites.** The spatial and temporal distribution of historic settlements would be analyzed to show variation in size and placement, relationship to cultural and natural features, and internal differences and similarities.*** Archaeological comparisons of patterns of material style and refuse disposal, as well as functional architectural patterns would result in a statement defining what constituted each historic site, how sites related to each other, and how they formed a community in terms of the criteria within the framework set forth by the General Research Design of Historic Settlement in the Tombigbee River Multi-Resource District.***

About two-thirds of the historic sites without structures which were investigated as part of the Demopolis Pool survey (Sheldon et al. 1980) yielded surface indication of archaeological features, such as scatters of cut stone or brick, ground depressions or soil discolorations, and well or wall ridges or edges. Fewer than one-quarter of the sites without standing structures failed to reveal surface indications of archaeological features. None of the undocumented sites of the 1800 to 1860 period encountered in Sheldon's (et al. 1980) field survey had standing structures but several of them had surface indications of archaeological features. It was projected that some of the standing structures within the BWT project area would represent recent construction at locations representing undocumented sites of the 1800 to 1860 period. Therefore, historical archaeology at nonaboriginal sites was to include surface investigation of selected areas of undocumented occupations. Historically documented sites or site areas would receive limited surface and subsurface testing.

SUMMARY OF PHASE I

The tentative Phase I model discussed here was used to predict the types of environmental zones which might be archaeologically significant at some level of statistical evaluation. It was recognized that such a model, developed in part by intuitive extrapolation from peripheral regions, would prove imperfect. It was our intent to test the implications of such a settlement location model during the subsequent phases of field reconnaissance. In this chapter the Phase I model was reproduced, with minor modifications, as an indication of the sometimes incorrect assumptions from which our initial field investigations proceeded. The model should be understood in its historical sense. It has been superceded by the results of those field investigations which it guided.

The Phase I model was designed to reflect two separate goals: a summarized inventory of existing data and development of predictive models. We proceeded by compiling available archaeological, geochronological, and ecological data for the BWT project area. Prehistoric archaeological sites where data were adequate were analyzed to determine whether patterns of site location could be related to modern ecological parameters. For earlier periods, small sample sizes and modern ecological parameters were not expected to provide significant predictive capability. A preliminary paleoecological reconstruction and a tentative model of site locations had been derived. Following this first phase, we designed a sampling program, described in Chapter IV, to investigate the predicted archaeological site densities and distributions to be tested by archaeological field survey.

Other errors in this preliminary model we expected to identify through the use of historical documents and through investigation of recorded site locations within the project area (Chapter II). The geographic implications of these data would then be integrated with interpreted patterns of historic change. Those environments which represent effective site location criteria could be selected for investigation and those which represented recent occupation or disturbance could be eliminated from consideration.

PART II: ARCHAEOLOGICAL INVESTIGATIONS

CHAPTER IV

DEVELOPING A SAMPLING DESIGN FROM THE MODEL

David S. Brose and Russell Weisman

INTRODUCTION

As described in Chapter II the records compiled from 1851 to 1981 were consulted to identify the exact location, chronological position, cultural affiliation, and material assemblage of archaeological sites within the BWT project area. The detailed protohistoric and ethnohistoric research (Lankford 1983) undertaken as part of the BWT cultural resources reconnaissance was incomplete at that time.

For the purposes of constructing the initial predictive model only those sites whose records were on file with the various State institutions were used because they represented the most complete available data and the only sites with professional evaluation of site type or temporal placement. Data on over 200 archaeological sites were obtained. Since it is highly probable that changing environments, as well as developments in economic and technological cultural systems, variably structured the location of prehistoric sites, efforts were made to identify these critical effective environmental conditions for the major periods and types of archaeological sites. Primary site conditions--those which may have been significant as the prehistoric or early historic 'siting criteria,' secondary site conditions--those which may have been significant in the preservation or exposure of site areas, and tertiary site conditions--those which may have been significant in the discovery or recording of the site itself--were distinguished.

In addition to this literature review, a broader study was undertaken of archaeological sites of various types, cultural complexes, and periods from regions adjacent to the project area. These investigations resulted in a general framework of archaeological site morphology and location which was analyzed to arrive at a synthesis of the culturally diagnostic material for each cultural and temporal unit. Primary and secondary environmental conditions for archaeological sites of all major cultural periods known to have occurred or likely to exist within or adjacent to the Black Warrior-Tombigbee project area were also noted in this analysis.

These cultural and chronological periods identified for detailed investigation are shown on the following table:

Table 2. Expected Cultural and Chronological Periods in Initial Model (Chapter III).

Period	Project Areas Manifestation (N/S)	Chronology
Ethnohistoric	Choctaw/Mobile-Tomeh	A.D. 1810
Late Mississippian	Alabama River/Pensacola ?	A.D. 1500
Early Mississippian	Moundville	A.D. 1250
Transitional	West Jefferson/Strongs Bayou ?	A.D. 1000
Late Woodland	Miller III/Weeden Island-McLeod	A.D. 850
Middle Woodland	Miller II/Porter/Santa Rosa	A.D. 500
	Miller I/Deptford ?	A.D. 250
Gulf Formational	Wheeler-Alexander/Bayou La Batre	800 B.C.
	Benton/ ?	1500 B.C.
Late Archaic	Eva/ ?	3500 B.C.
Middle Archaic	Big Sandy/ ?	
	Kirk/ ?	6000 B.C.
Early Archaic	Hardaway-Dalton/ ?	8500 B.C.
Paleo-Indian	Clovis/Clovis	11500 B.C.

This attempt to fill the BWT study area with historical cultural manifestations derived from surrounding areas (when project-specific data were inadequate), as did the tentative Phase I site location model, required revision as a result of our Phase II field investigations but a cultural-historical framework was necessary for identifying archaeological materials encountered in our field investigations. The degree to which this initial expectation was modified by the data we encountered can be seen by comparing Table 2 with our revised chronology (Figure 8, Chapter V).

Cultural periods were considered as a weighting factor for all of the environmentally different physiographic zones. The longer a particular geographic location had been occupied, the stronger the weight should be for those ecological variables used by the original inhabitants to select settlement locations. Each occurrence of a site in more than one time period (every distinct component) should be counted as a separate case so that environmental attributes surrounding multicomponent sites would give more weight to these repeatedly selected environments. For example, the location and environmental attributes of a site with both Woodland and Mississippian cultural remains were counted as two separate cases.

Thus, a site occupied continuously, or repeatedly on a seasonal basis would indicate that conditions at this location warranted continuous or repeated occupation. To predict these optimal locations, these continuous or repeatedly occupied sites should be weighted more than single or short period occupations. Conversely, a site occupied in more than one time period may not have been inhabited by the same peoples, and each incident should count as a unique case.

The Phase I estimated distribution of components for recorded sites within the Mobile Delta and upper riverine zones of the BWT project area was as follows:

Table 3. Phase I Estimated Distribution of Components at Recorded Sites.

Number of Components at each Site	Estimated Frequency (%) at Delta Sites	Estimated Frequency (%) in upper BWT areas
4	10	5
3	25	20
2	50	25
1	15	50

Thus 100 site locations in the Mobile Delta area may represent projected 230 components ([4 x 10] + [3 x 25] + [2 x 50] + 15), but 100 sites in the upper portions of the BWT area may represent only 180 components ([4 x 5] + [3 x 20] + [2 x 25] + 50). This significant difference in the projected distribution of components from recorded site locations (D + 27.7 percent), which was almost certainly due to the greater geographic constraints imposed on site location within the deltaic floodplain zones was used in planning the field survey.

CULTURAL RESOURCE UTILIZABLE DESIGNATED ENVIRONMENTAL DATA

The utilized environment and cultural components for many recorded cultural resources in the BWT project area were used to develop the Phase I site location model prior to field testing. The mapped data were to be used in planning sampling and survey zones within the different environmental sections of study area.

Maps of recorded site locations were constructed so that utilized environments could be used to designate where other, as yet unknown, sites might occur with the highest frequency. This was done in several steps, summarized as follows: (1) Environmental data potentially important in locating sites were collected for each recorded site. (2) The significance of all environmental variables was evaluated for each site. (3) The key variables for each cultural period were identified based on models of prehistoric cultural geography. Initially it appeared that key variables for most periods were "Topography," "Distance to various sources of water," and "Soil drainage" for both upland and floodplain zones. (4) The key variables and their attributes were then designated to demarcate geographic areas with a high probability of containing unknown sites. (5) These environmentally designated areas were then ranked for the degree to which they represented environments similar to those of the recorded sites. Every such area was marked on the appropriate USGS quadrangle. (6) Finally, we attempted to test the logical consistency of this approach by looking at the designated environments for another sample which had been used in the primary field study of the project area. All of these sites were found to be located in designated environments. This method did show that the designated environmental data could locate some cultural resources, but it was not really a test of the approach. Just as many designated environments might contain no cultural resources, so cultural resources might exist in other types of environments where we had no survey data. To develop a model which could approximate the distribution of still unknown sites it was necessary to perform controlled field investigations of those other environmental areas, as well as to document the negative results of survey in designated environments.

ACQUIRING ADDITIONAL ENVIRONMENTAL DATA

In addition to the location and cultural composition data, environmental data (Table 4) were collected for each site. These environmental variables were selected because their importance had been identified in previous studies of similar areas of the Southeast (Jenkins et al. 1975, Sheldon et al. 1980, Brose 1981b).

The BWT study area lies within the upper and lower Coastal Plain physiographic province of southeastern Alabama. The separation between the river valley and delta regions of the study area correspond roughly to the upper and lower divisions of the Coastal Plain.

Eight distinct physiographic zones are represented within the project area (Table 5). Further details of the environment within this area were provided in the proposal:

> The Black Warrior-Tombigbee flows southward in western Alabama in the East Gulf Coast Plain section of the Coastal Plain physiographic province. The river flows in a narrow floodplain across a succession of sedimentary geologic formations that are progressively younger, from Cretaceous, at Demopolis, to Recent, in the Mobile Delta. Differences in rock type, soils, vegetation and slope occur in outcrop areas of these geologic units, but the greatest physiographic change is seen in the lower floodplain - delta portion of the river, generally termed the "Mobile Delta." Not far below Jackson Lock and Dam the Black Warrior-Tombigbee floodplain widens and where it meets the Alabama River, the combined floodplain reaches 18 miles across. The floodplain diminishes in elevation and gradually changes into a delta where the first distributaries occur just below McIntosh, the end of which is east of Mobile, being crossed by the Causeway and Interstate 10 bridge. The river distance from Demopolis Lock and Dam to the river at Government Street is 213 miles; 93 (or 44%) lie south of the US 43 bridge near Jackson.
>
> Of importance to a cultural resources study are the physiographic differences in both the two main parts, the river section and the delta section. The exposures of various geologic units in the river and the several depositional environments create a number of habitats that were exploited by the human occupants. . . . The river, itself having potential exploitive channel environments, is a unifying and dominating physical feature especially important as a transit route to the interior from the coast, and carrying the interior resources to the coast. The flow of sediment and nutrients into the bay, sound, and gulf create yet additional biological complexity. The river

Table 4. Cultural Resource Utilizable Designated Environmental Data.

I. Physiographic Zones
   A. Black Belt
   B. Flatwoods
   C. Southern Red Hills
   D. Tallahatta Hills
   E. Rolling Piney Woods
   F. Delta Meander
   G. Delta Swamp
   H. Delta Marsh

II. Topography
   A. Deltaic Sediments
   B. Alluvial Bottomland
   C. Secondary Floodplain
   D. Steep River Bluff
   E. Well Drained Terraces
   F. Dissected Ridges
   G. Poorly Drained Interfluvial Uplands

III. Alluvial Geomorphology
   A. Modern Natural Levee
   B. Modern Point Bar or Channel Deposits
   C. Relic Channel Deposits
   D. Back Swamp Deposits
   E. Terrace Deposits
   F. Undifferentiated Floodplain Deposits

IV. Soil Drainage Characterization
   A. Well Drained Soils (sandy loams and sandy clay loams)
   B. Poorly Drained Soils (silty clay loams and silt loams)
   C. Undrained (gleyed) Soils (silty clay, clayey silts, and clay loams)

V. Minimum Slope
   A. 0 to 3%
   B. greater than 3 but less than 8%
   C. greater than 8 but less than 15%
   D. greater than 15%

VI. Water Source Within 500 Meters
   A. Major Active River Channel
   B. Former River Channel
   C. Major Tributary
   D. Minor Tributary

Table 5. BWT Physiographic Zones from Demopolis to Mobile.

Physiographic Zone	River Miles	Approximate Area (sq. miles)
1. Black Belt	202-213	60
2. Flatwoods	170-202	110
3. Southern Red Hills	145-170	86
4. Tallahatta Hills/ Hatchetigbee Anticline	101-145	155
5. Southern Limestone/ Rolling Piney Woods	75-101	160
6. Coastal Lowlands/ Delta Meander	47-75	152
7. Delta Swamp	13-47	220
8. Delta Marsh	0-13	105
TOTAL	213-0	1,059

and delta thus are only two parts of a complex ecosystem that has been used by man over the past several thousand years.

The effects of sea level changes during the Pleistocene epoch were important both along the coast and in the interior. Evidence from [adjacent states] clearly illustrates ecological changes, including drowned forests, buried marsh peat, retreating coastlines, and deltas, and subsequent sedimentation in coastal rivers.

During the past few thousand years, valley filling has caused the progradation of the floodplains and Mobile Delta southward to its present position. The effects of European occupation, particularly clear cutting for agriculture, very likely caused rapid sedimentation in the floodplain, delta and bays (Brose and Wilson 1980:2-3).

Between Demopolis and Mobile, the Tombigbee River Valley cross-cuts eight different northwest-southeast trending sedimentary geologic units. These different bedrock units produce local variability in soils, topographic expression, forest habitat, and valley morphology (Lamb, Appendix B). The study area was stratified using these geomorphic units since the variable environmental potential of these zones was likely to affect site distribution and density (Thomas 1975).

Our Phase I model had predicted archaeological site location by type and by cultural affiliation. It was our goal to identify recurrent patterns of distinct environmental attribute clusters which would account for most of the site locations within each physiographic region of the study area.

The "Minimum Slope of Land" and "Distance to Water" categories produced minor technical problems: the slope ranges varied to such an extent that it was necessary to collapse them to three categories to obtain any meaningful results. For compatibility with other variables, " Distance to Water" was ranked and clustered. From the sixteen possible variable attribute states (Table 4), three upland combinations and five floodplain combinations appeared significant. Within the floodplain soil class (Sheldon et al. 1980), relative elevation (Jenkins et al. 1975), and proximity to active river channel, former channels or oxbows, major tributaries, and minor tributaries were considered to be potentially significant. Within the upland soil class, proximity to floodplain, river channel, and major and minor tributaries were chosen as significant variables.

These variables were also chosen for their observed and suggested correlations with prehistoric site locations within other study areas where overall environments appear similar to the BWT project area (Sheldon et al. 1980, White 1981) and because they could be readily identified using available county soil and geologic maps, USGS quadrangles, and aerial photos.

The basic goal of stratification was to organize and define the potential sampling universe within, and in terms of, units which were identifiable, operationally manageable, and culturally and environmentally meaningful.

Five floodplain and three upland environmental attribute clusters were chosen from the logically possible clusters based on the observed success of each cluster to predict site locations for the recorded sites within the project area and other similar areas. These clusters appear to best represent the range of high probability locations which could be expected both within and between environmental zones. The potential sampling universe was limited to cultivated fields to maximize areal coverage and maintain comparability between sampled areas.

THE SAMPLING PROGRAM

A simple or strictly random survey sampling design was considered inappropriate for the purposes of this study since straight probability sampling would assume that all parts of the study area are equally likely to contain sites (Read 1975). This was an unacceptable assumption, given even the limited data available.

A diachronic model of site location had been formulated to suggest that the patterning of combinations of designated environmental variables may be valuable in predicting site location.

Several types of environmental data were sought for each prehistoric site located during the initial phase of this study. Distance of sites to water and stream rank were gathered by measurement and inspection of the appropriate United States Geological Survey (USGS) maps. The United States Soil Conservation Services Soil Survey provided data on the slope of the land. Precontact floral communities of site areas can be approximated from early survey records and from summary studies such as Harper's (1943) Forests of Alabama. Information on the topography and surface geomorphology of typical site areas was obtained by Dr. George Lamb of the University of South Alabama Department of Geology (Appendix B) and from state and county Geological Survey maps showing their distributions throughout the study area. In order not to waste this information, strict probability sampling was rejected in favor of a multistage stratified sampling design which allows for the use of nonquantifiable professional judgement and thereby optimizes existing knowledge as a variable (See Rivizzingo, Appendix A).

The theoretical total of 512 distinct environmental zones was reduced to a manageable number in several ways. It was apparent from the model and background research that some environmental clusters had more sites than other areas. Those with highly variable or uncertain number of sites were eliminated from consideration as they were designated. Still other combinations were found to be totally absent within the study area. Clusters only rarely present in some, but not all, environmental zones, because of their low comparative utility, were also eliminated for field test even though some of these were considered to be very high probability areas. Despite the elimination of a considerable number of clusters the total still remained unattainably high.

Within the constraints of a 40 day field season, given an average survey time of one-half day per unit, the maximum number of sample areas we could hope to examine was between 60 and 80. To maximize areal coverage and maintain comparability between sample areas, the survey focused as much as possible on surface inspection and was limited to areas of high surface visibility such as cultivated fields and clear cut areas. Systematic shovel testing was determined to be, for the purposes of this study, too costly in terms of time and effort expended to justify the expected quantity of data returned. This decision further trimmed the sample pool of clusters. Certain cluster types that did occur in all environmental zones were not always present in areas of high surface visibility. Consequently, these clusters were eliminated from consideration.

From the remaining list of clusters, a series of floodplain and upland types were selected for examination in the river and delta sections of the study area for the following reasons: (1) they were present in all, or most of, the environmental zones, (2) they were located in areas of high surface visibility, and (3) they provided the best cross section of high probability clusters, both in terms of their geographic position within a typical cross-valley profile and in terms of their expected high potential for different kinds of sites. Once the study area had been stratified and the clusters of environmental variables chosen for examination, it was necessary to choose a suitable sample area or unit and construct a sampling frame composed of such units.

The reliability of results obtained from statistical manipulation of sample survey data is dependent on a determination of whether a given site is or is not located within a designated environmental sample area or unit. The size of sample units, therefore, had to correspond to the size and shape of the environmental clusters under examination. If sample units were very large, it would be difficult to find internally homogeneous clusters of the desired composition. If units were too small it would be difficult to determine sample area boundaries in the field. Since smaller sample areas may be surveyed more quickly than larger areas, theoretically, a dispersed array of sample units capable of yielding more accurate population estimates could be investigated. The time expended in travel between sample areas, however, often completely outweighs this potential statistical advantage and even results in lower levels of survey coverage.

Sample unit size in the BWT design was determined by a conservative estimate of the average area which could be intensively surveyed by a three person field crew, walking 20 m apart over level dry open terrain, in half a day, allowing two hours per day for travel.

Blocks of 500 m by 500 m were eventually selected as sample units because they best fit the estimates mentioned, and, the UTM grid sytem could be easily adapted as a framework for this purpose.

Having stratified the study area, and having chosen the environmental clusters to be examined and determined the sample units and frame, the sampling design was scrutinized for potential biases which might skew the sample survey results.

Although distinct environmental zones had been distinguished within the project area, the boundaries between zones were often found to be indistinct, irregular, or gradational. As a result of suspected variability in site density within these environmentally uncontrolled ecotonal boundary areas, sample unit selection was limited to core areas within each environmental zone to maintain sample homogeneity.

The clustering of sample units was accomplished by creating a sample free 10 km buffer region between core areas of adjacent zones. The 10 km distance may approximate the effective catchment area of hunting and gathering peoples. Lee (1969) suggested that 10 km border zones should be sufficient to separate those populations associated with major zone boundary ecotones and those within the core environments. Although ecotones may be high probability site location areas, the central tendencies of occupations within the noted environmental zones must be more fully understood before the more complex boundary situations can be effectively explored.

Core areas within each environmental zone were gridded using the UTM 1000 m grid system marked on the USGS Quadrangle maps. The resulting one km square quadrats were quartered to obtain four 500 m by 500 m sampling units in each sampling quadrat. Each 500 m square block was small enough to be environmentally homogenous, within the grain size controls of this study, and yet not so small as to require frequent moves between units within a single day's work.

A graphic representation of keying such sample block characteristics for floodplain and uplands in each zone is presented Table 6. In Table 6 relative topography distinguishes active floodplain locations from other locations in the project area. Using these distinctions, elevated terraces which were not a part of the active floodplain were considered uplands. In general the floodplain-upland edge lay below 10 ft AMSL in the Delta Marsh and Delta Swamp zones, between 20 ft AMSL and 40 ft AMSL in the Delta Meander zone, and between 40 ft and 90 ft AMSL in the river valley physiographic zones on a south-north rise. The relative topography for any specific site area was easily identifiable in the field investigation phases.

Group 1 soils are sandy level to gently sloping (less than 15 per cent) and are generally well-drained. Group 2 soils are poorly drained or excessively sloping soils with a high silt and/or clay content.

Basic hydrological features are the active river channel or oxbow lakes in the river valley and Delta Meander zone, primary distributary channels in the Delta Swamp and Delta Marsh zones, old channels and oxbow lakes in the Delta Swamp, and bays or basins in the Delta Swamp and Delta Marsh zones.

Ecotone locations consist of the nearest bluff or terrace edge for all upland sites, the shore of old river channels or oxbow lakes for floodplain sites in the river valley and Delta Meander zone, or the shore of bays and basins for floodplain sites in the Delta Swamp and Delta Marsh.

Table 6. BWT Site Area Environment Coding.

RELATIVE TOPOGRAPHY	X = Floodplain	0 = Upland
SOILS	X = Group 1 Soils	0 = Group 2 Soils
BASIC HYDROLOGICAL FEATURES	X = less than 500 m	0 = greater than 500 m
ECOTONE LOCATION	X = less than 500 m	0 = greater than 500 m
MAJOR TRIBUTARIES	X = less than 500 m	0 = greater than 500 m
MINOR TRIBUTARIES	X = less than 500 m	0 = greater than 500 m

Major tributaries in the river valley and Delta Meander zone are those flowing into the Tombigbee River, or the Mobile, Tensaw, or Alabama Rivers, which may have secondary tributaries of their own originating outside of the BWT floodplain with their own developed floodplains. Secondary distributary channels were considered major tributaries in the Delta Swamp and Delta Marsh physiographic zones.

Minor tributaries represent all other permanent sources of water within the project area, including tertiary distributary channels in the Delta Swamp and Delta Marsh.

All 500 m blocks within each environmental area which contained at least 50 percent visible ground surface were identified using USGS quadrangle maps, and sequentially, were assigned a number. All numbered blocks were then examined to determine their "signature' based on the five attributes for both floodplains and uplands listed in Table 4. Blocks conforming to one of the nine high probability site location environmental attribute clusters or siting types were thereby identified for each environmental zone.

Lists of all sample units for each of these sample quadrats were prioritized using numbers selected from a random number table. The nine 500 m square blocks randomly selected within each environmental zone were systematically surveyed. Sample units outlined on quadrangle maps and aerial photos were marked with the appropriate cluster type and priority numbers (Figure 4). Investigations were then organized to minimize travel time between highest priority sample units.

This sampling program was limited to the extent that the designated environmental data did not include outcrops of Tallahatta quartzite, rockshelters, gravel shoals, saline tributaries, or clay sources. All of these were probably significant to the aboriginal and historic occupants of the study area.

The major boundary condition in the designated environmental data, even after our deliberate avoidance of ecotone areas, is due to the statistically necessary assumption that the designated environmental sets are homogeneous within each region of the study area. That is, we assume that, as an example, within the delta all floodplain areas with Group 1 soils less than 500 m from a minor distributary channel, more than 500 m from a major distributary channel, more than 500 m from an ecotone location, and less than 500 m from a bay or basin will offer the same range of available resources. In fact there are a limited number of anomalous areas for each of the designated environmental clusters. Anomalous environmental areas investigated during this reconnaissance have shown a very high frequency of archaeological sites.

As indicated in Table 5, the eight major environmental zones do not comprise equal areas. It was decided to expend equal effort, in terms of survey time, within each zone within this phase of field survey. One-half day per designated environmental type was allowed for each zone, or four and one-half days per zone. The remaining one-half day per week, not devoted to examination of designated environmental sample blocks, was to be used to examine known critical historic or prehistoric sites within

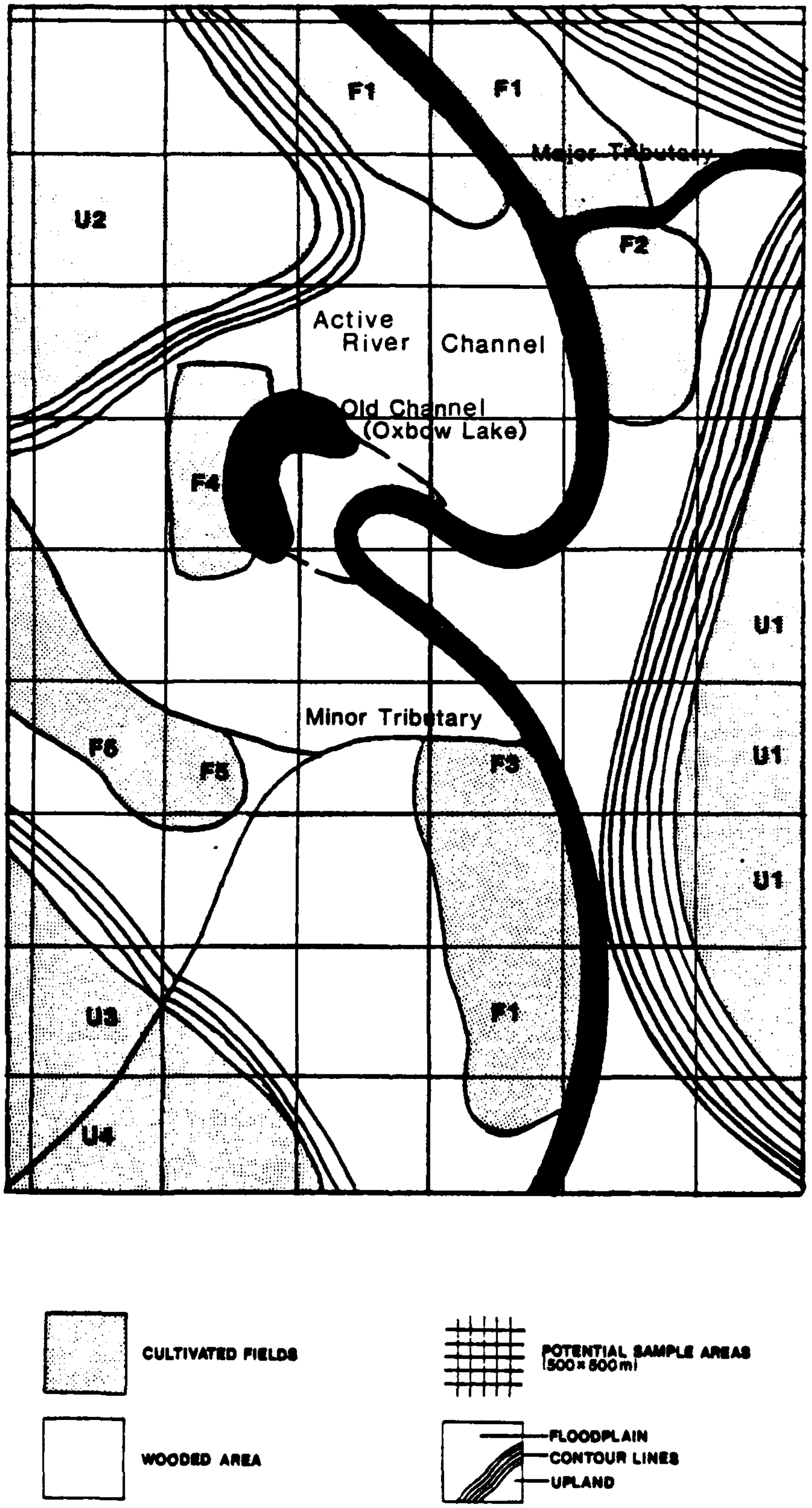


Figure 4. Selected Sampling Areas in the Riverine Region of the BWT Project Area.

KEY TO FIGURE 4

SELECTED SAMPLING AREAS IN THE RIVERINE REGION OF THE BWT PROJECT AREA

Uplands

U1 = 0X0X00	Upland, Group 1 soils, greater than 500 m from active river channel, less than 500 m from the bluff edge, greater than 500 m from any major tributary, and greater than 500 m from any minor tributary.
U2 = 0X0000	Upland Group 1 soils, greater than 500 m from active river channel, greater than 500 m from the bluff edge, greater than 500 m from any major tributary, greater than 500 m from any minor tributary.
U3 = 000X0X	Upland, Group 2 soils, greater than 500 m from active river channel, less than 500 m from the bluff edge, greater than 500 m from any major tributary, less than 500 m from any minor tributary.
U4 = 00000X	Upland, Group 2 soils, greater than 500 m from active river channel, greater than 500 m from the bluff edge, greater than 500 m from any major tributary, and less than 500 m from any minor tributary.

Floodplain

F1 = XXX000	Floodplain, Group 1 soils, less than 500 m from active river channel, greater than 500 m from old channel, greater than 500 m from any major tributary, greater than 500 m from any minor tributary.
F2 = XXX0X0	Floodplain, Group 1 soils, less than 500 m from active river channel, greater than 500 m from old channel, less than 500 m from any major tributary, greater than 500 m from any minor tributary.
F3 = XXX00X	Floodplain, Group 1 soils, less than 500 m from active river channel, greater than 500 m from old channel, greater than 500 m from any minor tributary.
F4 = XX0X00	Floodplain, Group 1 soils, greater than 500 m from active river channel, less than 500 m from old channel, less than 500 m from any major tributary, less than 500 m from any minor tributary.
F5 = XXX000	Floodplain, Group 1 soils, greater than 500 m from active river channel, greater than 500 m from old channel, greater than 500 m from any major tributary, greater than 500 m from any minor tributary.

Group 1 Soils	Sandy level to gently sloping and well drained.
Group 2 Soils	Loamy or clay, excessively sloping and/or poorly drained.

that zone. If no suitable sample blocks existed within a zone of the requisite designated environmental types, time allotted to survey such blocks was not to be used during the initial sampling phase but was to be reallocated for use in later phases of the study. In practice, the effort expended to gain access to or to find other sample blocks of the appropriate type consumed this time and often more.

A controlled surface collection of all surface exposed areas was conducted in each selected sample block employing a walkover of the exposed ground surfaces at 15 m to 20 m intervals to visually determine the existence of any site. This inspection gave a rough estimate of site size. Surface inspection provided the basis for placing any necessary subsurface sampling units and for determining whether or not further interval stratification by cultural or chronological zones was necessary.

Transects were aligned with crop rows in cultivated fields and were generally parallel to contour lines in upland clear cut areas. For small sites restricted to a single landform, a total surface collection sample of less than 20 percent of the site area was implemented based on field judgement. For larger sites, where there was variability within the site, the controlled surface collections were stratified on the basis of topography so that potential internal variability in the surface distribution of the artifacts would not be masked.

In any sampling block where the appropriate environmental areas were not exposed, or had been subsequently covered with vegetation, the area was to be stratified by the criteria described earlier and investigated by the excavation of small units, ranging from 25 cm by 25 cm to 100 cm by 75 cm, excavated in 10 cm levels. These units were to be checked for topsoil or plowzone soils or other evidence of disturbance. The presence of cultural materials in these units was to be observed also. If a cultural horizon was encountered at these sites, the deposit was investigated by larger excavation units. All obvious disturbances including roads, bulldozed areas, ruts and erosional gullies, and areas of urban, suburban, or industrial development in these areas were to be investigated.

Once the presence of significant artifacts had been determined, a further systematic subsurface inspection was conducted to assess the significance of any undisturbed cultural remains. To locate diagnostic cultural material and better define site limits further surface inspection was implemented. Any artifact concentrations were collected, bagged separately, and noted on the site maps and field notes. (Example: Artifact Concentration A at Site 1Mo104). When sites were discovered during field investigation they were assigned site numbers provided by the Office of Archaeological Research (OAR) at Mound State Monument. Sites were also photographed and site locations were recorded on USGS quadrangle maps.

To evaluate the significance of any historic archaeological component, located by documentation or by previously described field survey, we also inspected the site surface for obvious cultural features such as standing structures, wells, root cellars, chimney or brick piles, or concentrations of historic artifacts. A temporal assessment of partial structures and other historic surface or subsurface deposits was accomplished by consulting appropriate documentation and by historical architecture references when appropriate. The temporal assignment of most historic sites involved some analysis and description of associated temporally diagnostic artifacts.

For all historical and prehistoric archaeological sites maps showing the location of all structures, features, and surface scatters were made. In addition, maps were made showing the location of all surface collections and test excavations.

The BWT sampling design was structured to cope the logistic constrains of a sample size limited to 1 percent or less of a large culturally and environmentally diverse area and by the scope-of-work emphasis on surface inspection where possible.

This archaeological field survey was designed so that, whether or not any archaeological materials were encountered, stratigraphic, spatial, and statistical details of survey and sampling units and tests would be recorded to the same levels of detail. Thus considerable negative data, not merely missing information, was generated for structuring subsequent statistical investigations within the BWT project area.

The basic focus of archaeological inquiry and examination is the potentially significant site, defined as a spatially limited cluster of artifacts and/or features whose original form and distribution were the product of some past cultural behavior. The stratified sampling units of this study consisted of spatial units or bounded geographic areas which were both quantitatively and qualitatively different from our target population--archaeological sites of potential significance.

This stratified sampling program was, however, an ideal strategy where archaeological sites were being sought. A totally random sampling strategy would not provide the dispersion of the sampling units necessary to estimate the distribution of archaeological sites within the ecological zones, or in strata between sampling units, except when these units or zones were closely spaced. This environmentally stratified sampling design, which assigned variable distances between sampling units permitted greater confidence of estimates for the distribution of prehistoric archaeological sites.

FIELD INVESTIGATIONS

Field investigations were conducted by a three person field crew over a 48 day period beginning in the Black Belt zone near Demopolis on May 13 and concluding in the Delta Marsh zone in Mobile on July 24, 1981.

A total of 60 sample units was investigated resulting in the discovery of 85 new archaeological sites and the reexamination of 11 additional previously known sites. Seventeen additional new sites were recorded in areas immediately adjacent to sample areas, and 32 other archaeological sites were investigated.

Basic field procedures consisted of: (1) organization of prioritized sample units and development of a weekly survey plan, (2) location of sample units in the field, (3) obtaining permission from land owners and tenants to survey, (4) confirmation of desired attribute clusters and acceptable degree of surface visibility, and (5) a surface reconnaissance consisting of a complete pedestrian walkover along 50 ft interval transects.

The sampling design allotted one week or five field days for the investigation of nine different sample units within each environmental zone. This schedule allowed one-half day per week for investigation of sites outside of the selected sample quadrats. This uncommitted one-half day per week was essentially an attempt to reserve time for potential delays which might be caused by weather, equipment breakdown, or another time consuming problems. This field schedule proved to be somewhat optimistic. The general survey technique and sample unit size were found to be effective. Generally, it was physically possible and productive to survey two 500 m by 500 m sample quadrats per day. However, a number of factors combined to slow the completion of field work and disrupt the original schedule.

Permission to conduct survey operations on private land was occasionally far more difficult and time consuming to obtain than had been anticipated and was frequently made necessary by locked gates and posted property. The problem was generally compounded by complex lease agreements whereby major land owners have leased their fields to some individual, the rights to cut timber to others, and the hunting rights to still other individuals or groups of individuals. Thus, often when the land owner could be identified, located, and contacted, access problems could still not be resolved until a number of different individuals were contacted. In cases where it was not possible to gain permission to survey the highest priority sample unit for any given cluster type, the next highest priority unit was investigated.

In most cases, the managers for major land holding companies were cooperative and would grant permits for investigation on company lands, but often this required long drives to the company offices and longer waiting periods for the manager to approve our request. After obtaining permits for survey, other less easy to locate and sometimes less cooperative woodlands employees were still needed to lock and unlock gates.

In some cases landowners and farmers would call our attention to archaeological sites outside of our selected survey quadrats or would present artifact collections for us to examine. At times sites outside of formal sample areas were visited and collections were viewed to maintain good local relations. In the process, much valuable site data was collected and unbudgeted time was expended.

The goals of this reconnaissance study were to provide first approximation models for site location and density without conducting a 100 percent nonexclusive survey. King (1978) had suggested that a rough idea of site densities can probably be obtained from such a small sample if the procedures are followed consistently. Yet even this occasionally proved beyond our ability.

As detailed in earlier sections, sample quadrats were chosen for the presence of clusters of environmental characteristics and surface visibility. Occasionally, upon arrival at a sample area, what had appeared on the quadrangle maps and aerial photographs as a cultivated field would be found to have unacceptably low surface visibility. Some fields had returned to pine plantations. Others had reverted to pasture or were simply overgrown. Still others were overgrown with crops. Early in the survey, pastures and hay fields were often mistaken for cultivated fields on the black and white aerial photographs. This problem was later corrected by checking sample areas against color infrared transparencies.

In some instances, the total pool of prioritized sample units of a given cluster type were rejected, either for access or visibility reasons or because they failed, on surface inspection, to conform to the desired environmental cluster. In these cases, that particular cluster type was eliminated from consideration within that zone. This resulted in the investigation of 12 fewer sample areas than had been projected. Although these sample units were not surveyed, often the time allotted to survey them, and more, was expended simply in attempting to do so.

In the delta section of the project area, changes in the sampling strategy were adapted to address problems of surface visibility. Sample quadrats were replaced by linear shoreline sample units which allowed for surface inspection of the erosional surfaces along the distributary channels, bayous, and bays of the delta. Somewhat different sampling criteria were used in this area and to insure more representative survey coverage of potentially significant environments. Table 6 lists the sample unit types examined in the delta portion of the study area. As in the river section, sample areas were selected from the pool of environmentally appropriate areas for each type, using a random number table. Shorelines in sample areas were inspected by boat and on foot. Within each sample unit all of the exposed surfaces were examined. Shovel tests were excavated where possible to determine the extent of sites away from the shoreline and to confirm the presence of undisturbed cultural deposits. However, systematic subsurface testing for the discovery and or further investigation of buried sites was beyond the scope of this project.

In addition to our inspection of formal sample units, certain previously known sites were selected for reexamination. Our goals were first, to obtain controlled comparative collections and second, to attempt to resolve problems or uncertainties caused by missing or conflicting published data concerning site location, content, and cultural affinity.

As noted earlier, a select number of sites were investigated at the request or insistence of friendly land owners whom we could ill afford to alienate. Other sites were recorded outside formal sample areas as a result of fortuitous observation during our travels to, from, and between the statistically chosen formal sample areas. Where and when time permitted, these sites were investigated and recorded, usually upon completion of the day's statistical sample quota. More often than not, survey priorities precluded formal recording of those sites casually observed outside of sample areas or brought to our attention by informants.

In summary, Phase II archaeological field investigations were completed between May 13 and July 24, 1981. A total of 48 days was required for the investigation of 60 selected sample areas. A total of 145 archaeological sites was investigated, an average of three per day.

Although field investigations were completed behind schedule, this should not be attributed to either poor planning or to a faulty research design. Rather it was the result of overly optimistic goals--goals which were pursued in a genuine attempt to do justice to a demanding scope-of-work and an equally demanding study area.

FIELD RESULTS

The assignment of archaeological site components to the appropriate cultural period was accomplished through a preliminary analysis of the recovered materials.

Although the preceramic period (and many aspects of the ceramic periods as well) are interpretable only through an analysis of lithic artifacts recovered, the reconnaissance level of this study precluded detailed lithic analysis. Since lithic few artifacts were recovered their analysis is summarized in this section.

All lithic materials from the BWT sample survey and the complementary sample were studied by Janet Clute. These were first sorted into rough categories of: (1) projectile points, (2) modified lithics or tools, (3) unmodified lithics, (4) pecked, ground, or polished stone, and (5) unmodified rocks. All material was then further subdivided according to lithology.

Projectile points were described, using the terminology and types explained in Cambron and Hulse (1964). Some projectile points appeared to be similar to, but did not fall strictly within the limits set for, the Cambron and Hulse types. In these instances the projectile point was noted as being "similar to" the type in question.

Modified lithics were also described on the basis of the Cambron and Hulse (1967) descriptive terminology. Whenever the utilization of the modified lithics seemed apparent this fact was noted as part of the description. In many cases, however, the utilization could not be clearly determined and then only the basic shape and form of the object was included in the description.

The pecked, ground, or polished stones were similarly described on the basis of their basic shape and form, and additionally, whenever possible, on the basis of utilization.

The unmodified lithics were handled using two different methods. For Sumter, Marengo, and Choctaw Counties, unmodified lithics were divided into (1) cores--cobbles or pebbles that show evidence that flakes have been removed; (2) primary decortication flakes--flakes that exhibit major portions of cortex on more than one surface; (3) secondary decortication flakes--flakes that exhibit portions of cortex on one or two surfaces; (4)

secondary flakes--flakes exhibiting no cortex; (5) small flakes--flakes having greatest diameter less than 10 mm; (6) amorphous flakes--irregularly shaped flakes, usually small with little to no cortex: (7) thermal shatter--flakes or fragments that exhibit irregular curved fractures or "spalls" as a result of intense heat treatment; and (8) block shatter--blocky, irregular fragments. For each of these classes a count of individual lithic objects was made. Because of the time constraints imposed by the project, the unmodified lithics from Washington, Clarke, Mobile, and Baldwin Counties were classed in one undiagnostic category, counted, and weighed.

The unmodified rocks, those that exhibited no evidence of human alteration, were also listed according to two methods. For Sumter, Marengo, and Choctaw Counties only a count by rock type was recorded. Both count and weight were recorded for the unmodified rocks from Washington, Clarke, Mobile, and Baldwin Counties.

Although these procedures met the level of effort called for in the contract, they are archaeologically inadequate in significant ways. A sample of lithic materials, which we feel represent both chonologically normative "type clusters" and in some cases the variability within chronologically restricted types, is illustrated in Figures 5, 6, and 7.

The aboriginal ceramics, so important in understanding cultural changes and social locations through the last three thousand years, are described and interpreted by Ned J. Jenkins in the following chapter. All historic artifacts were analyzed by Jim Parker (Parker, Appendix E, this volume).

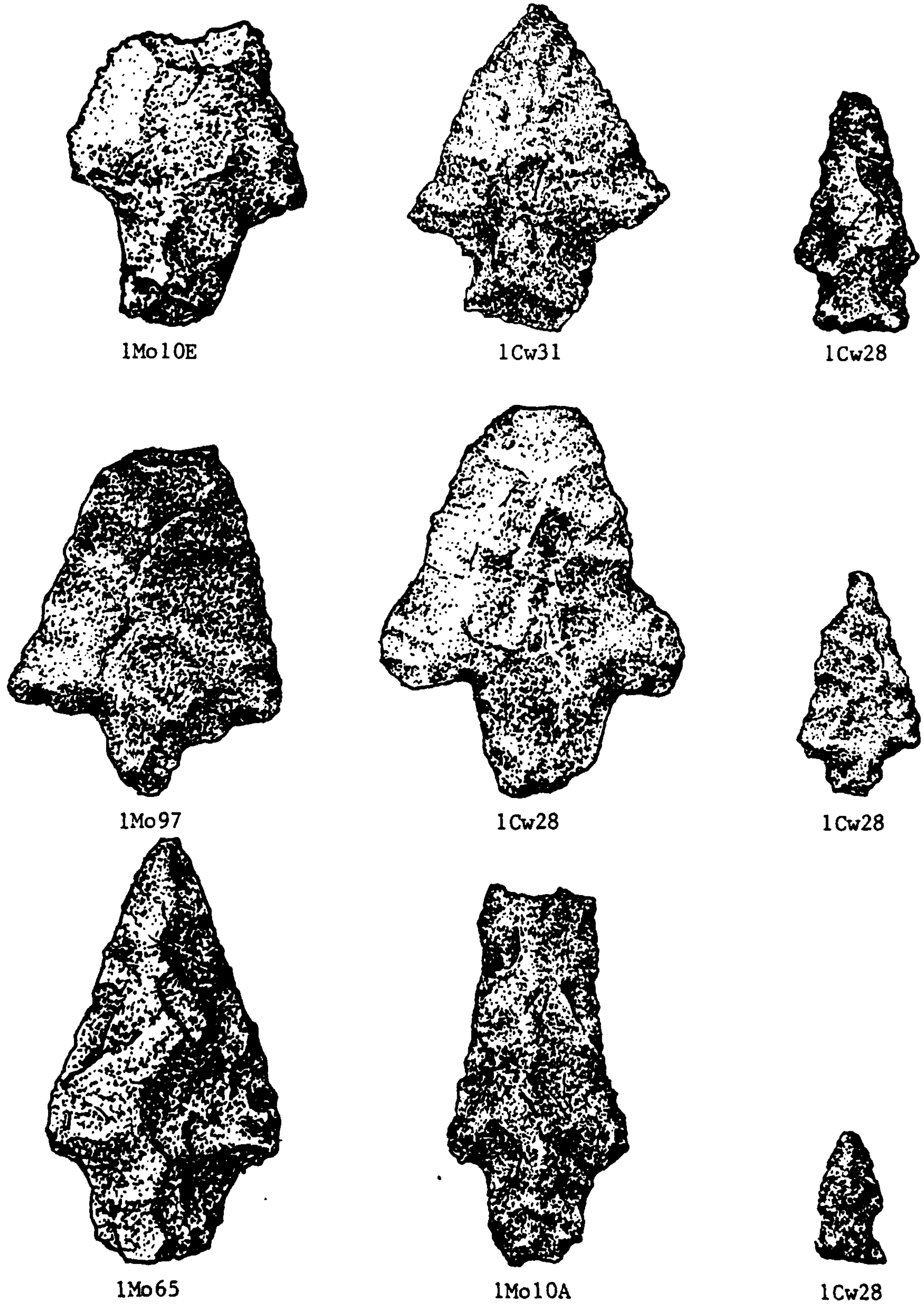
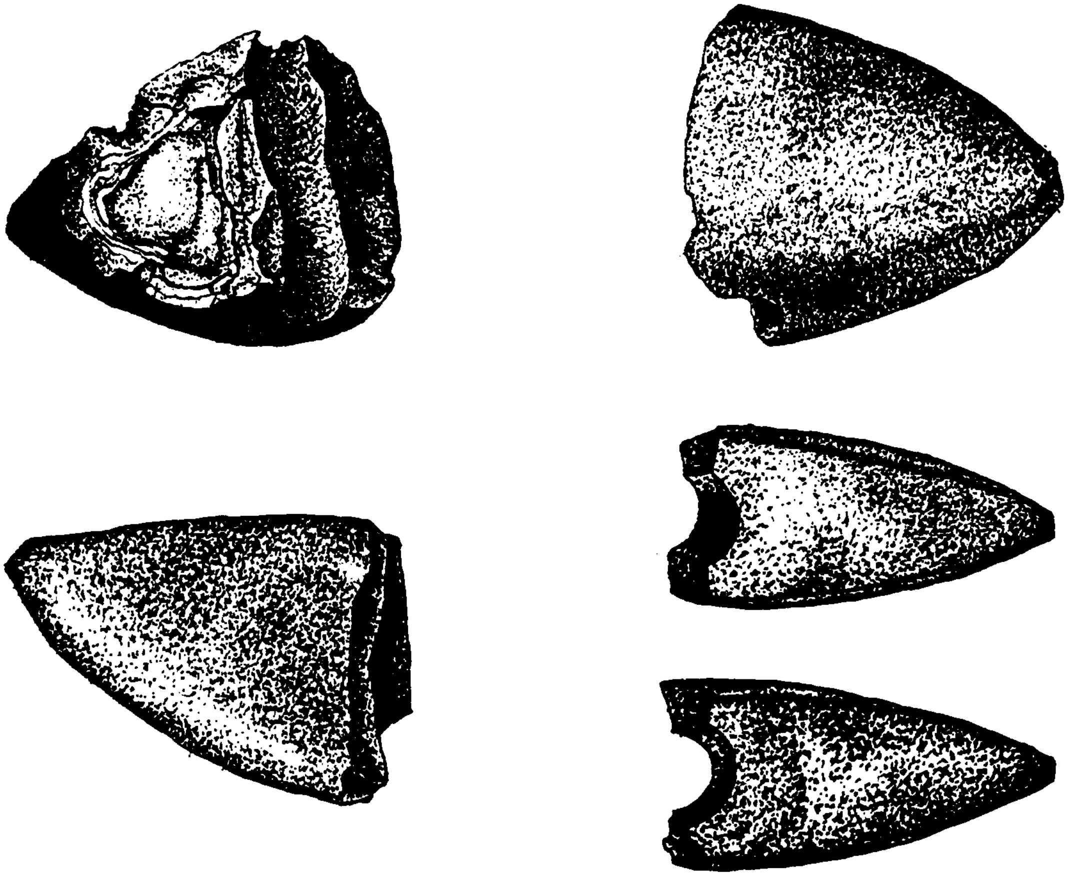


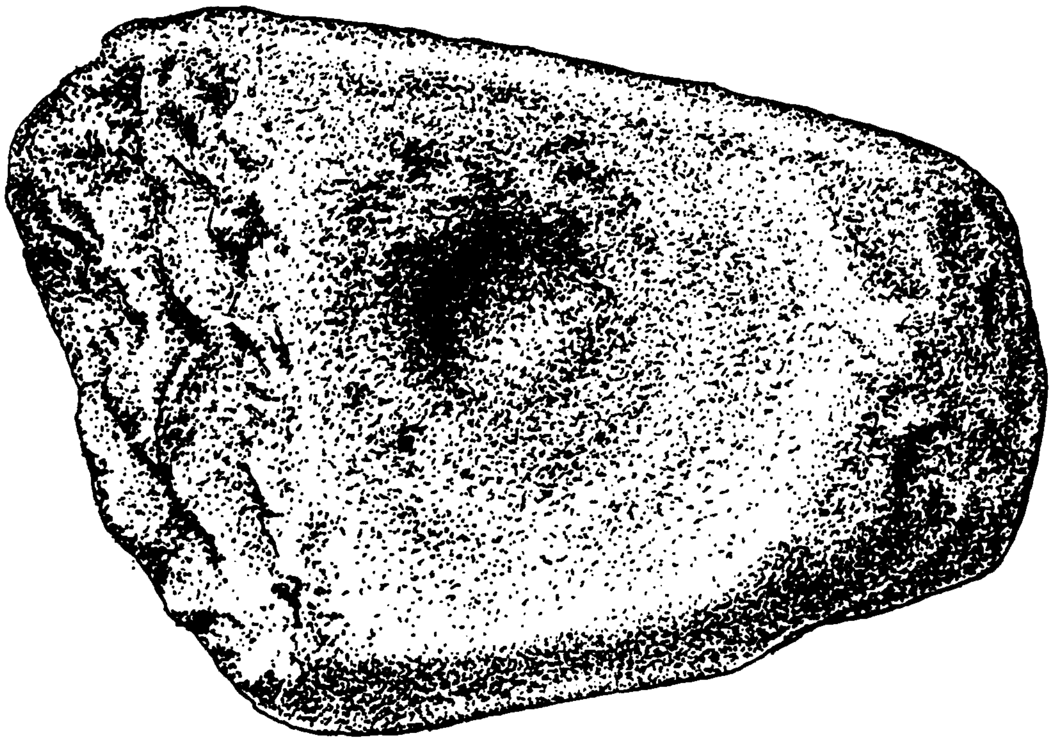
Figure 5. Archaic and Woodland Stemmed Tallahatta Quartzite Projectile Points from Various Sites within the BWT Project Area. All drawn life size by C. Maggiora.



Atlatl Weights, Ground and Polished Ferruginous Concretions

Heat Treated Red Jasper Stemmed Projectile Point/Knife

Figure 6. Archaic Artifacts from Site 1Mo100. All drawn life size by C. Maggiora.



1Mo103

Tallahatta Quartzite Bipitted Stone

1Su96

Heat Treated
Red Jasper

1Mo109
Yellow Jasper

1Mo10E
Ft. Payne Chert ?

Figure 7. Stone Tools from Marengo and Sumter Counties.
All drawn life size by C. Maggiora.

CHAPTER V

CERAMIC SUMMARY DESCRIPTIONS AND CHRONOLOGY

Ned J. Jenkins

CERAMIC SUMMARY DESCRIPTIONS

In this chapter, the analytical units recognized in the analysis of the BWT ceramics are summarized, and an interpretation of their chonological implications is presented. Units used in this study are basically those defined by Willey (1949), Wimberly (1960), Phillips (1970), Steponaitis (1980b), and Jenkins (1981) with a few modifications. The BWT ceramics were further analyzed by physiographic zones and the traditions represented within these zones are discussed in the chronology section of this chapter. The ceramic counts by physiographic zones are summarized in Table 7 and presented in greater detail in Tables 9, 10, 11, 13, 14, 15, 16, and 18 in the chronology section of this chapter.

Shortly after this analysis was completed, Fuller and Stowe (1982) reassessed the Pensacola ceramics of the Mobile Delta and Bay regions utilizing type-variety nomenclature. Unfortunately the analysis of Pensacola ceramics conducted for the BWT report had been completed prior to Fuller and Stowe's draft presenting the Pensacola ceramic typology. Consequently that typology was not used in this study and the proposed taxonomic scheme was not tested by the BWT investigations.

Shell Tempered Ceramics

Shell tempered ceramics in the study area were comprised primarily of the Moundville and Pensacola series. The Alabama River series and historic types such as Chickachae Combed and Mission Red Filmed occurred as minorities. The Moundville series ceramics were concentrated primarily in the Black Warrior and central Tombigbee River Valley, north of Demopolis, Alabama during the Mississippian stage, ca. A.D. 1000-A.D.1500. The northern end of the BWT study area, just south of Demopolis, overlaps with the southern limit of the Moundville ceramic distribution. Shell tempered ceramics were generally sparse along the lower Tombigbee River to the southern edge of the Tallahatta Hills physiographic zone (Table 7). The first major component of the Pensacola series was located within the Tallahatta Hills zone at the Peaveys Landing Mound, Site 1Ck15 (Moore 1905a:262). Pensacola components and ceramics increased substantially south of the Tallahatta Hills (Table 7).

The Moundville and Pensacola ceramic series share many traits and at least two decorated types in common. Moundville Incised is the most numerous decorated type throughout the Moundville series. Moundville

Table 7. Total Ceramics by Physiographic Zones.

	Black Belt	Flatwoods	Southern Red Hills	Tallahatta Hills	Rolling Piney Woods	Delta Meander	Delta Swamp	Delta Marsh	TOTAL
Shell Tempered									
Plain (Coarse)	2	3	7	73	365	108	251	804	1,613
Plain (Fine)	-	-	6	24	29	31	50	103	243
Alabama River Applique	-	-	1	-	-	-	-	-	1
Chickachae Combed	-	-	-	-	-	-	1	-	1
Misson Red Filmed	-	-	-	-	-	-	6	-	6
Moundville Incised (Plain Arch)	-	-	-	-	-	1	1	-	2
Moundville Incised (Punctated Arch)	-	-	-	3	11	2	-	43	59
Moundville Incised (Arch with Rays)	-	-	-	-	8	-	-	-	8
Moundville Engraved	-	-	-	1	11	-	1	3	16
Pensacola Incised	-	-	-	16	18	7	28	47	116
Pensacola Red	-	-	-	-	-	4	-	-	4
D'Olive Plain	-	-	-	1	-	5	-	-	6
D'Olive Incised	-	-	-	-	5	-	1	6	12
Mobile Cane Impressed	-	-	-	3	12	-	-	2	17
Langston Fabric Marked	-	-	-	-	4	-	-	-	4
Unclassified Noded	-	-	-	-	-	-	-	1	1
Residual Incised	-	-	1	1	3	-	-	5	10
Residual Punctated	-	-	-	-	-	2	-	-	2
Discoidal	-	-	-	-	2	1	-	1	4
Eroded	2	-	8	1	-	12	20	97	140
Subtotal	4	3	23	123	468	173	359	1,112	2,265
Clay Tempered									
Plain	-	24	12	6	20	43	188	150	443
Jefferson Ware (Type A)	-	-	-	-	-	-	3	-	3
Mulberry Creek Cord Marked	-	10	1	1	-	5	25	47	89
Ponchartrain Check Stamped	-	-	-	-	-	-	5	2	7
Harrison Bayou Incised	-	-	-	-	-	1	-	-	1
Mazique Incised	-	-	-	-	-	-	1	-	1
Evansville Punctated	-	-	-	-	-	1	-	-	1
Gainesville Complicated Stamped	-	-	-	-	-	-	-	1	1
Churupa Punctated	-	-	-	-	-	-	1	-	1
Marksville Incised	-	1	1	-	3	-	-	-	5
Marksville Stamped *var. Crooks*	-	-	-	1	-	-	-	-	1
Marksville Stamped *var. Mabin*	-	-	-	-	2	-	-	-	2
Marksville Stamped	-	-	-	-	-	1	2	-	3
Indian Bay Stamped	-	-	-	-	-	1	-	-	1
Unclassified Dentate Stamped	-	-	-	-	2	-	1	-	3

Table 7. Total Ceramics by Physiographic Zones (Continued).

	Black Belt	Flatwoods	Southern Red Hills	Tallahatta Hills	Rolling Piney Woods	Delta Meander	Delta Swamp	Delta Marsh	TOTAL
Clay Tempered (Continued)									
Unclassified Rectilinear Incised	-	-	-	-	-	1	-	-	1
Unclassified Interior Engraved	-	-	-	-	-	-	-	1	1
Unclassified Clay Grit Tempered Plain	-	-	-	-	2	-	-	-	2
Unclassified Brushed	-	-	1	-	-	-	-	2	3
Residual Incised	-	-	-	-	-	2	1	-	3
Eroded	-	4	-	1	1	3	4	1	14
Subtotal	0	39	15	9	30	58	231	204	586
Fine Sand Tempered									
Plain	11	44	380	359	307	438	337	222	2,098
Check Stamped	-	-	69	151	2	2	28	6	258
McLeod Simple Stamped	-	-	3	218	2	4	-	-	227
McLeod Linear Check Stamped	-	-	2	54	-	-	-	-	56
Carrabelle Incised	-	-	-	1	-	14	1	5	21
Carrabelle Punctated	-	-	-	-	-	3	-	1	4
Deas Pinched	-	-	-	4	-	-	-	-	4
Indian Pass Incised	-	-	-	-	-	2	-	-	2
Keith Incised	-	-	-	1	-	2	-	-	3
Mound Field Net Marked	-	-	1	4	-	1	-	-	6
Tucker Ridge Pinched	-	-	-	4	-	4	-	-	8
Weeden Island Incised	-	-	-	-	-	2	-	-	2
Weeden Island Rim	-	-	3	1	-	4	4	-	12
Furrs Cord Marked	118	46	629	6	2	9	8	9	827
Saltillo Fabric Marked var. China Bluff	-	1	1	-	-	3	3	-	8
Saltillo Fabric Marked var. Tombigbee	-	22	29	1	2	6	-	-	60
Alligator Bayou Stamped	-	1	-	-	-	1	1	-	3
Basin Bayou Incised	-	-	1	-	1	5	3	-	10
Porter Zone Incised	-	-	-	-	2	1	-	-	3
Santa Rosa Punctated	-	-	-	-	2	-	-	-	2
Santa Rosa Stamped	-	-	2	1	2	2	-	-	7
Alexander Incised	-	-	-	-	-	-	-	1	1
Alexander Pinched	-	-	3	-	1	-	-	-	4
O'Neal Plain	-	-	-	-	-	-	1	-	1
Bayou La Batre Scallop Impressed	-	-	-	1	-	2	-	-	3
Bayou La Batre Stamped	-	-	-	-	95	26	8	-	129
Bayou La Batre Cord Wrapped Dowel Impressed	-	-	-	-	-	2	-	-	2
Unclassified Interior Red Filmed	-	-	-	-	-	1	-	-	1

Table 7. Total Ceramics by Physiographic Zones (Continued).

	Black Belt	Flatwoods	Southern Red Hills	Tallahatta Hills	Rolling Piney Woods	Delta Meander	Delta Swamp	Delta Marsh	TOTAL
Fine Sand Tempered (Continued)									
Unclassified Punctated	-	-	1	-	-	-	-	-	1
Unclassified Rectilinear Incised	-	-	-	-	3	-	-	-	3
Residual Roughened	-	-	1	-	-	-	-	-	1
Residual Incised	-	-	-	1	-	4	-	8	13
Residual Punctated	-	-	-	-	-	2	1	-	3
Reel Fragment	-	-	-	-	-	1	-	-	1
Ocmulgee Fields Incised	-	-	-	-	-	-	1	-	1
Eroded	-	17	57	122	17	54	13	19	299
Subtotal	129	131	1,181	930	438	595	409	271	4,084
Coarse Sand/Grit									
Plain	-	-	-	-	138	16	121	88	363
Mobile Cord Marked	-	-	-	-	-	52	212	104	368
Bayou La Batre Stamped	-	-	-	5	96	1	9	3	114
Santa Rosa Stamped	-	-	-	1	-	-	-	-	1
Bayou La Batre Cord Wrapped Dowel Impressed	-	-	-	-	1	-	-	-	1
Unclassified Check Stamped	-	-	-	-	-	1	25	9	35
Unclassified Simple Stamped	-	-	-	-	-	2	-	-	2
Unclassified Incised Over Cord Marked	-	-	-	-	-	3	-	-	3
Unclassified Pinched	-	-	-	-	1	-	-	-	1
Unclassified Fingernail Punctated	-	-	-	-	-	1	-	-	1
Unclassified Brushed	-	-	-	-	-	-	1	-	1
Unclassified Zoned Dentate Stamped	-	-	-	-	2	-	-	-	2
Residual Incised	-	-	-	-	-	1	1	-	2
Eroded	-	-	-	-	1	21	11	-	33
Subtotal	0	0	0	6	239	98	380	204	927
Limestone Tempered									
Mulberry Creek Plain	-	-	1	2	-	-	-	-	3
Wright Check Stamped	-	-	4	-	-	-	-	-	4
Flint River Brushed	-	-	-	1	-	-	-	-	1
Subtotal	0	0	5	3	0	0	0	0	8
Fiber Tempered									
Plain	-	1	5	-	-	3	2	10	21
Wheeler Dentate Stamped	-	-	1	-	-	-	-	-	1
Eroded	-	1	3	-	-	-	-	-	4
Subtotal	0	2	9	0	0	3	2	10	26
TOTAL	133	175	1,233	1,071	1,175	927	1,381	1,801	7,896

Incised var. Moundville occurred during the Moundville I phase and had virtually disappeared by the Moundville III phase. Vars. Carollton and Snows Bend both first appeared as minorities during the Moundville I phase. Var. Carollton became the dominant variety during the Moundville II phase and continued through the early part of the protohistoric period. Var. Snows Bend was a minority throughout its existence in the Warrior and central Tombigbee Valleys. Morphological counterparts of all of these varieties have been found along the lower Tombigbee River and as far south as the Gulf Coast as a part of the Pensacola series. Local varieties have been named by Coblentz (1978) but no copies of this manuscript could be obtained at the time of this study.

The lower Tombigbee counterparts of the Moundville Incised varieties may have occurred in different percentages through time than in the Moundville area. Var. Moundville (arch with rays) may be early as at Moundville, however, it quickly disappeared. Var. Carollton (plain arch) was a distinct minority along the lower Tombigbee River and may not have been made locally. Var. Snows Bend (arch with punctations) was the dominant arch form throughout the Mississippian sequence of the lower Tombigbee, but this variety was only a minority along the Warrior and central Tombigbee Valleys. Another type shared by the Pensacola and Moundville series is Moundville Engraved. There are some regional stylistic differences within the Moundville Engraved type between Moundville and the lower Tombigbee, however.

The Moundville and Pensacola series also have two basic ware subgroups. A coarse shell tempered, unburnished ware which has been fired in an oxidizing atmosphere is the largest subgroup. This ware is usually plain or bears the Moundville Incised arch. The other less frequently occurring ware is tempered with fine shell, is burnished, and usually has been fired in a reducing environment. This ware has previously been referred to as black filmed (Wimberly 1960:185, McKenzie 1965:55, Heimlich 1952:28-32). Types made on this ware include Carthage Incised and its lower Tombigbee counterpart, Pensacola Incised. Moundville Engraved is also made on this ware. By the protohistoric period these ware distinctions began to break down and Moundville Engraved, Pensacola Incised, and Carthage Incised were generally made of a coarser paste.

No decorated types of the Moundville series were found during this study mainly because the northern end of this project area barely overlapped with the southern limit of the Moundville phase. Also, the pottery found on the small Mississippian components of the BWT project area was predominantly a plain coarse shell tempered ware, probably Mississippi Plain var. Warrior. In the Warrior and central Tombigbee Valleys, this coarse plain pottery accounted for approximately 90 percent of any ceramic complex at any time during the Mississippian stage (Jenkins 1981:31). The decorated minority types, therefore, usually do not appear in smaller collections.

Plain

No type names were assigned to plain shell tempered pottery with the exception of D'Olive Plain (see type discussion) because the spatial distribution of the Moundville and Pensacola series overlap along the lower Tombigbee River Valley and morphologically the plain pottery of both series is very similar. The plain pottery of both series is composed of two subgroups--a coarse shell, unburnished ware fired in an oxidizing environment and a fine burnished ware fired in a reducing atmosphere. The Moundville series coarse plain ware has been referred to as Mississippi Plain var. Warrior and the fine plain ware has been referred to as Bell Plain var. Hale (Steponaitis 1980b:435-436, 427-429; Jenkins 1981:71-72, 63-66). Alabama River Plain (Cottier 1970:20-21; Sheldon 1974:201-203) is also found along the central and lower Tombigbee River, the Warrior Valley and the Alabama River Valley. More recently however, this type has been subsumed under Mississippi Plain (Steponaitis 1980b:435; Jenkins 1981: 70-73). Both the coarse and fine shell tempered pottery of the Pensacola series has previously been lumped under the type Pensacola Plain (Willey 1949:463-464; Wimberly 1960:179-181; Jenkins 1976:225-226).

Three coarse shell tempered sherds from Site 1Mb213 deserve special mention. These sherds are probably from a very large hemispherical bowl. The sherds from this bowl are thicker (average 1.2 cm) than the majority of the Pensacola Plain in the region. Haphazard scraping marks are visable on the vessel exterior, but the scraping marks on the interior are clearly parallel with the coils. Neither surface is smoothed or burnished. Mississippian coarse ware is usually smoothed on both surfaces. Since the remainder of the pottery from this site is probably historic Apalachee, these shell tempered sherds may also be historic, thus accounting for their distinctive morphology.

Alabama River Applique (Cottier 1970:23-24, Sheldon 1974)

This is a minor but distinctive type of the Alabama River series. This decorative treatment is accomplished by adding strips of clay, nodes or nonfunctional handles to that portion of the vessel between the shoulder and the lip. This treatment appears to be a fairly good horizon style for the protohistoric period in portions of the southeastern United States from the upper portion of the lower Mississippi Valley in the west to the Alabama River Valley in the east. In the upper portion of the lower Mississippi Valley this applique treatment is diagnostic of the Campbell complex (Chapman and Anderson 1955:105) or the Armorel phase (Williams 1980:105-109). In the Tombigbee drainage it is characteristic of the Summerville IV phase (Mann 1981: 30-35) and the Sorrells phase (Marshall 1977:57). Farther east, in the Warrior drainage, it is characteristic of an unnamed protohistoric phase characterized by urn burial (Curren and Little 1981). Even farther east on the Alabama River, applique pottery is diagnostic of the Alabama River phase (Cottier 1970:23-24, Sheldon 1974). All of these complexes date ca. 1500-1650. Only one Alabama River Applique sherd was recovered by this study. It was found in the Southern Red Hills zone at Site 1Cw28 (Tables 7 and 11). An Alabama River Applique vessel has also been recovered from the Ginhouse Island site, 1Wn86, in the Delta Meander zone (David Chase, personal communication 1980).

Chickachae Combed (Ford 1936:42-43, Collins 1927, Penman 1976:133-141)

Originally this pottery was described as a sand tempered type. Recent work at Fort Tombecbe (Jim Parker, personal communication 1981) and along Chickasaw Bogue Creek (David Chase, personal communication 1981) have produced numerous examples of shell tempered Chickachae Combed. Combed actually appears to be a misnomer. A great deal of this pottery was engraved on a sun dried paste with a singular pointed tool. One Chickachae Combed sherd was recovered during this study at Site 1Mb213, in the Delta Swamp (Tables 7 and 16).

D'Olive Plain (Jenkins 1976:228)

This is one of the few plain wares to which a type name has been assigned. This type is identified by its distinctive shallow pan vessel shape. Most examples have an interior depth of less than 15 cm and a diameter that usually does not exceed 40 cm. Six D'Olive Plain sherds were recovered during this project; one in the Tallahatta Hills and five in the Delta Meander zone (Tables 7, 13, and 15).

D'Olive Incised (Jenkins 1976:229, 1981:70)

This type was originally defined by Jenkins (1976:229) as D'Olive Engraved, but later was changed to D'Olive Incised (Jenkins 1981:70). The decoration consists of one or two lines incised on the vessel interior parallel to the lip or of a continuous series of arches incised on the vessel interior just below the lip. Arches were occasionally filled with engraved fine-line cross hatching or multiple parallel lines. The incising was usually executed on a leather hard paste. Many examples are almost engraved, i.e., executed on sun dried paste. The vessel shape of this type is the same as D'Olive Plain, a very shallow pan. The shallow pan form of D'Olive Plain and D'Olive Incised was occasionally used as a burial urn cover (see Moore 1900a:293). Six D'Olive Incised sherds were found in the Delta Marsh zone, one in the Delta Swamp and five in the Rolling Piney Woods zone (Tables 7, 14, 16, and 18). D'Olive Plain and D'Olive Incised are both tempered with fine to medium shell and are usually very highly burnished. Both are minority types of the Pensacola series.

Langston Fabric Impressed (Heimlich 1952:26, Wimberly 1960:185-188)

This type is tempered with coarse shell and has a surface treatment accomplished by pressing a plaited fabric into the wet clay. The weave of the fabric is characteristically a simple twined, coarse, open weave (see Lewis and Kneberg 1946:Plate 49E). Mississippian pottery with this surface treatment is frequently referred to as salt pan ware because large amounts of this pottery have been found at salt deposits from south Alabama to Missouri (Wentowski 1970:54-56; Brown 1981b:8-14). The vessel form is a shallow pan. In the central Tombigbee Valley, where type-variety nomenclature has been employed, Langston Fabric Impressed was classed as a variety of Kimmswick Fabric Impressed, a type described by Walker and Adams (1946) for the upper part of the lower Mississippi Valley (Jenkins 1981:70). Four Langston Fabric Impressed sherds were found during this study, all in the Rolling Piney Woods zone (Tables 7 and 14). A number of salt deposits and at least three major prehistoric salt processing sites were identified within this zone. Test excavations at these sites indicated that Langston Fabric Impressed and Mobile Cane Impressed were the predominant Mississippian ceramics found on these sites (David Chase, personal communication 1970, Trickey 1958:Figure 3, Wimberly 1960:Table 6).

Mobile Cane Impressed (Trickey 1958:392)

This type is tempered with coarse shell and appears to have been molded in a split cane basket. The vessel form was described by Trickey (1958:392) as a wide mouthed cone. This was the most numerous type found at the salt processing sites in southern Clarke County. Of the 17 sherds recovered during this survey, 12 were found in the Rolling Piney Woods zone (Tables 7 and 14). Several salt deposits were found in this zone, on the eastern side of the Tombigbee River.

Mission Red Filmed (Smith 1948:316-317, Willey 1949:490)

This type was originally defined as a result of excavations at a Spanish mission site near Tallahassee, Florida. Abundant Indian pottery was dated by its direct association with historic Spanish artifacts to ca. 1650-1725, an interval referred to as the Leon-Jefferson period (Smith 1948:316-317). Mission Red Filmed pottery is tempered with very fine particles of shell and has a very hard and compact paste. Vessels which comprise this type are plate forms with interior surfaces decorated by red zoned areas and by cups and small globular jars with completely red filmed surfaces. In the BWT project area this type was found only at Site 1Mb16, a probable historic Mobilian village site on Seymours Bluff within the Delta Swamp (see Tables 7 and 16 and Lankford 1983:33).

Moundville Incised (DeJarnette and Wimberly 1941:83, Heimlich 1952:24-25, Wimberly 1960:184-185, Steponaitis 1980b:446-449, Jenkins 1981:75-78)

The characteristic design of the Moundville Incised sherds found in the BWT study area is a series of incised and/or punctated arches arranged end-to-end around the shoulder of the vessel. The incision is always executed in a wet paste. The paste is tempered exclusively with coarse shell and the vessel surface is smoothed but not burnished. Three basic arch decorative treatments, defined as varieties by Steponaitis (1980b: 446-449) for the Warrior Valley, also occur in the Pensacola series along the lower Tombigbee, Mobile Delta and coastal regions, but in different relative frequencies. In the Warrior Valley region var. Moundville was the predominant arch treatment during the Moundville I phase. This mode, which consists of arches incised end-to-end around the shoulder with rays incised perpendicular to the arches, is present but rare along the lower Tombigbee, Mobile Delta, and coastal regions.

Var. Carrollton occurred as a minority during the Moundville I phase, and became the major arch motif during the Moundville II phase in the Warrior valley. In the adjacent central Tombigbee Valley it continued through the early part of the protohistoric period (Mann 1981:76-77). This motif, which consists of single or multiple unembellished arches arranged end-to-end around the shoulder of the vessel, is present, but rare, along the lower Tombigbee, Mobile Delta and coastal regions. Two vessels, exhibiting a plain arch, were found at the Pine Log Creek site containing burials. A late Pensacola complex, as well as European artifacts dating to the sixteenth century were in probable association (N.R. Stowe, personal communication 1982).

Var. Snows Bend occurred as a minority during the Moundville I, II, and III phases in the Warrior valley and through the early protohistoric period in the adjacent central Tombigbee valley. This motif is an arch embellished with punctations or an arch composed entirely of punctations. This is by far the most numerous arch motif in the Pensacola series. Although all of the same arch modes found in the Moundville series are also found in the Pensacola series, the temporal duration of these modes in the Pensacola series is not entirely understood or documented.

A total of 69 Moundville Incised sherds were recovered during this study. Only two plain arch sherds were recovered, one from the Delta Swamp zone and one from the Delta Meander zone. Eight sherds with rays incised perpendicular to the arch were recovered, all from the Rolling Piney Woods zone. Forty-three punctated arch sherds were found in those zones south of the Tallahatta Hills, but none were recovered from the Delta Swamp (see Tables 7, 11, 13, 14, 15, 16, and 18).

Moundville Engraved (Willey 1949:446, Wimberly 1960:185, McKenzie 1965: 58-60, Steponaitis 1980b:437-445, Mann 1981:70-75, Jenkins 1981:72-75)

This type includes all sherds that are decorated with either post-fired or sun-dried engraving. The paste is always a very fine shell and the surface is always highly burnished. Twelve varieties of this type were recognized by Steponaitis (1980b:437-445) for the Warrior River Valley, based primarily on motif. Many of these varieties have also been recognized in the central Tombigbee Valley (Jenkins 1981:72-75; Mann 1981:70-75). A total of 16 Moundville Engraved sherds were recovered by this project. The largest sample was recovered from Site 1Ck210 in the Rolling Piney Woods zone. These sherds look most like var. Taylorville which dates to the Moundville II and early Moundville III phases, ca. A.D. 1200-A.D.1350 (Steponaitis 1980b:444). A radiocarbon sample from Site 1Ck20 yielded a date of A.D. 1295±65. One sherd from the Tallahatta Hills zone, one from the Delta Swamp zone, and three from the Delta Marsh zone were too small or eroded to be compared to Steponaitis' varieties or were unlike any of his varieties (See Tables 7, 13, 15, 18). One Moundville Engraved sherd was found by Wimberly (1960:185) at the James Village site. It is most like the Warrior Valley var. Havana which occured throughout the Moundville phase (Steponaitis 1980b:439).

Pensacola Incised (Willey 1949:464; Wimberly 1960:181-183)

This type is characterized by rectilinear or curvilinear incisions into a wet paste. The incisions in cross section are both broad and U shaped and narrow and V shaped. The paste is usually tempered with a fine to medium shell and the surfaces are usually well burnished. Frequent designs are lines incised parallel to the lip, as well as figures associated with the Southeastern Ceremonial Complex which became more stylized during the later part of the Pensacola continuum. A total of 116 Pensacola Incised sherds were recovered from an area extending from the southern edge of the Tallahatta Hills zone south to the Delta Marsh zone (See Tables 7, 13, 14, 15, 16, 18).

Pensacola Red (Willey 1949:466, Wimberly 1960:183)

This type is defined by its plain surface without decoration except for the addition of a hematite slip or film. The paste is a fine to medium shell. This type is undoubtedly related to the historic Mission Red Filmed type. Pensacola Red, however, dates to the Mississippian stage and the vessel shape is confined to simple hemispherical bowls. Pensacola Red also has slightly thicker vessel walls and the paste is less compact. Four Pensacola Red sherds were found in the Delta Meander zone (see Tables 7 and 15).

Unclassified Noded

One sherd from Site 1Ba194 in the Delta Marsh zone is tempered with coarse shell and has two nodes approximately 1 cm wide and 1 cm long (see Tables 7 and 18).

Clay Tempered Ceramics

Clay tempering has a very long history within the project area. By clay tempered, we mean crushed pot sherds (grog) and other prepared clay used as temper. Grog is often difficult to consistently sort from other prepared clay. Consequently both have been subsumed under clay tempered in this study. Clay tempered ceramics comprise a minority of the types of almost every ceramic complex thus far identified within the project area. A major exception is the central Tombigbee Valley Miller III complex which is primarily clay or grog tempered. The inspiration for clay tempering in the BWT area probably is derived from the lower Mississippi Valley where clay tempering occurs earliest and more frequently than in any other area. In north central Florida where clay tempering occurred as a minority ware during the Mississippian and historic stages. Most notably, some of the Spanish mission Indian pottery from that area was clay tempered (Smith 1948:317, Jones 1973:1-50). The relationship (if any) of this clay tempered pottery to that of the Mississippi Valley is not clear.

Plain

No type names were assigned to plain clay tempered pottery in this study since this pottery was morphologically very similar, from its initial appearance in the Mobile Bay area until the Late Woodland period. Traditional type names subsumed under our plain category include Tchefuncte Plain (Ford and Quimby 1945:52-54; Phillips, Ford and Griffin 1951:70; Phillips 1970:162-164) and Baytown Plain (Phillips, Ford and Griffin 1951:76; Phillips 1970:47-57; Jenkins 1981:87-90). A number of morphologically distinct spatial and temporal varieties of the above types have also been defined for the lower Mississippi Valley and central Tombigbee Valley. Clay tempered plain also occurred rarely in the Delta Swamp zone during the historic period. Rim sherds of the historic clay tempered ware can be readily sorted by their distinctive pinched and often folded rims.

A total of 424 plain clay tempered sherds were recovered during this study. The great majority were associated with Mulberry Creek Cord Marked and could be classified as Baytown Plain. Components containing clay tempered pottery were concentrated in the Delta Swamp and Delta Marsh zones. Clay tempered pottery also occurred in all of the other zones except the Black Prairie (see Tables 7, 10, 11, 13, 14, 15, 16, and 18).

Churupa Punctated (Ford 1936:220-222, Wimberly 1960:109, Phillips 1970: 67-69)

This clay tempered type is characterized by punctations zoned by broad incised lines which are U shaped in cross section. One sherd was found during this survey in the Delta Swamp zone at Site 1Mb211 (Tables 7 and 16). The spatial distribution of this type is concentrated in the lower Mississippi Valley where Phillips (1970:67) placed it within the Marksville period. Wimberly (1960:109) recovered this type in Porter-Marksville context along the lower Tombigbee and Gulf Coast regions. Both the Marksville and Porter-Marksville periods are regional equivalents of the Middle Woodland period, ca. A.D. 1-500. Morphologically, the sherd recovered during this study is most like var. Churupa of the lower Mississippi Valley (Phillips 1970:67-69). It has trianguloid punctations zoned by broad lines which are U shaped in cross section.

Evansville Punctated (Phillips, Ford and Griffin 1951:90; Phillips 1970: 78-81)

This type, as defined by Phillips (1970:78), is rather loosely defined and consists of unzoned fingernail decorated pottery on a clay tempered paste. One sherd was found by this survey in the Delta Meander zone at Site 1Wn73 (see Tables 7 and 15). The sherd has random cresent shaped punctations much like the lower Mississippi Valley var. Wilkinson (Phillips 1970:81). This does not, however, imply a relationship. A variety of Evansville Punctated with random punctations similar to this sherd, designated var. Tishabee, has been recognized in the central Tombigbee Valley Gainesville Lake area. This variety initially appeared during the early Miller III Vienna subphase, ca. A.D. 800, and continued through the terminal Miller III Gainesville subphase to approximately A.D. 1100 (Jenkins 1981:92-93).

Gainesville Complicated Stamped (Jenkins 1981:95-96, Brown 1981a:23-25)

This is a rare type in any region. It has a surface treatment produced by malleation with a carved implement. In the central Tombigbee Valley Gainesville Lake area only one variety, var. Gainesville, could be distinguished. This variety dated to approximately A.D. 450 to A.D. 600. It is clearly a copy of the sand tempered Swift Creek Complicated Stamped var. Wilkes Creek, which has the same bullseye motif. Both varieties were consistently recovered in late Miller II Turkey Paw subphase features.

Only one Gainesville Complicated Stamped sherd was recovered during this study from Site 1Mb206 in the Delta Marsh zone (see Tables 7 and 18). This sherd closely approaches the definition of var. Gainesville in that the motif seems to be concentric circles. A positive identification could not be made--because of breakage a single complete bullseye motif is not present.

Harrison Bayou Incised (Ford 1936:187-188, Phillips 1970:87-88)

This clay tempered type is defined by cross hatched incising around jar rims. It is very similar to Beldeau Incised but Beldeau Incised always has punctations centrally located within the diamonds formed by the cross hatching. Beldeau Incised reportedly dates to the Coles Creek period while Harrison Bayou Incised dates to the following Plaquemine period (Phillips 1970:57). One Harrison Bayou Incised sherd was found at Site 1Wn75 within the Delta Meander zone which appears to be from a small hemispherical bowl decorated with cross hatching. The sherd looks very much like a clay tempered copy of the Weeden Island series type, Keith Incised. This Harrison Bayou Incised sherd and the previously discussed Evansville Punctated sherd were probably associated with an early Miller III-like component at Site 1Wn75 (Tables 7 and 15).

Indian Bay Stamped (Phillips, Ford and Griffin 1951:88; Phillips 1970: 91-93)

This type is characterized by unzoned plain and dentate rocker stamping. It was most concentrated in the lower Mississippi Valley during the Middle Woodland Marksville period. One Indian Bay Stamped sherd was recovered in the Delta Meander zone at Site 1Wn76 (Table 7 and 15).

Jefferson Ware (Smith 1948:317-318, Willey 1949:492-493)

This analytical bundle was defined by Hale Smith (1948:317) to include ". . . a plain ware and pottery decorated with four distinct types of complicated stampings, with or without a punctated and folded rim." The paste may be tempered with grit or with crushed sherds. Three of the complicated stamped Type A sherds (Smith 1948:317-318) were recovered from Site 1Mb216 (Tables 7 and 15). This motif is a pattern of three to five concentric rectilinear stamped impressions. The plain pottery can be sorted only by its distinctive pinched rims. Four such rims were recovered from Site 1Mb216 and one rim with a wide fold was also recovered from Site 1Mb210. This type of pottery was probably made by groups of the Apalachee confederacy. It has been recovered from at least two Spanish missions near Tallahassee, Florida. This pottery has been dated to the north central Florida Leon-Jefferson period, ca. 1650-1725 (Smith 1948: 317-319, Jones 1973:22-25)).

Marksville Incised (Setzler 1933:1-21; Ford and Willey 1940:78-79; Ford and Quimby 1945:65-67; Phillips, Ford and Griffin 1951:94; Wimberly 1960: 114-116; Phillips 1970:110-119; Toth 1974:58-59)

This clay tempered type is defined primarily by broad incising which is U shaped in cross section and was executed on a leather hard paste. Several varieties have been established, based primarily on motif. This type is spatially concentrated in the lower Mississippi Valley, where it occurred during the Middle Woodland Marksville period (Phillips 1970:111; Toth 1979:188-199). Marksville Incised occurs as a minority in the lower Tombigbee, Mobile Bay, Delta, and Coastal regions during the Middle Woodland period where it has been found to comprise less than 2.50 percent of any complex (Wimberly 1960:114-116, Tables 1 and 5).

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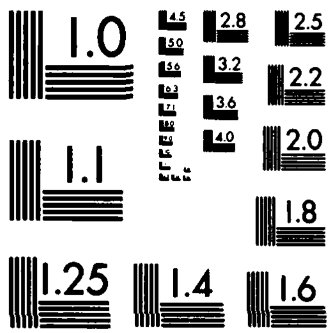

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A total of five Marksville Incised sherds were found during this study. None could be classified to variety level because of their eroded condition. Three sherds were found in the Rolling Piney Woods, one in the Southern Red Hills, and one in the Flatwoods (see Tables 7, 10, 11, and 14).

Marksville Stamped (Setzler 1933:1-21; Ford and Willey 1940:65-74; Ford and Quimby 1945:67; Phillips, Ford and Griffin 1951:91; Wimberly 1960: 109-114; Phillips 1970:119-127)

This type is defined by patterns of stamping; plain rocker stamped, dentate stamped, or cord wrapped dowel impressed, zoned or outlined by curvilinear or rectilinear broad incised lines which are U shaped in cross section. Several varieties have been recognized for the lower Mississippi Valley where this type was concentrated during the Middle Woodland Marksville period. Wimberly (1960:109-114) also recognized Marksville Stamped in Middle Woodland context in the lower Tombigbee, Mobile Bay and Delta regions. In those regions, however, Marksville Stamped is a minority type accounting for no more than 1.50 percent of the ceramic complex at any site (Wimberly 1960:109-114, Tables 1 and 5). A total of 6 Marksville Stamped sherds were collected during this project (Tables 7, 14, and 16). Included among these are one var. Crooks sherd and two var. Mabin sherds as defined by Phillips (1970:121-123).

Mazique Incised (Ford and Willey 1939:8; Phillips, Ford, and Griffin 1951: 57-59; Ford 1951:57-59; Wimberly 1960:178; Phillips 1970:129)

This clay tempered type has been variously interpreted by the above cited authors. We are following Phillips (1970:129-130) where this type is defined by designs that consist of line-filled triangles and other simple arrangements of vertical and oblique parallel lines forming bands around the upper portions of vessels. This type was concentrated in the lower Mississippi Valley during the Late Woodland Coles Creek period. Wimberly (1960:178) found Mazique Incised on the Mobile coast at the Andrews Place Shell Midden in stratigraphic association with a late Weeden Island component which also contained small amount of Ponchartrain Check Stamped (1960:178, Table 9). One Mazique Incised sherd was recovered by this project in the Delta Swamp at Site 1Mb97 (Tables 7 and 16).

Mulberry Creek Cord Marked (Haag 1939:17; Phillips, Ford and Griffin 1951:82; Ford 1951:53-55; Heimlich 1952:21; Wimberly 1960:175-176; Phillips 1970:136-139; Jenkins 1981:99-102)

This is probably one of the more widespread types in the Southeast and indeed probably stretches the type concept. Although this type evolved locally in several different regions, recent research indicates that the Mulberry Creek Cord Marked of the Mississippi Valley and the Tombigbee Valley are probably historically related (Jenkins 1982).

Mulberry Creek Cord Marked, simply defined as a cord marked surface treatment on a clay tempered ware, occurred as a major type in the western Tennessee Valley, the central Tombigbee Valley, and the lower Mississippi Valley as far south as Vicksburg, Mississippi almost exclusively during the Late Woodland period. In the lower Mississippi Valley Mulberry Creek

Cord Marked first occurred during the Middle Woodland Marksville period.

A total of 89 Mulberry Creek Cord Marked sherds were recovered by this project (Tables 7, 10, 11, 13, 15, 16, and 18).

This type was most concentrated in the Delta Swamp and Delta Marsh zones within this project area where frequently it occurred as a minority in probable association with early Weeden Island components. There were also several components at Sites 1Mb206, 1Ba194, and 1Ba198 where Mulberry Creek Cord Marked and clay tempered plain comprised as much as 50 percent of the assemblage. As will be discussed later, such components may represent intrusive Miller III groups from the central Tombigbee Valley. Mulberry Creek Cord Marked and Baytown Plain were the major types made in the central Tombigbee Valley during the Miller III phase (Jenkins 1981: 24-29). The Mulberry Creek Cord Marked recovered by this project is virtually indistinguishable from var. Aliceville as defined by Jenkins (1981:100-102).

Ponchartrain Check Stamped (Ford and Willey 1939:5; Ford 1951:78-81, Wimberly 1960:175, Phillips 1970:154, Brown 1981b)

This type is characterized by a waffle grid surface treatment on a clay tempered paste. Several varieties have been recently defined that reveal more diversity in Ponchartrain Check Stamped than was previously noted. Other than the most numerous rectangular shaped check, surface treatments also include grids composed of diamond shaped checks, checks with raised dots, linear check stamped, and diamonds within diamonds. A number of distinctive rim modes have also been recognized (Brown 1981a). This wide range of variability has not been documented for the BWT study area.

Ponchartrain Check Stamped was concentrated in the lower Mississippi River Valley south of the Red River mouth. To the east, along the Gulf Coast, it overlapped with the contemporaneous Weeden Island type, Wakulla Check Stamped. The occurrence of Ponchartrain Check Stamped in Louisiana and coastal Mississippi is probably best interpreted as a westward spread of the check stamping tradition via Wakulla or McLeod Check Stamped during the Late Woodland period (Ford 1951:79, McMichael 1960:112). This interpretation is to some degree substantiated by the stratigraphic association of Wakulla and Ponchartrain Check Stamped at the Andrews Place Shell Midden, on the coast of Mobile County, Alabama (Wimberly 1960:Table 9).

Only seven Ponchartrain Check Stamped sherds were recovered during this project, five from the Delta Swamp and two from the Delta Marsh (see Tables 7, 16, and 18). All of these sherds had a surface treatment consisting of very fine square checks no larger than 2 mm in diameter. Only one rim was recovered. It is similar to the Onion Lake Rim Mode defined by Brown (1981b:62). It displays a 1 cm wide rim strip without an incised line beneath the strip.

Unclassified Dentate Stamped

Two sherds from Site 1Ck45 in the Rolling Piney Woods and one sherd from Site 1Mb63 in the Delta Swamp exhibited unzoned dentate stamping accomplished with a scallop shell. The decoration is like that described for Bayou La Batre Stamped (Wimberly 1960:64-68), but it has a clay tempered paste (see Tables 7, 14, and 16).

Unclassified Rectilinear Incised

One sherd from Site 1Wn76 in the Delta Meander zone appeared to bear a motif of interlocking rectangles. The lines were incised into a leather hard paste and are 1 mm wide and approximately 0.50 mm deep (see Tables 7 and 15).

Unclassified Interior Engraved

One small rim sherd from Site 1Ba194 in the Delta Marsh has a fine line engraved 3 mm beneath and paralleling the lip (Tables 7 and 18). Two other lines are engraved perpendicular to this line. The vessel form is a shallow pan. This sherd is most similar to the lower Mississippi Valley variety L'Eau Noire Incised var. Anna. This variety is diagnostic of several Plaquemine phases of the Mississippian stage (Phillips 1970: 102).

Unclassified Brushed

One clay tempered sherd from Site 1Mo9 within the Southern Red Hills has an irregular brushed surface finish. It is from an early Miller I context (see Tables 7 and 14).

Unclassified Clay-Grit Tempered Plain

Two plain sherds from Site 1Ck45 within the Rolling Piney Woods zone were tempered with particles of clay and grit. These sherds were from a single component Bayou La Batre site and resemble Bayou La Batre Plain except for the admixture of clay particles to the paste (Tables 12 and 14).

Fine Sand Tempered Ceramics

Sand tempered pottery has been subdivided into two basic analytic units in this study--fine sand and coarse sand-grit--since these differences are both temporally and spatially significant. Fine sand tempered pottery first appeared in the Alexander and Bayou La Batre series at least as early as 500 B.C. Fine sand tempered pottery was less frequent during the earlier portion of the Bayou La Batre continuum and increased in frequency through time. Bayou La Batre pottery was made throughout the area from the Rolling Piney Woods, south to the Gulf Coast. Within the Tombigbee drainage, Alexander pottery is concentrated within the Black Prairie and Tombigbee Hills zones. In the Black Prairie, sand tempered ware was dominant in the Miller tradition until A.D. 600 or A.D. 700 when grog or clay tempering became the dominant ware. Farther south, in the Flatwoods and Southern Red Hills zones, the Miller tradition ware does not change to grog (crushed sherds) but remains sand. Farther south, within the Tallahatta Hills and Rolling Piney Woods zones, the ceramics were tempered mainly with fine sand during the Middle Woodland Porter phase and the Late Woodland McLeod phase. Clay tempered pottery occurred as a minority ware during the Porter phase. In the Delta Meander, Delta Swamp, and Delta Marsh zones, fine sand tempered ware was dominant in the Porter phase and Weeden Island ceramics. A coarse sand-grit tempered ware became dominant in these zones during the later part of the Late Woodland period.

Plain

Few plain finished sherds tempered with fine sand were assigned traditional type names in this study because most body sherds and the majority of the rim sherds were not sufficiently morphologically diagnostic to assign type names when recovered from multicomponent sites and from mixed surface contexts. The plain fine sand tempered ceramics included several conventional type names; Bayou La Batre Plain, Franklin Plain, Weeden Island Plain, McLeod Plain, O'Neal Plain, and Baldwin Plain. These types cover a long span, ca. 500 B.C. to A.D. 1100. It should therefore be no great surprise that fine sand tempered plain was the largest analytical unit in almost every physiographic zone. In several rare instances plain pottery has been assigned a type name based on distinctive rim modes. These exceptions are discussed below under each respective category.

Check Stamped

A similar problem was encountered with fine sand tempered check stamped pottery as with the plain pottery. As will be discussed later in the chronology section, check stamping first appeared in the study area as a major surface treatment at around A.D. 400 and probably lasted until approximately A.D. 1100. Two major types have been recognized, McLeod and Wakulla Check Stamped (Wimberly 1960:126-130, 147-151). Wimberly postulated that Wakulla Check Stamped developed out of McLeod Check Stamped and cited stratigraphic evidence at the McLeod Estate Village. At that site Wakulla Check Stamped, late McLeod Linear Check Stamped, and late McLeod Simple Stamped occurred only in the upper levels, but McLeod Check Stamped, early McLeod Linear Check Stamped, and early McLeod Simple Stamped occurred mainly in the lower levels (Wimberly 1960:213, Table 2). Unfortunately, however, sorting McLeod Check Stamped form Wakulla Check Stamped is not that easy. McLeod Check Stamped characteristically has generally bold checks, averaging 3 to 4 mm, which are only moderately clear-cut. The rims may be unmodified or have a small rounded exterior rim fold averaging 7 mm wide. This small fold appears to have been formed during the stamping process while the lip was being finished (Wimberly 1960:127-128). The temper of Wakulla Check Stamped contains a slightly coarser sand. Checks are generally smaller, with a range of 1.5 mm to 4 mm, and are well defined. The characteristic rim treatment for Wakulla Check Stamped is the addition of a rim strip forming a collar 2 to 3 cm wide. Smaller rim folds less than 12 mm wide are present also (Wimberly 1960:149-150).

In summary, Wakulla Check Stamped and MeLeod Check Stamped can be sorted to some degree by rim mode and by check size. Unfortunately there is a good deal of overlap between McLeod and Wakulla. Wide rim strips are occasionally found on vessels with a bold check surface finish and vessels with a fine check surface finish may have unmodified rims with no rim fold or strip.

In the analysis of the large WPA collections Wimberly (1960) classified only the classic examples by type but the remaining sherds which could either be McLeod or Wakulla were placed in a residual category. The residual category is by far the largest in any of Wimberly's tables containing check stamped pottery. During this study, Wimberly's classification scheme was applied to the small collections recovered. Most of our check stamped pottery fell into Wimberly's residual category. Hence all of our check stamped pottery, with the exception of linear check stamped, has been lumped into a fine sand tempered check stamped category.

Two varieties of McLeod Check Stamped were defined in the central Tombigbee Valley Gainesville Lake area where this pottery occurred in a late Miller II Turkey Paw subphase context c.a. A.D. 450-A.D. 600 (Jenkins 1981:134-137). More recent research, however, indicates that these two varieties should be combined into one variety designation, <u>var. Bigbee</u> (Jenkins 1981:135). The absence of any modified rims plus the presence of one small podal support suggests this McLeod pottery dates to the very earliest part of the McLeod phase. In the three components in which this pottery was found, McLeod Simple Stamped outnumbered McLeod Check Stamped approximately 2 to 1. McLeod Simple Stamped also outnumbered McLeod Check Stamped at all of Wimberly's early McLeod components (Wimberly 1960: Tables 2 and 4).

It will be argued later that the Weeden Island and McLeod complexes were generally contemporaneous and spatially distinct. Further, McLeod groups were clearly interacting with Weeden Island groups and later McLeod incorporated Weeden Island ceramic traits.

Check stamping is clearly concentrated in the Tallahatta Hills zone with a secondary concentration possibly in the Southern Red Hills (although most of that check stamped pottery is from one site). Of the 258 sherds recovered, 151 came from the Tallahatta Hills and 69 from the Southern Red Hills (see Tables 7, 10, 11, 13, 14, 15, 16, and 18).

<u>McLeod Simple Stamped</u> (Wimberly 1960:132-138, 178; Jenkins 1981:136-139)

This type was first defined by Wimberly (1960) for the lower Tombigbee Valley region where it is spatially most concentrated. Wimberly had segregated McLeod Simple Stamped into early and late varieties based on the same rim morphology used to distinguish McLeod Check Stamped from Wakulla Check Stamped. None of the wide rim strips diagnostic of the late variety of McLeod Simple Stamped were recovered, consequently, all simple stamped pottery in this study has been referred to simply as McLeod Simple Stamped. The simple stamped surface treatment was produced both by stamping with a carved implement and probably by brushing with twigs. Future studies should count these morphological treatments separately.

McLeod Simple Stamped was concentrated in the Tallahatta Hills zone. Of the 56 sherds recovered by this study, 54 came from that zone (see Tables 7, 11, 13, and 14).

<u>McLeod Linear Check Stamped</u> (Wimberly 1960:130-132, 177 Jenkins 1981:136)

This is another type originally defined by Wimberly from excavations in the lower Tombigbee region. Early and late varieties were established by Wimberly based on the same rim morphology used to distinguish McLeod Check Stamped from Wakulla Check Stamped. Since none of the wide rim strips characteristic of late McLeod Linear Checked Stamped were recovered during this study, this pottery is referred to here as simply McLeod Linear Check Stamped. This does not imply, however, that rim morphology would not be a useful criterion when studying larger collections. This type is clearly concentrated in the Tallahatta Hills zone. Of the 227 sherds recovered by this study, 218 came from that zone (see Tables 7, 11, 13, 14, and 15).

Alexander Incised (Haag 1939:7, 1942:515; Ford and Quimby 1945:64; Willey 1949:360; Heimlich 1952:12; Wimberly 1960:80; Jenkins 1981:114-118)

This type is defined primarily by broad rectilinear incising on a paste that ranges from fine to coarse sand tempered. Podal supports occur frequently as well as a band of bosses punched through from the inside just beneath the lip exterior. This type was concentrated within the upper Tombigbee Valley and the western portion of the middle Tennessee Valley. It has, however, been recovered in other regions as a minority type associated with contemporaneous local complexes. Recent radiocarbon determinations place this type between ca. 500 B.C. and 100 B.C. (Jenkins 1982:38). Several varieties have been defined for the central Tombigbee Valley based primarily on motif (Jenkins 1981:114-118). The one sherd recovered by this project from Site 1Ba215 within the Delta Marsh (Tables 7 and 18) was too small for identification at the variety level.

Alexander Pinched (Haag 1939:9, 1942:515; Ford and Quimby 1945:64-65; Heimlich 1952:12; Phillips 1970:37-38; Jenkins 1981:118-119)

This is a companion type of Alexander Incised and therefore has a similar temporal and spatial distribution. Alexander Pinched is defined by fingernail punctating or pinching over the entire vessel exterior. Podal supports and a band of nodes beneath the lip exterior occur frequently. Only four sherds of this type were recovered by this study, three in the Southern Red Hills and one in the Rolling Piney Woods (see Tables 7, 11, and 14).

Alligator Bayou Stamped (Willey 1949:372-373, Wimberly 1960:89-93, Jenkins 1981:120-122)

This type included both sand and clay tempered ware as originally defined by Willey (1949:372-373). The type was later refined by Wimberly to comprise only sand tempered ware (Wimberly 1960:89-93). Several varieties have subsequently been defined for the central Tombigbee Valley from the different stamping techniques, zoned within incised lines (Jenkins 1981:120-122). In the central Tombigbee Valley, Alligator Bayou Stamped is a minority type in the Miller I and Miller II phase ceramic assemblages, ca. 100 B.C. to A.D. 600. Its area of greatest concentration, however, is the lower Tombigbee Valley, Mobile Bay, Delta, and coastal regions as far east as Destin, Florida. Although only three sherds were recovered during this project, studies by Wimberly (1960) and Trickey and Holmes (1971) indicate this type occured most frequently from the Tallahatta Hills zone south to the Mobile coast during the Middle Woodland period.

Basin Bayou Incised (Willey 1949:375-376, Wimberly 1960:93-98, Jenkins 1981:127-131)

This type was originally defined by Willey (1949:375-376) to include both clay and sand tempered ware. It was later refined by Wimberly (1960: 93-98) to include only sand tempered ware. Several varieties were subsequently defined in the central Tombigbee region where it was a minority type during the Miller I and Miller II phases (Jenkins 1981:127-131). A total of 10 sherds were recovered by this project. Five were recovered from the Delta Meander zone and three from the Delta Swamp (Table 7, 15, and 16). Previous research by Trickey (1958), Wimberly (1960), and Trickey and Holmes (1971) indicate that Basin Bayou Incised was an important Middle Woodland type from the Tallahatta Hills zone south to the coast. Current evidence suggests the primary distribution of this type extends as far east as Choctawhatchee Bay (Sears 1977:163-166).

Bayou La Batre Scallop Impressed (Wimberly 1953b, 1960:68-70)

Sherds of this type may be tempered with either fine sand or coarse sand and grit. A stratum cut at Site 1Ck45 indicated that tempering in the Bayou La Batre series changed from coarse sand and grit to fine sand through time (see Figure 10 in the chronology section of this chapter). This type is a minority type of the Bayou La Batre series. The characteristic decoration was accomplished by impressing the crenated edge of a scallop shell into the wet vessel surface at a 90 degree angle. Although only three Bayou La Batre Scollop Impressed sherds were recovered during the BWT study, work by Wimberly (1960), Trickey (1958), and Trickey and Holmes (1971) indicated that the type's primary spatial distribution extended from the Tallahatta Hills zone to the coast. The Bayou La Batre series was concentrated in the Mobile Bay, Mobile Delta, and lower Tombigbee River region. This series occurred in northwest Florida only as a minority with early Deptford pottery (Sears 1977:154-157).

Bayou La Batre Cord Wrapped Dowel Impressed (Wimberly 1953b, 1960:70-71)

Sherds of this type may be tempered with either fine sand or coarse sand and grit. The decoration was accomplished by randomly applying a cord wrapped dowel or rod to the exterior surface. This very rare type occurred as a part of the Bayou La Batre series. Temporal and spatial data are very limited, but it has been found intermittently from the Gulf Coast to the Tallahatta Hills zone. Only two sherds were recovered during this study, both from the Delta Meander zone (Tables 7 and 15).

Bayou La Batre Stamped (Wimberly 1953b, 1960:68-70)

This type is the most frequently occurring decorated Bayou La Batre type. Like the other Bayou La Batre types, this type may have either a fine sand or a coarse sand and grit temper. A limited excavation conducted by this project suggests these differences in temper are temporally significant (see Figure 10). A total of 114 Bayou La Batre Stamped sherds were recovered, 96 of which came from the excavation unit at Site 1Ck45 in the Rolling Piney Woods. Data collected during the BWT study and by Trickey (1958), Wimberly (1960), and Trickey and Holmes (1971) indicate that the Bayou La Batre series extended from the Tallahatta Hills to the gulf coast (see Tables 7, 12, 13, 15, 16, and 18). Bayou La Batre sherds occur as a minority in Deptford components as far east as Wakulla County, Florida (Sears 1977:155-156).

Carrabelle Incised (Willey 1949:422-425, Wimberly 1960:161-163).

This is one of the major decorated types of the Weeden Island series ca. A.D. 400-1100. It is defined by rectilinear designs composed of herringbone or nested triangles placed between the lip and shoulder of the exterior surface. The incised lines are usually narrow, less than 2 mm wide. The spatial distribution of the Weeden Island series and of this type extended from around Tampa Bay, Florida, west to Mobile Bay, Alabama (Sears 1977:168-178). A total of 21 sherds were recovered during this study, 14 from the Delta Meander zone and 5 from the Delta Marsh (see Tables 7, 15, 16, and 18). Carabelle Incised also occurred as a minority with McLeod cermaics in the Tallahatta Hills region and as an extreme minority with local complexes along the Alabama and central Tombigbee Rivers.

Carrabelle Punctated (Willey 1949:425, Goggin 1952:108, Wimberly 1960: 160-161)

This is another of the major types of the Weeden Island series. It is defined primarily by a band of punctations between the lip and shoulder. The field of punctations is usually outlined by a single incised line around the shoulder. The distribution of this type extended along the Gulf Coast from the Cedar Keys to Mobile Bay and up many of the rivers from the Tombigbee in the west to the Flint River in the east (Sears 1977:168-175). Only four Carrabelle Incised sherds were recovered during this study, three from the Delta Meander zone and one from the Delta Marsh zone (see Tables 7, 15, and 18).

Deas Pinched (Wimberly 1960:170-172)

This is a minority type of the McLeod series. It is defined by an overall simple stamped design obliterated in part by vertical or diagonal rows of pinched-up continuous ridges. Only four Deas Pinched sherds were recovered during this study; all are from the Tallahatta Hills zone (see Tables 7 and 13). This type has not previously been reported outside of the Mobile River drainage. It is probably closely related to Tucker Ridge Pinched of the Weeden Island series.

Furrs Cord Marked (Jennings 1941:199-200, Cotter and Corbett 1951:18-19, Jenkins 1981:132-133)

This type is characterized by a cord marked exterior either vertically or obliquely impressed over the entire surface of the vessel. The type was first defined by Jennings (1941:199-200) as a result of excavations and survey along the Natchez Trace within the upper Tombigbee drainage. It was later recognized in the central Tombigbee Valley where a local variety, var. Pickens was defined (Jenkins 1981:132-133). Furrs Cord Marked first appeared as a minority during the Miller I phase and increased in relative frequency at the expense of Saltillo Fabric Impressed until the Miller II phase when it became a major type. In the

Black Prairie and Tombigbee Hills it evolved into the clay tempered type, Mulberry Creek Cord Marked around A.D. 600, during the early Miller III Vienna Landing subphase. In the Flatwoods and Southern Red Hills zones of the lower Tombigbee Valley this evolution did not occur and the sand tempered Furrs Cord Marked remained a major type well into the Late Woodland period.

A total of 827 Furrs Cord Marked sherds were recovered by this study. Although sherds of this type were recovered from every physiographic zone within the study area, it was most concentrated within the Southern Red Hills zone where 629 sherds were recovered. Secondary concentrations occurred in the Black Prairie, 118 sherds, and the Flatwoods, 46 sherds (see Tables 7, 9, 10, 11, 13, 14, 15, 16, and 18). South of the Southern Red Hills, Furrs Cord Marked occurred as a minority in regional phases of the Middle and Late Woodland periods. A local variety of this type occurs as a minority in northwest Florida in association with the Weeden Island and Santa Rosa series. In that area it was referred to as West Florida Cord Marked (Willey 1949:388, 440).

Indian Pass Incised (Willey 1949:425-427, Wimberly 1960:166-167)

This is one of the less frequently recovered types of the Weeden Island series. The type is characterized by very fine closely spaced incised lines. Designs consist of curvilinear loops and whorls. The distribution of this type spanned the Gulf Coast from Tampa Bay, Florida to Mobile Bay, Alabama. It also occurred along Coastal Plain rivers from the Flint to the Tombigbee (Sears 1977:168-175). Only two sherds were recovered by this project, both from the Delta Meander zone (see Tables 7 and 15).

Keith Incised (Willey 1949:427-428, Wimberly 1960:165166).

This is generally one of the more frequently recovered types of the Weeden Island series. It is characterized by fine line rectilinear incising around the upper portion of the vessel. The design consists of a band of diagonal cross hatching, forming diamonds which frequently have dot punctations at the intersection of the incised lines. The geographical distribution of this type follows the previously discussed types of the Weeden Island series. Three Keith Incised sherds were recovered by this project; two from the Delta Meander zone and one from the Tallahatta Hills (see Tables 7, 13, and 15).

Mound Field Net Marked (Willey 1949:440, Wimberly 1960:163-165)

This is another type of the Weeden Island series. It is characterized by a net impressed surface finish over the entire exterior. It has the same spatial distribution as the other types of the Weeden Island series. Six Mound Field Net Marked sherds were recovered by this survey; four from the Tallahatta Hills zone, one from the Southern Red Hills zone, and one from the Delta Meander zone (see Tables 7, 11, 13, and 15).

O'Neal Plain (rim) (Haag 1939:6, 1942:515; Ford and Quimby 1945:65; Heimlich 1952:10-11)

One rim sherd, apparently from a plain vessel, was recovered from

Site 1Mb60 within the Delta Swamp zone (Tables 7 and 16). It has a distinctive rim treatment composed of a line of bosses just beneath the lip exterior. These bosses were formed by punching a small hole through from the interior thereby producing a raised bump on the exterior. The interior hole was then smoothed over. This rim treatment is characteristic of the Alexander series. The plain companion type is O'Neal Plain.

Porter Zone Incised (Wimberly 1960:98-101)

This is a minority type of the Middle Woodland Porter phase. Designs are predominantly curvilinear and are usually expressed by plain bands with background areas filled with fine closely spaced incising. Broad, shallow lines, U shaped in cross section, outline the designs. Only three Porter Zone Incised sherds were recovered by this study; two from the Rolling Piney Woods and one from the Delta Meander zone (Table 7, 14, and 15). Research by Wimberly (1960) indicates this type extended from the Tallahatta Hills to the Gulf Coast.

Ocmulgee Fields Incised (Jennings and Fairbanks 1939:5, Willey 1949:494, Wauchope 1966:87-90, Wimberly 1960:189)

This is a late historic (primarily Creek) type. It is characterized by narrow incised lines with scroll, quilloche, or a combination of scroll and straight line designs. This type seems to be centered in an area extending from the Tallapoosa River drainage to the lower Chattahoochee River drainage. One sherd was found at Site 1Mb216 in the Delta Swamp (Tables 7 and 16).

Saltillo Fabric Marked (Jennings 1941:201, Cotter and Corbett 1951:19, Jenkins 1981:140-142)

Two Saltillo Fabric Marked varieties have recently been defined by Jenkins (1981:140-142). Var. Tombigbee has a surface treatment applied with a woven fabric. Experiments reveal the treatment was probably applied with several dowels woven together. This variety occurred primarily in an area extending from the Southern Red Hills north to the Tombigbee Sand Hills during the Middle Woodland Miller I phase. It also occurred in the Miller II phase, but at a lower relative frequency. In the lower Tombigbee Valley it is a minority type in the Porter complex and possibly also in the late Bayou La Batre complex. Sixty sherds of this variety were recovered during this study. Of these, 22 were from the Flatwoods and 29 were from the Southern Red Hills zone. South of the Southern Red Hills, this variety occurred only as a minority (see Tables 7, 10, 11, 12, 14, 15, and 16).

Var. China Bluff has a surface treatment comprised of a randomly impressed single cord wrapped dowel. This variety was concentrated during the late Miller II subphase (ca. A.D. 450 to A.D. 600) in the central Tombigbee Valley region (Jenkins 1981:140-142). Eight sherds were recovered during this study; three in the Delta Swamp, three in the Delta Meander zone, and one each in the Flatwoods and Southern Red Hills zones (Tables 7, 10, 11, 15, and 16). Var. China Bluff seems to have been an extreme minority element in the late Middle Woodland to early Late Woodland complexes south of the central Tombigbee Valley.

Santa Rosa Punctated (Willey 1949:378, Wimberly 1960:107-109)

This is a minority type of the Middle Woodland Porter complex and of the Santa Rosa series. It is characterized by broad lines, U shaped in cross section, which form figures or zones filled with closely spaced hemicoidal punctations. Only two sherds were recovered during this study. Both were from the Rolling Piney Woods zone (see Tables 7 and 14). Previous research by Wimberly (1960) indicates this type probably occurred most frequently from the Tallahatta Hills south to the Gulf Coast. Work by Willey (1949) indicated this type also occurred along the northwest Florida Coast.

Santa Rosa Stamped (Willey 1949:376-378; Wimberly 1960:74-76)

This is a minority type which appeared first in the Bayou La Batre series and continued into the Middle Woodland Santa Rosa series. It is characterized by rows of unzoned plain rocker stamping over the entire exterior. A total of seven sherds were recovered by this project; two each from the Southern Red Hills, the Rolling Piney Woods, and the Delta Meander zones, and one sherd from the Tallahatta Hills zone (see Tables 7, 11, 13, 14, and 15). Work by Wimberly (1960) and Willey (1949) indicated that the geographic distribution of this type extended from the Tallahatta Hills to the Gulf Coast and across northwest Florida. It was also a minority type in the central Tombigbee Valley in probable association with Alexander and Miller ceramics (Jenkins 1981:143-144).

Tucker Ridge Pinched (Willey 1949:428-429, Goggin 1952:108, Wimberly 1960:178)

This is one of the more numerous decorated types of the Weeden Island series. Its geographical center was the northwest Florida coast, but it is also found inland along the rivers from the Tombigbee in the west to the Flint in the east. This type is characterized by rows or ridges executed in a wet paste with the fingernails. The decoration is confined to an area between the lip and the shoulder. Eight sherds were found during the course of this project; four in the Tallahatta Hills and four in the Delta Meander zone (Tables 7, 13, and 15).

Weeden Island Incised (Willey 1949:411-419, Goggin 1952:107, Wimberly 1960:158-159)

This is a type of the Weeden Island series. The basic design principle is one of contrasting areas with the featured design expressed as an undecorated area. Hachures and fields or rows of punctations were used as backgrounds. This type extends from Mobile Bay, Alabama in the west to Little Manatee, Florida in the east. Only two sherds were found during the course of this study, both in the Delta Meander zone (Tables 7 and 15). Work by Wimberly (1960) and Trickey (1958) and Trickey and Holmes (1971) indicates the local spatial distribution of this type extends from the Tallahatta Hills to the Gulf Coast.

Weeden Island Rim

Although not a ceramic type, this distinctive rim mode has proven to be a useful analytical unit. This form, as used in this study, consists of a substantially thickened rim which appears to have been both modeled and carved while the paste was wet. It often resembles a fold and has been referred to by some researchers as a pseudofold. This rim mode may be either wedge-shaped or squarish in cross section. Not all rims from Weeden Island vessels conform to this description. This rim mode is simply the most diagnostic of the Weeden Island series.

This Weeden Island rim form was the most frequently adopted of Mobile Delta Weeden Island ceramic traits into local non-Weeden Island ceramic traditions along the Alabama and Tombigbee Rivers. The adoption of selected Weeden Island ceramic traits varied from group to group but the presence of this rim form in the local complexes serves as a useful chronological index.

Unclassified Interior Red Filmed

One sherd from Site 1Wn76 in the Delta Meander zone had an interior surface treatment embellished with a red film or slip (Tables 7 and 15). The sherd is most similar to Weeden Island Red (Sears 1956a:46).

Unclassified Punctated

One sherd from Site 1Cw33 in the Southern Red Hills had an eroded surface treatment that appears to have been fingernail punctated. It may be Alexander Pinched (Tables 7 and 11).

Unclassified Rectilinear Incised

Three interesting sherds were recovered from the test unit at Site 1Ck45 in the Rolling Piney Woods. One rim sherd from Level 3 had a broad line incised obliquely from the lip. Two other sherds from the bank profile exhibited two broad lines incised parallel to one another. One of these sherds had what appears to be two punctations marginal to one line. The lines of all three sherds were U shaped in cross section and were 3 to 5 mm wide and approximately 1 mm deep. The sherd from Level 3 looks most like Alexander Incised, although the exterior surface was poorly smoothed. The sherds from the bank profile had a smooth surface finish. One of these sherds may actually be curvilinear incised. The sherds are small, however, and the mode of incising was difficult to determine. These two sherds are either Basin Bayou Incised or Alexander Incised (see Tables 12 and 14 in the chronology section of this chapter).

Coarse Sand/Grit Tempered Pottery

This pottery group is tempered with 1 to 2 mm coarse sand particles and/or 2 to 4 mm crushed quartzite, or a mixture of coarse sand and crushed quartzite. This ware is characteristic of both the early Bayou La Batre complex and the Tensaw Lake complex. Both complexes, and this ware group, occur most frequently in an area extending south from the Rolling Piney Woods. The Bayou La Batre complex extended as far south as the Gulf Coast but present evidence indicates the Tensaw Lake complex did not extend as far south.

Plain

The coarse Bayou La Batre Plain and the unnamed coarse plain ware of the Tensaw Lake complex were morphologically so similar that type names were not used in this study because the types could not be consistently sorted.

Mobile Cord Marked (Trickey and Holmes 1971:127)

This type was originally advanced by Trickey and Holmes (1971:27). It was not described in their report, however. The surface treatment consists of cord marking over the entire vessel surface. Rims may have a slight fold or be unmodified. The vessel shapes appear to be deep conoidal jars or hemispherical bowls. This type is sorted from Furrs Cord Marked, from which it probably developed, primarily by its distinctive coarse sand/grit temper. Mobile Cord Marked is the most numerous type of the Late Woodland Tensaw Lake complex. A total of 368 sherds of this type were recovered; 52 from the Delta Meander zone, 212 from the Delta Swamp zone and 104 from the Delta Marsh zone (Tables 7, 15, 16, and 18).

Unclassified Check Stamped

Check stamped sherds with coarse sand/grit paste have been occasionally found in surface contexts with Mobile Cord Marked. Stowe found these ceramics in stratigraphic context over a Weeden Island zone (Stowe 1981: Table 37). Rims may have a small fold as much as 1 cm wide. Check size ranges from 3 mm to 8 mm. A total of 35 sherds of this check stamped pottery was recovered by this project; 25 from the Delta Swamp, 9 from the Delta Marsh, and one from the Delta Meander zone (Tables 7, 15, 16, and 18).

Unclassified Simple Stamped

Two coarse sand/grit simple stamped sherds were found in the Delta Meander zone at Site 1Ck207 associated with a large Tensaw Lake component. This surface finish was apparently produced by a paddle carved in linear grooves (Tables 7 and 15).

Unclassified Incised-Over-Marked

One sherd from Site 1Ck207 and two sherds from 1Wn76, in the Delta Meander zone, exhibited sloppy rectilinear incising over Mobile Cord Marked (Tables 7 and 15). The appearance of this pottery is much like the central Tombigbee Valley clay tempered Alligator Incised over Mulberry Creek Cord Marked (Jenkins 1981:82-85).

Unclassified Pinched

One sherd with a fingernail pinched decoration was found at Site 1Wn81 in the Rolling Piney Woods zone (Tables 7 and 14). It has a very coarse paste with a temper composed of large sand particles and fragments of crushed quartzite. The sherd is morphologically similar to a very coarse tempered Alexander Pinched but the extremely coarse paste is more similar to Whiteoak Pinched (Chase 1969:18-19)--a major Late Woodland

Whiteoak complex type along the Alabama River between Selma and Camden, Alabama.

Unclassified Punctated

This rim sherd has a decoration consisting of random crescents apparently applied with a fingernail. The paste is tempered with coarse sand and a small amount of grit. The sherd was recovered in the Rolling Piney Woods zone at Site 1Wn77 (Tables 7 and 14).

Unclassified Brushed

One sherd from Site 1Mb211 in the Delta Swamp zone has a brushed surface treatment (see Tables 7 and 16). This could conceivably be a Chattahoochee Brushed sherd, a late historic type usually associated with Ocmulgee Fields Incised.

Unclassified Zoned Dentate Stamped

One rim sherd from Level 1 and one sherd from the surface at Site 1Ck45 have a decoration consisting of sloppy dentate stamping zoned by sloppily incised lines. The rim sherd from Level 1 has a very unusual thickened rim made from a clay coil which exhibits narrow diagonal incised lines 6 mm apart. The paste is medium to coarse sand with a few grit particles (see Tables 7, 12 and 14). These two sherds are undoubtedly a very early prototype of Alligator Bayou Stamped.

Limestone Tempered Pottery

The limestone tempered pottery complexes nearest to the study area occur in the Tennessee Valley. In the western portion of the middle Tennessee Valley the earliest limestone tempered pottery is Longbranch Fabric Marked and Mulberry Creek Plain which probably first appear around 100 B.C. Two succeeding complexes ultimately emerge. At about 1 A.D. a complex composed predominantly of Flint River Cord Marked and Mulberry Creek Plain appeared in the uplands adjacent to the western Tennessee Valley in association with Stone Mound mortuary ritual. Another ceramic complex, composed of the types Wright Check Stamped, Pickwick Complicated Stamped, and Mulberry Creek Plain, subsequently or contemporaneously appears on the western Tennessee Valley floodplain where it is associated with the Copena mortuary complex (Futato 1980:122-124).

In the eastern portion of the Middle Tennessee Valley Mulberry Creek Plain continued to be the dominant type throughout the Middle Woodland period. Its companion type, Long Branch Fabric Marked, was gradually replaced by Flint River Brushed. Wright Check Stamped, Bluff Creek Simple Stamped, and Pickwick Complicated Stamped appeared only as minorities in this area (Heimlich 1952, Cole 1981b). Following the Middle Woodland Copena mortuary complex, the Flint River complex composed of the types Flint River Brushed and Mulberry Creek Plain developed (Webb and Wilder 1951:268-272). The Flint River complex probably dates from about A.D. 500 or A.D. 600 to about A.D.1000.

Flint River Brushed (Heimlich 1952:20)

One sherd of this type was recovered from Site 1Ck73 in the Tallahatta Hills zone (Tables 7 and 13). This type first appeared during the Middle Woodland period in the Guntersville Basin (Cole 1981b, Heimlich 1952) and is characteristic of the Late Woodland period in the eastern Tennessee Valley and the upper Coosa Valley.

Mulberry Creek Plain (Haag 1939:10, 1942:516; Heimlich 1952:15-17

Three Mulberry Creek Plain sherds were recovered in the Southern Red Hills zone at Site 1Cw28 and two sherds were recovered at Site 1Ck1 in the Tallahatta Hills zone (Tables 7, 11, and 13). This type occurs from 100 B.C. to ca. A.D. 500 or 600 in the western portion of the Middle Tennessee Valley and until approximately A.D. 1000 in the eastern Tennessee Valley.

Wright Check Stamped (Haag 1939:13, 1942:516; Heimlich 1952:17-18)

A total of four sherds of this type were recovered during this study. All of these sherds were recovered from Site 1Cw28 in the Southern Red Hills zone (see Tables 7 and 11). This type was manufactured primarily during the Middle Woodland throughout much of the western Tennessee Valley.

Fiber Tempered Pottery

This ware is found throughout the Coastal Plain of the Southeast where it was the earliest ware manufactured. In the Tombigbee drainage, this ware is most concentrated within the central and upper portions (Jenkins 1975b). In that area the fiber tempered Wheeler series are diagnostic of the Broken Pumpkin Creek phase. These ceramics have been relatively dated from ca. 1000 B.C. to 500 B.C. (Jenkins 1981:164-171).

Plain

Plain fiber tempered pottery in the BWT study area could probably be classified as Wheeler Plain (Haag 1939:2, 1942:514; Wimberly 1953a; Jenkins 1981:166-168). A total of 20 sherds were found during this study, one half of which were recovered from the Delta Marsh zone (see Tables 7, 10, 11, 13, 15, and 18).

Wheeler Dentate Stamped (Wimberly 1953a, Jenkins 1981:164-166)

One sherd of this type was found in the Southern Red Hills zone at Site 1Cw36 (Tables 7 and 11).

CERAMIC CHRONOLOGY

Perhaps the greatest contribution the subdiscipline of archaeology has to offer anthropology is the proficiency to document cultural change. Theoretically, the archaeologist has the ability to trace the cultural evolution of any given region through millenia by documenting change in material culture content. Some classes of artifacts better lend themselves to chronology building since many items of cultural baggage are not durable or plentiful enough, or alone sufficiently diagnostic to accurately place within a chronological framework. When morphological attributes of certain plentiful and durable artifact classes are found to be temporally sensitive then these artifacts can be used to relatively date other less diagnostic artifact classes when consistently found in direct association. Once the chronologies of the more durable, plentiful, and diagnostic artifact classes are understood, then the archaeologist can begin to evaluate the temporal and spatial modifications of food procurement stratigies, settlement patterns, house forms, ceremonialism, and to define culture processes.

The two major artifact classes which have been proven to best lend themselves to chronological studies in the southeastern United States are lithic tools and ceramics. Lithic tools and ceramics are durable, plentiful, and are amenable to fine scaled morphological/temporal segregation. The burden of temporal control usually falls upon lithic artifacts during the Archaic stage. This burden is transferred to pottery after the introduction of ceramic technology. The plasticity and greater consistent morphological variability of pottery allows for a finer temporal scaling once ceramic variability is documented and understood.

The purpose of this section is to detail the ceramic development of the BWT study area as it is presently understood. Even though a substantial amount of research has been previously undertaken in portions of the BWT study area, the ceramic development or evolution has not been considered. Previous researchers have viewed the definable ceramic complexes as static units, rather than in terms of evolution from one complex to another. Understanding the development of the various ceramic complexes and series within the BWT study area has been greatly enhanced by the research design and method of data recovery outlined in Chapter IV by Wiesman and Brose. The BWT study area was segregated into eight physiographic zones based on their various environmental characteristics. The ceramic study was organized toward discerning differences or similarities in the ceramic development within these physiographic zones. The study of ceramic development was, therefore, conducted within the framework of the natural environment (Figure 8).

Ceramic counts by environmental zone were summarized in Table 7 and are presented below in Tables 9, 10, 11, 13, 14, 15, 16, and 18. A thorough study of these ceramic tables and other published data reveals that there is no one developmental sequence for the BWT study area. There are at least four local sequences which can be defined within the eight physiographic zones. Ceramic sequences can be defined in the following combinations; one sequence for the Black Prairie zone, one for the Flatwoods and Southern Red Hills zones, one for the Tallahatta Hills and Rolling Piney Woods zones, and one for the Delta Meander, Delta Swamp, and Delta Marsh zones (Table 8). In the following pages, each of the four local sequences are described separately. This section presents the basic data base and discusses the ceramic evolution of each zone. The relationships of the local sequences to one another and to ceramic sequences in the central Tombigbee River Valley, the Alabama River Valley, the lower Mississippi River Valley, and northwest Florida are also discussed.

Figure 8. Ceramic Chronologies by Environmental Zone, BWT Study Area.

Calendrical Dates	Black Belt	Flatwoods and Southern Red Hills	Tallahatta Hills and Rolling Piney Woods	Delta Meander, Delta Swamp, and Delta Marsh	Calendrical Dates
	Choctaw?	Choctaw/Creek	Choctaw	Chatot Apalachee-Tawasa-Taensa	
A.D. 1700				Tomeh-Mobilian-Pensacola	A.D. 1700
	Summerville IV	(Sparse)			
A.D. 1500			Pensacola	Pensacola	A.D. 1500
	Moundville-Summerville I, II, III	Mississippian			
A.D. 1000				Tensaw Lake	A.D. 1000
	Miller III	Tuckabum	McLeod		
A.D. 500				Weeden Island (Mainly early)	A.D. 500
	Miller II	Miller II			
A.D. 300			Porter	Porter	
	Miller I	Miller I			A.D. 1
100 B.C.					
	Alexander	Alexander	Bayou La Batre	Bayou La Batre	
500 B.C.			↓ ? ↑	↓ ? ↑	500 B.C.
		Plain Fiber Tempered (probably Wheeler)			
1000 B.C.	Wheeler		Plain Fiber Tempered (probably Wheeler)	Plain Fiber Tempered (probably Wheeler)	1000 B.C.

Note: Dashed lines indicate ceramic continuity. Solid lines indicate ceramic discontinuity.

Black Prairie Zone Ceramic Chronology

The southernmost edge of the Black Prairie physiographic zone coinsides with the northern end of the BWT study area. Few ceramics were recovered from this portion of the Black Prairie by this study, partly because several of the sample blocks slated for survey in this zone were unplowed, resulting in minimal artifact recovery within the alloted time. It is equally possible that the southern edge of the Black Prairie zone had a low population density.

The scanty artifactual material collected by the BWT project provides few insights into the ceramic chronology of the Black Prairie zone (Table 9). Mitigation and research projects within the Black Prairie along the Tombigbee River, north of the BWT project area, have, however, provided a clear understanding of the ceramic development within that zone. Mitigation and research conducted in the Gainesville Lake area of the central Tombigbee Valley by Neilsen and Jenkins (1973); Jenkins et al. (1975); and Jenkins (1975a, 1980, 1981, and 1982) for the U.S. Army Corps of Engineers has resulted in substantial refinement of the ceramic sequence originally proposed by Jennings (1941, 1944); Cotter and Corbett (1951); and Bohannan (1972). Work by other researchers provided a substantial amount of supporting data for the sequence (Rucker 1974; Blakeman 1976; Blakeman et al. 1976; Winn and Atkinson 1976; Atkinson and Elliott 1978; O'Hear and Conn 1977; O'Hear et al. 1981; Atkinson et al. 1980). Recent research indicates that the central Tombigbee Valley ceramic sequence extends at least as far south as the Demopolis, Alabama area near the southern edge of the Black Prairie zone and tangential to the northern edge of the BWT study area (Sheldon et al. 1980). A summary of the central Tombigbee and Black Prairie sequence was most recently detailed by Jenkins (1981, 1982). Greater detail and the supporting data for the sequence are found in those reports.

<u>Broken Pumpkin Creek Phase</u> (1000 B.C. - 500 B.C.)

The diagnostic ceramics of the Broken Pumpkin Creek phase are the fiber tempered Wheeler series. These were the first ceramics to appear within the Black Prairie zone. This series consists almost entirely of temporally varying percentages of the types Wheeler Plain, Wheeler Dentate Stamped, Wheeler Punctated, and Wheeler Simple Stamped as defined by Wimberly (1953a) and Jenkins (1981:164-171). Wheeler Plain usually comprises 85 to 90 percent of any Wheeler assemblage. It is usually necessary, therefore, to acquire a large collection before any decorated sherds will appear. Consequently most small components yield only plain sherds. The dominate vessel shape of the Wheeler series was the flat based beaker. The simple hemispherical bowl, however, was present also.

<u>Henson Springs Phase</u> (500 B.C. -100 B.C.)

The sand tempered Alexander series are the diagnostic ceramics of the Henson Springs phase. These ceramics are decorated almost exclusively by pinching and incising, referred to as Alexander Pinched and Alexander Incised (Haag 1939:9). The incised motifs are almost exclusively rectilinear, consisting of chevrons, chevron filled triangles, diamonds formed by cross hatching, hexagons, and lines incised parallel to the rim. The

Table 8. Ceramic Components by Physiographic Zones.

Site No.	Provenience	Components	Relative Component Size*	Comments
Black Belt				
1Mo88	Surface.	Miller II or Tuckabum	S	—
1Su96	Surface.	Miller II	S	—
1Su98	Surface.	Mississippian	S	Shell tempered plain only.
		Tuckabum	VL	Adjacent to mounds near West Paces Landing.
Flatwoods				
1Mo8	Surface of roadcut through mound.	Miller II or Tuckabum	S	—
1Mo9	Surface.	Miller I	L	Alligator Bayou Stamped and Marksville Incised minorities.
		Miller III	S	—
1Mo10	Surface, Area A.	Mississppian	S	Shell tempered plain only.
		Miller II or Tuckabum	M	Probably Tuckabum.
	Surface, Area B.	Miller III	S	—
	Surface, Area B Extention.	Miller III	S	—
		Miller II or Tuckabum	S	—
	Surface, Area C.	Unidentified Woodland	S	Clay and sand tempered plain.
	Surface, Area D.	Miller III (early)	S	Could be associated with Tuckabum component.
		Tuckabum	M	—
		Wheeler	S	—
	Surface, Area E.	Mississippian	S	Shell tempered plain only.
		Miller III (early)	S	—
		Miller II (early)	M	—
1Mo96	Surface.	Miller III	S	Possibly late Miller III.
1Mo98	Surface.	Unidentified Woodland	S	All sand tempered plain. Probably Middle Woodland.
1Mo99	Surface.	Miller I	S	—
1Mo102	Surface.	Unidentified Woodland	S	Eroded sand tempered only.
Southern Red Hills				
1Mo104	Surface, Area A.	Mississippian	S	Shell tempered plain only.
		Tuckabum	L	McLeod or Weeden Island minority.
1Mo106	Surface.	Unidentified Woodland	S	Probably Miller I.
	Feature I.	Miller I	L	Possibly Pharr subphase.
1Mo107	Surface.	Mississippian	S	Shell tempered plain only.
		Unidentified Woodland	S	Eroded sand tempered.
1Mo108	Surface.	McLeod	M	Furrs Cord Marked minority.
1Mo109	Surface.	Mississippian	S	Shell tempered eroded.
		Miller II	M	Marksville Incised minority.
	Buried component.	Miller I	L	Possibly Bynum subphase with Basin Bayou Incised minority.
1Cw28	North ½ of site, 20 m interval walkover.	Miller II or Tuckabum	L	Weeden Island minority.
	South ½ of site, 20 m interval walkover.	Mississippian	M	Shell tempered plain only.
		Tuckabum or Miller II	L	Weeden Island minority.
		Miller III	S	Probably associted with Tuckabum component.
	Washout at north end of site.	Tuckabum or Miller II	M	Wright Check Stamped minority.
		Weeden Island	M	Possibly associated with Tuckabum component.
		Wheeler	S	—
	Controlled surface collection, north end of site.	Miller II or Tuckabum	M	—
		Weeden Island	M	—
	5 m x 17 m area, NE edge of site.	Miller II or Tuckabum	L	Miller III and Weeden Island minorities. Miller I possibly present.
1Cw29	Surface.	Mississippian	S	—
		Unidentified Woodland	S	Plain sand tempered.
1Cw31	Surface.	Tuckabum	S	McLeod or Weeden Island minority.
1Cw33	Surface.	Mississippian	S	Shell tempered plain only.
		Alexander	S	—
		Wheeler	S	—
1Cw45	All units.	Tuckabum	VL	Weeden Island minority.
Tallahatta Hills				
1Cw39	Surface.	Mississippian	S	Shell tempered plain only.
		Miller II	S	—
1Cw40	Surface.	Mississippian	S	Shell tempered plain only.
1Cw44	Surface.	Unidentified Woodland	S	Sand tempered plain only.
1Ck1	All units, plus Wimberly 1960.	Bayou La Batre	L	Alexander and Tchefuncte minorities.
		Porter	VL	Marksville and Miller I minorities.
		McLeod	L	Weeden Island minority.

Table 8. Ceramic Components by Physiographic Zones (Continued).

Site No.	Provenience	Components	Relative Component Size*	Comments
Tallahatta Hills (continued)				
1Ck5	General surface.	McLeod	VL	Weeden Island minority.
		Mississippian	S	Shell tempered plain only.
	North end of site.	McLeod (early)	L	Clay tempered plain minority.
	South end of site.	Mississippian	S	—
		McLeod	S	—
	Southwest of house.	Mississippian	S	Shell tempered plain only.
		McLeod	VL	—
	Feature 1.	McLeod	VL	—
1Ck16	General surface, plus Wimberly 1960	McLeod (early?)	VL	Weeden Island minority.
1Ck20	All units.	Pensacola	VL	Peaveys Landing mound. 1 check stamped and 1 Weeden Island Plain.
1Ck73	Surface.	McLeod (early?)	VL	Weeden Island, Furrs Cord Marked, and Flint River Brushed minorities.
1Ck74	Surface.	McLeod (early?)	VL	Weeden Island and Miller III minorities.
1Ck79	Surface.	Pensacola	S	—
		McLeod	S	—
1Ck199	Surface.	Unidentified Woodland	S	1 sand tempered check stamped, eroded.
Rolling Piney Woods				
1Ck45	All units.	Bayou La Batre	VL	Early Marksville minorities.
1Ck209	General surface.	Pensacola	M	—
		Porter	L	—
		Bayou La Batre	S	—
1Ck209	Bank profile.	Porter	M	Marksville minority. Probably Late Porter.
1Ck210	Profile Slump.	Pensacola (early)	VL	Sand tempered plain minority.
1Wn67	Surface.	Unidentified Woodland	S	Sand tempered plain and eroded.
1Wn69	Surface.	Pensacola	S	—
		Unidentified Woodland	S	Sand and clay tempered plain.
		Wheeler	S	Ben Griffin collection.
1Wn70	—	Pensacola	L	Peach Pit in direct association.
		McLeod(?)	M	Plain clay tempered minority.
1Wn72	Surface.	Alexander	S	—
1Wn81	All units.	Pensacola	M	—
		Unidentified Woodland	S	—
Delta Meander				
1Ba380	All units.	Pensacola	M	Musket ball in possible association.
		Tensaw Lake	S	—
1Ba381	Mound surface.	Pensacola	M	—
		Tensaw Lake	S	—
	All other units.	Pensacola	L	—
		Tensaw Lake	S	—
1Ck200	All units.	Weeden Island	L	Saltillo Fabric Marked var. Tombigbee minority. Possible Porter component.
1Ck201	Surface.	Unidentified Woodland	S	Eroded sand and sand/grit tempered.
1Ck202	Surface.	Miller II or Tuckabum	S	1 Furrs Cord Marked sherd.
1Ck203	Surface.	Mississippian	S	Shell tempered plain only.
		Tensaw Lake	S	—
1Ck204	Surface.	Pensacola	S	—
1Ck205	Shovel test.	Mississippian	S	Eroded shell tempered.
		Unidentified Woodland	S	Plain and eroded sand tempered.
1Ck206	Surface.	Mississippian	S	Plain shell tempered only.
1Ck207	Shovel test and surface.	Mississippian	S	Shell tempered plain only.
		Tensaw Lake	L	—
1Ck208	Surface.	Unidentified Woodland	S	Eroded sand tempered.
1Wn74	Surface.	Mississippian	S	Eroded shell tempered.
1Wn75	Surface.	Mississippian	S	Shell tempered plain only.
		Bayou La Batre	M	Saltillo Fabric Marked var. Tombigbee minority.
		Weeden Island	M	Troyville minorities.
		Miller III (early)	M	Probably in association with Weeden Island component.
		Wheeler	S	—
1Wn76	General Surface.	Porter	L	Marksville and Miller I minorities.
		Pensacola	M	—
	South of beach to shell concentration.	Pensacola	S	—
		Porter	L	Furrs Cord Marked minority.
	Shell washout.	Pensacola	S	—
		Porter	L	Clay tempered plain minority. Probably Marksville Plain.
	South end of site.	Marksville	M	Possibly Tchefuncte.

Table 8. Ceramic Components by Physiographic Zones (Continued).

Site No.	Provenience	Components	Relative Component Size*	Comments
Delta Meander				
1Wn76	Beach surface.	Pensacola	M	—
		Porter	M	Clay tempered plain minority.
		Bayou La Batre	M	—
		Wheeler	S	All plain.
1Wn77	Surface, Area D.	Porter	M	—
		Alexander(?)	S	Fingernail Punctated sherd.
	Surface, Area E.	Mississippian	S	Shell tempered plain only.
		Unidentified Woodland	S	Sand tempered plain and eroded.
1Wn78	Surface, Shell Concentration 1.	Tensaw Lake	S	—
		Weeden Island	M	—
	Surface, Shell Concentration 2.	Mississippian	S	Shell tempered plain only.
		Tensaw Lake	S	—
		Weeden Island	L	Saltillo Fabric Marked var. China Bluff minority.
	Area between Shell Concentrations 2 and 3.	Mississippian	S	Shell tempered plain only.
		Weeden Island	L	—
		Tensaw Lake	M	—
	Surface, Shell Concentration 4.	Weeden Island	M	—
	Surface, south of shell concentrations.	Mississippian	S	Shell tempered plain only.
		Weeden Island	M	Furrs Cord Marked minority.
1Wn79	Surface.	Tensaw Lake	S	—
		Weeden Island	S	—
Delta Swamp				
1Mb60	Borrow pits, surface.	Miller III	S	Possibly late.
		Bayou La Batre	S	Alexander minority.
1Mb63	Surface.	Porter	L	Marksville minority.
		Bayou La Batre	M	—
1Mb65	Surface.	Pensacola	L	—
		Tensaw Lake	L	—
		Weeden Island	L	Furrs Cord Marked and Pontchartrain Check Stamped minorities.
		Miller III (early)	L	Probably associated with Weeden Island component.
1Mb66	Surface	Pensacola	S	—
		Tensaw Lake	VL	—
		Weeden Island	L	Furrs Cord Marked minority.
		Miller III (early)	L	Probably associated with Weeden Island component.
1Mb97	Surface	Pensacola	M	—
		Tensaw Lake	S	—
		Weeden Island	L	Mazique Incised and clay tempered plain minorities.
		Bayou La Batre	S	—
		Wheeler	S	All plain.
1Mb203	Surface and shovel test.	Marksville	S	—
1Mb210	Surface.	Mississippian	S	Possibly Historic Mobilian.
		Appalachee	M	Historic. Similar to 1Mb216.
		Unidentitified	S	Plain sand/grit tempered.
1Mb211	Bank Profile.	Pensacola	M	—
	General surface.	Weeden Island	M	Saltillo Fabric Marked var. China Bluff minority.
		Troyville(?)	M	Plain clay tempered and Churupa Punctated.
	Spoil piles dredged from gas well.	Mississippian	S	Shell tempered plain only.
	Surface, shell washout.	Pensacola	M	—
1Mb212	Bank profile.	Pensacola	S	—
		Unidentified Woodland	S	Sand tempered plain.
	Surface, woods at bluff top.	Mississippian	S	Shell tempered plain only.
1Mb213	Surface, 66 m north of south end of bluff.	Mississippian	S	Shell tempered plain only.
	Surface, south end of bluff.	Unidentified Woodland	S	Clay tempered plain.
	43 cm below surface.	Wheeler	S	—
1Mb215	Bank profile, 60 cm below surface.	Unidentified Woodland	S	Eroded sand tempered.
1Mb216	Surface, bluff top.	Appalachee and other Historic	L	Possibly Creek minority.
1Mb217	Surface.	Mississippian	S	Shell tempered plain only.
1Mb218	Surface.	Weeden Island	M	—
1Mb220	Shovel test, 0-80 cm	Pensacola	L	—
1Ba382	All units.	Pensacola	L	—
		Tensaw Lake	S	—

Table 8. Ceramic Components by Physiographic Zones (Continued).

Site No.	Provenience	Components	Relative Component Size*	Comments
Delta Swamp (continued)				
1Ba383	Profile cut.	Mississippian	S	Shell tempered plain only.
		Unidentified Woodland	S	Clay tempered plain.
1Ba385	Shovel test.	Mississippian	S	Shell tempered plain only.
1Ba388	Surface.	Mississippian	S	Shell tempered plain only.
1Ba384	Midden zone.	Mississippian	M	Shell tempered plain only.
1Ba393	Stratum below plowzone.	Unidentified Woodland	S	Plain sand and clay tempered.
1Ba395	Surface.	Pensacola	M	--
		Tensaw Lake	S	--
1Ba441	Surface.	Mississippian	S	Shell tempered plain only.
		Weeden Island	S	--
1Ba449	All units.	Weeden Island	M	--
		Tensaw Lake	S	--
1Ba450	Surface.	Mississippian	S	Shell tempered plain only.
		Tensaw Lake	M	--
		Miller II or Tuckabum	S	Plain clay tempered minority.
1Ba451	Surface.	Tensaw Lake	M	--
		Weeden Island	M	--
1Ba452	Surface.	Tensaw Lake	M	--
		Unidentified Woodland	S	Plain sand tempered.
1Ba453	Surface.	Unidentified Woodland	L	Plain sand and clay tempered.
1Ba454	Surface.	Mississippian	S	Small eroded shell tempered plain sherd.
1Ba455	Surface.	Mississippian	S	Shell tempered plain only.
		Tensaw Lake	M	--
		Weeden Island(?)	S	--
		Miller III	S	Pontchartrain Check Stamp minority.
1Ba456	Surface.	Tensaw Lake	M	--
		Bayou La Batre	L	Possibly very late Bayou La Batre.
1Ba457	Surface.	Tensaw Lake	S	--
1Ba458	Surface.	Tensaw Lake	S	Miller III minority.
1Wn66	Surface.	Pensacola	M	--
Delta Marsh				
1Ba194	Surface.	Pensacola	VL	--
		Tensaw Lake	L	--
		Weeden Island	M	Furrs Cord Marked Minority.
		Miller III (early)	M	Probably associated with Weeden Island component.
1Ba197	Surface.	Mississippian	S	Shell tempered plain and eroded.
		Unidentified	M	Plain sand, clay, and sand/grit tempered.
1Ba198	Surface.	Pensacola	M	--
		Weeden Island	S	--
		Miller III (early)	S	Probably associated with Weeden Island component.
1Ba200	Surface.	Pensacola	VL	--
		Weeden Island	M	Plain clay tempered minority.
1Ba215	Surface.	Mississippian	S	Shell tempered plain only.
		Tensaw Lake	M	Miller III minority (probably late).
		Bayou La Batre	M	Alexander minority.
		Wheeler	M	All plain.
1Ba394	All units.	Pensacola	VL	--
1Ba398	Surface.	Pensacola	L	--
		Unidentified	S	Plain clay and sand/grit tempered.
1Ba399	Shovel test.	Pensacola	S	--
1Ba400	Surface.	Mississippian	M	Shell tempered plain only.
		Unidentified Woodland	S	Plain clay tempered.
1Ba401	Surface.	Pensacola	S	--
		Tensaw Lake	S	--
		Tuckabum	M	--
1Ba459	Surface.	Weeden Island	M	Plain clay tempered minority.
1Ba460	Surface.	Mississippian	S	Shell tempered plain only.
1Mb96	All units.	Pensacola	S	--
		Unidentified Woodland	M	Sand and clay tempered plain.
1Mb206	Surface.	Pensacola	VL	--
		Weeden Island	VL	1 Gainesville Complicated Stamped sherd in probable association.
		Miller III (early)	VL	Probably associated with Weeden Island component.

* S 0-10 sherds = Small Component
M 11-30 sherds = Medium Component
L 31-100 sherds = Large Component
VL 100+ sherds = Very Large Component

Table 9. Black Belt Ceramics.

	1Mo68 Surface	1Su96 Surface	1Su98 Surface	Total
Shell Tempered				
Plain (Coarse)	-	-	2	2
Eroded	-	-	2	2
Subtotal	-	-	4	4
Fine Sand				
Plain	-	2	9	11
Furrs Cord Marked	1	1	116	118
Subtotal	1	3	125	129
Other				
Fired Clay	-	-	1	1
TOTAL	1	3	130	134

pinched pottery may be either fingernail punctated or pinched. Minority types of the Alexander series include Smithsonia Zoned Stamped, Columbus Punctated (Heimlich 1952:12), Crump Punctated (DeJarnette et al. 1975a), and an unnamed reed punctated pottery. The majority of the ceramics from any Alexander assemblage, however, is plain (Haag 1939:6). Alexander pottery characteristically has a line of bosses or nodes, immediately beneath the lip. The execution of these nodes was accomplished by pushing a 1 or 2 mm diameter implement through the vessel wall from the interior, creating a raised node on the exterior 4 to 6 mm in diameter and 1 or 2 mm high.

Several Alexander vessel shapes are known. The available evidence suggests that the basic shape for both Alexander Pinched and Alexander Incised is a large, straight sided vessel, usually with an excurvate rim and a flat base often with podal supports. Globular-like vessels with a rounded base seem to be present also. Bases frequently have four podal supports. A rare basal form is the pseudoanular or ring-like base. An unusual six sided vessel composed of three short sides and three long sides has been recently recovered from the Kellogg Village site, near Columbus, Mississippi. The base of this vessel is flat with six podal supports consisting of three sets of two situated below each of the three short sides of the vessel (Atkinson et al. 1980:121-122).

It is presently impossible to document internal development of Alexander ceramics since no deep stratified Henson Springs components have been located or excavated. Neither have a sufficient number of Alexander features been found to seriate these ceramics into a sequence of stylistic change.

The Alexander series may have developed out of the Wheeler series. This assumption is supported by the high co-occurrence of Wheeler and Alexander components. It has been postulated that the attributes that comprise both series are derived from earlier ceramic series within the Coastal Plain located primarily along the Atlantic coast. The ceramic attributes that comprised these early series have been referred to as the parent complexes of the Gulf tradition. It has been proposed that the spread of these attributes was a by product of trade (Walthall and Jenkins 1976:43-49, Jenkins 1982). The development from Wheeler to Alexander has not been documented stratigraphically and remains an important problem for future researchers.

Miller I Phase (100 B.C. - A.D.300)

At approximately 100 B.C. a new and distinct ceramic technology appeared in the central and upper Tombigbee River drainage. The salient characteristics of this technology were fabric and cord marking and conoidal vessels with rounded bases.

The Miller I phase is defined ceramically by the appearance and dominance of the types Saltillo Fabric Marked and Baldwin Plain. Furrs Cord Marked apeared slightly later in the Miller I phase as a minority type. Three subphases of the Miller I phase can be distinguished based on the relative frequencies of these three types.

During the early Miller I Bynum subphase the only types manufactured were Baldwin Plain and Saltillo Fabric Marked. It has been proposed that the Bynum subphase dated approximately from 100 B.C. to A.D. 1.

The middle Miller I Pharr subphase has been defined by the initial appearance of Furrs Cord Marked as a minority type in association with Saltillo Fabric Marked and Baldwin Plain. At this time Furrs Cord Marked comprised no more than 12 percent of the total ceramic complex at any of the excavated components. Other minority types included Basin Bayou Incised, Alligator Bayou Stamped, and probably Mound Field Net Marked. These latter types are more common and diagnostic in the Middle Woodland Porter phase of the Tallahatta Hills, Rolling Piney Woods, Delta Meander, Delta Swamp, and Delta Marsh zones. The Middle Miller I Pharr subphase dated from approximately A.D. 1 to A.D. 200.

The late Miller I Craigs Landing subphase was characterized by a further increase in the relative amount of Furrs Cord Marked. Components of this subphase were roughly characterized by 20 to 30 percent Furrs Cord Marked, 30 to 40 percent Saltillo Fabric Marked, and approximately 40 percent Baldwin Plain. Consistent minority types included Basin Bayou Incised, Alligator Bayou Stamped, Santa Rosa Stamped, Santa Rosa Punctated and Porter Zone Incised. The Craigs Landing subphase dated approximately from A.D. 200 to A.D. 300 (Jenkins 1981:20-22).

Miller I vessel shapes were characterized by two basic shapes, the Baldwin Plain simple hemispherical bowl and the Saltillo Fabric Marked and Furrs Cord Marked deep conoidal jar.

Jenkins (1982) has proposed that the appearance of the Miller I phase was a product of a southward expansion of the Pinson complex of western Tennessee. The center of this complex is a group of 20 Middle Woodland mounds on the eastern edge of the West Tennessee Plain physiographic district. Jenkins (1982) proposed that this environmental district served as a natural corridor through which Miller I spread southward. Due south of the Pinson Mounds site this physiographic district is known as the North Central Hills and Interior Flatwoods districts in Mississippi. The Ingomar site (Brown 1926) is located within the Interior Flatwoods in north Mississippi. This site is (or was) almost a physical replica of the Pinson Mounds site. It was located in the same physiographic district, in a similar environmental setting between major river drainage divides and had an almost identical ceramic assemblage. Numerous other smaller Middle Woodland mounds are also located in the area, including the Bynum Mounds site (Cotter and Corbett 1951). The North Central Hills and Interior Flatwoods bend eastward and cross the lower Tombigbee River. In Alabama the North Central Hills district is known as the Southern Red Hills district. Where the Southern Red Hills and Interior Flatwoods cross the Tombigbee the BWT, Moore (1905a), and Sears (1977) recorded several large Miller I and II mound groups. Jenkins (1982) has proposed that early Miller groups entered Mississippi and Alabama via this physiographic district probably as site unit intrusions. The smaller Alexander population was either acculturated, displaced, or both.

Miller II Phase (A.D. 300 A.D. 600)

Ceramically, the Miller II phase developed out of the Miller I phase. It was marked by the numerical increase of Furrs Cord Marked over Saltillo Fabric Marked. By the end of the phase Saltillo Fabric Marked was a minority, most of the pottery was plain, and grog or clay tempered pottery was more numerous.

The Miller II phase has been divided into early and late subphases. No excavated data is available for the documentation of the transition from the early to late Miller II subphases. The earlier part of the Miller II phase is the least understood segment of the Miller sequence.

During the early Miller II Tupelo subphase Furrs Cord Marked comprised approximately 40 to 50 percent, Saltillo Fabric Marked comprised 10 to 20 percent, and Baldwin Plain comprised 40 to 50 percent of the total ceramic count. Jenkins (1982:96) proposed that the Tupelo subphase dated approximately from A.D. 300 to A.D. 450.

One of the most dramatic changes of the Miller continuum had occurred by the onset of the late Miller II Turkey Paw subphase. Grog tempered pottery became a consistent part of the ceramic assemblage and plain pottery became the dominant surface treatment.

Sand tempered ware was the dominant pottery during the Turkey Paw subphase, although it decreased in frequency through time. The dominant sand tempered type was Baldwin Plain var. Blubber, with an average frequency of 30 to 40 percent. The dominant vessel form of this type was a large straight sided flat bottomed vessel that occassionally exhibited large crude loop handles riveted to the vessel wall. The most numerous decorated sand tempered variety was Saltillo Fabric Marked var. China Bluff, with an average range of occurrence from about 10 to 15 percent. This variety has a surface treatment identical to the grog tempered Withers Fabric Marked var. River Bend and var. Montgomery, consisting of a randomly applied cord wrapped dowel. This treatment is a good marker for Turkey Paw components because its occurrence before and after this subphase is sporadic. This variety is very similar to the Weaver Corded Stick type which became the dominant decorated type in the Illinois Valley at the end of the Middle Woodland period (Wray and MacNiesh 1961:52-53, Figure 4). The most common vessel shape of these varieties was the small beaker, occasionally exhibiting podal supports. Furrs Cord Marked var. Pickens is the next most numerous sand tempered variety, with an average range of occurrence from about 2 to 6 percent. Its vessel shape during this time period is unknown.

Grog or clay tempered pottery first became an important and consistent part of the ceramic assemblage during the Turkey Paw subphase. It comprised approximately 5 percent of the total complex at the beginning of the subphase and occurred at frequencies equal to sand tempered pottery by the end of the subphase. Clay tempered pottery was segregated into two ware subgroupings. One group was tempered with dense amounts of clay. The other group was tempered with more sand and less clay. The ware containing more sand and less clay is most numerous during the early part of the Turkey Paw subphase and virtually disappeared during the following

Miller III phase. Baytown Plain was the dominant clay tempered pottery type during the Turkey Paw subphase. Baytown Plain var. Tishomingo appeared at a rate of 1 to 5 percent at the beginning of the subphase and increased to approximately 40 percent by the end of the subphase. The frequency range of the dense clay tempered var. Roper paralleled that of the sparsely grog tempered var. Tishomingo although the latter was slightly but consistently more numerous. The dominant vessel form of both varieties was the beaker, occasionally exhibiting large loop handles. This vessel form is a diagnostic mode of this subphase.

Cord marking on a clay tempered paste appeared in the Tombigbee drainage, probably for the first time during this subphase. Mulberry Creek Cord Marked var. Aliceville (dense clay) and var. Tishomingo (sparse clay) occurred sporadically at approximately equal frequencies at rates between 1 and 5 percent of the total complex. Hemispherical bowls and variations of the conoidal jar were the major vessel shapes.

Fabric marking on a clay tempered paste was an important surface treatment during this subphase. Four varieties of fabric marked pottery have been defined, based on temper and dowel treatment. Withers Fabric Marked var. River Bend (dense clay temper) and var. Montgomery (sparse clay temper) both have a surface treatment randomly applied with a singular dowel. The beaker was the primary vessel shape. These two varieties occurred at a frequency range from 1 to 6 percent and tend to be most numerous toward the later part of the subphase. Withers Fabric Marked var. Gainesville (dense clay temper) and var. Craigs Landing (sparse clay temper) have a surface treatment accomplished with wide multiple dowels woven together and carefully applied over the entire vessel surface. Var. Gainesville occurred sporadically during the Turkey Paw subphase at rates betweeen 1 and 5 percent. Var. Craigs Landing was only rarely present. The major vessel shape of these two varieties was the large hemispherical bowl.

Ceramics of at least two or three nonlocal complexes occurred with the local Miller ceramics. All of the major McLeod types were present including McLeod Simple Stamped, McLeod Check Stamped, and McLeod Linear Check Stamped. The most numerous type was McLeod Simple Stamped var. Eutaw which occurred at an average frequency range of about 5 to 6 percent. McLeod Check Stamped var. Bigbee occurred at an average frequency range of about 3 to 4 percent. McLeod Linear Check Stamped occurred at a frequency of less than one percent. The major vessel shape of this complex was the flat based beaker. This was probably an early McLeod complex since one McLeod Check Stamped podal support was found and all rims are unmodified. According to Wimberly (1960:127-130), McLeod Check Stamped vessels did not have podal supports. If, however, the McLeod complex developed from a local Deptford complex, as has been postulated (Wimberly 1960:130), at least some podal supports should have been present in early McLeod context. Further, sites along the lower Tombigbee, such as the McLeod Estate site and Deas Village which were identified by Wimberly as early McLeod based on rim morphology, had significantly higher percentages of McLeod Simple Stamped, like the components in the Gainesville Lake area.

Minority types which consistently occurred with both the McLeod pottery and the local Miller ceramics were Weeden Island Red Filmed, Late Swift Creek Complicated Stamped, Carrabelle Punctated and Incised, and possibly Basin Bayou Incised. These types together comprised less than two percent of the Turkey Paw complex.

Another nonlocal complex which occurred in association with the Turkey Paw complex is a late Copena complex similar to those found in the Tennessee Valley. The most numerous variety of this limestone tempered group was Mulberry Creek Plain var. Dead River. It occurred at a frequency between 20 and 40 percent being more numerous toward the beginning of the subphase. Wright Checked Stamped was the second most numerous limestone tempered type. Together vars. Wheeler Bend and Dead River occurred at rates between 2 and 10 percent throughout the subphase. Pickwick Complicated Stamped was the least numerous limestone tempered type. Together vars. Coal Fire and Hogeye occurred sporadically at frequencies between 1 and 10 percent.

The Turkey Paw subphase dated from A.D. 450 to A.D. 600. The consistent association of early McLeod ceramics in good Turkey Paw contexts at three sites should allow us to relatively date the initial appearance of the McLeod complex within the lower Tombigbee Tallahatta Hills (Jenkins 1981:22-24).

Miller III Phase (A.D. 600 - A.D.1100)

Ceramically, the Miller III phase developed of the Miller II phase. Miller III ceramics were primarily clay tempered. During the earliest part of the Miller III phase, plain pottery and sand tempering predominated. Throughout the duration of the phase, however, cord marking and grog tempering increased, and plain pottery and sand tempering decreased. Four subphases have been defined, based mainly on the temporally varying percentages of the major types and varieties.

The earliest division of the Miller III phase, the Vienna subphase, was characterized by both sand and clay tempered ceramics. Early and late subdivisions of the Vienna subphase were tentatively defined by the relative percentages of clay and sand tempered pottery. The early Vienna complex was comprised of almost equal amounts of sand and clay tempered pottery. Baldwin Plain var. Blubber was the most numerous ceramic variety, comprising 30 to 40 percent of the total ceramic complex. Furrs Cord Marked var. Pickens increased to comprise about 10 percent of the total ceramic complex. Weeden Island minorities seem to still be present also.

Clay tempered pottery comprised approximately 50 percent of the early Vienna ceramic complex. Baytown Plain var. Roper was the most numerous comprising about 30 percent, and var. Tishomingo comprised roughly 4 percent. Mulberry Creek Cord Marked var. Aliceville had increased in frequency since late Miller II times to comprise 12 to 15 percent of the total complex. Withers Fabric Marked var. Gainesville occurred sporadically at a rate of only 2 percent. Alligator Incised appeared for the first time during the early Vienna subphase at a frequency of less than one half percent. This type was a consistent minority in Baytown related phases of the Yazoo Basin (Phillips 1970:38-39). In both the Yazoo Basin and the central Tombigbee Valley, Alligator Incised also occasionally was incised over Mulberry creek Cord Marked.

The late Vienna complex was very similar to the early Vienna complex. Clay tempered pottery, however, increased substantially over sand tempered ware. Baytown Plain var. Roper comprised 45 to 55 percent of the total complex and Mulberry Creek Cord Marked var. Aliceville increased to comprise about 25 percent. Withers Fabric Marked var. Gainesville doubled to approximately 4 or 5 percent. Several minority types occurred for the first time and comprised less than one percent. These included Yates Net Impressed var. Yates, Gainesville Simple Stamped var. Hickory, Salomon Brushed var. Fairfield, Evansville Punctated var. Tishabee, Larto Red Filmed var. Unspecified, and Avoyelles Punctated var. Unspecified. Alligator Incised var. Oxbow and var. Gainesville continued at a rate of about 0.50 percent.

The early Vienna subphase dated from approximately A.D. 600 to A.D. 750 and the late Vienna subphase dated from approximately A.D. 750 to A.D. 900. The dominant vessel form of the preceeding Turkey Paw subphase, the beaker, virtually disappeared during the Vienna subphase as did any form of appendages. The major Mulberry Creek Cord Marked vessel shapes were the simple hemispherical bowl and bag-shaped conical forms.

The succeeding Catfish Bend subphase was characterized by an increase in the relative amount of Mulberry Creek Cord Marked and Withers Fabric Marked, a decrease in the amounts of Baytown Plain and the virtual disappearance of all sand tempered pottery. Baytown Plain var. Roper and Mulberry Creek Cord Marked var. Aliceville each comprised between 35 and 45 percent of the total ceramic complex. Withers Fabric Marked increased in frequency to comprise 5 to 10 percent of the total ceramic complex. All of the clay tempered minority types present during the late Vienna subphase continued into the following Catfish Bend subphase. Other minorities appearing for the first time included Alligator Incised var. Geiger, Gainesville Cob Marked var. El Rod, and Avoyelles Punctated var. Tubbs Creek.

At around A.D. 1000 two ceramic complexes, the Gainesville and Cofferdam complexes, apparently developed out of the Catfish Bend complex. The Gainesville subphase ceramics were characterized by several Mississippian attributes, while the Cofferdam complex was more traditionally Woodland. Both complexes appear to be at least partially contemporaneous, with the Cofferdam complex continuing slightly later. These conclusions were supported by both seriational and radiocarbon analysis (Jenkins 1981, 1982).

Two ceramic wares were present in the Gainesville complex. Clay tempered pottery comprised 99 percent of the complex. The clay tempered ceramics and their percentages were practically identical to those of the Catfish Bend complex. There was one important difference, however. The Gainesville subphase Baytown Plain var. Roper occasionally exhibited loop handles. The most distinctive ceramic difference between the two complexes was the appearance of approximately 1 percent shell tempered pottery in the Gainesville complex. This pottery was mainly Mississippi

Plain var. Warrior, although a very small amount of unclassified orange slipped and orange and black on buff pottery has also been recovered. Other traits occurring in the Gainesville subphase which appear to be of Mississippian origin included rectangular semisubterranean houses and burials extended or semi-flexed on their back with their bodies oriented east to west.

The Cofferdam complex has been distinguished from the Gainesville complex by its rarity of Mississippian attributes and the overwhelming dominance of cord marked pottery. Ceramically, this complex was characterized by a two or three to one dominance of Mulberry Creek Cord Marked var. Aliceville over Baytown Plain var. Roper. Most of the clay tempered minority varieties which occurred in Catfish Bend and Gainesville complexes also occurred in the Cofferdam complex. Two distinctive varieties, however, Gainesville Cob Marked var. El Rod and Oxbow Incised var. Geiger, have not been recovered in Cofferdam context.

Current radiometric assessments indicate that the Gainesville subphase probably began around A.D. 1000 and lasted no later than A.D. 1100. Dates from Cofferdam contexts indicate this subphase probably also began around A.D. 1000 and may have lasted until A.D. 1200. The relationships between the Catfish Bend, Cofferdam, and Gainesville subphases as well as their relationships to early Mississippian manifestations in the central Tombigbee Valley remains an interesting avenue of research. The appearance of full blown early Mississippian in that area has been well documented as early as A.D. 1000. The mechanism responsible for the appearance of early Mississippian in the area is not understood. Perhaps different modes of interaction with local Woodland groups resulted in the development of the apparently contemporaneous Gainesville and Cofferdam complexes. Only future research can answer this question (Jenkins 1981: 24-29).

Summerville I Phase (A.D. 1000 - A.D. 1200)

Archaeological investigations in the central Tombigbee Valley Black Prairie zone have resulted in the definition of a regional Mississippian ceramic sequence. Previous research in that area (Jenkins 1981:29-33) recognized the Moundville I-III sequence of the adjacent Warrior Valley defined by Steponaitis (1981:141-231). From these initial investigations it was apparent that very similar Mississippian ceramic development had occurred in both areas. The center of this development was clearly located in and around the large and complex site of Moundville, in the Warrior Valley. More recent research in the Gainesville Lake area has further refined the central Tombigbee ceramic sequence and correlated that development with the Moundville sequence. The local Tombigbee sequence is now referred to as Summerville I-III (Peebles 1981:118-129, Mann 1981: 1-121). The ceramic content of a protohistoric Summerville IV phase was very similar to an undefined protohistoric phase in the Warrior Valley and the Alabama River Valley Alabama River phase (Cottier 1970:1-31, Sheldon 1974).

The content of the Summerville I-IV phase sequence appears to be almost identical to the Tibbee Creek-Sorrells phase sequence defined by Marshall (1977:53-58) for the Tibbee Creek drainage. Tibbee Creek flows into the Tombigbee River at Columbus, Mississippi. How these two local Mississippian sequences overlap spatially is a problem that must clarified by future research. It is also entirely possible that both local sequences will be integrated into one sequence since the type sites for both sequences are no more than 40 miles apart.

Two basic shell tempered wares were produced throughout the Summerville sequence. A coarse unburnished ware contained temper particles that were usually over 1.5 mm in diameter. This unburnished ware was usually fired in an oxidizing environment, producing a pale yellow to strong brown finish. The other ware has a paste containing fine shell particles that were less than 1.5 mm in diameter. This ware, usually burnished and often fired in a reducing atmosphere, frequently has a glossy black surface finish that was probably accomplished by moistening the sun dried surface and burnishing the damp surface. This procedure floated the finer particles to the surface and produced a finish similar to a film. The burnished surface turned a glossy black or dark gray when fired in a reducing atmosphere. Throughout the Summerville sequence approximately 85 to 90 percent of the ceramics were coarse ware, and a little over 10 percent were fine ware in village middens.

During the Summerville I phase, Moundville Incised was the dominant decorated type. The most frequently occurring variety of this type was var. Moundville (3 to 4 percent) followed by var. Carrollton (1 to 2 percent). Mississippi Plain var. Warrior was the most numerous variety, comprising approximately 80 to 85 percent of the total complex. Both Mississippi Plain and Moundville Incised were tempered with coarse shell and were unburnished and had two opposing loop or strap handles. The predominant vessel shape of these varieties was the globular jar (Steponaitis 1980b:123-124, Jenkins 1981:70-77).

The major variety of fine ware during the Summerville I phase was Bell Plain var. Hale, comprising about 8 to 10 percent of the total complex. Decorated fine ware varieties together comprised between 2 and 5 percent of the complex. These included Carthage Incised var. Moon Lake and var. Summerville, and Moundville Engraved var. Tuscaloosa. The vessel shape associated with var. Moon Lake was the flaring rim bowl. The shape associated with var. Summerville and var. Tuscaloosa was the subglobular bottle with pedestalled base.

Summerville II-III Phases (A.D. 1200 - A.D. 1500)

The temporal range and ceramic content of the Summerville II-III phases and the Warrior Valley Moundville II-III is similar. A clear distinction between Summerville II and III could not be made among the excavated Tombigbee Valley components since these assemblages appear to be too badly mixed. Peebles and Mann (1981:63) stated that: "The two part designation, II-III was given in the hope that it could be further subdivided in the future."

During the Summerville II-III phases the most numerous ceramic varieties continued to be Mississippi Plain var. Warrior and Bell Plain var. Hale. The basic vessel shape of var. Warrior remained the same, although the number of handles increased from two to four. There were also changes in the vessel shape of Bell Plain var. Hale. The ovoid pedestalled bottle evolved into a form with a wider body and a shorter pedestalled base. By the end of Summerville III times the pedestalled base had disappeared. It was also during the Summerville II-III phases that the beaded or filleted rim appeared. Moundville Incised var. Moundville had either disappeared by this time or was produced as an extreme minority. Moundville Incised var. Carrollton occurred most frequently in Summerville II contexts, but was also present in Summerville III contexts. Var. Snows Bend was present in both Summerville I and II contexts, although it was most numerous in Summerville III contexts (Mann 1981:75-83). Several varieties of decorated fine ware occurred as minorities during the Summerville II-III phases. These included Carthage Incised var. Moon Lake, var. Fosters, and var. Carthage. Var. Fosters reached its maximum frequency of occurrence at this time. Moundville Engraved var. Hemphill and var. Taylorville also occurred as minorities (Mann 1981:70-75).

Summerville IV Phase (A.D. 1500 - A.D. 1700)

The predominant ceramics of the Summerville IV complex were Mississippi Plain var. Warrior (about 90 percent) and Bell Plain var. Hale (about 5 percent). For this time period, however, the fine ware var. Hale is more difficult to sort from the coarse ware var. Warrior since the shell tempering in var. Hale is frequently coarser than previously. Alabama River Applique var. Alabama River, Barton Incised vars. Cochrane and Demopolis, Carthage Incised var. Carthage and Fosters, and Moundville Incised var. Carrollton occurred as minorities. To the east, this complex was very similar to protohistoric assemblages in the Warrior and Alabama River Valleys. A possibly important difference is the absence of Moundville Incised var. Carrollton in the latter assemblages. Excavated components in the Warrior Valley were radiocarbon dated at ca. A.D. 1600 (Curren and Little 1981). These dates as well as the associated trade goods indicate these are late protohistoric components and that the absence of var. Carrollton may be characteristic of late protohistoric assemblages. This hypothesis will require testing by future excavations in the Warrior Valley.

To the west of the Tombigbee Valley the Summerville IV phase ceramics were almost identical to those of the Sorrells phase (Marshall 1977:57). An important distinction is the presence of significant amounts of Parkin Punctated in Sorrells assemblages. The larger amounts of Parkin Punctated in Sorrells assemblages led Marshall (1977:57) to speculate that there were ". . . two phase complexes as yet unseparated . . . [that] lie together contemporaneously." Farther west, the Sorrells and Summerville IV phase ceramics are very similar to the central Mississippi Vallay Armorel phase ceramics (Williams 1980:105-110).

Flatwoods and Southern Red Hills Ceramic Chronology

Ceramic complexes within the Flatwoods and Southern Red Hills zones are essentially identical to those of the Black Prairie zone from the initial appearance of pottery at around 1000 B.C. until the end of the Miller II phase at around A.D. 600 or A.D. 650. The same phase constructs defined for the Black Prairie zone are therefore applied to the Flatwoods and the Southern Red Hills during these earlier periods. Starting at around A.D. 600 the ceramic development of these zones diverges from the Black Prairie when a fairly distinct Late Woodland complex emerged.

Broken Pumpkin Creek Phase (1000 B.C. - 500 B.C.)

One Broken Pumpkin Creek phase component was identified in the Flatwoods zone and two components were identified within the Southern Red Hills zone (Tables 8, 10, and 11). The diagnostic ceramics of this phase are the fiber tempered Wheeler series, consisting of Wheeler Punctated, Wheeler Denate Stamped, Wheeler Simple Stamped, and Wheeler Plain. Decorated Wheeler pottery, in the form of Wheeler Dentate Stamped, was found only at Site 1Cw28. The presence of these few decorated sherds was the primary rationale for assigning the components yielding fiber tempered pottery to the Broken Pumpkin Creek phase and to the Wheeler series. Although previous surveys along the lower Tombigbee were far from exhaustive, Wheeler pottery seemed to be most concentrated north of Demopolis, Alabama. The largest sites have been found in the Prairie, some distance from the river (Jenkins 1982:29-30). Only one other sherd of decorated Wheeler pottery had been found along the lower Tombigbee, at Site 1Ck74 (Coblentz 1979:39). There may be two possible explanations for the rare occurrence of Wheeler ceramics along the lower Tombigbee. (1) The lower Tombigbee probably represents the southernmost fringe of the territory of the Wheeler population. (2) Wheeler groups penetrated this region occasionally to exploit local Tallahatta quartzite quarries or to trade for Tallahatta quartzite. This lithic material outcrops farther south in the Tallahatta Hills zone. Tallahatta quartzite was one of the preferred raw lithic materials used by Gainesville Lake area Broken Pumpkin Creek phase groups (Ensor 1980b:87).

Henson Springs Phase (500 B.C. - 100 B.C.)

The Southern Red Hills and Flatwoods zones also appear to represent the southern boundary of the Henson Springs phase. Only one site has been recorded in the Flatwoods and Southern Red Hills zones which produced Alexander ceramics (Tables 10 and 11). Tallahatta quartzite continued to be an important lithic resource along the central Tombigbee River during the Henson Springs phase (Ensor 1980b:87). The rare occurrence of Alexander components along the lower Tombigbee River may therefore reflect a preference for Tallahatta quartzite continued from the preceding Broken Pumpkin Creek phase.

Miller I Phase (100 B.C. - A.D.100)

Four Miller I components were recorded within the Flatwoods and the Southern Red Hills zones (Tables 8, 10, and 11). Most of these components were larger, contained more artifacts, and appeared to be the product of more intensive or more permanent occupation than the preceeding Alexander and Wheeler components. Sites 1Mo9 and 1Mo109 had rather large dense middens much like the base camps of the Gainesville Lake area (Jenkins 1982). Miller I components were characterized ceramically by the dominance of Saltillo Fabric Marked and Baldwin Plain. Furrs Cord Marked occurred after the initial appearance of Saltillo Fabric Marked and in-

Table 10. Flatwoods Ceramics.

	1Mo8-Surface Mound Cut by Road	1Mo9-Surface	1Mo10-Surface, Area A	1Mo10-Surface, Area B	1Mo10-Surface, Area B-Extension	1Mo10-Surface, Area C	1Mo10-Surface, Area D	1Mo10-Surface, Area E	1Mo96-Surface	1Mo98-Surface	1Mo99-Surface	1Mo102-Surface	TOTAL
Shell Tempered													
Plain (Coarse)	-	-	1	-	-	-	-	2	-	-	-	-	3
Subtotal	-	-	1	-	-	-	-	2	-	-	-	-	3
Clay Tempered													
Plain	-	2	1	1	4	1	6	7	2	-	-	-	24
Mulberry Creek Cord Marked	-	1	1	1	3	-	-	-	4	-	-	-	10
Marksville Incised	-	1	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	1	3	-	-	-	-	-	-	-	-	-	4
Subtotal	-	5	5	2	7	1	6	7	6	-	-	-	39
Fine Sand Tempered													
Plain	-	10	8	-	2	1	4	13	-	5	1	-	44
Furrs Cord Marked	2	11	14	-	2	-	11	6	-	-	-	-	46
Saltillo Fabric Marked <u>var. China Bluff</u>	-	-	-	-	-	-	-	1	-	-	-	-	1
Saltillo Fabric Marked <u>var. Tombigbee</u>	-	17	-	-	-	-	-	4	-	-	1	-	22
Alligator Bayou Stamped	-	1	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	6	2	-	-	-	2	-	-	2	2	3	17
Subtotal	2	45	24	-	4	1	17	24	-	7	4	3	131
Fiber Tempered													
Plain	-	-	-	-	-	-	1	-	-	-	-	-	1
Eroded	-	-	-	-	-	-	1	-	-	-	-	-	1
Subtotal	-	-	-	-	-	-	2	-	-	-	-	-	2
TOTAL	2	50	30	2	11	2	25	33	6	7	4	3	175

Table 11. Southern Red Hills Ceramics.

	1Mo104-Surface, Area A	1Mo106-Surface	1Mo106-Feature 1	1Mo107-Surface	1Mo108-Surface	1Mo109-General Surface	1Mo109-Burial Component	1Cw28-Surface, 20 m walkover entire site	1Cw28-Surface, 20 m walkover north one-half	1Cw28-Surface, 20 m walkover south one-half	1Cw28-Surface, washout northern end	1Cw28-Controlled Surface Collection, 5 m circle north end	1Cw28-Surface, 20 x 50 ft area northeast edge	1Cw28-General surface north end	1Cw29-Surface	1Cw31-Surface	1Cw33-Surface	1Cw36-Surface	1Cw45-Surface	1Cw45-Midden Test*	TOTAL
Shell Tempered																					
Plain (Coarse)	1	-	-	-	-	-	-	-	-	3	-	-	-	1	1	-	1	-	-	-	7
Plain (Fine)	-	-	-	1	-	-	-	-	-	4	-	-	-	-	1	-	-	-	-	-	6
Alabama River Applique	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Residual Incised	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	-	-	2	-	1	-	-	-	5	-	-	-	-	-	-	-	-	-	-	8
SUBTOTAL	1	-	-	4	-	1	-	-	-	12	-	-	-	2	2	-	1	-	-	-	23
Clay Tempered																					
Plain	-	1	-	-	-	1	-	-	-	2	-	-	-	1	-	-	-	5	2	-	12
Mulberry Creek Cord Marked	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Markeville Incised	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Unclassified Brushed	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
SUBTOTAL	-	1	-	-	-	2	1	-	-	3	-	-	-	1	-	-	-	5	2	-	15
Fine Sand Tempered																					
Plain	16	-	20	-	-	12	16	15	14	33	45	27	36	12	7	7	2	5	61	52	390
Furrs Cord Marked	69	-	8	-	2	3	-	18	10	21	24	28	44	-	-	4	-	-	176	222	529
Saltillo Fabric Marked																					
var. Tombigbee	2	-	13	-	-	-	12	-	1	-	-	-	1	-	-	-	-	-	-	-	29
var. China Bluff	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
McLeod Linear Check Stamped	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2
Check Stamped	8	-	-	-	6	-	-	3	1	4	29	9	2	1	-	1	-	-	5	-	69
McLeod Simple Stamped	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	3
Weeden Island Rim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3
Mound Field Net Marked	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Basin Bayou Incised	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Santa Rosa Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2
Alexander Pinched	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	3
Unclassified Punctated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Eroded	4	1	1	2	4	-	-	5	-	7	-	5	5	4	-	5	-	1	13	-	57
SUBTOTAL	99	1	42	2	13	15	29	42	26	65	98	69	90	19	7	17	6	6	257	278	1,181
Limestone Tempered																					
Mulberry Creek Plain	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Wright Check Stamped	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	4
SUBTOTAL	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	5
Fiber Tempered																					
Wheeler Plain	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	1	-	-	-	5
Wheeler Dentate Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Eroded	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	3
SUBTOTAL	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	1	1	-	-	9
TOTAL	100	2	42	6	13	18	30	42	26	80	110	69	91	21	9	17	8	12	259	278	1,233

* Radiocarbon Dated

creased in frequency through time. No Furrs Cord Marked was recovered from the single component buried Miller I stratum at Site 1Mo109. This may indicate that component dated to the very earliest part of the Miller I phase, the Bynum subphase. One Basin Bayou Incised sherd was recovered from this midden, indicating contemporaneity and interaction between Miller I and Porter phase groups farther down river. Two nonlocal sherds were also found at Site 1Mo9. One Alligator Bayou Stamped sherd again supports the contemporaneity of Miller I and the Porter phase. Site 1Mo9 also yielded one Marksville Incised sherd, a Middle Woodland lower Mississippi Valley type (Phillips 1970:110-111). These types have consistently been found in association with excavated Miller I components in the Gainesville Lake area (Jenkins 1975a:Table 19) and in the upper Tombigbee drainage (Cotter and Corbett 1951:26; Bohannon 1972:Table 1; Jenkins 1981:21, 1982:43-44). These types have also been recovered in Middle Woodland Porter contexts at the Porter and McVay sites (Wimberly 1960: Tables 1 and 5).

<u>Miller II Phase</u> (A.D. 300 - A.D. 600)

The Miller II phase followed the Miller I phase in the Flatwoods and Southern Red Hills zones. Miller II components were characterized by an increase in the relative frequency of Furrs Cord Marked over Saltillo Fabric Marked. Saltillo Fabric Marked became a minority type at this time, and cord marked and plain became the major surface treatments. Miller II components are often difficult to distinguish from the succeeding Tuckabum phase components. Tuckabum components are characterized by 80 or 90 percent Furrs Cord Marked, but Miller II components have 60 percent Furrs Cord Marked at the most. Tuckabum components do not appear to have any associated Saltillo Fabric Marked. Miller II components were present in Area E at Site 1Mo10 and in the plowzone at Site 1Mo109. Other possible Miller II components were present at Site 1Mo108 Area A, at Site 1Mo10, and at Site 1Cw28 (Tables 10 and 11).

<u>Tuckabum Phase</u> (A.D. 600 - A.D. -)

Tuckabum components are defined by their high, 80 to 90 percent composition of Furrs Cord Marked, very low, 10 to 20 percent composition of plain pottery, and an apparent absence of Saltillo Fabric Marked. A temporally diagnostic Tuckabum artifact inventory trait is the small triangular projectile point. This projectile point form did not occur until the early Miller III Vienna Landing subphase, ca. A.D. 600, in the Gainesville Lake area (Ensor 1980b:86-87). These small triangular projectile point forms are therefore probably a good marker for the Late Woodland period along the Tombigbee River. Dating the initial appearance of the Tuckabum complex is based primarily on the known dates for the appearance of the small triangular projectile point form. Defining the transition from Miller II to Tuckabum, as well as how and why it occurred, are clearly questions for future excavations.

Tuckabum components were generally larger and more numerous than the components of any of other complexes identified in the Flatwoods and Southern Red Hills zones. Tuckabum components were found in Area D at Site 1Mo10, and at Sites 1Mo104, 1Cw28, 1Cs31, and 1Cw45. Possible Tuckabum components were identified at Sites 1Mo9 and 1Mo10, Areas A and B

(Tables 7, 10 and 11). One Tuckabum component at Site 1Su98 was also found in the southern edge of the Black Prairie, where that zone abutts the Flatwoods zone (Tables 10 and 11). The Tuckabum phase is named for a large midden at the mouth of Tuckabum Creek.

Nonlocal ceramic types and complexes were found in apparent association with Tuckabum complexes at several sites. These associations were inferred from surface contexts and will have to be tested by future excavations in the Flatwoods zone. On the northern end of the Tuckabum territory, Tuckabum components appear to have associated Miller III minority assemblages. Miller III minorities were found at Site 1Mo9, Areas A, B, C, D, and E and at Site 1Mo96. It is difficult to determine from which subphase during the Miller III phase these assemblages might date since the Miller III sherd counts are small. In the Southern Red Hills, there was a Miller III minority assemblage at Site 1Cw28 and possibly at Sites 1Cw36 and 1Cw45.

At the southern end of Tuckabum distribution, in the Southern Red Hills, assemblages of nonlocal derivation indigenous to environmental zones farther south occurred in apparent association with Tuckabum components. These nonlocal minority complexes were either McLeod, Weeden Island, or a mixture of both. Distinguishing between McLeod and Weeden Island assemblages in mixed surface contexts is difficult because the ceramics of both complexes are morphologically very similar. This distinction is further clouded by the premise that these complexes appear to have changed through time. These changes are inferred primarily from the relative percentages of plain, check stamped, and simple stamped pottery. Although these differences will be discussed further below, the most pronounced ceramic difference between Weeden Island and McLeod complexes is the rarity of simple and linear check stamping in Weeden Island and its immense popularity in McLeod assemblages. Tentative minority component identifications in the Southern Red Hills zone were made primarily on this distinction. A relatively large Late Weeden Island component appeared to be concentrated in the washout area of Site 1Cw28. Of the 49 fine sand tempered check stamped (Wakulla?) sherds recovered, 29 were from that area. No simple stamped pottery was recovered from the site (Tables 10 and 11). A Carrabelle Incised sherd from Site 1Cw28 was also observed in the collection of a local resident. Other probable Weeden Island components were identified at Area A of Site 1Mo104 and at Site 1Cw31. The components consisting of check and simple stamped pottery at Sites 1Mo108 and 1Cw45 could be either McLeod or Weeden Island, but are possibly McLeod because of the presence of simple stamping. These assignments and associations are somewhat conjectural, considering that they were based on surface contexts and in some cases rather small sherd counts. Determining the relationships and distinctions between McLeod and Weeden Island components in the Southern Red Hills, their temporal positions, and relationships to the Tuckabum complex, are clearly problems to be answered by future excavations.

At the present time we have no data to indicate how long the Tuckabum complex may have existed. One radiocarbon sample, dated to A.D. 810±50, was obtained from a good context at the single component Tuckabum Creek site. We cannot determine accurate temporal parameters with present data, however. Although this phase surely began around A.D. 600, its terminus is not known. If Tuckabum did not last until the early Mississippian period, there is no known later Woodland complex in the region that developed from it. Future excavations in the region should more clearly define the temporal parameters of the Tuckabum phase and better define its complete material and cultural content.

Mississippian (A.D. 1000 - A.D.1541)

Mississippian components within the Flatwoods and Southern Red Hills zones were sparsely represented. Only 26 sherds and 7 very small components could be classified as Mississippian. Sites producing shell tempered pottery included 1Mo11, Area E; 1Cw28; 1Mo104, Area A; 1Mo107; 1Mo109; 1Cw29; and 1Cw33 (Tables 8, 10, and 11). Since most of this shell tempered pottery was plain, these components cannot be assigned to any specific Mississippian complex. Some of it in fact probably dates to the succeeding protohistoric period, during which shell tempered plain continued to dominate the ceramic inventory. Future surveys should test this apparent but tenuous trend since our survey sample was very small. Early Mississippian mounds may have been first situated on tributary creeks such as the Bessemer Mound on Village Creek (DeJarnette and Wimberly (1941) in the upper Warrior drainage and the Cedar Creek Mound (Jenkins and Paglione 1980) in the lower Alabama River drainage.

Protohistoric (A.D. 1541 - ca. A.D. 1700)

Occupation of this region during the protohistoric period appears to have been sparse. Only one possible protohistoric component was identified at the north end of Site 1Cw28 where one Alabama River Applique sherd was recovered (Table 11).

Talahatta Hills and Rolling Piney Woods Ceramic Chronology

Unidentified Fiber Tempered (ca. 1000 B.C.)

The earliest ceramics in the Tallahatta Hills and Rolling Piney Woods were probably fiber tempered. Sites yielding such ceramics are rare, however. No fiber tempered sherds were recovered by this study in these zones and few fiber tempered sherds have been previously recorded. One large plain rim sherd was observed in the Ben Griffin collecton in Jackson, Alabama. This sherd was reportedly collected from Site 1Wu69 in the Rolling Piney Woods. No other fiber tempered pottery has been found there. The primary component at this site consisted of a large buried Late Archaic stratum which has yielded a number of large straight stemmed projectile points made from Tallahatta quartzite. One Wheeler Punctated sherd has been recovered from Site 1Ck74 (Coblentz 1979:39). One possible reason for the sparse presence of fiber tempered pottery in this region might be that Wheeler groups indigenous to the central Tombigbee region penetrated the lower Tombigbee area to obtain Tallahatta quartzite.

Bayou La Batre Variant (Phases Undefined) (? B.C. - A.D. 1)

Bayou La Batre ceramics were the earliest granular tempered or nonfiber tempered ceramics in the lower BWT study area. The surface treatment of these ceramics was either plain or decorated with a scallop shell. Very rare examples were decorated with a cord wrapped dowel. The dominant vessel form was the deep truncate-conoidal open bowl resting on a small base platform. Variations on the basic form included a hemispherical bowl with a constricted mouth and a globular jar with a short rim. A number of basal forms occurred--ranging from ring bases to bases with seven podal supports (Wimberly 1960:Figures 38-40). Bayou La Batre Plain and Bayou La Batre Stamped were the two major Bayou La Batre series types. Bayou La Batre Scallop Impressed, Santa Rosa Stamped, and Bayou La Batre Cord Wrapped Dowel Impressed were minority types (Wimberly 1953b; 1960: 64-76). A stratigraphic cut conducted at Site 1Ck45 during this study revealed that Bayou La Batre Plain increased in relative frequency through time while Bayou La Batre Stamped decreased (Table 12, and Figures 9 and 10). This stratigraphic cut also revealed temporal changes in temper. The temper of the very earliest Bayou La Batre ceramics was primarily a very coarse sand and grit. The grit was crushed quartzite. The latest Bayou La Batre pottery was tempered primarily with very fine sand (Table 12 and Figures 9 and 10).

A very small amount of early Marksville pottery was found in direct association with the Bayou La Batre pottery at Site 1Ck45. Two sherds were classified as Marksville Stamped var. Mabin. The decoration of these sherds was accomplished by pressing cordage, possibly a cord wrapped dowel, into the wet clay and then zoning with broad incised lines. The paste, however, was not the classic chalky early Marksville paste. The tempering material consisted of clay and fine sand particles and was hard and compact. The sherd classified as Marksville Incised var. Unspecified had an identical paste and had only a broad incised line visible.

One unique sherd was found in Level 1 of the stratigraphic cut at Site 1Ck45. This sherd was zone dentate stamped, similar to Alligator Bayou Stamped. The dentate stamping, however, was very coarse like that of Bayou La Batre Stamped. The temper was coarse sand and grit and was most like the coarse Bayou La Batre temper. This sherd was interpreted as an example of a developmental prototype of Alligator Bayou Stamped.

Three radiocarbon dates were obtained from different levels at Site 1Ck45. Level 2 dated 170±100 B.C, Level 3 dated A.D. 80±45, and Level 4 dated 195±70 B.C. The Level 3 date seems to be inconsistent with the others and is probably too late.

Within the Tallahatta Hills and Rolling Piney Woods, Bayou La Batre components have been identified at Sites 1Ck1, 1Ck45, and 1Ck209 (Tables 8, 13, and 14).

Only Alexander ceramics were recovered from one small component at Site 1Wu72. Recent radiocarbon dates indicate Alexander ceramics probably date from about 500 B.C. to 100 B.C. (Jenkins 1982) and are probably at least partially contemporaneous with the Bayou La Batre series. They have not yet been found in unquestionable association at any of the few excavated Bayou La Batre sites, however. Alexander ceramics have been recovered in relatively good association with Tchefuncte ceramics at the Tchefuncte site in the lower Mississippi Valley (Ford and Quimby 1945:

Table 12. Site 1Ck45: Ceramics.

	BANK CUT EXCAVATION 1 METER SQUARE										
	Level 1 0-15 cm		Level 2 15-30 cm		Level 3 30-45 cm		Level 4 45-60 cm				
	%	No.	%	No.	%	No.	%	No.	TOTAL		
Coarse Sand/Grit Tempered											
Bayou La Batre Plain	12.22	11	29.82	34	19.78	18	38.09	8	71	37	25
Bayou La Batre Stamped	10.00	9	20.17	23	39.56	36	28.57	6	74	22	-
Bayou La Batre Cord Wrapped Dowel Impressed	-	-	-	-	-	-	-	-	-	-	1
Zoned Dentate Stamped	1.11	1	-	-	-	-	-	-	1	-	1
Subtotal	23.33	21	50.00	57	59.34	54	66.66	14	146		
Fine Sand Tempered											
Bayou La Batre Plain	57.77	52	48.24	37	25.27	23	9.52	2	114	72	55
Bayou La Batre Stamped	14.44	13	15.78	18	14.28	13	4.76	1	45	30	30
Santa Rosa Stamped	-	-	-	-	-	-	-	-	-	-	1
Rectilinear Incised	-	-	-	-	0.87	1	-	-	-	2	-
Subtotal	72.22	65	48.24	55	40.65	37	14.28	3	160		
Clay Tempered											
Plain	1.11	1	1.75	2	-	-	9.52	2	5	4	1
Marksville Stamped <u>var. Mabin</u>	1.11	1	-	-	-	-	4.76	1	2	-	-
Marksville Incised <u>var. Unspecified</u>	-	-	-	-	-	-	4.76	1	1	-	-
Dentate Stamped	2.22	2	-	-	-	-	-	-	2	-	-
Clay/Grit Tempered Plain	-	-	-	-	-	-	-	-	-	1	1
Subtotal	4.44	4	1.75	2	-	-	19.04	4	10		
TOTAL		90		114		91		21	316		

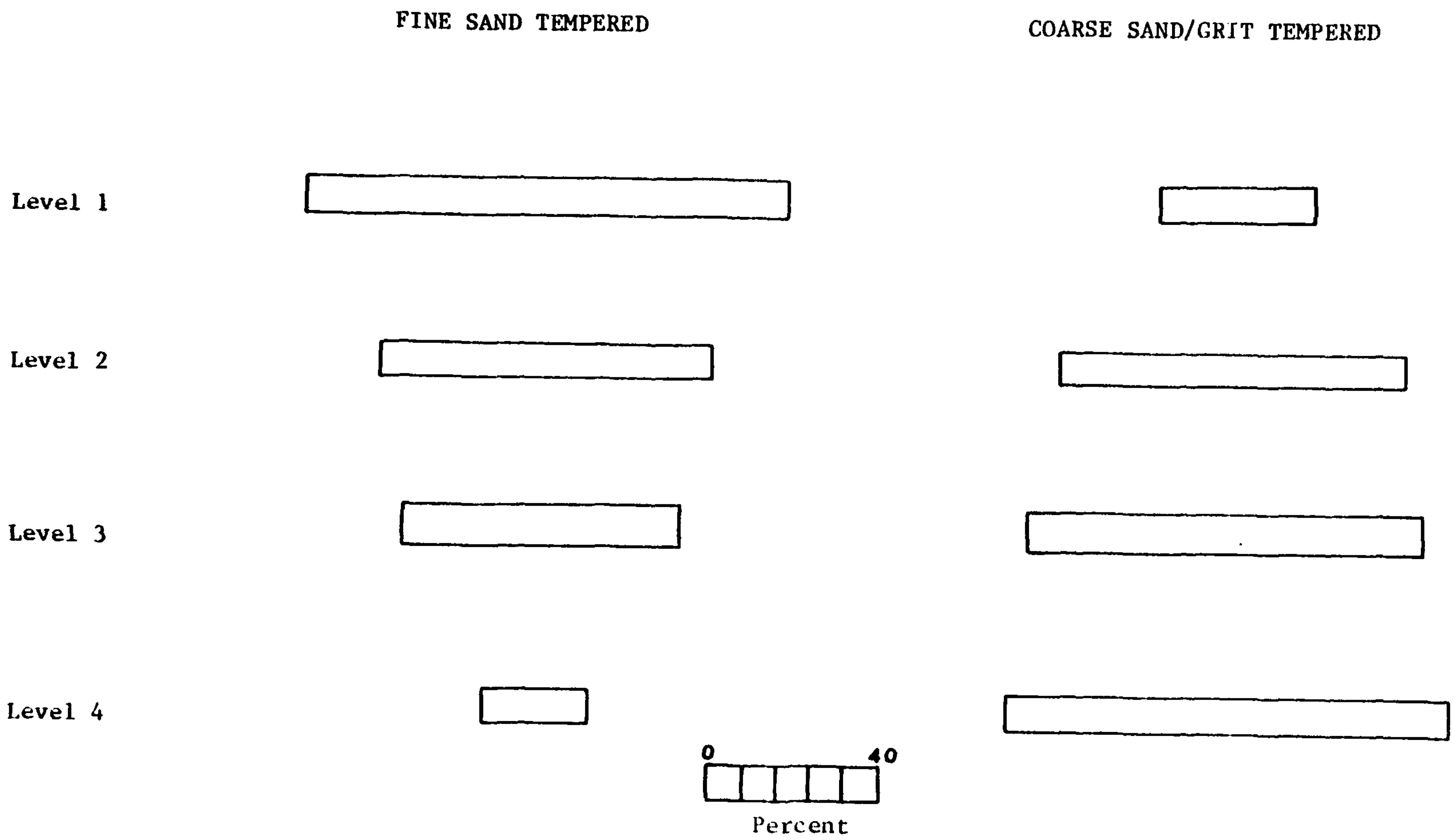


Figure 9. Site 1Ck45: Ceramic Temper Distribution by 15 cm Level from Bank Cut Excavation, 1 m Square.

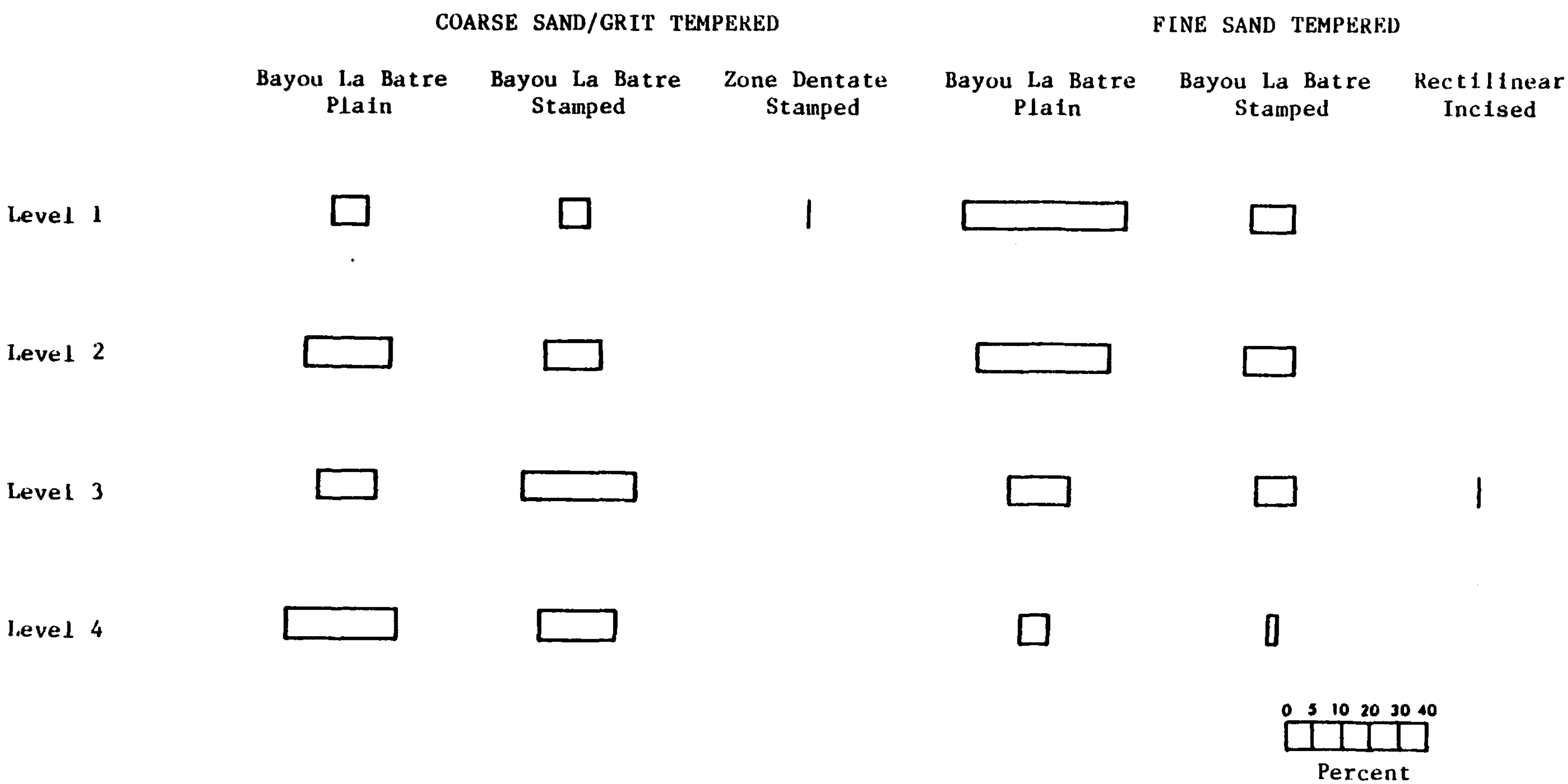


Figure 10. Site 1Ck45: Ceramic Type and Temper Distribution by 15 cm Level from Bank Cut Excavation, 1 m Square.

Table 13. Tallahatta Hills Ceramics.

	1Cw39 Surface	1Cw40 Surface	1Cw44 Surface	1Ck1 Shovel Test 2	1Ck1 Shovel Test 3	1Ck1 Shovel Test 4	1Ck1 Surface along road	1Ck5 General Surface	1Ck5 Surface, north end	1Ck5 Surface, south end	1Ck5 Surface, southwest of house	1Ck5 Feature 1*	1Ck16 Surface	1Ck20 Stratum at mound base*	1Ck20 Surface	1Ck73 Surface	1Ck74 Surface	1Ck79 Surface	1Ck199 Surface	Total
Shell Tempered																				
Plain (Coarse)	1	1	-	-	-	-	-	4	-	-	3	-	-	3	61	-	-	-	-	73
Plain (Fine)	3	2	-	-	-	-	-	-	-	-	-	-	-	2	16	-	-	1	-	24
Moundville Incised (Punctated Arch)	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	3
Pensacola Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	1	-	16
D'Olive Plain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Mobile Cane Impressed	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	3
Residual Incised	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Moundville Engraved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
Eroded	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Subtotal	4	3	-	-	-	-	-	5	-	1	3	-	-	10	95	-	-	2	-	123
Clay Tempered																				
Plain	1	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	2	-	-	6
Mulberry Creek Cord Marked	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Marksville Stamped <u>var. Crooks</u>	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Subtotal	1	-	-	-	1	-	-	-	2	1	-	-	1	-	-	-	3	-	-	9
Fine Sand Tempered																				
Plain	3	-	2	18	4	-	7	76	14	1	86	20	20	-	-	71	37	-	-	359
Check Stamped	-	-	-	2	-	-	-	27	-	-	69	18	-	-	-	15	19	-	1	151
McLeod Linear Check Stamped	-	-	-	-	-	-	-	1	-	-	9	35	-	-	1	4	4	-	-	54
McLeod Simple Stamped	-	-	-	-	-	-	-	33	4	-	26	38	23	-	-	27	66	1	-	218
Furrs Cord Marked	1	-	-	-	-	-	-	2	-	-	1	-	-	-	-	-	2	-	-	6
Tucker Ridge Pinched	-	-	-	-	-	-	-	2	-	-	-	-	2	-	-	-	-	-	-	4
Mound Field Net Marked	-	-	-	-	-	-	-	1	-	-	2	-	-	-	-	-	1	-	-	4
Carrabelle Incised	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Deas Pinched	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3	-	-	4
Keith Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Weeden Island Rim	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Saltillo Fabric Marked <u>var. Tombigbee</u>	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Residual Roughed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Residual Incised	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Bayou La Batre Scallop Impressed	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Santa Rosa Stamped	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	-	-	-	1	1	-	37	11	-	1	-	56	-	-	4	9	-	2	122
Subtotal	4	-	2	22	6	1	8	180	29	2	194	111	102	-	1	122	142	1	3	930
Coarse Sand/Grit Tempered																				
Bayou La Batre Stamped	-	-	-	3	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	5
Santa Rosa Stamped	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Subtotal	-	-	-	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	6
Limestone Tempered																				
Mulberry Creek Plain	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Flint River Brushed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Subtotal	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3
TOTAL	9	3	2	27	7	1	11	185	31	4	197	111	103	10	96	123	145	3	3	1,071
Other																				
Daub	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	8
Cane Impressed Clay Fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1

* Radiocarbon Dated

Table 14. Rolling Piney Woods Ceramics.

	1Ck209 Surface	1Ck209 Bank Profile*	1Ck210 Profile Slump*	1Ck45 All Units	1Wn67 Surface	1Wn69 Surface	1Wn70 Surface	1Wn72 Surface	1Wn81 Shovel Test R-1, 0-45 cm	1Wn81 Shovel Test R-2	TOTAL
Shell Tempered											
Plain (Coarse)	8	-	324	-	-	1	25	-	7	-	365
Plain (Fine)	4	-	17	-	-	-	1	-	7	-	29
Moundville Incised (Punctated Arch)	1	-	9	-	-	-	1	-	-	-	11
Moundville Incised (Rays Perpendicular to Arch)	-	-	5	-	-	-	-	-	3	-	8
Pensacola Incised	-	-	8	-	-	1	9	-	-	-	18
D'Olive Incised	-	-	4	-	-	-	1	-	-	-	5
Residual Incised	-	-	3	-	-	-	-	-	-	-	3
Moundville Engraved	-	-	11	-	-	-	-	-	-	-	11
Langston Fabric Marked	-	-	4	-	-	-	-	-	-	-	4
Mobile Cane Impressed	-	-	12	-	-	-	-	-	-	-	12
Eroded	-	-	-	-	-	-	2	-	-	-	2
SUBTOTAL	13	-	397	-	-	2	39	-	17	-	468
Clay Tempered											
Plain	5	1	-	10	-	1	1	-	2	-	20
Marksville Stamped <u>var. Mabin</u>	-	-	-	2	-	-	-	-	-	-	2
Marksville Incised	-	2	-	1	-	-	-	-	-	-	3
Dentate Stamped	-	-	-	2	-	-	-	-	-	-	2
Clay-Grit Tempered Plain	-	-	-	2	-	-	-	-	-	-	2
Residual Incised	-	1	-	-	-	-	-	-	-	-	1
SUBTOTAL	5	4	-	17	-	1	1	-	2	-	30
Fine Sand Tempered											
Check Stamped	2	-	-	-	-	-	-	-	-	-	2
McLeod Simple Stamped	-	-	-	-	-	-	2	-	-	-	2
Basin Bayou Incised	1	-	-	-	-	-	-	-	-	-	1
Porter Zoned Incised	-	2	-	-	-	-	-	-	-	-	2
Saltillo Fabric Marked <u>var. Tombigbee</u>	-	2	-	-	-	-	-	-	-	-	2
Furrs Cord Marked	-	2	-	-	-	-	-	-	-	-	2
Santa Rosa Stamped	1	-	-	1	-	-	-	-	-	-	2
Santa Rosa Punctated	-	2	-	-	-	-	-	-	-	-	2
Alexander Pinched	-	-	-	-	-	-	-	1	-	-	1
Eroded	-	10	-	-	1	-	1	-	4	1	17
Plain	39	11	2	241	1	1	9	1	2	-	307
Bayou La Batre Stamped	-	-	-	95	-	-	-	-	-	-	95
Rectilinear Incised	-	-	-	2	-	-	-	-	-	-	2
SUBTOTAL	43	29	2	339	2	1	12	2	6	1	437
Coarse Sand/Grit Tempered											
Plain (Bayou La Batre)	1	1	133	-	-	-	-	3	-	-	138
Bayou La Batre Stamped	-	-	96	-	-	-	-	-	-	-	96
Bayou La Batre Cord Wrapped Dowel Impressed	-	-	1	-	-	-	-	-	-	-	1
Zoned Dentate Stamped	-	-	2	-	-	-	-	-	-	-	2
Pinched	-	-	-	-	-	-	-	-	1	-	1
Eroded	-	-	-	-	-	-	-	-	1	-	1
SUBTOTAL	1	1	-	232	-	-	-	-	5	-	239
TOTAL	62	34	399	588	2	4	52	2	30	1	1,174

* Radiocarbon Dated

Figures 22 and 23). Tchefuncte ceramics are morphologically similar to both Alexander and Bayou La Batre ceramics and probably had a similar temporal duration. Future research within the BWT study area should strive to better define the temporal relationships between these three ceramic series.

Porter Phase (A.D. 1 - A.D. 400)

The ceramic types diagnostic of the Porter phase were originally defined by Willey (1949:372-386) and later expanded by Wimberly (1960: 86-125) after excavations along the Mobile Gulf Coast and the lower Tombigbee River. These ceramics were initially referred to as Porter Hopewell (DeJarnette 1952:277) and later as Porter Marksville (Wimberly 1960: 86). Most recently this Middle Woodland manifestation has been referred to simply as the Porter phase (Walthall 1979:205, 1980:155). It is clear, however, that the Porter complex is a local manifestation of the Santa Rosa series.

Porter ceramics consist primarily of the sand tempered types Alligator Bayou Stamped, Basin Bayou Incised, Santa Rosa Punctated, and sand tempered plain. The sand tempered plain pottery has been referred to by Wimberly (1960:101) as Franklin Plain. This plain pottery comprises approximately 80 percent of any Porter assemblege. Other sand tempered types which occur as extreme minorities include Porter Zone Incised, Early Crooked River Complicated Stamped, Early St. Andrews Complicated Stamped and Early Swift Creek Complicated Stamped. Several clay tempered types more common to the lower Mississippi Valley also occur in Porter contexts as minorities. These include Marksville Stamped, Marksville Incised, and Churupa Punctated. Wimberly (1960) also noted the presence of two now obsolete types, Crooks Stamped and Troyville Incised. Crooks Stamped is now referred to as a variety of Marksville Stamped (Phillips 1970:121-122) and Troyville Incised is now subsumed under Marksville Stamped var. Troyville (Phillips 1970:125-127).

Two major sites of the Porter phase were excavated by Harry Tourtelot and reported by Steve Wimberly (1960). Both sites, Porter Village and McVay Village are situated within the Tallahatta Hills zone. Some of the stylistic variability observed in the type Basin Bayou Incised at the Porter site indicates that much of that assemblage may date toward the later end of the Porter phase. Many Basin Bayou Incised and Alligator Bayou Stamped sherds from the Porter site often bear a decorative detail consisting of a large punctation terminating the end of an incised line. This treatment is fairly common in the later types Weeden Island Incised and Weeden Island Punctated (Willey 1949:Figures 36, 37, 38, and 40). These two types probably developed out of Basin Bayou Incised and possibly Santa Rosa Punctated.

This style of incising terminated by punctation is also found in Marksville Incised var. Steele Bayou, a type diagnostic of the late Issaquena phase. As stated by Phillips (1970:116) "In the Yazoo region it appears to be one of the most reliable late Issaquena markers so far encountered." Phillips (1970:960) suggests that late Issaquena dates to approximately A.D. 300-A.D. 400. This date agrees well with the suggested date for late Porter. Consequently this mode of incising may prove to be a good horizon marker for the A.D. 300-400 time level.

It has also been suggested that Porter Zone Incised was a transitional type between the zone stamped style of Porter or Santa Rosa to the zone incising of the later Weeden Island ceramics (Wimberly 1960:87, Sears 1977:164). One hundred Porter Zone Incised sherds were recovered at the Porter site. Neither this type nor the style of incising terminating in punctation was observed at the Porter component at the McVay site. This may imply that the Porter site may contain the latest component of the two sites. The presence of two Marksville rims, however, probably indicates that an early Porter component is also represented at the Porter site.

Other data also suggests that most of the Porter component material at the Porter site dates to the late Porter phase. It will be later argued that much larger percentages of Basin Bayou Incised than Alligator Bayou Stamped as well as smaller percentages of Marksville ceramics are characteristic of late Porter. At the Porter site, Basin Bayou Incised accounted for 11.32 percent of all pottery and Alligator Bayou Stamped comprised only 2.49 percent. This is considerably different from McVay Village where Basin Bayou Incised comprised 2.94 percent and Alligator Bayou Stamped comprised 1.44 percent. Marksville ceramics at the Porter site totaled only 2.34 percent but those at the McVay site totaled 12.03 percent (Wimberly 1960:Table 1 and 5). It is therefore possible that smaller percentages of Marksville ceramics are characteristic of late Porter.

One other Porter phase site was recorded by this study in the Rolling Piney Woods zone. A buried Porter phase component at Site 1Ck209 was located at the mouth of Jackson Creek. The site yielded a Porter Zone Incised square bottomed vessel and an associated radiocarbon sample dated at A.D. 200±100--clearly an acceptable date for the Porter phase. A minority of Miller I and Marksville sherds were also found in association, which further strengthens the acceptability of this date (see Table 14 for associated ceramics).

<u>McLeod Phase</u> (A.D. 400 - A.D.1000)

This manifestation was originally defined as the McLeod-Deptford series and period (Wimberly 1960:209). More recent researchers have favored dropping the Deptford part of the name, however (Sears 1961: 251-252, Walthall 1980:167). Furthermore, it seems more logical not to use localized period designations. The term McLeod is used in this report as a phase, following Walthall (1980:167) and Late Woodland is the period used to designate this time frame, following Griffin (1952). It is recognized, however, that the McLeod phase probably existed a long time and is probably divisable into early and late subphases.

The ceramics diagnostic of Wimberly's McLeod-Deptford series included McLeod Check Stamped, Early McLeod Linear Check Stamped, and Early McLeod Simple Stamped. Wimberly further proposed that this series developed into the Weeden Island-Coles Creek series, composed of Wakulla Check Stamped (which developed from McLeod Check Stamped), Late McLeod Linear Check Stamped, Late McLeod Simple Stamped, the Weeden Island series, and a few Coles Creek minority types. The differences between McLeod Check Stamped and Wakulla Check Stamped were based on rim morphology and check size. The differences between early and late McLeod Linear Check Stamped were based on rim morphology (see the ceramic summary description for a more detailed discussion of these differences).

Wimberly's (1960) proposed McLeod to Weeden Island development appears to be partially in error. McLeod ceramic development in the Tallahatta Hills now appears to have been relatively distinct from the Weeden Island development south of the Rolling Piney Woods. Contact between McLeod and Weeden Island groups, however, resulted in numerous ceramic similarities. It is therefore suggested that Weeden Island and McLeod were generally spatially distinct. Wimberly (1960), Trickey (1958), and Trickey and Holmes (1971) included too much space and ceramic diversity in devising a Late Woodland chronology which included everything from the lower Tombigbee Valley to the gulf coast.

Wimberly's basic component divisions in the Tallahatta Hills were correct, although he misidentified them. Wimberly's McLeod-Deptford should be referred to as early McLeod and his Weeden Island-Coles Creek in this zone should be called Late McLeod. These components are reasonably distinct from the Weeden Island components on the coast and in the delta. The basic and most pronounced difference between them is that the coast and delta Weeden Island components contain less than 1.0 percent simple and linear check stamped pottery, but those in the Tallahatta Hills contain significant amounts. Beckum Village is the only Weeden Island-Coles Creek (or late McLeod) component excavated in the Tallahatta Hills which was not mixed with an earlier McLeod-Deptford (or early McLeod) component. It contained approximately 10 to 13 percent simple stamped pottery and 7 percent linear check stamped pottery. James Village, the only other site that is predominantly Weeden Island-Coles Creek (or late McLeod) had a similar but slightly higher percentage of simple stamped but only 1.0 percent linear check stamped pottery (see Wimberly 1960:Tables 3 and 6). There may also be other differences, but they were not reflected in Wimberly's ceramic counts or discriptions.

Criteria other than rim morphology and check size should enable the archaeologist to segregate early and late McLeod components in the Tallahatta Hills. Components identified by Wimberly (1960) as McLeod-Deptford (or early McLeod) contain more simple stamped pottery than check stamped or linear check stamped. The major components at McLeod Estate Village and Deas Village are early McLeod. At Deas Village, McLeod Simple Stamped comprised 66 percent, McLeod Check Stamped comprised 1.50 percent, McLeod Linear Check Stamped comprised less than 1.0 percent, and McLeod Plain comprised about 27 percent. At McLeod Estate Village, McLeod Simple Stamped comprised 50 percent, McLeod Check Stamped comprised 8.16 percent, McLeod Linear Check Stamped comprised 16 percent, and McLeod Plain comprised 20 percent. Weeden Island series ceramics comprised less than 1 percent at McLeod Estate Village and approximately 3 percent at Deas Village (Wimberly 1960:Tables 2 and 4).

Similar McLeod complexes were found at three sites in the central Tombigbee Valley Gainesville Lake area in association with late Miller II Turkey Paw subphase components. At each of these sites, McLeod Simple Stamped out numbered McLeod Check Stamped and McLeod Linear Check Stamped. The rims on these specimens were also unmodified as were the early McLeod examples from the Tallahatta Hills. One check stamped podal support was represented among a total of 457 McLeod sherds. Although Wimberly (1960: 126-133) stated that early McLeod ceramics did not have podal supports, if McLeod ceramics developed out of a Middle Woodland Deptford complex (which they must have) then one would expect to find podal supports in association with McLeod at some point during early McLeod development. A small minority of Weeden Island series ceramics were also found in Turkey Paw subphase context. Radiocarbon determinations indicate that the Turkey Paw subphase dated from A.D. 450 to A.D. 600 (Jenkins 1981:Tables 1, 2, 4, and 7). Based on the Gainesville Lake area dates and associations, it is proposed that early McLeod should have begun around A.D. 400 or A.D. 500.

One feature was excavated by the BWT project at the James Village site. The feature contained 16 percent check stamped, 31 percent linear check stamped, 34 percent simple stamped, and 20 percent plain. All rims were unmodified. Although the feature should date to the earlier end of McLeod development, the high percentage of linear check stamped pottery seems unusual. Two charcoal samples from this feature produced dates of A.D. 1130±50 and A.D. 1270±50 (see Appendix D). Although this appears to be an unusual assemblage, it may be a pure terminal McLeod feature or the dates are wrong. Another distinct possibility is that the feature contained mixed earlier and later McLeod ceramics.

One other site, 1Ck74, originally located by Coblentz (1979:38-39) and revisited during this study, may be primarily early McLeod (Table 13).

Many of the components Wimberly (1960) called Weeden Island-Coles Creek should probably be termed late McLeod. Wimberly defined these components mainly on the basis of small check size, wide rim strips and/or folds and the presence of the Weeden Island series. Weeden Island series ceramics were, however, also present during early McLeod as indicated by the association of early McLeod ceramics with Weeden Island types in the Gainesville Lake area (Jenkins 1981:22-24). The Weeden Island series were therefore probably present as a minority throughout the McLeod continuum. The Weeden Island-Coles Creek component assignments made by Wimberly, from the presence of the Weeden Island series, were actually probably part of the McLeod-Deptford (or early McLeod) components at sites like McLeod Estate and Deas Village. That is to say that at those sites the Weeden Island series were part of the early McLeod components.

Late McLeod components are also characterized by larger percentages of check stamping, including linear check stamping, than simple stamping. The Beckum Village site is the only excavated late McLeod component that is not mixed with an early McLeod component. This component contained approximately 10 to 13 percent simple stamped pottery, 25 to 27 percent check stamped pottery, 10 to 11 percent linear check stamped and less than one percent of the Weeden Island series. Although the James Village site is a mixture of early and late McLeod, it appears to be primarily late. It contained approximtely 45 to 55 percent check stamped pottery, less than 1 percent linear check stamped, 15 to 17 percent simple stamped pottery and about one percent Weeden Island ceramics.

Assigning calendrical dates to the late McLeod phase would be pure guesswork at this time. Late McLeod was probably generally contemporaneous with late Weeden Island, ca. A.D. 800-1100. The two dates of ca.

1100 to 1200 recovered during this study from the James Village site may date a terminal McLeod assemblage.

Very little is known about the origin of the McLeod series. The check and simple stamped McLeod ceramics, however, were part of a different ceramic tradition than the preceding incised, punctated, and rocker stamped Porter ceramics, and therefore did not develop from Porter ceramics. McLeod ceramics most likely originated in the nearby Alabama River Valley. Check stamping was the main surface treatment in that region from approximately 100 B.C. until A.D. 1100. Recent survey (Jenkins and Paglione 1980) in the Tallahatta Hills-Alabama River region revealed Middle Woodland components comprised of check stamping and a lesser amount of simple stamping, which could have provided the ceramic base that developed into McLeod by A.D. 400. Deptford-like components have also been excavated in the Rolling Piney Woods-Alabama River Valley area at Site 1Mn1. A component was also excavated at Site 1Mn7 (Graham 1967) which was very similar to the early McLeod proposed in this report.

Deptford-like components were most numerous and largest in the Alabama River Valley between Selma and Montgomery where the local Deptford manifestation has been referred to as the Cobbs Swamp phase (Chase 1979). The only published excavations in that area, however, are by Nielsen (1976:90-174) and Nance (1976). The Cobbs Swamp complex developed into the Henderson Complex. The Henderson complex is similar to the early and late McLeod complexes, but simple stamping does not occur in Henderson. Weeden Island minority types are also found in association with Henderson components (Dickens 1971, Nielsen 1976, Jenkins and Paglione 1980).

A detailed model of ceramic evolution has been offered by Jeter (1977:112-136) for the central and upper Alabama River Valley Henderson complex anchored on four radiocarbon dates. The emergence of Henderson from the Cobbs Swamp (Deptford) complex occurred between A.D. 400 and A.D. 500. By A.D. 500 check stamping (Henderson Check Stamped) comprised only 15 percent of the total complex. Most of the remaining pottery was plain. Between A.D. 600 and A.D. 800 check stamping increased. Shortly before A.D. 800, during late Henderson times, check stamping (Henderson Check Stamped) comprised approximately 80 percent of the total complex. The folded rim and rim strip and Weeden Island minorities apparently were present throughout the sequence. Shortly after A.D. 800, the Autauga complex developed in part from Henderson. The ceramic paste became coarse (much like the Tensaw Lake complex of the Delta) and check stamping decreased through time. Early Autauga was characterized by approximately 50 percent check stamped (Autauga Check Stamped) but late Autauga, ca. A.D. 900 to 1000, contained only about 10 percent check stamped pottery (Jeter 1977:112-136). Autauga ceramics may have resulted from a merger between Henderson and the Whiteoak complex (Jenkins and Paglione 1980, Chase, personal communication 1980).

Several Late Woodland ceramic developments within the central and upper Alabama River Valley parallel those within the Tallahatta Hills, the Mobile Bay, and Delta. The percentages of check stamping increased through time in the Henderson, McLeod, and Weeden Island complexes. In each complex the local check stamped types are morphologically very similar or virtually identical. The wide rim fold and rim strip was present in each complex. The temporal and morphological variability of these rim modes, however, is not completely understood.

Some changes in McLeod Check Stamped check size and possibly in Weeden Island Wakulla are not well documented archaeologically. Check size seems to be relatively small throughout the Weeden Island (Wakulla) check stamped continuum. The check size is large in early McLeod and small, like Wakulla, in late McLeod. Late McLeod Check Stamped is essentially Wakulla Check Stamped. Check stamping, however, was a minority in early Weeden Island. (See the discussion of Delta ceramics below).

The McLeod and Henderson complexes also share a similar minority (between 1.0 and 3.0 percent) of the incised and punctated Weeden Island series. Similarities among the Weeden Island, McLeod, and Henderson complexes probably resulted from contacts among Weeden Island groups, indigenous to the Mobile Bay and Delta region, McLeod groups in the Tallahatta Hills, and Henderson groups in the central and upper Alabama River Valley. The type of relationship maintained by these groups is unclear. A few Weeden Island communities seem to have been present among local groups along both the lower Tombigbee and the Alabama Rivers.

Along the lower Tombigbee, north of the Rolling Piney Woods zone, the only probable example of a Weeden Island community is the washout area at Site 1Cw28. Probable Weeden Island communities were identified along the central Alabama River Valley at Sites 1Wx25x1, 1Wx1 and 1Wx1 and 1Wx77 (Craig Sheldon, personal communication 1982). Farther north, within the lower Tallapoosa River drainage, a probable Weeden Island site was tested by David Chase (1967:61-63) which also contained a few of the local Calloway complex sherds. Weeden Island ceramic traits in that area strongly influenced local ceramic development. The Calloway complex developed into the Dead River complex, which in turn developed into the Hope Hull complex (Chase 1968:17-29). The Dead River and Hope Hull complexes, characterized by 90 percent sand tempered plain, about 10 percent red filmed, and no check stamped pottery, were very different from the Henderson complex.

In summary, between A.D. 450 and A.D. 700 or A.D. 800, the Weeden Island culture had a pronounced effect upon ceramic development along the lower Tombigbee, the Alabama, and the lower Tallapoosa Rivers. At approximately A.D. 450 or A.D. 500 both Henderson and McLeod developed out of local Deptford complexes. The Dead River and Hope Hull complexes developed out of the Calloway complex which was not related to Deptford, and as a consequence, Dead River and Hope Hull are morphologically very different from Henderson and McLeod. Not only were the parent complexes different but some of the accepted Weeden Island traits were different. Red filming, for example, was whole heartedly accepted by Hope Hull people, but not by Henderson or McLeod groups.

<u>Pensacola Variant (Phases Undefined)</u> (A.D.1100 - A.D.1700)

The Pensacola variant was a very extended aboriginal manifestation, and is here defined to include ceramic complexes in which the Pensacola series were dominant. Types of this series in the Mobile area include Pensacola Plain, Pensacola Incised, Pensacola Red, and Moundville Engraved, as defined by Willey (1949:458-466), as well as Moundville

Incised and D'Olive Engraved (Wimberly 1960:184-185, Jenkins 1976:227). Because few details about the temporal, spatial, or morphological variability of the types comprising the Pensacola series are known, no phases have been defined.

Data collected during this study indicate that Pensacola components extended along the Tombigbee River as far north as the southern edge of the Tallahatta Hills, approximately 15 miles north of Jackson, Alabama by river. In this area, the Peaveys Landing Mound site (Moore 1905a:262-263) is the northern most known Pensacola mound and village along the Tombigbee River. In the next zone south, Pensacola components were found at Sites 1Ck209, 1Ck210, 1Wn69, 1Wn70 and 1Wn81 (Tables 13 and 14). Pensacola habitation sites extended up the Alabama River to the area around Cahaba, Alabama. Three Pensacola mounds are known north of the Delta Meander zone, one at Matthews Landing (Moore 1900a:297), one on Cedar Creek near Camden (Jenkins and Paglione 1980), and another was once at the mouth of the Cahaba River. Pure Pensacola sites extended eastward at least as far as Pensacola Bay, but in that area and farther east Pensacola sites are increasingly mixed with progressively larger amounts of Fort Walton ceramics. Around Perdido and Pensacola Bays, the shell tempered Pensacola series comprised from 68 percent to 100 percent of the local Mississippian ceramics. The Choctawhatchee Bay area had no site which exceeds 72 percent and the average is slightly less than 50 percent (Lazarus 1971). The Choctawhatchee Bay area was probably the interface between the Pensacola and Fort Walton variants. The the boundary probably changed over time, to some degree accounting for the spatially variable percentages of shell tempered Pensacola ceramics and sand tempered Fort Walton ceramics. Pensacola sites also extended west along the Mississippi Gulf Coast as far as Lake Ponchartrain. Clay tempered Plaquemine types were often mixed with these components, which Phillips (1970:951-955) referred to as the Bayou Petre phase.

The large multimound Bottle Creek site, near the head of the Mobile Delta was probably the major Pensacola ceremonial center.

> The true areal extent of the site is unknown, but there are at least seventeen earthen mounds in close proximity to one another in the central part of Mound Island and an extensive village area that extends eastward toward Bottle Creek for a distance of approximately one-quarter mile and southward for an unknown distance. In addition to this central mound complex and contiguous village area, there are three mounds located on a small bayou connecting Alligator Lake with Dominic Creek approximately two miles due south of the principle mound, plus two shell midden areas to the west and southeast of the central complex (Lankford et al. 1976:9).

The temporal parameters of Pensacola are poorly known. Radiocarbon samples from Site 1Ck20, the Peaveys Landing Mound, in the Tallahatta Hills and from Site 1Ck210 in the Rolling Piney Woods should date to the earlier part of the Pensacola continuum, but Site 1Ck210 should be the earliest.

The sample from Site 1Ck210 was dated at A.D. 1295±65 and the sample from 1Ck20 was dated at A.D. 1770±55. The date from Site 1Ck210 is interpreted as an acceptable determination. The ceramics from this component included more Moundville Incised var. Moundiville than any other Pensacola component identified during this survey. In the Warrior Valley, var. Moundville occurred mainly during the Moundville I phase (A.D. 1000 to A.D. 1250). Therefore the 1Ck210 date is a good date by relative dating from the Warrior Valley. The date from Site 1Ck20 is probably at least 200 or 300 years too late. Stowe (1974:199) obtained a radiocarbon sample from a dugout canoe found in a sandbar adjacent to Site 1Ck20 which yielded a date of A.D. 1345±60. This date is more in line with the ceramics recovered from the 1Ck20 mound during this study (Table 13).

Morphologically, the Pensacola and Moundville series ceramics are very similar and may have been roughly contemporaneous. Steponaitis (1981) has dated the Moundville series from A.D. 1000 to A.D. 1500. The Moundville series developed into the Alabama River series. Alabama River also shares many similarities with Pensacola. Current estimates (Carlos Solis, personal communication 1982) place the Alabama River series between A.D. 1450 to A.D. 1650. The approximate termination of Pensacola should date to the late protohistoric or early historic periods, ca. A.D. 1700-1750. Trickey's (1958:391-392) McIntosh Incised and Douglas Incised are late varieties of Pensacola Incised and Moundville Incised. Eighteenth century European artifacts have been found in association with these ceramics at Hooks Plantation, Three Rivers Landing, and the Douglas Mound (Moore 1905a:247-252, Trickey 1958:391, James V. Knight, personal communication 1982). The ceramic and historic associations at those sites, however, are not well documented. Historic materials dating to the sixteenth century have been recovered from other Pensacola-Fort Walton sites from Bear Point east to Fort Walton (Lazarus 1965a; Lazarus et al. 1967), as well as from the Bottle Creek site (James V. Knight, personal communication 1982).

More recently shell tempered ceramics have been found in probable French context, 1711-1763, from excavations within the city of Mobile and at Fort Conde. Most of this pottery was plain and red filmed. A smaller amount of fine line incised pottery similar to Leland Incised var. Bayou Goula was present. Several Colono-Indian vessel forms were also present (Cottier and Sheldon 1979:125-131). It is not known if these represent a development out of Pensacola, or if they were a product of an aboriginal group, or introduced by the French.

Delta Meander, Delta Swamp, and Delta Marsh Zones

The data generated by this and previous studies reveal that the same ceramics developed in each of these three delta physiographic zones and that this development was the same as that in the Tallahatta Hills and Rolling Piney Woods from Bayou La Batre times through the Porter phase. At approximately A.D. 400, however, the ceramic development within the Delta Meander, the Delta Swamp, and the Delta Marsh zones is fairly distinct from that in the Tallahatta Hills, although there was clearly contact between groups living in both areas between A.D. 400 and A.D. 700. The spatial break between Weeden Island and McLeod is not that distinct (based upon our present data) in the Rolling Piney Woods zone. There appear to be Weeden Island Mounds at Paynes Woodyard, Carneys Bluff, and Kimbells Field (Moore 1905a:253-262) as well as a McLeod habitation site at the Salt Creek II site (Trickey 1958:Figure 3) in that zone. That McLeod site is probably a specialized salt procurement station. David Chase (personal communication 1982) recovered a complete shallow pan McLeod Simple Stamped vessel from a 5 ft by 5 ft test unit at that site in 1972.

The basic sequence presented below is similar to that offered by Wimberly (1960), Trickey (1958), and Trickey and Holmes (1971). The primary difference is that I regard Weeden Island and McLeod as distinct manifestations, even though they do share several ceramic types and surface treatments. Many of the interpretations offered below are based on stratigraphic data obtained by those authors cited above.

Unidentified Fiber Tempered (ca. 2500 B.C. - 500 B.C.)

Plain fiber tempered pottery has been found in small quantities at a few sites in the Mobile Delta, bay, and coast regions. Five components have been recognized by this study: Sites 1Wn75 and 1Wn76 in the Delta Meander, Sites 1Mb97 and 1Mb213 in the Delta Swamp, and Site 1Ba214 in the Delta Marsh zone (Tables 8, 15, and 16). Since only plain pottery was recovered from these sites it is not presently possible to determine the series to which this pottery is most closely related until more diagnostic decorated sherds are recovered. Because of its geographical proximity, it seems most likely that this plain fiber tempered pottery is most closely related to the Tombigbee Valley Wheeler series.

Dating this plain fiber tempered ware is just about impossible at this time. None of the Southeastern fiber tempered series has been dated later than 500 B.C. The Savannah River region Stallings Island series has been dated from 2500 to 1000 B.C. (Stoltman 1972). The Orange series, concentrated along the St. Johns River has been dated from 2000 to 1000 B.C. (Bullen 1972). The Norwood series has been dated to around 1000 B.C. (Phelps 1965) and the Wheeler series has been estimated to date from 1200 B.C. to 500 B.C. (Jenkins 1974, 1975b, 1982). Hence, the plain fiber tempered pottery of the Mobile Delta, bay, and coastal regions could date anywhere from 2500 B.C. to 500 B.C. A date of 1170±125 B.C. has been obtained from the northwest Florida area on plain fiber tempered pottery in apparent association with an early Santa Rosa Stamped vessel (Lazarus 1965a:109). That vessel was incorrectly identified by Lazarus (1965a: Figure 6) as a net impressed type of Alexander pottery.

There is some evidence that plain fiber tempered pottery was at least partially contemporaneous with early Bayou La Batre. At the stratified Bryants Landing Site 3 in the Delta Swamp zone, plain fiber tempered pottery was recovered in apparent association with Bayou La Batre ceramics (Trickey and Holmes 1971:Figure 2). Further evidence of their possible contemporaneity has been obtained from the Mobile coast. In the central excavation block of Site 1Mb14, the Bayou La Batre Shell Midden, plain fiber tempered pottery was found in the lowest levels of that site, again in apparent stratigraphic association with Bayou La Batre ceramics (Wimberly 1960:Table 18). Bayou La Batre pottery has been dated at 1129 B.C.

Table 15. Delta Meander Ceramics.

	1Ba380 Surface	1Ba380 Bank Profile and Shovel Test	1Ba381 Mound Surface	1Ba381 Shovel Test West of Mound	1Ba381 Surface Around Mound	1Ch200 Shovel Tests 1 and 2	1Ch201 Surface	1Ch202 Surface	1Ch203 Surface	1Ch204 Surface	1Ch205 Shovel Test	1Ch206 Surface	1Ch207 Shovel Test and Surface	1Ch208 Surface	1Wn74 Surface	1Wn75 Surface
Shell Tempered																
Plain (Coarse)	13	3	9	11	9	-	-	-	4	1	-	1	-	-	-	8
Plain (Fine)	6	-	10	2	6	-	-	-	-	-	-	-	-	-	-	1
Pensacola Incised	-	-	2	-	2	-	-	-	-	1	-	-	-	-	-	-
Moundville Incised (Plain Arch)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moundville Incised (Punctated Arch)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D'Olive Plain	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
Pensacola Red Filmed	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residual Punctated	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eroded	-	-	-	-	3	-	-	-	-	4	1	-	2	-	2	-
Discoidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	23	6	21	13	23	-	-	-	4	6	1	1	2	-	2	9
Clay Tempered																
Plain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21
Mulberry Creek Cord Marked	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Evansville Punctated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Harrison Bayou Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Marksville Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indian Bay Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rectilinear Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residual Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eroded	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28
Fine Sand Tempered																
Plain	-	-	-	-	-	14	-	-	-	-	1	-	-	-	-	41
Check Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
McLeod Simple Stamped	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Carrabelle Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carrabelle Punctated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tucker Ridge Pinched	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mound Field Net Marked	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Keith Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Indian Pass Incised	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Weeden Island Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Weeden Island Rim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interior Red Filmed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Furrs Cord Marked	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Saltillo Fabric Marked <u>var. Tombigbee</u>	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Saltillo Fabric Marked <u>var. China Bluff</u>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Basin Bayou Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alligator Bayou Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Rosa Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Bayou La Batre Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Bayou La Batre Scallop Impressed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bayou La Batre Cord Wrapped Dowel Impressed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Residual Punctated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Residual Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Reel Fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eroded	-	-	-	-	-	22	1	-	-	-	4	-	-	3	-	-
Porter Zoned Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	39	1	1	-	-	5	-	-	3	-	59
Coarse Sand/Grit Tempered																
Plain	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-	-
Mobile Cord Marked	-	-	2	1	-	-	-	-	8	-	-	-	26	-	-	-
Check Stamped	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Simple Stamped	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Incised over Cord Markd	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Bayou La Batre Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Residual Incised	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Fingernail Punctated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eroded	-	-	-	-	-	-	1	-	-	-	-	-	17	-	1	-
Subtotal	-	-	4	1	-	-	1	-	8	-	-	-	50	-	1	1
Fiber Tempered																
Plain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Subtotal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
TOTAL	23	6	25	14	23	39	2	1	12	6	6	1	52	3	3	98
Other																
Fired Clay	3	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-

Table 15. Delta Meander Ceramics (Continued).

	1Mo76 General Surface	1Mo76 Surface Shell Midden	1Mo76 Surface North of Beach	1Mo76 Surface South End	1Mo76 Surface Beach at Point	1Mo77 Surface Area D	1Mo77 Surface Area E	1Mo78 Surface Shell Concentration 1	1Mo78 Surface Shell Concentration 2	1Mo78 Surface Shell Concentration 4	1Mo78 Midden Area Between Shell Concentrations 2 and 3	1Mo78 Surface Between Shell Concentrations 2 and 3	1Mo78 Surface South of Shell Concentration	1Mo79 Surface	1Mo81	Total
Shell Tempered																
Plain (Coarse)	10	2	8	-	24	-	-	-	2	-	1	-	-	-	-	108
Plain (Fine)	1	-	-	-	2	-	1	-	-	-	-	-	2	-	-	31
Pensacola Incised	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Moundville Incised (Plain Arch)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Moundville Incised (Punctated Arch)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
D'Olive Plain	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Pensacola Red Filmed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Residual Punctated	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Eroded	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Discoidal	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Subtotal	15	3	9	-	27	-	1	-	2	-	1	-	2	-	-	173
Clay Tempered																
Plain	5	4	-	12	-	1	-	-	-	-	-	-	-	-	-	43
Mulberry Creek Cord Marked	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Evansville Punctated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Harrison Bayou Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Marksville Stamped	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Indian Bay Stamped	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Basin Bayou Incised	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Residual Incised	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	2
Eroded	-	-	1	-	-	1	-	-	-	1	-	-	-	-	-	3
Subtotal	6	6	1	13	-	3	-	-	-	1	-	-	-	-	-	58
Fine Sand Tempered																
Plain	73	34	45	-	84	7	1	13	61	12	33	1	13	3	-	430
Check Stamped	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2
McLeod Simple Stamped	1	-	-	-	-	-	-	2	-	-	-	-	-	-	-	4
Carrabelle Incised	-	-	-	-	-	-	-	2	5	2	-	-	4	1	-	14
Carrabelle Punctated	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	3
Tucker Ridge Pinched	-	-	-	-	-	-	-	1	3	-	-	-	-	-	-	4
Mound Field Net Marked	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Keith Incised	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2
Indian Pass Incised	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	2
Weeden Island Incised	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2
Weeden Island Rim	-	-	-	-	-	-	-	1	2	-	-	1	-	-	-	4
Interior Red Filmed	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Furrs Cord Marked	2	-	4	-	-	-	-	-	-	-	-	-	1	1	-	9
Saltillo Fabric Marked <u>var. Tombigbee</u>	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-	6
Saltillo Fabric Marked <u>var. China Bluff</u>	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3
Basin Bayou Incised	2	-	1	-	2	-	-	-	-	-	-	-	-	-	-	5
Alligator Bayou Stamped	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Santa Rosa Stamped	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Bayou La Batre Stamped	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	26
Bayou La Batre Scallop Impressed	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
Bayou La Batre Cord Wrapped Dowell Impressed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Residual Punctated	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
Residual Incised	-	1	-	-	1	-	-	-	2	-	-	-	-	-	-	6
Boat Fragment	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	1	3	-	-	6	1	2	-	-	-	-	11	-	-	54
Porter Zoned Incised	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Subtotal	84	37	53	-	105	14	2	26	80	16	35	3	31	5	-	595
Coarse Sand/Grit Tempered																
Plain	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	16
Mobile Cord Marked	-	-	-	-	-	-	-	-	5	-	-	9	-	1	-	52
Check Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Simple Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Incised over Cord Marked	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	3
Bayou La Batre Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Residual Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Fingernail Punctated	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Eroded	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	21
Subtotal	-	-	-	-	12	1	-	2	5	-	-	11	-	1	-	96
Fiber Tempered																
Plain	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3
Subtotal	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3
TOTAL	105	46	63	13	146	18	3	26	87	15	36	14	33	6	-	927
Other																
Fired Clay	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-	14

Table 16. Delta Swamp Ceramics.

	1Mb60 Surface, Borrow Pits	1Mb63 Surface	1Mb65 Surface	1Mb66 Surface	1Mb97 Surface	1Mb203 Surface	1Mb210 Surface, Gulley, and Borrow Pit	1Mb211 Surface	1Mb211 Bank Profile	1Mb211 Surface, Gas Well Spoil Piles	1Mb211 Surface Shell Mound	1Mb212 Surface Bluff Top	1Mb212 Bank Profile	1Mb213 Surface 200 ft North of South End of Bluff	1Mb213 Surface South End of Bluff	1Mb216 Surface	1Mb216 Shovel Test 50 m North of Oil Tank	1Mb217 Surface	1Mb218 Surface	1Mb220 Shovel Test, 0-80 cm	1Ba382 Profile Cut	1Ba383 Profile Cut	1Ba385 Shovel Test	1Ba388 Surface	1Ba389 Midden Zone	1Ba391 Strata Below Plowzone	1Ba395 Surface	1Ba431 Surface	1Ba449 Surface	1Ba449 Bank Profile Upper Shell Layer	1Ba450 Surface	1Ba451 Surface	1Ba452 Surface	1Ba453 Surface	1Ba455 Surface	1Ba456 Surface	1Ba457 Surface	1Ba458 Surface	Total
Shell Tempered																																							
Plain (Coarse)	-	-	56	1	10	-	5	-	16	5	15	1	2	3	-	4	-	1	-	49	63	-	1	-	-	-	14	1	-	-	1	-	-	1	2	-	-	-	251
Plain (Fine)	-	-	5	-	11	-	-	-	1	-	1	1	-	2	-	1	-	-	-	7	3	2	-	2	11	-	-	2	-	-	1	-	-	-	-	-	-	-	50
Pensacola Incised	-	-	8	1	1	-	-	-	3	-	4	-	3	-	-	-	-	-	-	6	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	28
Moundville Incised (Plain Arch)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
D'Olive Incised	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Moundville Engraved	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Chickachae Combed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Mission Red Filmed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Eroded	-	-	-	4	-	-	-	-	8	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	20
Subtotal	-	-	70	6	22	-	5	-	28	5	25	2	5	5	-	12	-	1	-	63	67	2	1	2	13	-	17	3	-	-	2	-	-	1	2	-	-	-	359
Clay Tempered																																							
Plain	4	9	32	25	5	2	20	13	-	-	-	-	2	-	1	35	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	22	6	10	-	-	188
Mulberry Creek Cord Marked	3	-	12	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	25
Pontchartrain Checked Stamped	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	5
Mazique Incised	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Churupa Punctated	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Marksville Stamped	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Jefferson Ware (Type A)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Residual Incised	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Dentate Stamped	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Subtotal	7	12	52	33	6	3	20	14	-	-	-	-	2	-	1	38	-	-	-	-	-	1	-	-	-	1	-	-	-	-	1	-	-	22	7	10	-	1	231
Fine Sand Tempered																																							
Plain	4	34	29	50	50	-	-	16	-	-	-	-	-	-	-	3	1	-	17	-	-	-	-	-	-	-	-	2	24	8	1	16	1	16	5	60	-	-	337
Checked Stamped	-	-	7	11	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	1	-	3	-	-	-	-	-	-	28
Weeden Island Rim	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	4
Carrabelle Incised	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Saltillo Fabric Marked var. China Bluff	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Furrs Cord Marked	-	-	4	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	8
Alligator Bayou Stamped	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Basin Bayou Incised	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Bayou La Batre Stamped	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	8
O'Neal Plain (Rim)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	13
Ocmulgee Fields Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Residual Punctated	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Subtotal	8	38	40	70	52	-	-	21	-	-	1	-	-	-	-	4	1	-	18	-	-	-	-	-	-	-	-	3	28	9	3	20	1	16	5	71	-	-	409
Coarse Sand/Grit Tempered																																							
Plain	-	12	18	53	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	3	-	3	6	-	1	4	14	-	2	121
Bayou La Batre Stamped	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
Mobile Cord Marked	-	-	51	90	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	7	-	26	-	11	-	15	4	2	2	212
Check Stamped	-	-	1	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	4	-	1	-	-	-	25
Brushed	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Residual Incised	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Eroded	-	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
Subtotal	-	21	75	161	4	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	2	-	10	-	29	13	15	1	20	19	2	4	380
Fiber Tempered																																							
Plain	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Subtotal	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
TOTAL	15	71	237	270	85	3	26	35	28	5	27	2	7	5	2	54	1	1	18	63	68	3	1	2	13	2	19	6	30	9	35	33	16	40	34	100	2	5	1,381
Other																																							
Daub	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Fired Clay	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18

at the Bryants Landing Site 4 (Trickey and Holmes 1971:119). This date may at least partially support Lazarus' (1965a) 1170 B.C. date where Santa Rosa Stamped, a Bayou La Batre type, was found in apparent association with plain fiber tempered pottery. The data on such an early placement of Bayou La Batre, however, are conflicting. Considering the 170 B.C. and 195 B.C. dates for Bayou La Batre from Site 1Ck45, this could mean that the Bayou La Batre series existed for 1000 years. This seems unlikely. There is, however, demonstrable temporal and morphological variability in Bayou La Batre ceramics. Determining the relative ages of fiber tempered pottery and Bayou La Batre pottery is clearly a problem to be addressed by future excavations.

Bayou La Batre Variant (Bases Undefined) (? B.C. - A.D. 1).

Bayou La Batre ceramic assemblages similar to those of the Tallahatta Hills and Rolling Piney Woods have also been identified in the delta region. Bayou La Batre components occur as far south as the gulf coast, where this ceramic series was first defined at the Bayou La Batre Shell Midden (Wimberly 1953b, 1961). A total of seven Bayou La Batre components were recognized in the delta during this study: two in the Delta Meander zone, four in the Delta Swamp zone, and one in the Delta Marsh zone (Tables 8, 15, 16, and 18).

Site 1Ba229A, in the Delta Marsh zone, was a stratified Bayou La Batre-early Porter site excavated by the University of South Alabama (Stowe 1977). This excavation is especially important since it appears to show reveal an unbroken sequence of ceramic development from Bayou La Batre to early Porter. A number of nonlocal sherds were also present (Table 17, Figures 11 and 12). It is also significant that the ceramic stratigraphy, to a large degree, paralleled that at Site 1Ck45. At Site 1Ck45 coarse sand and grit tempered pottery and Bayou La Batre Stamped pottery decreased and fine sand tempered plain pottery increased through time. Clay tempered pottery was a minority throughout the midden (Figures 11 and 12). This same trend is clearly evident in Levels 7 through 21 at Site 1Ba229A, although there does seem to be a little more clay in the ceramic paste at Site 1Ba229A than at Site 1Ck45. Specifically, ceramic change in Levels 6 through 14 at Site 1Ba229A nearly duplicates the ceramics change at Site 1Ck45 (Table 17, Figure 11).

The lowest levels, Levels 21 through 15, at Site 1Ba229A contained virtually a pure early Bayou La Batre component, except for four sherds. One unclassified cord marked and two unclassified check stamped sherds, and one Crooks Stamped sherd were probably intrusive from the upper levels. The Bayou La Batre pottery from these levels is mainly grit tempered or sand and grit tempered. Bayou La Batre Stamped comprised approximately 40 percent and Bayou La Batre Plain comprised approximately 55 percent of the total ceramics in those levels (Table 17, Figure 11).

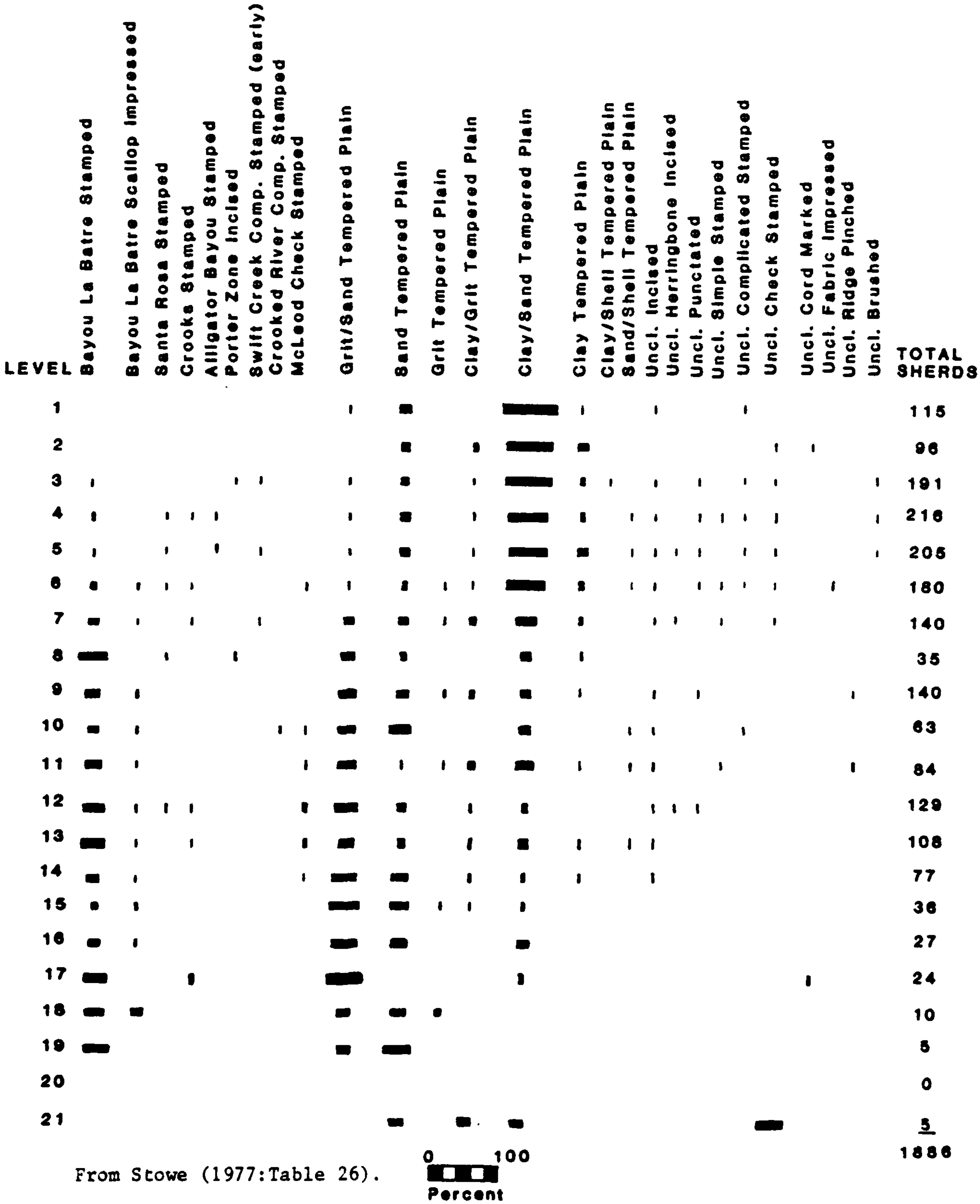
Check stamped pottery began to appear consistently from Level 14 through Level 2. The check stamped sherds in Levels 14 through 10 were classified as McLeod Check Stamped and those from Levels 7 through 2 were designated unclassified check stamped. All of this check stamped pottery is probably Deptford Check Stamped. Deptford and McLeod Check Stamped are morphologically very similar and represent temporal variations within the

Table 17. 1Ba229A Pottery Distribution by Levels.

Levels	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
Classifiable																						
Bayou La Batre Stamped	-	-	3	12	6	18	24	16	33	9	21	39	40	15	3	5	9	3	2	-	-	258
Bayou La Batre Scallop Impressed	-	-	-	-	-	1	1	-	7	3	1	1	4	2	3	1	-	2	-	-	-	26
Santa Rosa Stamped	-	-	-	3	1	1	-	1	-	-	-	2	-	-	-	-	-	-	-	-	-	8
Crooks Stamped	-	-	-	1	-	1	2	-	-	-	-	2	1	-	-	-	1	-	-	-	-	8
Alligator Bayou Stamped	-	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Porter Zone Incised	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Swift Creek Complicated Stamped (early)	-	-	1	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
Crooked River Complicated Stamped	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
McLeod Check Stamped	-	-	-	-	-	3	-	-	-	1	2	9	7	2	-	-	-	-	-	-	-	24
Residual																						
Sand/Grit Plain	1	-	5	2	7	3	21	7	35	17	15	41	23	29	16	10	12	2	1	-	-	247
Sand Plain	19	12	21	28	31	16	21	3	26	20	2	17	10	19	10	6	-	2	2	-	1	266
Grit Plain	-	-	-	-	-	1	2	-	3	-	2	-	-	-	1	-	-	1	-	-	1	11
Clay/Grit Plain	-	5	3	8	7	1	12	-	12	-	9	1	5	3	1	-	-	-	-	-	-	67
Clay/Sand Plain	91	63	130	125	105	97	41	6	19	9	22	13	14	4	2	5	1	-	-	-	1	748
Clay Plain	2	14	14	19	29	17	8	1	1	-	2	-	2	2	-	-	-	-	-	-	-	111
Clay Shell Plain	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Sand Shell Plain	-	-	-	1	1	1	-	-	-	1	2	-	1	-	-	-	-	-	-	-	-	7
Unclassifiable																						
Incised	1	-	5	2	4	7	2	-	2	1	3	1	1	1	-	-	-	-	-	-	-	30
Herringbone Incised	-	-	-	-	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	3
Punctated	-	-	3	2	4	4	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	16
Simple Stamped	-	1	-	1	-	3	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	7
Complicated Stamped	1	-	1	4	1	2	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	10
Check Stamped	-	-	1	3	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	13
Cord Marked	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2
Fabric Impressed	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Ridge Pinched	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	-	3
Brushed	-	-	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
																						1886

From Stowe (1977:Table 25).

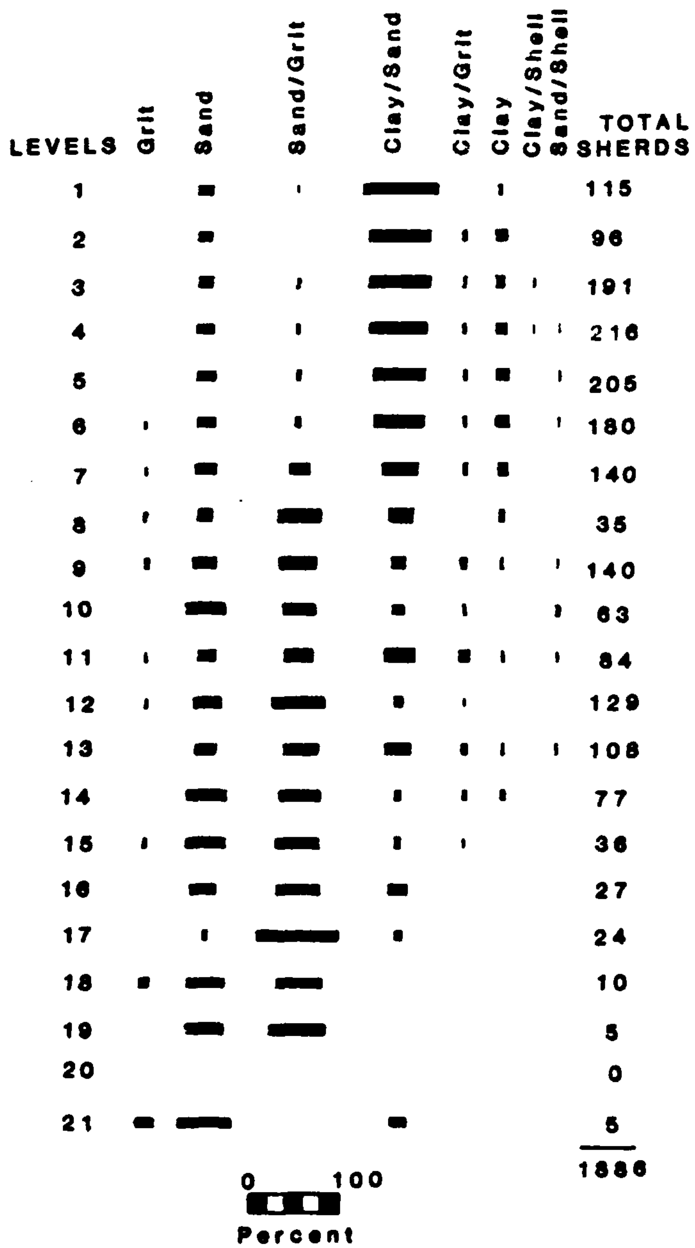
Site 1Ba229A
Type Distribution of Pottery from
Squares SM-1 and SM-2



From Stowe (1977:Table 26).

Figure 11.

Site 1Ba229A
Temper Distribution of Pottery from
Squares SM-1 and SM-2



From Stowe (1977:Table 26).

Figure 12.

long check stamping tradition. A total of 21 probable Deptford Check Stamped sherds were recovered from Levels 14 to 8. A good example of a Flint Creek projectile point, possibly made from Fort Payne chert, was recovered from Level 13 (Stowe 1977:Figure 21, lower left). This is the major projectile point type associated with Alexander ceramics in the central and upper Tombigbee River Valley (Jenkins 1982). Fort Payne chert outcrops naturally in the upper Tombigbee Valley and western Tennessee Valley, the area where Alexander ceramics are spatially most concentrated. One sherd from Level 7 classified as Unclassified Herringbone Incised (Stowe 1977:171), could well be Alexander Incised.

Alexander pottery and Flint Creek projectile points have been dated between 500 B.C. and 100 B.C. in the central and upper Tombigbee River Valley (Jenkins 1982). Based on the associations of the possible Alexander and the Deptford materials, Levels 14 through 7 may date no earlier than 200 or 300 B.C. and no later than 1 A.D. Swift Creek Complicated Stamped appeared for the first time in Level 7. Crooks Stamped occurred for the first time in Level 13 (with the exception of the one sherd from Level 17) and Crooked River Complicated Stamped occurred in Level 10. These are traditionally known as Middle Woodland types, beginning ca. A.D. 1 or possibly 100 B.C. A rather inclusive definition of Crooks Stamped, including both clay and sand tempering was used for this report. As originally defined, Crooks Stamped was a clay tempered type (Ford and Willey 1940:81-82). The decoration of Bayou La Batre Scallop Impressed is identical to Crooks Stamped except for the zone incising of Crooks. If the scallop impressing of Bayou la Batre Scollop Impressed were zoned by incising, the end product would look like Crooks Stamped (or Marksville Stamped <u>var. Crooks</u>), a clay tempered type of the early Marksville period (Ford and Willey 1940:81-82; Phillips 1970:121). Therefore Crooks Stamped probably developed out of Bayou La Batre Scallop Impressed, and most of these sherds classified by Stowe (1977) as Crooks Stamped are probably in good late Bayou La Batre context, except the one sherd in Level 17. Zone stamping is a good Middle Woodland horizon marker the Mississippi and Tombigbee drainages as well as in the Mobile Bay and Delta region. The initial appearance of Crooks Stamped at Site 1Ba229A probably developed during the very earliest part of the Middle Woodland period. The Bayou La Batre types and percentages present in Levels 14 to 7 were approximately the same as those in Levels 21 to 15 (Table 17, Figure 11).

The ceramics in Levels 7 through 1 could be termed terminal Bayou La Batre or very early Porter. Bayou La Batre Stamped decreased rapidly from Level 7 through Level 3. Alligator Bayou Stamped occurred for the first time in Level 5. Alligator Bayou Stamped was basically a zoned stamped development out of Bayou La Batre Stamped. Both types employ dentate stamping as the basic mode of decoration and both have podal supports. Check stamping, or Deptford Check Stamped continued to occur above Level 7 and Early Swift Creek Complicated Stamped occurred for the first time in Level 7. The appearance of this type should date no earlier than 100 B.C. or A.D. 1 (Brose 1979b:142, Sears 1977:162). Crooks Stamped occurs fairly consistently from Levels 7 to 4.

Perhaps one of the most characteristic features of this early Porter complex is the increase in the relative amount of plain pottery. Sand tempered plain and clay and sand tempered plain comprise roughly 80 percent of the total complex but clay tempered plain averaged approximately 10 percent (Table 17, Figure 11). This is very close to the percentages of plain pottery in the Porter components at Porter and McVay villages (Wimberly 1960:Tables 1 and 5). It is probably significant that Basin Bayou Incised did not occur in the early Porter component at Site 1Ba229A, probably because it has no prototype in the Bayou La Batre series. Incising probably ultimately was incorporated as a standard of the Porter complex as a result of contacts between groups making early Marksville ceramics in the lower Mississippi Valley and groups making early Porter ceramics. Marksville Incised probably developed out of Tchefuncte Incised (Ford and Willey 1940:137-138) in the lower Mississippi Valley during a time when Marksville groups were communicating with early Illinois Hopewell groups. At this time dentate stamping probably spread to the lower Mississippi Valley and became incorporated into early Marksville ceramics, and then diffused northward to the Illinois Valley to be assimilated by early Hopewell potters by A.D. 1.

Bayou La Batre components have also been excavated from stratified contexts at the Bryants Landing 3 and Bryants Landing 4 sites along Tensaw Lake within the Delta Swamp zone. At these sites Bayou La Batre components were found in stratigraphic context beneath Porter components. A radiocarbon date of 1129 B.C. was obtained for the Bayou La Batre component at the Bryants Landing 4 site (Trickey and Holmes 1971:119). This date, however, may be too early.

Alexander components were recorded at Site 1Mb60, in the Delta Swamp zone, and at Site 1Ba215 in the Delta Marsh zone. Both sites have larger Bayou La Batre components, suggesting that the Alexander and Bayou La Batre components could be associated. A possible Alexander component, represented by one pinched sherd, was also present at Site 1Wn77 in the Delta Meander zone (Table 15).

The Bayou La Batre, Tchefuncte, and Alexander series should be roughly contemporaneous (Walthall and Jenkins 1976:46-47). There are, however, very few good stratigraphic associations in the few excavated Bayou La Batre components in the Mobile, Alabama area. Probably the best stratigraphic association of Bayou La Batre and Tchefuncte is in the block excavation at Site 1Mb14 where Tchefuncte ceramics were found in all levels in direct association with Bayou la Batre ceramics. A few Marksville sherds were most concentrated in Level 2 and a few plain fiber tempered sherds were concentrated in the lowest levels. Alexander pottery did not seem to be present, but some unclassifiable sand tempered incised, pinched, and gash-punctated sherds were present that could very possibly be Alexander (Wimberly 1960:Table 18). A re-examination of this collection would probably shed more light on the temporal associations of these early ceramic series. Alexander and Tchefuncte pottery has been found in direct association at the Tchefuncte site in the lower Mississippi Valley (Ford and Quimby 1945:Figure 22).

<u>Porter Phase</u> (A.D. 1 - A.D. 400)

The Porter phase ceramics are diagnostic of the Santa Rosa series and the Santa Rosa-Swift Creek period as defined by Willey (1949:366). In this report, however, the term Middle Woodland refers to this time span rather than to the more regionally specific Santa Rosa-Swift Creek. Significant regional differences in the relative percentages of Santa Rosa and Swift Creek series pottery have been documented across northern Florida. East of the Apalachicola River Middle Woodland ceramic assemblages were almost pure early Swift Creek and Santa Rosa ceramics were rare, occurring primarily in mound contexts. West of the Apalachicola River and Choctawhatchee Bay the Santa Rosa series accounted for more than 50 percent of a particular complex and became more frequent farther east (Phelps 1969:17, Sears 1977:165). In the Mobile Bay area, early Swift Creek Complicated Stamped comprised no more than 1.0 percent of any Middle woodland ceramic complex. The Santa Rosa series was most concentrated in the Mobile, Alabama area. The Santa Rosa series developed directly out of the Bayou La Batre series which was also spatially concentrated in the Mobile area. It seems probable, however, that this development occurred as a result of contact between lower Mississippi Valley and early Porter groups. The Santa Rosa and Marksville series share many ceramic traits in common such as broad curvilinear and rectilinear incising, plain and dentate zoned rock stamping and podal supports. Both Bayou La Batre and Tchefuncte were parent ceramic series from which the Santa Rosa and the Marksville series developed.

Porter components have been identified during this study at Sites 1Wn76 and 1Wn77 in the Delta Meander zone and at Site 1Mb63 in the Delta Swamp zone (Tables 8, 15, 16, and 17). It is probably a sampling accident that the BWT project found no Porter components in the Delta Marsh zone, since Stowe (1977) excavated an early Porter component in that zone at Site 1Ba229A and Wimberly (1960) reported several Porter components along the Mobile Gulf Coast.

An early Porter component was represented in Levels 1 through 7 at Site 1Ba229A which had developed out of earlier Bayou La Batre components. This early Porter component was characterized by 80 to 85 percent mainly clay and sand tempered plain pottery and smaller amounts of fine sand tempered Bayou La Batre Stamped, Bayou La Batre Scallop Impressed, and Santa Rosa Stamped. Also present were small amounts of sand tempered Alligator Bayou Stamped, Porter Zoned Incised, early Swift Creek Complicated Stamped, Deptford Check Stamped, Crooked River Complicated Stamped, as well as sand and clay tempered Crooks Stamped. Unclassified ceramics such as Herringbone Incised, simple stamped, fabric marked, cord marked and ridge pinched were also present (Table 17, Figure 11). Basin Bayou Incised was not represented in this component.

Porter components stratigraphicaly overlying Bayou La Batre components have also been excavated at the Bryants Landing 3 and Bryants Landing 4 sites. A radiocarbon date of 79 B.C. was obtained from the Bryants Landing 4 component (Trickey and Holmes 1971:Table 1, Figure 2). The sherd sample was small, however, and it is difficult to determine what point in the Porter continuum this sample should date. Based on its close proximity to the Bayou La Batre strata, it should be early, as implied by the radiocarbon date.

Excavated Porter components along the Mobile Gulf coast have been reported at Copeland Bayou Shell Midden B, Marsh Island Shell Midden, West Fowl River Shell Midden, and Salt Marsh Mound (Wimberly 1960:Tables 11, 12, 13, 14, and 16). Components such as Salt Marsh Mound and Coden Bayou Mound where percentages of Basin Bayou Incised significantly dominated the percentages of Alligator Bayou Stamped were probably late in the Porter sequence. Therefore Porter ceramic development was apparently characterized by larger percentages of Alligator Bayou Stamped during early Porter, with little or no Basin Bayou Incised. Late and terminal Porter was apparently characterized by larger percentages of Basin Bayou Incised with only a small amount of Alligator Bayou Stamped. Unfortunately, there is only minimal stratigraphic support for this model. At Site 1Ba229A the early Porter levels containing Alligator Bayou Stamped and no Basin Bayou Incised were directly over the Bayou La Batre levels and at the Salt Marsh Mound the proposed late Porter component containing a high percentage of Basin Bayou Incised was concentrated at the base of a predominantly Weeden Island midden. This is a logical model since Porter developed out of Bayou la Batre, where dentate stamping was the main decoration and developed into Weeden Island where no dentate stamping (zoned or unzoned) occurs. Instead, incising was one of the most important Weeden Island decorative treatments.

<u>Tates Hummock Phase (Weeden Island Variant)</u> (A.D. 400 - A.D. 1100)

By A.D. 400 a dynamic series of cultural systems had developed on the southern Coastal Plain in an area extending east as far as the Altamaha River, west as far as Mobile Bay, south as far as Tampa Bay, and north as far as the Fall Line. Most cultural systems within this broad area were Weeden Island or were related to Weeden Island. The purest forms of Weeden Island, in terms of ceramics and burial ceremonialism, seem to be concentrated along the coastal strand from the Mobile Bay and delta region east to the Suwannee River (Milanich 1980:11-17).

Along the interior Coastal Plain in Alabama a number of local cultural systems, to varying degrees, participated in the Weeden Island ceremonial system. This ceremonial and other less clear forms of contact resulted in a superficial Weeden Island veneer over these cultures. The McLeod and Tuckabum complexes, and possibly the Turkey Paw complex along the Tombigbee River and the Hope Hull, Henderson, and Claiborne complexes along the Alabama River are representative examples.

The regional Weeden Island representative in the Mobile area is the Tates Hummock phase (Walthall 1980:171-172). Data collected during this and earlier studies reveal both spatial and temporal changes in ceramic content. Initially, the Tates Hummock phase encompassed that area from the Delta Meander zone southward to the Gulf Coast. At about A.D. 800 or A.D. 900 Weeden Island development in the Delta Meander, Delta Swamp, and Delta Marsh zones was terminated by a group producing Tensaw Lake complex coarse cord marked ceramics while late Tates Hummock development continued on the gulf coast. Weeden Island or Tates Hummock were analyzed into early and late subdivisions for the purposes of this study. This division does not correspond to Willey's (1949) Weeden Island I and II periods, which were inferred mainly from larger percentages of early Swift Creek Complicated Stamped in Weeden Island I and larger percentages of Wakulla Checked Stamped in Weeden Island II. The Mobile area is on the western fringe of the spatial distribution of late Swift Creek Complicated Stamped which never comprised over 1.0 percent of any ceramic complex and therefore never played a significant role in the ceramic development of the area. Willey's Weeden Island I and II, however, may have been generally contemporaneous with the early and late Weeden Island manifestations of the Mobile area.

Early Weeden Island components in the BWT study area were characterized by approximately 80 to 90 percent plain and 0 to 15 percent check stamped pottery. Most sites contained less than 10 percent check stamped pottery. The check size of this pottery was usually small, less than 4 mm. Types such as Carrabelle Incised, Carrabelle Punctated, Weeden Island Incised, Weeden Island Punctated, Keith Incised, Mound Field Net Marked, Weeden Island Red, and Indian Pass Incised together seldom comprised more than 5 percent of any assemblage.

This early Weeden Island manifestation probably developed directly out of the late Porter complex. Continuity is evident in the high percentage of plain pottery, approximately 80 percent in both complexes. Furthermore, Weeden Island Incised probably developed out of Basin Bayou Incised and Porter Zone Incised. Weeden Island Punctated probably developed out of Santa Rosa Punctated. Types such as Carrabelle Incised and Kieth Incised may have developed as a result of contact with lower Mississippi Valley late Marksville or Troyville groups where rectilinear incising remained in vogue in ceramic varieties such as Marksville Incised var. Goose Lake.

A large number of Weeden Island components were found in the Delta Meander, Delta Swamp, and Delta Marsh zones. Weeden Island components were found in the Delta Meander zone at Sites 1Ck200, 1Wn75, 1Wn78, and 1Wn79. In the Delta Swamp zone, Weeden Island components were found at Sites 1Mb65, 1Mb66, 1Mb97, 1Mb211, 1Mb218, 1Ba431, 1Ba449, and 1Ba451. Weeden Island components were found in the Delta Marsh zone at Sites 1Ba194, 1Ba200, 1Ba459, and 1Mb206 (Tables 8, 15, 16, and 18).

Along the gulf coast, early Weeden Island components have been found in stratigraphic context beneath late Weeden Island components at several sites on the western side of the Bay. At the Powell Mound, the Salt Marsh Mound, and Tates Hummock site the percentages of sand tempered check stamped (Wakulla) gradually increased from bottom to top, as the percentages of sand tempered plain decreased. Checked stamped pottery may comprise as much as 40 percent and plain pottery comprises about 30 to 35 percent in the upper levels. Late McLeod Linear Check Stamped and Late McLeod Simple Stamped were virtually absent, never comprising more than 0.50 percent of an assemblage. At the Andrews Place Shell Midden, a late Weeden Island component was stratigraphically beneath a Mississippian component (Wimberly 1960:Tables 9, 15, 16, and 17). A similar stratigraphic sequence was found on the eastern side of the Bay at the St. Andrews Point site. There percentages of Wakulla Check Stamped also increased through time (Trickey 1958:Figure 3).

A number of nonlocal types were associated with the early and late Weeden Island components. The most frequently associated types were clay tempered (Baytown) plain, and Mulberry Creek Cord Marked. Other types included Coles Creek Incised, Ponchartrain Check Stamped, Mazique Incised, Evansville Punctated, Beldeau or Harrison Bayou Incised, and French Fork

Table 18. Delta Marsh Ceramics.

	1Ba194 Surface	1Ba197 Surface	1Ba198 Surface	1Ba200 Surface	1Ba215 Surface	1Ba394 Shovel Test 1, 0-86 cm	1Ba394 Shovel Test 2, 0-40 cm	1Ba394 Shovel Test 2, 40-80 cm	1Ba398 Surface	1Ba399 Shovel Test, 0-80 cm	1Ba400 Surface	1Ba401 Surface	1Ba459 Surface	1Ba460 Surface	1Mb96 Surface	1Mb206 Surface	Total
Shell Tempered																	
Plain (Coarse)	148	3	10	93	3	205	51	43	48	2	19	-	-	1	6	172	804
Plain (Fine)	23	-	4	6	-	20	6	9	12	-	10	2	-	-	-	11	103
Pensacola Incised	9	-	-	6	-	5	6	1	8	-	-	-	-	-	-	12	47
Moundville Incised (Punctated Arch)	5	-	1	-	-	24	3	7	1	-	-	-	-	-	1	1	43
Moundtile Incised (Unspecified Arch)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Moundville Engraved	1	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	3
D'Olive Incised	-	-	-	1	-	1	1	-	-	1	-	-	-	-	-	2	6
Mobile Cane Impressed	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2
Residual Incised	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	4	5
Noded	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Discoidal	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Eroded	-	4	12	-	-	-	-	-	81	-	-	-	-	-	-	-	97
Subtotal	189	7	27	107	3	257	67	61	150	3	29	3	-	1	7	202	1,113
Clay Tempered																	
Plain	19	8	8	1	3	-	-	-	3	-	3	3	7	1	11	65	131
Mulberry Creek Cord Marked	4	-	1	-	3	-	-	-	-	-	-	-	-	-	-	39	47
Gainesville Complicated Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Ponchartrain Check Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
Interior Engraved	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Residual Incised	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Eroded	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Subtotal	24	8	10	1	6	-	-	-	3	-	3	3	7	1	11	108	185
Fine Sand Tempered																	
Plain	20	2	7	21	39	-	-	-	-	-	-	3	11	-	3	131	241
Check Stamped	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	5	6
Carrabelle Incised	1	-	1	2	-	-	-	-	-	-	-	-	-	-	-	1	5
Carrabelle Punctated	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Furry Cord Marked	1	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-	9
Residual Incised	3	-	-	2	-	-	-	-	-	-	-	-	-	-	2	1	8
Eroded	-	4	-	-	-	-	-	-	-	-	-	-	9	-	-	6	19
Alexander Incised	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Subtotal	25	6	8	27	40	-	-	-	-	-	-	11	24	-	5	144	290
Coarse Sand/Grit Tempered																	
Plain	15	14	2	4	6	-	-	-	2	-	2	-	3	-	-	40	88
Mobile Cord Marked	48	-	-	-	13	-	-	-	-	-	23	2	-	-	-	18	104
Check Stamped	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	9
Bayou La Batre Stamped	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
Subtotal	66	14	2	4	22	-	-	-	2	-	25	2	3	-	-	64	204
Fiber Tempered																	
Plain	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	10
Subtotal	-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	10
TOTAL	304	35	47	139	81	257	67	61	155	3	57	19	34	2	23	510	1,802
Other																	
Daub	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Fired Clay	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	2

Incised. These ceramics probably represent two complexes, Miller III from the north and Coles Creek from the west.

In the early Weeden Island components in the Delta Meander, Delta Swamp, and Delta Marsh zones, Mulberry Creek Cord Marked was the most numerous type, except for clay tempered (Baytown) plain. The decorated Coles Creek types were a distinctive minority. The Coles Creek type, Ponchartrain Stamped, tends to appear only at those Weeden Island sites that have the highest percentages of sand tempered (Wakulla Check) stamped. At almost every site in the delta with Baytown Plain and Mulberry Creek Cord Marked, plain clay tempered pottery significantly outnumbered clay tempered cord marked pottery. These clay tempered assemblages are very much like the early Miller III central Tombigbee River valley Gainesville Lake area Vienna complex which has been dated from A.D. 600 to A.D. 900 (Jenkins 1981:24-26, 1982:112-113).

Mulberry Creek Cord Marked is rare in lower Mississippi Valley Coles Creek contexts because the spatial distribution of that type as a major part of any complex does not extend any farther south than the mouth of the Red River (Ian Brown, personnal communication 1982). There are some fairly large early Miller III-like components in the Delta Swamp and Delta Marsh zones, such as at Sites 1Mb65, 1Mb66, and 1Mb206 (Tables 8, 16, and 18). The presence of these components argues for more than simple intermittent contact with Miller III groups--it suggests that there were probably some Miller III people in residence there. How and why this may have occurred is not clear and remains a good topic for future research.

Miller III populations in the central Tombigbee region show signs of population pressure by around A.D. 700 or A.D. 800 (Jenkins 1982:143-144). Some groups may have moved out of the central Tombigbee at about that time. The small Miller III population could have also been in the bay area to cement a trade alliance with the local Weeden Island groups. Marine shells, probably from the gulf coast, were frequently found in Miller III burials (Cole et al. 1982).

Mulberry Creek Cord Marked has also been found in reasonably good stratigraphic association with early and late Weeden Island components along the gulf coast at Andrews Shell Midden, the Powell Mound, the Salt Marsh Mound, and the Tates Hummock site (Wimberly 1960:Tables 9, 15, 16, and 17). Here the Miller III-like ceramics were mixed with more Coles Creek ceramics than in the Delta Swamp and Delta Marsh zones so it was not possible to determine if the clay tempered plain ware was part of the Miller-like assemblages or part of the Coles Creek assemblages.

Other nonlocal types have also been found at early Weeden Island sites in the delta. Saltillo Fabric Marked var. China Bluff sherds were found at Sites 1Mb211 and 1Wu78. This variety was temporally and spatially concentrated during the late Miller II Turkey Paw subphase (A.D. 450-A.D. 600) in the central Tombigbee River Valley. This temporal placement is compatible with the Weeden Island ceramic associations at Sites 1Mb211 and 1Wn78 where check stamped (Wakulla) was rare or absent (Tables 8, 15, and 16) at those early Weeden Island components.

Furrs Cord Marked sherds were possibly associated with early Weeden Island components at Sites 1Wn76, 1Wn78, 1Wn79, 1Mb65, and 1Ba94. Furrs Cord Marked sherds found in Weeden Island assemblages could have resulted from contacts with Tuckabum groups in the Flatwoods and Southern Red Hills zones. Tuckabum-Weeden Island contact is evident at Site 1Cw28, a large probable Weeden Island component the Southern Red Hills zone (Tables 8, 14, 15, 16, and 18).

In the Mobile and northwest Florida gulf coast regions Furrs Cord Marked has been called West Florida Cord Marked. A Middle Woodland early variety of this type has unmodified rims and a Late Woodland late variety has folded rims (Willey 1949:388, Wimberly 1960:123). The presence of West Florida Cord Marked in Weeden Island assemblages probably resulted from contact between Weeden Island and Tombigbee Valley groups. Furrs Cord Marked was a major type in the Tombigbee Valley for a very long time. Willey (1949:388) had remarked that West Florida Cord Marked would probably eventually be merged with an interior Coastal Plain type.

Only one Weeden Island radiocarbon date has been recovered in the Mobile area--a date of A.D. 830±60 was obtained in stratigraphic context from Zone F at Site 1Ba181 in the Delta Swamp zone (Stowe 1981:180). Ceramic associations indicate that this sample should date the late end of early Weeden Island. The assemblage from Zone F contained approximately 10 percent check stamped pottery. The overlying Zones D and E contained Tensaw Lake ceramics.

<u>Tensaw Lake Phase</u> (A.D. 850 - A.D. 1200)

At approximately A.D. 850, Weeden Island ceramic development within the Delta Meander, Delta Swamp, and Delta Marsh zones was terminated but continued along the Mobile gulf coast. High percentages of Wakulla Check Stamped were recovered from the upper levels at Andrews Place Shell Midden, Powell Mound, Salt Marsh Mound, and Tates Hummock (Wimberly 1960: Tables 9, 15, 16, and 17). Current survey data suggests that Weeden Island development may have also continued in the Mobile Bay area.

The ceramic complex which replaced the early Weeden Island complex in the delta is morphologically very distinct from it. This later complex is defined here as the Tensaw Lake complex.

Survey data compiled during this study and by N.R. Stowe of the University of South Alabama (written communication 1982) suggests that the Tensaw Lake complex was confined to the delta zones and probably did not extend very far south into the Mobile Bay area. The Tensaw Lake complex is characterized predominantly by the type Mobile Cord Marked. Unnamed check stamped, simple stamped, and plain ceramics occur in smaller percentages. The paste of this pottery is tempered with a very coarse sand and grit. This coarse paste is very similar to the pastes of the central and upper Alabama River Late Woodland Whiteoak and Autauga complexes and appears to be a horizon marker for the A.D. 800-1100 time frame for an area encompassing the lower Tallapoosa, the Alabama River Valley, and the Mobile Delta. Mobile Cord Marked pottery comprises between 55 and 90 percent of most assemblages. When check stamped and/or simple stamped pottery are present, the percentage of Mobile Cord Marked pottery is lower. When these surface treatments are absent, the percentages of Mobile Cord Marked are higher, around 90 percent. Stratigraphic data from the upper Mobile Bay area suggests that these ceramic differences may be temporally significant.

In the summers of 1974 and 1975 the University of Alabama conducted extensive excavations at Sites 1Ba196 and 1Ba251 (DeJarnette 1976a). These excavations revealed at least three ceramic complexes. The largest part of the assemblage was a shell tempered Pensacola complex. The remaining ceramics were comprised of a coarse sand/grit tempered complex, interpreted as the ceramics of an intrusive Tawasa group from north Florida, and a clay tempered complex, interpreted as the ceramics of an intrusive Plaquemine group from the lower Mississippi Valley--thought to have been Taensa. All of these ceramic complexes were thought to date to the early colonial period (Knight 1976:143, Jenkins 1976:11-19).

Research conducted during this BWT study has revealed that these interpretations were in error. Some portions of Site 1Ba196 were generally stratified, and several excavation units appeared to be well stratified. Site 1Ba196 was generally composed of distinct upper and lower shell lenses. Across most of the site the coarse sand/grit tempered complex (1,055 sherds) and the clay tempered complex (129 sherds) were generally concentrated in the lowest shell zone, Zone D, in association with a numerically dominant Pensacola complex (Jenkins 1976:Tables 1-11), which, in some areas of the site was clearly an early Pensacola complex. Moundville Incised was the dominant decorated type. The local equivalent of Moundville Incised var. Moundville, the earliest variety of Moundville Incised in the Warrior Valley (Steponaitis 1980b:448), was present. The percentages of this variety relative to other, generally later, varieties of Moundville Incised is not clear since no re-analysis of all ceramics from Site 1Ba196 has been undertaken. These associations were not uniform across the entire site. In many areas the earlier ceramics appeared to be mixed with the later Pensacola ceramics concentrated in Zones A and B which probably were protohistoric and/or very late Mississippian. Excavation Areas A and B-2 appeared to be among the best stratified portions of the site (see Jenkins 1976:Tables 2,4). In these areas the relative percentages of Moundville Incised decreased from zones D through A, while the percentages of Pensacola Incised increased in Zone A.

The coarse sand/grit tempered pottery, also concentrated in Zone D, is clearly a late version of the Tensaw Lake complex. The surface treatments and morphology of the Zone D coarse sand/grit tempered pottery were identical to what has been defined in the present BWT study as the Tensaw Lake complex. The percentages of the various surface treatments in Zone D at Site 1Ba196, however, differed considerably from most other Tensaw Lake components identified by the BWT survey. Cord marking was the dominant surface treatment at most Tensaw Lake components identified by the BWT study, comprising between 60 and 90 percent of all ceramics. At Site 1Ba196, however, plain pottery was dominant, comprising over 60 percent of this ware group. Check and simple stamping were more numerous, but comprised less than 5 percent of the complex.

The clay tempered Plaquemine complex was the third and smallest complex represented in Zone D. This complex was apparently imported from the lower Mississippi Valley and may be useful for relatively dating the late Tensaw Lake and early Pensacola complexes with which it was directly associated. Most of this complex was plain, Baytown Plain var. Addis. Other ceramics included Coles Creek Incised var. Hardy and L'Eau Noire Incised vars. L'Eau Noire and Carter (Jenkins 1976:234). In the Natchez region these ceramics would date to around A.D. 1200-1300 (Vincas Steponaitis, written communication to Vernon J. Knight 1981).

In summary, it seems clear that three contemporaneous ceramic complexes were present in Zone D at Site 1Ba196 and these may represent three distinct ethnic groups at the A.D. 1200-1300 time level. The late Tensaw Lake ceramics no doubt represent a remnant late Woodland population indigenous to the Mobile Bay area. The shell tempered Pensacola ceramics are morphologically very distinct from the late Tensaw Lake ceramics (Jenkins 1976:225-234) and represent an early Mississippian group. It will be argued later that these people were intrusive from the Warrior Valley upstream.

One Tensaw Lake radiocarbon determination yielding a date of A.D. 881±150 was obtained from Shell Layer 1 at the Bryants Landing 4 site (Trickey and Holmes 1971:Table 2). This seems a reasonable date for this complex, but it is very possible that the Tensaw Lake complex could have lasted as late as A.D. 1100 or 1200.

A large number of Tensaw Lake phase components were visited during the BWT study. In the Delta Meander zone, Tensaw Lake components were identified at Sites 1Ba381, 1Ck203, 1Ck207, 1Wn78, and 1Wn79 (Tables 8 and 15). Tensaw Lake phase components were identified at Sites 1Mb65, 1Mb66, 1Ba382, 1Ba395, 1Ba449, 1Ba450, 1Ba451, 1Ba452, 1Ba455, 1Ba456, and 1Ba458 in the Delta Swamp zone (Tables 8 and 16), and at Sites 1Ba194, 1Ba215, and 1Ba401 in the Delta Marsh zone (Tables 8 and 18).

Pensacola Variant (Phases Undefined) (A.D. 1100 - A.D. 1700)

Pensacola components were most numerous within the Delta Meander, Delta Swamp, and Delta Marsh zones. Within the Delta Meander zone, Pensacola components were present at Sites 1Ba380, 1Ba381, 1Ck204, and 1Wn76. Probable Pensacola components yielding only plain shell tempered pottery were present at Sites 1Ck203, 1Ck205, 1Ck206, 1Ck207, 1Wn74, 1Wn75, 1Wn77, and 1Wn78. Within the Delta Swamp zone, Pensacola components were present at Sites 1Mb65, 1Mb66, 1Mb97, 1Mb211, 1Mb212, 1Mb220, and 1Ba395. Probable Pensacola components were present at Sites 1Mb210, 1Mb213, 1Mb217, 1Mb383, 1Mb385, 1Ba388, 1Ba389, 1Ba431, 1Ba450, 1Ba454, and 1Ba455. Within the Delta Marsh zone, Pensacola components were present at Sites 1Ba194, 1Ba198, 1Ba200, 1Ba398, 1Ba399, 1Ba401, 1Mb96 and 1Mb206. Probable Pensacola components were present at Sites 1Ba197, 1Ba215, 1Ba400, and 1Ba460 (Tables 8, 15, 16, and 18).

Pensacola assemblages within the Delta Meander, Delta Swamp, and Delta Marsh zones were ceramically very similar to those of the Tallahatta Hills and Rolling Piney Woods. Morphological stylistic change within each of the defined types of the Pensacola series is not well understood within any of the five physiographic zones of the BWT study area or along the bay and gulf coast where Pensacola ceramics also occur. The Pensacola ceramic typology must be considerably refined before more finely scaled temporally significant stylistic change can be documented. N.R. Stowe and R. Fuller of the University of South Alabama are presently refining the Pensacola ceramic taxonomy.

Two sites reported by Wimberly (1960) revealed some degree of Mississippian stratigraphy and give some suggestive data for a general trend in Pensacola ceramic development. At both sites the relative percentages of Moundville Incised decreased while the percentage of Pensacola Incised increased through time. At the Andrews Place Shell Midden, a Mississippian component overlay a late Weeden Island component. The Mississippian stratum began generally in the 2.0 ft level. Moundville Incised accounted for 4.3 percent (counting Mississippian ceramics only) in this level and decreased to 1.4 percent of the total assemblage in Level 1. Pensacola Incised comprised 0.8 percent at the 2.0 ft level and increased to 5 percent in the top level. Pensacola Plain comprised over 90 percent of the pottery at this site. At the Copeland Bayou site, Moundville Incised showed a general decrease from 10.0 percent in the lowest level to 6.8 percent in the upper level. Pensacola Incised increased from 6.8 percent to 19.0 percent. Pensacola Plain comprised 75 to 80 percent of the total ceramics at this site (Wimberly 1960:Tables 9 and 11). The Mississippian stratigraphy at these two sites was generalized and somewhat mixed with earlier components and therefore subject to rather cautious interpretation. This general stratigraphy also agrees with the Pensacola ceramic seriations proposed by Trickey (1958:Figure 3), Holmes (1963:Figure 1) and with that in Areas A and B-2 at Site 1Ba196 (Jenkins 1976:Tables 2,4). It also parallels the evolution of Moundville Incised and Carthage Incised in the Moundville and Summerville sequences within the Warrior and Tombigbee drainages. In those areas the three varieties of Moundville Incised decreased in frequency throughout the Moundville and Summerville I-III sequences. By approximately A.D. 1500 Moundville Incised <u>var. Carrollton</u> appeared only as a minority during the Late Mississippian-early protohistoric Summerville IV phase. In the later protohistoric components, postdating A.D. 1600, excavated in the Warrior and Alabama River drainages Moundville Incised was totally absent (Mann 1981, Steponaitis 1981, Sheldon 1974, Cailup Curren, personal communication 1981, Carlos Solis and Rick Walling, personal communications 1982).

The Pensacola series is morphologically very similar to the Warrior and Tombigbee River Valley Moundville series. The temporal morphological variability of Moundville ceramics in the Warrior and Tombigbee Valleys has been the subject of several recent studies (Steponaitis 1980b, Jenkins 1981, Mann 1981). One of the most numerous ceramic types present in both the Moundville and Pensacola series is Moundville Incised. A similar morphological variability in the arch motif of this type occurs in both series. The temporal variability of the arch morphology, however, has not been documented for the Pensacola series. It is, therefore, not known if the arch evolution documented for the Warrior and Tombigbee Valleys was paralleled in the Mobile Delta and coast regions.

The type Moundville Engraved is also found in both the Pensacola and Moundville series. Several Moundville Engraved sherds were recovered during this study from Site 1Ck210 which are very similar to the Warrior drainage <u>var. Taylorville</u> (Steponaitis 1980b:437-445). A radiocarbon sample from the stratum from which these sherds were recovered yielded a date of A.D. 1295±65. Site 1Ck210 also produced more Moundville Incised var. Moundville sherds, a Moundville I type, than any site visited by this study. This radiocarbon determination from Site 1Ck210 is within the range of dates for these types and varieties in the Warrior drainage but the date could be slightly late.

Another ceramic type, Mound Place Incised, also occurs in both the Moundville and Pensacola series. This type seems to persist throughout the Moundville sequence and is also numerous in the Pensacola series. Mound Place Incised was subsumed under Pensacola Incised in the Pensacola series (Willey 1949:464-466, Moore 1901b:Figure 37).

Carthage Incised is one of the most numerous fine ware incised types of the Moundville series. This type usually has a very fine shell tempered paste and a black burnished surface finish. The designs were executed in broad U shaped lines, incised when the paste was in a leather hard state of dryness (Steponaitis 1980b:429). Pensacola Incised is the equivalent of this type in the Pensacola series. The temporal morphological variability of Pensacola Incised has not been documented, however. One distinct difference between Pensacola Incised and Carthage Incised is the thickened rim of Pensacola Incised. This rim form is similar to the preceding Weeden Island rim and no doubt is one of the few ceramic attributes inherited from Weeden Island potters.

Pensacola ceramic distributional data gathered by this study and previous researchers indicate that the Pensacola series is most concentrated in the Mobile Delta, bay and coastal regions. Shell tempered Pensacola ceramics accounted for over 99 percent of the Mississippian ceramics in the BWT study area. Pensacola ceramics decreased in frequency and Fort Walton ceramics increased in frequency toward the east. The Choctawhatchee Bay seems to be an interface area between the Fort Walton and Pensacola ceramic series (Sears 1977:176).

Based on the above morphological and distributional data, the Pensacola series appears to have resulted from a southward diffusion of Moundville ceramics down the Tombigbee River around A.D. 1100. The social mechanisms of this diffusion are not clear. It is further proposed that early Pensacola components, similar to Site 1Ck210, will closely resemble the Moundville I complex. After the arrival of Moundville I ceramics along the lower Tombigbee, Mobile Delta, bay and coastal regions, these ceramics evolved through a different but similar sequence than those Mississippian ceramics in the Warrior and central Tombigbee Valleys. Communication with Fort Walton groups to the east and Plaquemine groups to the west created an environment for ceramic development different from the Warrior and central Tombigbee Valleys. Thus, the Pensacola series evolution is distinct from, yet similar to, that of the Moundville series.

PART III: MODELING SITE LOCATIONS

CHAPTER VI

DEFINITIONAL CONSIDERATIONS

David S. Brose

Because the classificatory terms employed for the locational analyses (Chapter VII) were necessarily somewhat general and ambiguous, the choices made to determine what components were represented at any given site warrant some definitional considerations. These are discussed in this chapter.

PALEO-INDIAN AND ARCHAIC SITES

There has been lively speculation in Alabama concerning the existence of a preprojectile point complex of pebble tools, purportedly representing a very ancient human occupation of the region (Lively 1965, Lively et al. 1965a, 1965b). We do not all agree with such an assignment. Not all of the artifacts assigned to the complex can be demonstrated to represent human workmanship. While many do, most of these have been recovered from sites were rough stoneworking or vegetal processing is likely to have occurred. At some sites yielding such pebble tools other artifacts diagnostic of more recent human activities were also found. No pebble tool sites have clearly early stratigraphic correlations. Indeed the argument for the antiquity of this hypothetical complex in the New World is based on an analogy of age and morphology which, if carried to the appropriate morphological age in the Old World, would suggest an Alabama Australopithecine. No pebble tools were recovered from sites within the BWT for which we suggest a pre-Paleo-Indian age.

The Paleo-Indian stage or period is characterized by a series of fluted, partially fluted, and finally unfluted projectile point types or type clusters. Although the largest number of intact Paleo-Indian sites are known on the plains-Prairie interface, a thousand miles west of the Tombigbee study area, Mason (1962), Williams and Stoltman (1965) and Griffin (1967) have all noted that,

> . . . the greater variety and the large number of fluted point forms in the Southeast and the sharply restricted time period for Clovis points in the West, from 9500 to 9000 B.C., now suggest that the development of the complex may have taken place in the Southeast (Griffin 1967:176).

This position has been echoed by later authors (e.g. Brose 1981a, White 1981). The Quad site, in north central Alabama, yielded several

Clovis and Quad projectile points from uncontrolled contexts (Soday 1954). In northwest peninsular Florida, human skeletal remains and nonlithic artifacts dated to 9500 B.C. were recovered from limestone sinks and springs (Clausen et al. 1979). Several typologically early projectile points have reportedly been collected around Pensacola and Choctawhatchee Bays to the east (Bense, personal communication; Purdy 1981). Although Paleo-Indian projectile points of several late types and periods have been recovered from the upper Tombigbee terraces, only the Hester site appears to represent an intact late Paleo-Indian component (Muto and Gunn n.d., Bense 1982).

The absence of Paleo-Indian sites is to a large degree due to the fluvial and geomorphological history of the area (Curren 1978). The Tombigbee River upstream has migrated and meandered across wide floodplains, burying older surfaces below alluvial and colluvial deposits in those rare locations where these have been preserved at all. Many areas which may have contained sites in the riverine region have doubtlessly been lost to erosion and lateral channel migration. The lack of Paleo-Indian components in the Tallahatta Hills portion of the project, where the Tombigbee River is deeply entrenched along a series of tectonic structural fault zones, is probably due to the near restriction of survey coverage to relatively few, and probably recent, portions of floodplains and terraces, just those areas where the relevant sediment is more deeply entrenched. This lowered the probability of finding Paleo-Indian sites on the few broad terraces with colluvial cover, areas from which those few examples noted above were known. Within this portion of the project area, a few areas exist where mechanical deep testing along long-abandoned channels may yield results, clearly an idea worth future exploration (Muto and Gunn n.d.). Certainly the lack of Paleo-Indian sites within the Mobile Delta itself is due to the fact that observable landforms in those physiographic zones are simply too recent.

With little question the most well defined, as well as the most securely dated, Early Archaic projectile point typological chronology in the Southeast is that derived from the Carolina Piedmont (Coe 1964), the Tennessee River Valley (Griffin 1974, Walthall 1980, DeJarnette et al. 1962), and the Little Tennessee River Valley (Chapman 1975a, 1977, 1979). The Kirk corner-notched projectile point cluster which has been dated between 9000 and 7500 B.P., is succeeded by a variety of stemmed and notched projectile point types or type-clusters of the Middle and Late Archaic with occasionally well-dated and intensively excavated sites located in eastern peninsular Florida (Milanich and Fairbanks 1980:48-60) and north and central Georgia and Alabama (Walthall 1980:44-67, DePratter 1975). Two most thoroughly reported excavations of Early Archaic sites are Russell Cave (Griffin 1974) and the Stanfield-Worley Bluff Shelter (DeJarnette et al. 1962) in northern Alabama.

Within the Tombigbee Valley several Middle Archaic and Late Archaic components have been excavated (Bense 1977, 1979, 1982; Jenkins 1982; Ensor 1980). Nonetheless, the descriptive limitation of existing local projectile point typologies is overshadowed by the fact that even well defined types appear in different temporal positions of Middle to Late Archaic sequences in different portions of even a single river valley. For example, Ensor (1982) described a Middle Archaic point type-cluster which resembles the later western Tennessee Archaic Big Sandy type. These artifacts were estimated to post-date 3500 B.C. However, as White (1981: 612) noted they were also reported in the lowest level at Russell Cave (Griffin 1974:41) and in the Dalton zone at Stanfield-Worley (around 7300 B.C.), as well as in other early contexts in the Southeast (DeJarnette et al. 1962:82-87). White (1981:612) suggested that the generalized side-notched beveled projectile point and its unbeveled companion Bolen Plain (Bullen 1975:51) appear to have a great temporal as well as spatial range, although White never described their "degree of standardization," or their spatial and/or temporal range in terms of dated deposits.

Another projectile point which White (1981) felt occurred in this area, and which might date from this early age, was similar to the Tallahassee projectile point (Bullen 1975:45), considered part of the late Paleo-Indian (Milanich and Fairbanks 1980:45, White 1981) or Early Archaic (Walthall 1980:45) Dalton horizon, sometime around 5000 years B.P. Projectile points similar to both the Bear Creek and the Flint River types are commonly recovered in the BWT area. Although these are yet undefined, their range of variation seems to include numerous point types, which, in other portions of the Southeast are demonstrably terminal Archaic or even later (see Appendix D, Site 1Ck45). Other stemmed points recovered in this survey do not resemble any known types and an Archaic affiliation is only suggested. White (1981) has also dealt with the lithic tradition of the Early Archaic period in the Chattahoochee Valley to the east where similar problems exist.

We have also rejected the arguments for antiquity which some authors (e.g. Kelley 1938:7, 1950b; McMichael and Kellar 1960:149ff; Soday 1954: 16-17; Huscher 1964, Purdy 1981) have based on the degree of lithic patina seen on tools, or the degree of surface decomposition they may display. Like other authors (e.g. Taylor and Smith 1978, White 1981, Belovich et al. 1982) we feel that unless the local geochemical conditions and the lithology of the tools remain controlled the weathering conditions are no reliable indication of time (viz. Anderson 1979).

However well defined Middle Archaic and Late Archaic lithic styles may be on the south Atlantic coast or the Tennessee River Valley and its tributaries, few dated or sealed stratified sequences can be documented for the Gulf Coastal Plain. In the mid-South Lewis and Kneberg (1957, 1959), Chapman (1975a, 1976, 1977, 1978, 1979) and others (Keel et al. 1979) have provided a detailed analysis of Archaic lithic change which can be matched in few other areas beyond that of the Carolina Piedmont (Coe 1964).

There have been several recent attempts at similar detailed Archaic lithic studies in the upper Tombigbee River Valley or adjacent areas (e.g. Atkinson et al. 1980; Bense 1979; Bense et al. 1979; Brookes 1979; Cambron and Waters 1959, 1961; Curren 1978; Ensor 1980a, 1980b, 1981; Futato 1977) but the reliability of assigning similar ages to similar morphology-based lithic assemblages on the Coastal Plain itself is certainly questionable.

GULF FORMATIONAL OR EARLY WOODLAND SITES

The introduction of ceramics to Southeastern material culture during the third millenium B.C. may have made those prehistoric peoples' lives more stable in dealing with a variety of resources in their natural environment, but these same ceramics may well have made the lives of southeastern archaeologists during the past decades less stable in dealing with an explosion of varieties, types, phases, complexes, and cultures in their terminology.

The analyses attemped in the predictive modeling required that a limited manageable number of cultural periods be created for statistical investigation. Too little data had required our condensing the 10,000 years of Paleo-Indian and Archaic occupation into a single chronological period. For the period between 1000 B.C. and A.D. 200 our problem was that, while there were no more physical data than for the Archaic, there were for this later period at least three major and different classification systems: that of Ford and Willey (1941), that of Griffin (1952, 1967), and that of Caldwell (1958) or Bullen (1971) or Walthall and Jenkins (1976). Within each of these systems there were numerous but different periods, stages, and or phases. These covered, or were designed to cover, overlapping areas of quite different shapes or sizes in the Southeast.

Along the south Atlantic coast and up its major tributaries, the Gulf Tradition begins about 2500 B.C. with several regional phases of fiber-tempered pottery, much of which is plain but some of which is quite elaborately decorated. By 1000 B.C. usually plain, but occasionally dentate stamped and rarely incised, fiber tempered and fiber and sand tempered ceramics of the late Gulf Formational tradition phases occur on the Florida Gulf coast and in the Tennessee River Valley. By 500 B.C. fiber has probably ceased to be used as a ceramic tempering agent anywhere in the Southeast. The sand or stone or clay tempered plain or paddle stamped or cord marked ceramics found along the Gulf Coast or in the major river valleys east of Mississippi have generally been assigned to an early intrusion of the Woodland, rather than the Gulf Tradition (Caldwell 1958). By the beginning of the Christian era, at latest, sand or clay or stone tempered dentate stamped and incised ceramics, again representing the Gulf Tradition, predominate in the western Gulf states and oc-occur with Woodland paddle-stamped ceramics in the eastern Gulf states. Mobile Bay and the BWT study area lie along the shifting frontier of these two traditions. Furthermore, the northern riverine portions of the BWT study area display a very different cultural history than do the southern deltaic portions of the area from 1000 B.C. to A.D.1000 (See Jenkins, Chapter V).

Our cover term chosen to identify the archaeological sites in the entire BWT study area with ceramics between 1000 B.C. and A.D. 1, must encompass the late Gulf Formational Broken Pumpkin Creek and Henson Springs phases in the north and the Bayou La Batre and Porter phases in the south, as well as the fiber tempered and fiber-and-sand tempered plain ceramics which appear earlier. It must also encompass some portion of the early Woodland tradition (if not Early Woodland) Miller I phase in the north as well as addressing the potentially early Woodland tradition Deptford-McLeod phase in the south. It is not intended to suggest that some new archaeological construct (Gulf Formational/Early Woodland) existed in the study area but rather that both traditional concepts with spatial and chronological variations are applicable. As Brose and Weisman have previously noted discussing the lower Chattahoochee,

> Since few archaeologists suspect that the fiber-tempered ceramics . . . represent anything other than adoption or acceptance of artifacts or concepts introduced from the coastal areas, and since the particular coast is at question, there is considerable debate as to what such materials should be called . . .. Jenkins (1978) and White (1981:619-625) have reviewed the history of which terms have been used by various investigators in the region. To a large extent the information currently available from areas farther east had been a critical factor in their decisions (Belovich et al. 1982:400-401).

In this study Jenkins (Chapter V) has assigned the fiber tempered ceramics to Wheeler although tentatively for areas south of the Rolling Piney Woods.

As Bense has summarized the situation in the Mobile Delta region,

> The Middle Gulf Formational Stage (1200-500 B.C.) appears to have been a period of expansion and interaction of coastal plain cultures. In the eastern coastal plain, Stallings Island evolves into the Refuge culture with sand tempered ceramics approximately 1100 B.C. Orange in northeast Florida expanded into the central and northern peninsula and the ceramic technology changed approximately 960 B.C. to the temperless St. Johns Series. The Gulf Formational cultures in the western Coastal Plain appear in this Middle period. These are the Wheeler cultures in the central and upper Tombigbee Valley and the middle Tennessee Valley, and the Bayou La Batre culture in the Mobile Bay and Delta area. In the Lower Mississippi Valley, the Poverty Point culture emerges out of the Late Archaic culture (Webb 1974) during the Middle Gulf Formational. The elaborate ceremonial center of Poverty Point and the dynamic trade networks for procurement of raw materials and export of finished items has been documented throughout the Southeast during this time period. This trade appears to have instigated a large amount of interaction among Gulf Formational coastal plain cultures. Walthall and Jenkins (1976) present in detail the specific traits of all the coastal plain cultures and their interaction (Bense 1979:64-68).

It is probably important for us to reiterate that even at those sites in the BWT Mobile Delta project area which yielded fiber tempered ceramics, not only were few ceramics recovered, but the apparently associated lithic assemblage was either not particularly diagnostic, or appeared to consist of projectile point types which, on typological grounds, have traditionally been assigned to earlier, often far earlier, portions of the Archaic period, Belovich et al. (1982) describe an analogous situation in the Chattahoochee Valley to the west. This suggests that many of the archaeological sites known from limited investigations, and typologically assigned to the Early or Middle Archaic, may in fact represent Late Archaic or early Gulf Formational sites. It further suggests that, in the absence of later aboriginal reoccupation and disturbance, or in the absence of local river erosion, many of these fiber tempered components would not be identified by traditional survey methods. Worse, those very processes of disturbance which lead to the identification of sites which have fiber tempered ceramics, often lead to the loss of their stratigraphic integrity (Caldwell and Smith 1978:17-18).

The middle to late Gulf Formational stage is represented by numerous sites which are located on older beach ridges along the Gulf Coast and Barrier Islands, or which extend up Mobile Bay through the Mobile Delta, and up the Tombigbee River along old terraces or levees. These sites yield the sand tempered ceramics of the Bayou La Batre series, related to the Orange and St. Johns ceramics of Florida, or to the Tchefuncte materials of the Louisiana Delta area (Ford and Quimby 1945, Willey 1949, Bullen 1974, Wimberly 1960, Trickey and Holmes 1971, Bullen and Stoltman 1972, Walthall and Jenkins 1976). While there are some general similarities between Bayou La Batre and Alexander, some Orange Incised and some of the Stallings Island types, the ceramics are distinct enough to recognize the actual sherds of Stallings Island or Alexander which occur in the southern sites. This may suggest no great temporal difference, at least at the late end, in these ceramic complexes.

The role and position of Deptford, or Deptford-McLeod is far from clear in the study area. Deptford is usually identified by sand and/or sand and grit tempering. The surface finishes may be plain, check-stamped, linear check stamped, or simple stamped. These may in turn be finely or boldly executed (Waring 1966, Willey 1949:53, Griffin and Sears 1950, Caldwell 1958, Wauchope 1966, Milanich 1973, DePratter 1979, Walthall 1980:104). Some authors have noted the presence of tetrapodal supports or flat bases or specific rim modes as chronologically significant. Investigations of sites on the Georgia coastal islands (Thomas and Larsen 1979) suggests that Deptford developed from the plain and simple stamped ceramics between 900 and 400 B.C. (DePratter 1979:111-118). As we have noted earlier, west of coastal Georgia,

> . . . not only are these serious problems involved in separating what cultural reality various archaeologists have meant to identify by the term "Deptford" . . . there are some problems in separating the various diagnostic ceramics (in time and space) which archaeologists have used to identify Deptford . . . on the ground. Brown (1982) has presented the best overview of the subject since McMichael (1960) wrestled with it. White (1981: 626-628, 1982:Appendix) has noted the difficulty in identifying sherds based on the "vague and overlapping' distinctions of Willey (1949), Chase (1968), Caldwell (1958), Waring (1968), Sears (1951), or Waring and Holder (1968) (Belovich et al. 1982:402-405).

Nonetheless we felt that we had to deal with the possibly early sand-tempered plain, simple stamped and/or check stamped ceramics with podal supports as Deptford (or what others had called Deptford-McLeod). Based upon our experience in the Chattahoochee Valley, we knew,

> . . . that this restricted assemblage characterized only a part of what other archaeologists (e.g. Waring 1968, Caldwell 1955, Milanich 1973, DePratter 1979) would call Deptford, or what others (e.g. Wauchope 1966, Garrow 1975, Schnell and Knight 1978) would call Cartersville. It [was] basically the early part of a rather [too-long] Deptford phase which by A.D. 300 appears dominated by complicated-stamped and cord-marked surface decoration (viz. Waring 1956, 1968; DePratter 1979: 112-113) on the Georgia coast (Belovich et al. 1982:404).

Despite questionable occurrences in the Chattahoochee River Valley or in eastern Florida and Georgia, there was some reason to question whether there was any such typologically defined Deptford assemblage on the Gulf Coast which might be such an early Woodland phase beginning prior to 400 B.C. and being replaced by Swift Creek or Swift Creek-Santa Rosa or Porter at about A.D. 250 (Walthall 1980:180ff, DeJarnette 1952:276, Willey 1949: 338ff).

We have (Belovich et al. 1982:406) noted the ambiguities surrounding the interpretation of Deptford-like ceramics on the Florida Gulf Coast as early (e.g. Lazarus 1965b, Willey 1949:38-55). We do not see in these data evidence for the idea that all Deptford-like ceramics will have an "Early Woodland" equivalence.

We believe that this limiting interpretation can probably be supported by the result of our recent investigations and analyses from the lower Tombigbee River Valley and the Mobile Delta study area. In these areas Wimberly (1953a) had assigned some portion of the McLeod ceramic series to a poorly distinguished McLeod-Deptford category. McLeod or McLeod-Deptford was early, or Early Woodland, paralleling Waring's then current placement of Deptford on the Georgia coast (Waring 1968, Caldwell 1958). Deptford thus represented a westward intrusion into Alabama occurring between the Bayou La Batre ceramic complex and the Porter-Hopewell ceramic complex. Wimberly later noted (but see also Wimberly 1960: 214 for reservations) that much of the McLeod check stamped pottery was probably late, either predating or postdating Weeden Island Wakulla check stamped pottery. Trickey (1958) and Trickey and Holmes (1971) shifted McLeod further to equate with, or to postdate, Weeden Island. Based upon the results of our BWT reconnaissance survey and the subsequent field verification of data from sites such as 1Ck45 and 1Ck5 (see Jenkins, Chapter V, and Weisman, Appendix D), we are now prepared to suggest a direct Bayou La Batre-Porter continuum during the second century B.C. These and other data indicate that the presumably early ceramic types, McLeod Simple Stamped and McLeod Linear Check Stamped, are most common in the period after A.D. 850. They are thus treated with our later Woodland complexes.

Although the early Miller I Woodland ceramics of the upper Tombigbee and upper BWT riverine region which predate A.D. 100 or 150 are both distinctive and well-dated, an Early Woodland placement for Deptford-McLeod in the lower BWT project area is not. Therefore, in the analysis of Gulf Formational or Early Woodland site locations, we have dealt only with sites having components which yield fiber tempered ceramics of whatever ultimate origin and name, and/or the well described Bayou La Batre series ceramics. No McLeod-Deptford sites have yielded ceramics with associated podal supports or have produced radiometric determination which would assign them to anything other than a later cultural stage.

MIDDLE TO LATE WOODLAND SITES

As in the preceding period, there are two clearly recognizable major geographic Middle to Late Woodland cultural complexes within the BWT project area (Figure 13). In the northern riverine region the sites which yield ceramics of the Miller I/II, II, III or Tuckabum complex have been unambiguously assigned to the Middle Woodland and Late Woodland, respectively (Jenkins, Chapter V; Jennings 1941). Those terms were first developed to deal with such midcontinental cultural materials as represented by the Miller-Tuckabum Creek complex (McKern 1939; Griffin 1946, 1967; Caldwell 1958; Jenkins 1979, 1980, 1981; Walthall 1980). In the lowermost riverine physiographic zones, from the Tallahatta Hills zone and southward, and within all of the delta physiographic zones, the Middle Woodland and Late Woodland are more complex. Archaeological studies have perhaps suffered by reliance on presumably accurate sequences developed for the lower Mississippi Valley to the west or on the Florida Gulf Coast to the east. This is unfortunate since, despite apparently obvious distinctions (Willey 1949; Sears 1953a, 1954, 1963, 1967, 1977; Milanich and Fairbanks 1980; Walthall 1980) between poorly known Early Woodland (Deptford) and the succeeding Middle Woodland (Santa Rosa/Swift Creek or Porter) and early Late Woodland (Weeden Island), it is not easy to identify any abrupt or significant archaeological changes in either the general ceramic data or the mortuary data (Brose 1979a). Very little settlement-subsistence data for the period between 200 B.C. and A.D. 300 has been recovered from the Florida northwest coast.

Nor should we be surprised at this inability to substantively distinguish Early Woodland from Middle Woodland or from early Late Woodland for the Gulf Coast, other than in arbitrary ceramic seriations of poorly defined types (Brose 1981a, Davis 1981, Brown n.d.). Similar difficulties occur throughout much of the midcontinent (Brose and Greber 1979, Brose 1976, Greber 1967). Brose (1979a) has argued that in northwestern Florida it is more conceptually productive and more archaeologically justifiable to regard Willey's (1949) trichotomy of Deptford-Santa Rosa/ Swift Creek-Weeden Island as a continuum (Brose 1981a).

Recent data from several of the McLeod type sites indicate that the presumably early McLeod-Deptford ceramic types are those variants of McLeod Check Stamped ceramics most common in the period after A.D. 850 (see Jenkins, Chapter V, and Weisman, Appendix D). Surely those Swift Creek types associated with the Deptford ceramics in the lower midden levels at Site 8Fr2 are types which are, or which resemble, ceramic motifs occurring in assemblages directly dated between A.D. 200 and A.D. 500 (see Willey 1949:38-55, Belovich et al. 1982, Milanich and Fairbanks 1980), the period also of late Deptford complicated stamped ceramics, on the Atlantic coast (Milanich 1973, DePratter 1979).

Indeed, the Alligator Lake site, just east of Mobile Bay, yielded clear evidence of ceramic types transitional from Bayou La Batre to

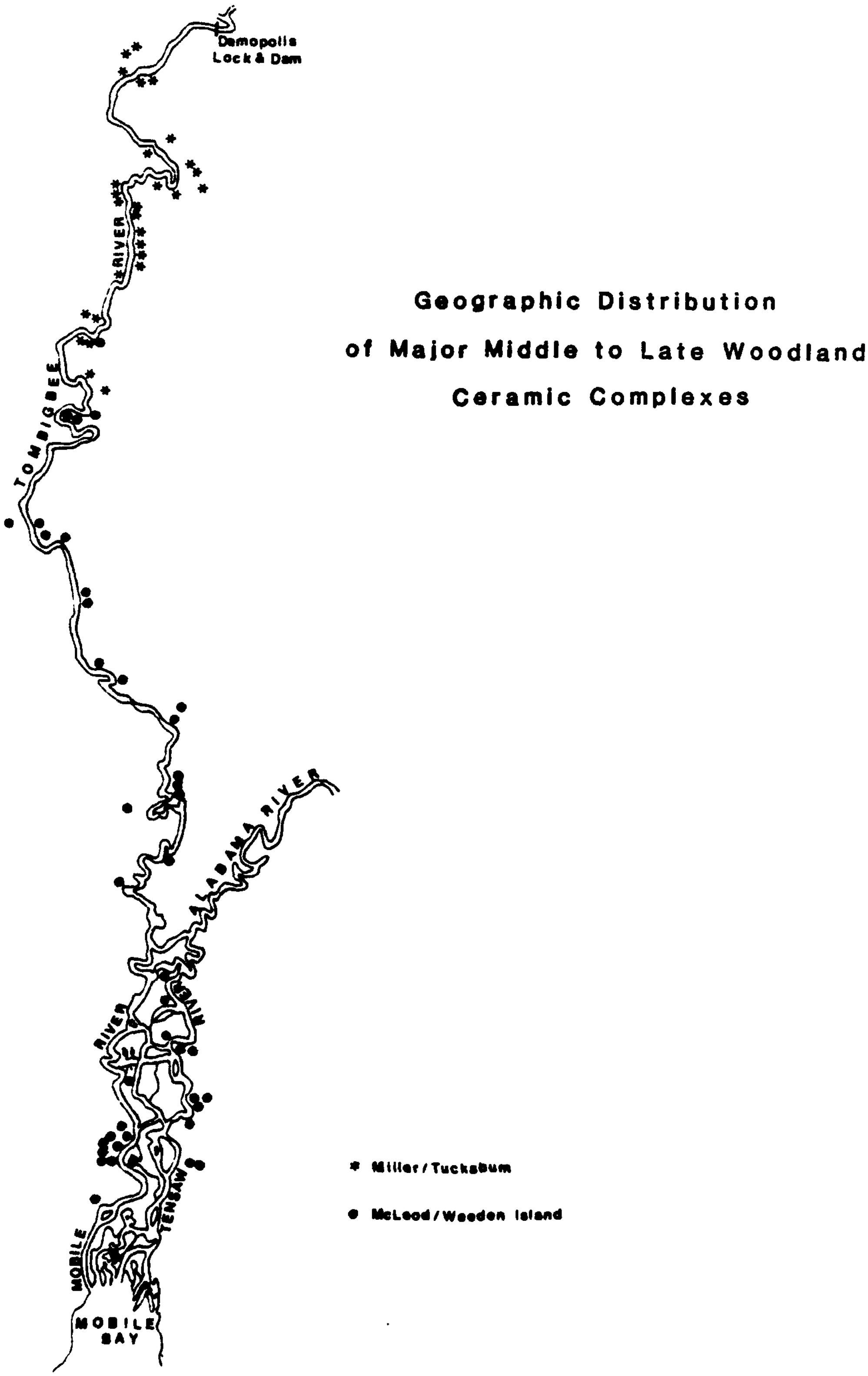

Geographic Distribution
of Major Middle to Late Woodland
Ceramic Complexes
Demopolis
Lock & Dam
TOMBIGBEE
RIVER
ALABAMA RIVER
RIVER
TENSAW
MOBILE
MOBILE
BAY
* Miller/Tucksbum
● McLeod/Weeden Island

Figure 13.

Porter. Santa Rosa Stamped (Lazarus 1965b, Jenkins and Ensor 1981:38) and similar ceramics also occur on the coast just west of Mobile Bay (Wimberly 1960: 74-76, Trickey and Holmes 1971:121). Thus what we will call Middle-Late Woodland sites throughout the lower BWT physiographic zones show a sequence of ceramic complexes which begin with a Bayou La Batre-Porter (Santa Rosa) transition just after the beginning of the second century B.C. (Weisman, Appendix D, and Jenkins, Chapter V). Check stamped and linear stamped (Deptford ?) ceramics, rarely with podal supports, are an ubiquitous but minimal part of these assemblages.

As on the Florida coast after 100 B.C. a new complicated stamped tradition seems to make a minimal appearance in the BWT region. Although simple stamped and checked stamped ceramics do not disappear, they decline in frequency, concomitant with the increased popularity of Swift Creek Complicated Stamped (Willey 1949, Caldwell 1958, Kelly and Smith 1975) and, more significantly, the incised and punctated ceramic tradition which we feel represents a development and an elaboration of the Gulf Formational tradition (Jenkins, Chapter V; Brose 1979b). By the end of the first century A.D., the ceramic assemblages of the lower BWT zones appear to indicate greater cultural contact with Marksville to the west, for, like the Lower Valley, there is an increase of zoned and unzoned incised and punctated vessels and a near loss of complicated stamped ceramics (Toth 1974, 1979). By A.D. 350, most of the zoned ceramics in these BWT regions decline in relative popularity. After this time it no longer appears valuable to consider the lower BWT in Marksvillian terms, for within this area there is equally good stylistic correspondence with the Weeden Island tradition of northwest Florida.

In 1974 Percy and Brose presented a series of papers concerned with the concept of Weeden Island in the Panhandle region of Florida (Brose and Percy 1974; Percy and Brose 1974). After a review of previous studies, they developed a ceramic phase sequence based upon available data from sites throughout western Florida, southwest Georgia, and southern Alabama although few such data were dated. They suggested a refinement of the subdivisions of Weeden Island which discarded Willey's Weeden Island I and II. Plain ceramics are common throughout all phases, although Sears (1973) was correct in his recognition of the potential difficulties in integrating domestic midden and burial mound ceramic chronologies.

By 1974 (Percy and Brose 1974; Brose and Percy 1974) and later (Brose and Percy 1978) a model was developed of Weeden Island which viewed changing subsistence and settlement patterns as a consequence of population growth and the increasing importance of horticultural activities. New data support this model of regional Weeden Island settlement-subsistence changes (Belovich et al. 1982; Bense 1978; Brose 1980a, 1981a; Caldwell and Smith 1978; Chase 1978; DeJarnette 1975; Gibson 1980; Jenkins 1976; Jeter 1977; Kelley and Smith 1978; Knudsen 1979; Koehler 1979; Milanich and Fairbanks 1980; Nance 1976; Percy 1976; Percy and Jones 1976; Scarry 1980; Schnell et al. 1979; Smith 1977; Tesar 1973; Walthall 1980; White 1981; Wing 1977).

Although far from definitive, there have been recent efforts to integrate the ideological remnants of Weeden Island death with the more mundane aspects of Weeden Island life. Weeden Island displays a gradual shift in the mortuary reflections of social status differentiation from those earlier attenuated Hopewellian patterns, to later Weeden Island mounds with secondary and primary bundle burials as well as artifact caches, especially whole pots, unassociated with specific burials, and fewer internal structures such as crypts or stone or log submounds. By late Weeden Island most mounds yield a few large caches and few individuals with any material or spatial evidence for status differentiation.

These efforts resulted in a series of absolute dates for Weeden Island 1 through 5. The Yent ("Deptford"), Green Point ("Santa Rosa/ Swift Creek") and the Kolomoki ("late Weeden Island") of Sears, are specialized mortuary complexes equivalent to Willey's (1945) Crystal River complex. These ceremonial assemblages of Weeden Island 1 through 2 (what Willey in 1949 called Weeden Island I sites as well as many that he considered mixed Santa Rosa-Swift Creek and Weeden Island I sites) dated between A.D. 150 and A.D. 450 (Brose 1979a, 1981a; Milanich and Fairbanks 1980). Certainly, archaeological evidence for some degree of nonegalitarian ranking can be seen in context of developing mortuary ritual (Willey 1949, Caldwell 1955, Milanich and Fairbanks 1980), at least by the end of this period. Whether called Troyville, late Porter, McLeod, or Yent-Crystal River-Kolomoki, these are local expressions of a widespread pattern of ceremonial behavior characterized by the exchange of both style and raw material among riverine coastal and estuarine groups, and between these and other, more distant groups (Goad 1979; Walthall 1979; Toth 1979; Brose 1979a, 1981a), on the Gulf Coastal Plain. The Porter and Porter-McLeod complexes of the BWT project area (our Middle Woodland) thus should also date to the period between A.D. 150 and A.D. 450. This is where the McQuorquodale Mound (Wimberly and Tourtelot 1941) belongs and where most of the Miller I/II sites upriver have been placed (Jenkins 1980, 1982).

What Willey considered mixed Weeden Island I and II, now Weeden Island 3, dates to the period between A.D. 400 and A.D. 600. Weeden Island 4 dates between A.D. 600 and A.D. 800. The most critical period for Brose and Percy's thesis, Weeden Island 5--Willey's (1949) late Weeden Island II, Caldwell's (1955) Wakulla complex, and Jenkins' (1978) Torreya complex--dates between A.D. 800 and A.D. 1000 or 1050 (Milanich 1974; Brose et. al. 1976; Brose 1980, 1981a; Daugherty et al. 1971; White 1981).

Within the lower BWT area, those McLeod sites which appear temporally equivalent to Weeden Island 3 and 4, are also characterized by a mixture of incised, punctated, and pinched along with plain and check stamped ceramics. However, it appears that late McLeod equivalent, in time if not in most aspects of the material culture, to Weeden Island 4 is characterized by a resurgence, or development, of linear check stamping. This indicates that most of what was considered Early Woodland McLeod-Deptford, is in reality Late Woodland and probably should be given a new phase designation (Jenkins, Chapter V).

Yet, however much the Porter to McLeod sequence resembles the rather more secure Weeden Island 1 through 4 sequence of West Florida, the post A.D. 800 Weeden Island 5 period finds little correspondence in the lower Tombigbee Valley or in the Mobile Delta, although Wakulla is the overwhelming contemporary complex at the lower Mobile Bay and Coastal Barrier Islands sites. By A.D. 850 two new assemblages, related to the northern riverine Miller III ceramics in ways yet unknown, appear as the Tuckabum complex in the lower Tallahatta Hills, the Southern Pine Hills, and the upper Delta Meander physiographic zones, and as the Tensaw Lake complex in the lower Delta Meander and Delta Swamp physiographic zones (Jenkins, Chapter V). In addition several Late Woodland sites along the western margins of the Delta Marsh zone yielded ceramics showing even stronger Miller III affinities. Thus, the environmental correlates of what we have necessarily combined as Middle and Late Woodland sites are reflective of a very complicated series of culturally, temporally, and geographically different interrelationships within the BWT project area.

MISSISSIPPIAN SITES

As we use the term, Mississippian explicitly excludes Weeden Island and McLeod ceramics, previously considered as Late Woodland, in the BWT project area (but see Stowe 1978). Furthermore, we intend to exclude not only the Tensaw Lake and Tuckabum complexes, but also those anomalous late Miller III-like ceramic components, assigning these also to the Late Woodland. Our Mississippian period is thus rather arbitrarily initiated, as it will be equally arbitrarily terminated. There is certainly some stratigraphic and radiometric justification for these procedures as far as a pre-Mississippian placement for Weeden Island/McLeod and the Tensaw Lake complex in the delta physiographic zones. However, there is all too little evidence of any type to assess the temporal interrelationship of Late McLeod in the riverine zones, the Tuckabum complex, the quasi-Miller III of the western delta, or Mississippian anywhere in the project area. Thus what we are, in the analytical section of our report, calling Mississippian is a construct based almost entirely upon particular styles of limited material culture. Without question, some chronologically later Late Woodland complexes in the riverine area postdate, and thus are more recent, than some of the Mississippian components in the Mobile Delta (see Weisman, Appendix D). Some Late Woodland in the Mobile Delta may also be later than some Mississippian in the Mobile Delta. That some riverine Late Woodland may also postdate some riverine Mississippian is also possible but given the near absence of significant Mississippian sites along the Tombigbee River between Jackson and Demopolis this hypothesis remains difficult to evaluate.

Despite the way in which we are about to handle the locations of even our obviously skewed Mississippian sites (Chapter VII), no evidence we know of supports a concept of monolithic unvarying Mississippian even in, or especially in, the delta. There it is possible to identify at least two, more or less temporally different, Mississippian complexes. An early Mississippian ceramic assemblage characterized by coarse shell tempered, plain surfaced bowls which are usually loop handled, and are undecorated or show, in about 10 percent of the reconstructable ceramics, simple incised arcades. For obvious reasons this Moundville I-II complex, which accompanies extended burials and which often is geographically associated with temple mounds, is assumed to be relatively well dated elsewhere between A.D. 1050 and A.D. 1350 (see Jenkins, Chapter V). This assumption may be a glaring illustration of our provincialism. A later Mississippian complex is characterized by an assemblage in which at least 80 percent of the ceramics are identical to those of the early Mississippian. The remaining 20 percent consists of coarse and, more frequently, fine shell-tempered plain and polished bowls of several forms--bottles, beakers, plates, and effiges. Loop handles are less common than are nodes or appliques of various types. Vessel surfaces are often decorated with complex iconographic and geometric motifs, singly and in combination. These are executed by a continuum of techniques ranging from predrying incising through postfiring engraving. Again single and combined techniques occur. Jenkins (Chapter V, 1980, 1981) and Fuller and Stowe (1982) are presently attempting to fit this complex into Phillips' (1970) and Steponaitis' (1980a) lower Mississippi Valley-Black Warrior type variety system. Until that, perhaps procrustean, labor is completed (see Brose 1981a), we here choose only to indicate that our BWT late Mississippian shares many Moundville II-III and Alabama River phase stylistic concepts, modes, and techniques, but that the most similar previously described assemblage is what Willey (1949) called Pensacola.

Our BWT late Mississippian is terminated by, or changed into, protohistoric with the introduction of trade goods or documents. The late Mississipppan assemblage is often found alone or is intimately associated with urn burial cemeteries. It does not appear to be found at temple mound sites in the absence of equal or greater frequencies of what we call early Mississippian. Neither Brose nor Weisman believe that the Bear Point Mound (Moore 1901a) was in fact a temple mound. Most of the known late Mississippian sites in the BWT project area are located south of the junction of the Tombigbee and the Alabama Rivers. Equally important, and most disconcerting, most of the diagnostic late Mississippian ceramics appear to be related to mortuary or ceremonial activities. It appears that the associated domestic or secular ceramics will differ little from the bulk of early Mississippian ceramics. Therefore at small sites or special function nonceremonial sites, even if they were late, the probabilities must be rather high that we would have recovered only those undiagnostic ceramics which duplicate early Mississippian assemblages. Multiple temple mound sites, such as Bottle Creek, tend to be rather large and to have been the locations at which some considerable degree of domestic occupation occurred, however extended by reoccupation or limited by function or season. More domestic occupation should, <u>mutatis mutandi</u>, yield more domestic "early Mississippian" ceramics. Therefore, large late Mississippian temple mound sites may all have evidence of "early Mississippian" components. While the logic is obviously circular, there is no way to reject the conclusion, which we believe to be correct, without systematic subsurface sampling at stratified sites. In the absence of that precision we are left in the unsatifactory position of having to deal with data which are fully comparable to those from most adjacent regions.

This section is certainly not the place from which to launch a full scale ceramic investigation of the temporal distinction within Mississippian (see Jenkins, Chapter V). Several recent papers (Whitlam 1981, Davis 1981, Brose 1981a) have questioned the extension of the type variety concept for Mississippian sites beyond the Lower Valley, but the seeming success of the approach in the Black Warrior (Steponaitis 1978, 1980a) and the upper Tombigbee River Valleys (Jenkins 1978, 1982) suggest its applicability to the BWT project area. As Phillips himself insisted, there are few logical justifications for assuming that the type-variety system will always be temporally or geographically appropriate even if there were no areal problems or procedural differences among its practitioners (Deetz and Dethlefsen 1966).

The early or late Mississippian societies of the Mobile Delta physiographic zones may have had their own, rather than a typical, Mississippian social geography which would have affected the spatial patterning of ceramic attributes as well other cultural baggage (Hodder 1979, Davis 1981, Brose 1981a, Downs and Stea 1977, Gould and White 1974). Futhermore, despite Phillips' injunctions, we have too often been guilty of assuming by the methodology itself that the changes in relative frequencies of Mississippian ceramic types or varieties represent widespread, regular, gradual continua.

This suggests that we can rely upon no wholesale transliteration of settlement-subsistence models of Mississippian origin and change which were developed from riverine adapted societies, or from interior-riverine Mississippian societies, or coastal societies. As Knight has suggested (Knight 1980b, 1981; Knight and Adams 1981), the Mobile Delta is a far different environment from the adjacent regions in ways which must have been of major significance for Mississippian populations.

Therefore our analytical Mississippian site locations within the BWT project area will have blended deltaic and riverine considerations of the site's environments and may have obscured whatever significant changes took place between A.D. 1050 and A.D. 1500. Should significant patterns emerge from our analyses they will be critical indeed. Those which are obscured by internal Mississippian noise will be suggestively mentioned but cannot be statistically documented.

PROTOHISTORIC SITES

Sites of the protohistoric period, from about A.D. 1500 to A.D. 1700, are defined to be those represented by the association of both remains of Euroamerican and aboriginal material culture in unambiguous archaeological association. A somewhat less operational definition would include aboriginal sites with or without material trade goods but which could be assigned with reasonable certainty to some specific aboriginal group identified as to location and ethnolinguistic affiliation in the Euroamerican historical documents. Ideally, protohistoric sites will meet both definitional criteria. In practice, and in the BWT project area, they seldom can meet either unequivocally. Discussions of the ambiguities of extant historical documentation and of critical missing data are presented in detail by Lankford (1983) and are touched upon by Weisman (Chapter II). The archaeological recognition of protohistoric sites is also difficult because of the introduction of trade goods prior to detailed locational or ethnohistoric records (Quimby 1960, 1966; Brose 1972; Smith 1948; DeJarnette 1976a; Boyd et al. 1957). Indeed, the archaeological problems are complicated by the very real fact that we have little firm archaeological evidence of the material culture of those diverse ethnolinguistic groups whose ceramic styles were intrusive into the BWT project area, and which, at different times, were derived from different portions of the Southeast. The use of presumably introduced central Georgia or western Florida surface treatments, vessel modes, and motifs to chronologically order the internal lower Tombigbee and Mobile Delta ceramic sequences is flawed (possibly fatally) by the fact that their chronological position within the Mississippian sequence of their purported respective heartlands is frequently rather unfixed (Jennings 1941; Brain 1969, 1981; Jenkins 1982; Sheldon et al. 1980).

These ill-defined chronologies have led various authorities to include Pensacola within Fort Walton (or worse, to equate Fort Walton with Pensacola) and thence to argue for a Fort Walton temporal position late in the Mississippian development (e.g. Sears 1977). This is significant since Pensacola is the latest prehistoric ceramic complex which clearly is a local BWT development.

The Pensacola ceramic series as originally defined (Willey 1949: 463-466) included "a little sand and grit" with the shell temper. Willey did not state whether this addition was optional or required, nor did he state whether it was the key attribute in distinguishing Pensacola wares from other shell-tempered Mississippian ceramics. The ceramic assemblages at most of the sites yielding Pensacola types to the east of Mobile Bay along the Gulf Coast seem associated with stylistic varieties of Fort Walton ceramics but frequently with a mixed shell tempered paste. They often include a sizable proportion of grit-tempered wares (Willey 1949). Studies by Lazarus (1971) and Lazarus and Hawkins (1976) have indicated that ratios of shell tempered wares to grit tempered wares increase moving westward from the Apalachicola basin and eventually account for over 80 percent of the ceramic assemblages at sites on Pensacola and Perdido Bays. How some of these shell-tempered ceramics differ from Moundville II-III ceramic types (Steponaitis 1978, 1980a) is not at all clear (Brose 1981a; Jenkins 1980, 1982; Belovich et al. 1982). One major, though not the only, distinction between the Pensacola and the late Moundville ceramic complexes may only be their respective coastal and inland locations.

Although many of the Florida West Coast Pensacola sites are clearly as late as A.D. 1540, this says nothing about how early some of the Pensacola sites in the BWT region may be. Available data hardly illuminate the temporal relationships of Pensacola (in the strict sense) and Fort Walton (in the strict sense) ceramics. The temporal parameters, to say nothing about the ethnolinguistic parameters of such exotic ceramic types as Leon Check Stamped, Mission Red Filmed, Chickachae Combed, Chattahoochee Brushed, Ocmulgee Fields Incised, or Alabama River Applique are not at all clear. And the ceramics are what we think we know best.

To discuss protohistoric societies it is necessary to have some concept of where and when the protohistoric period begins (see Curren and Little 1981, Oakley and Watson 1977). It is also necessary to have some ability to fit the sites with no known ethnic label to the ethnic names with unknown material cultural, if indeed they do fit. Only then will the anthropological studies of acculturation be based on more than speculation.

We confess at the outset that we have not accomplished much along these lines. While we have investigated 20 sites with components assignable to the protohistoric period, including those 6 sites which Lankford (1983) felt were the most secure in terms of temporal period, location, and ethnic affiliation, we can come to no firm conclusions save that those 6 sites, like all 20 protohistoric sites, meet only that minimal criterion of yielding aboriginal and appropriately early Euroamerican materials in probable good archaeological association. While a few of the protohistoric sites now known in the BWT region appear to meet the twin criteria of archaeological context and historical specificity, such sites are rare.

ETHNOHISTORIC AND HISTORIC SITES

Even in the initial model of BWT site locations, it was apparent to us that the most accurate and efficient approach to predicting the locations of historical sites would involve detailed investigation of the archives and documents. It was of course understood that these historical records were themselves biased and incomplete. The nonaboriginal occupation of the Mobile Delta area may have begun as early as 1519 but the historical records are almost useless for any period prior to 1702 (Weaver 1983). Furthermore, it is probable that only those historical site locations which represented properties which had either been taxed, or had served as political centers, or had been the scene of visits by historically significant persons would be identifiable in the archives. An additional problem existed in that many recorded land transactions involved transfers of large blocks of land within which the actual locus of any possible structures or areas of occupation may have not been specified, or indeed may have lain outside the boundaries of our BWT project area.

We also recognized that temporal attribution of any historical archaeological components encountered would be rendered difficult with the samples of diagnostic material we were likely to recover with a survey strategy oriented to surface reconnaissance. This, we felt, would be especially serious given the known historic reoccupation of nearly all of those few sites which we could expect to encounter within the project area. For these reasons, our major approach was to use the environmentally stratified survey strategy we had adopted as a way to test the general historical locational models being developed by the historians and geographers as part of this BWT Cultural Resources Reconnaissance (see Wilson 1983a). We felt that such an approach was likely to encounter those historical sites which, for one reason or another, would not be adequately represented in the locational models dependent on documentary studies. We also investigated a limited number of potential site areas which the project historian and ethnohistorian indicated were of special significance such as Chastang Bluff, Magazine Point, and Gin House Island. We avoided wasting time looking for those historical sites, especially forts, whose locations and archaeological potential had already been investigated, as our limited investigations were considered unlikely to add significantly to those investigations.

Overall, the archaeological results of the BWT reconnaissance, with respect to the historical sites within the project area, reveals several shortcomings of method while revealing several aspects of the historic period which could not be investigated from a documentary approach alone. First, the previously known military forts and posts were explicitly excluded from our data base as were the known historic salt works and towns which occured within the BWT project area. Secondly, those specific historical sites investigated at the request of the project historians or geographers revealed, for the most part, either that the previously assigned specific site locations were imprecise or that the recoverable archaeological material was temporally or socially ambiguous. Also, our several attempts to locate specific industrial activities in the BWT delta area, such as logging, appear to have left little or no unequivocal archaeological evidence, if we ignore, as we must, cut cypress stumps. This might well have been predicted by a more detailed investigation of the ephemeral and transitory industrial processes themselves.

Our approach to environmentally stratified random sampling has indeed revealed what our initial model had modestly hoped for. We now have archaeological evidence, with some locational predictive capability, of two regionally distinct types of historical sites in the BWT project area which were not, and because of their legal status could not have been, predicted from archival research alone. These new data should be of some assistance to the development of historical geographical models of cultural utilization of the BWT project area.

CHAPTER VII

MODELING SITE LOCATIONS

David S. Brose

EVALUATION OF THE SURVEY DATA

The BWT project area site data includes sites reported in previous survey efforts found in the literature search, sites recorded in the state files at Moundville or Montgomery, sites encountered as part of this environmentally stratified BWT sampling, and BWT complementary sites investigated as part of the project reconnaissance.

Of the 360 sites identified within the project area, 239 were located through literature search, and 121 were BWT project sites. Of the 121 BWT project sites, 36 were BWT complementary sites investigated during the supplementary survey during November and December 1981. Sites identified by the BWT project include 93 sites which were discovered in BWT sample areas, and 28 sites found through other archival or nonsystematic methods.

Any predictive model based upon logistically limited survey data as are those from this BWT reconnaissance requires an evaluation of potential sources of error and bias within the data. Given the assumption underlying our model that archaeological site locations will show a nonrandom, nonuniform distribution in terms of some critical environmental variables, we cannot show the accuracy of our measurement requirements since we cannot know the actual frequencies of all sites distributed by environment. We assume, however, that our measurement requirements, sampling techniques and data, are consistent with the statistical model (Rivizzingo, Appendix A).

Standardized data collected for all BWT sample area sites are listed in Table 19. These standardized data were coded for ADP assisted statistical manipulation so that the patterns of locational preference for archaeological sites of different classes or chronological periods could be identified and their probabilities of representing nonrandom distribution could be evaluated.

Those sites identified through literature search or from other archival data, show a considerable degree of bias by physiographic region (Table 20), especially in the Red Hills and Tallahatta Hills and in the upper Delta Meander and lower Delta Marsh zones.

Table 19. BWT Variables and Values Used in Preliminary Locational Analyses.

Variable		Value
1	SITE CLASS:	SITE LOCATION, LARGE COHERENT, INTERMEDIATE COHERENT, SMALL COHERENT, LARGE DECOMPOSED, INTERMEDIATE DECOMPOSED, SMALL DECOMPOSED, ISOLATED ARTIFACT.
2	MATERIAL DENSITY:	UNKNOWN, LOW, MEDIUM, HIGH.
3	MOUND OR STRUCTURE:	NONE, MOUND, STRUCTURE, MOUND AND STRUCTURE.
4	QUADRANGLE:	ARARAT, BAY MINETTE, BAY MINETTE-HURRICANE, BRIDGEHEAD, BUTLER, CHICASAW, CHICKASAW-CREOLA, CHOCTAW BLUFF, CITRONELLE, COATOPA, COFFEEVILLE, COFFEEVILLE L&D, CREOLA, HURRICANE, JACKSON, JACKSON AND/OR CHOCTAW, JEFFERSON, MC DOWELL, MC INTOSH, MOBILE, MYRTLEWOOD N., MYRTLEWOOD S. AND/OR PENNINGTON, PENNINGTON, PUTNAM, ST. STEPHENS, TATTLERSVILLE, TENSAW, WHITFIELD, WOODS BLUFF, WOODS BLUFF/ PUTNAM.
5	ENVIRONMENTAL ZONES:	BLACK BELT, FLATWOODS, RED HILLS, TALLAHATTA HILLS, ROLLING PINEY WOODS, DELTA MEANDER, DELTA SWAMP, DELTA MARSH.
6	TOPOGRAPHY:	UPLAND, FLOODPLAIN.
7	SOIL:	WELL DRAINED SOILS, POORLY DRAINED SOILS.
8	ACTIVE RIVER:	LESS THAN 500M, GREATER THAN 500M.
9	OLD CHANNEL:	LESS THAN 500M, GREATER THAN 500M.
10	BLUFF:	LESS THAN 500M, GREATER THAN 500M.
11	MAJOR TRIBUTARY:	LESS THAN 500M, GREATER THAN 500M.
12	MINOR TRIBUTARY:	LESS THAN 500M, GREATER THAN 500M.
13	LITERATURE SEARCH:	YES, NO.
14	BWT SAMPLE:	YES, NO.
15	BWT COMPLEMENTARY SAMPLE:	YES, NO.
16	STATE FILES:	YES, NO.
17	OTHER:	YES, NO.
18	USA FILES:	YES, NO.
19	INDETERMINATE:	YES, NO.
20	HISTORIC:	YES, NO.
21	MISSISSIPPIAN:	YES, NO.
22	WOODLAND:	YES, NO.
23	EARLY WOODLAND/ GULF FORMATIONAL	YES, NO.
24	ARCHAIC:	YES, NO.
25	PROTOHISTORIC:	YES, NO.
26	MISSING DATA:	YES, NO.
27	MULTIPLE:	YES, NO.

Table 20. Previously Recorded Sites by Physiographic Provinces.

ZONE	N	Percent of All Sites in Zone	Previously Recorded Percent of Sites in BWT
Black Belt	10	42	3
Flatwoods	23	68	6
Southern Red Hills	8	30	2
Tallahatta Hills	37	79	10
Rolling Piney Woods	19	64	5
Delta Meander	11	39	3
Delta Swamp	78	70	22
Delta Marsh	53	88	15
TOTALS	239		66

As shown in Table 21, these different frequencies suggest that sites in the delta and riverine regions of the BWT project area must be statistically considered to represent different sampling populations.

Table 21. Statistical Analyses of Biased BWT Regions.

	Previous Sites	New Site	Total
Riverine	97	64	161
Deltaic	142	57	199
TOTAL	239	121	360

X^2 = 5.037, df = 1.000, P = 0.025.

To a large degree this situation results from the relatively large number of previously recorded sites in the Flatwoods and Tallahatta Hills, and in the Delta Swamp and Delta Marsh.

The previously recorded sites significantly over represent floodplain areas within 500 m of the active river. Of the relatively few upland sites recorded in literature there has been far too much concentration on areas close to the river bluffs themselves. To some minor extent, there is a tendency for previously known sites to occur at areas more than 500 m from either major or minor tributaries, no doubt because many of the previously known sites were located at landings on levees equidistant from the tributaries. Although some caution must be maintained in any extropolation from such data, these biases can be evaluated and the prehistoric model of site locations may be adjusted to account for them by using the environmentally stratified BWT sample sites as an unbiased estimate of target population site distributions.

Comparison of the previously reported site environmental distributions with those of the systematically stratified BWT sample area sites encountered (Table 22) indicates that in terms of soil drainage/texture group, topographic position, and proximity to major tributaries or secondary deltaic distributaries, there are no statistically significant differencies between the two sampled populations but most previously recorded sites were located within 500 m of the active river or major deltaic distributaries or minor tributaries. Many were restricted to areas near old channels or were adjacent to deltaic bays and/or basins. A few previous cultural resource studies also had identified sites in upland areas (Trickey 1958, Wimberly 1960), along bluff edges (Coblentz 1979), and near minor, saline tributaries (Trickey 1958, Wimberly 1960).

BWT sample sites were distributed as uniformly as possible over culturally significant environments equally divided by each of the eight project physiographic zones. The BWT sample areas actually investigated probably underrepresent areas adjacent to the active river, to old channel features, or to bay or basin features, and may overrepresent areas within 500 m of minor tributaries and over 500 m from either the active river or major tributaries. In uplands of all but the Tallahatta Hills physiographic zone we were probably undersampling this significant environment. Preliminary adjustment is needed to correct such biases and to integrate the overrepresentation in previously known site data with the underrepresentation of BWT sample site data for all environmental variables save that of proximity to minor tributaries only and to deal with that issue on a period by period basis.

Such data set integration is implicit in the contract requirements and may be statistically justifiable as well. The Mann-Whitney U test (Siegel 1956:116-122, Table J) reveals that if the BWT sample sites are considered as the control group then $N^2=4$, $U=5$, and we may accept the probability that the two groups can be considered to have been drawn from the same population with a slightly better than 75 percent confidence level. But this does not tell us how to adjust the values to merge these two data sets, merely that we may more or less safely do so. If we assume that logistic differences are responsible for the observed differences in relative site frequencies in particular environments, then the least offensive method for value adjustment will be to take the pooled mean values, that is, to simply accept the relative frequencies of all sites by physiographic zone as an estimation of the actual relative distribution of sites in terms of that environment. Such an approach can be tested by employing the Friedman two-way ANOVA by ranks for related samples (Siegel 1956:166-172, 281) with n = sets of data = 3; and K = methodological conditions = 4. The resulting $X^2 r=4.87$ and the probability of encountering values this large by chance with samples drawn from a single population is greater than 0.148 and less than 0.175. Thus, for most environmental variables, but not all, we may use the relative frequency of all known sites within the BWT project area for a general evaluation of how archaeological sites are distributed in different portions of the area under study. These data are summarized in Table 23.

This is not intended to suggest that there are no important differ-

Table 22. Relative Frequencies of BWT Sample, Previously Recorded Sites, and Environment.

	Percent of BWT Sample Sites	Percent of Previously Recorded Sites	Percent of BWT Area
On Group 1 Well Drained Soils	76.5	76.6	57.5
Floodplain Topography	61.5	60.6	58.2
Within 500 m of Active River or Major Distributary	20.5	64.4	29.4
Within 500 m of Major Tributary or Secondary Distributary	37.3	34.2	20.2
Within 500 m of Minor Tributary Only	39.1	51.2	28.5
Within 500 m of Old Channel or Bay/Basin	14.7	28.2	27.3
Within 500 m of Bluff Edge	25.5	45.0	23.5

Table 23. Summarized Rela' ve Frequencies by Environmental Data for BWT Project Area.

	Area (Percent)	All Known Sites (Percent)
A. Physiographic Zones		
Black Belt	5.76	6.70
Flatwoods	10.54	9.40
Southern Red Hills	8.21	7.20
Tallahatta Hills	14.76	13.10
Rolling Piney Woods	15.33	8.30
Delta Meander	14.51	7.80
Delta Swamp	20.91	30.80
Delta Marsh	9.98	16.70
B. Soils		
Group 1: Well Drained	57.50	76.70
Group 2: Poorly Drained	42.50	21.40
C. Topography		
Uplands	41.80	38.30
Floodplain	58.20	61.70
D. Proximity to Active River Channel or Major Distributary in Delta		
Less than 500 m	20.50	50.30
Greater than 500 m	79.50	48.60
E. Proximity of Floodplain Sites to Old Channels, or of Deltaic Bottom-land Sites to Bays and/or Basins		
Less than 500 m	27.30	21.20
Greater than 500 m	72.70	78.80
F. Proximity to Major Tributary		
Less than 500 m	20.20	35.80
Greater than 500 m	79.80	63.10
G. Proximity to Bluff/Terrace Ecotone Edge		
Less than 500 m	23.50	31.80
Greater than 500 m	76.50	68.20
H. Proximity to Maximum Ecological Diversity Zone		
Less than 500 m	1.80	?
Greater than 500 m	98.20	?
I. In Uplands Proximity to Well-Drained Overlook with Prior Tributary Valley Access Stream		
Less than 500 m	1.80	13.80
Greater than 500 m	98.20	86.20
J. In Floodplains or Terrace Away from Old Channel With Proximity to Tributary Stream Junction With Main River		
Less than 500 m	5.10	16.20
Greater than 500 m	94.90	83.80
K. Proximity to Minor but not Major Tributary		
Less than 500 m	28.50	46.30
Greater than 500 m	71.50	53.70

ences between the various site survey strategies which have been employed in the past. Although the numbers of sites in most of the different designated environmental areas can be integrated for different methods of investigation there were statistically irreconcilable differences in the types of sites encountered in terms of sites class, material density, temporal period, frequency of reoccupation, and missing data. Of 360 sites, about 12 percent of the previously recorded sites represented site location only. Over 23 percent of previously known sites and about 28 percent of the new BWT sample sites encountered in our reconnaissance could not be assigned to a functional or m.rphological class. Our sampling sites were far more representative of all site sizes with 41 percent assigned to a "small coherent" or "small decomposed" category (Waselkov 1980). Less than 25 percent of the previously recorded sites were other than large or intermediate in size. The BWT complementary sample sites were well distributed over all identifiable site classes in terms of coherency of function or morphology as well as in terms of material density.

Indeed, nearly 75 percent of all previously recorded sites had to be assigned to either unknown or low material density classes but less than 22 percent of BWT sample sites were. This is especially significant when we realize that of the 171 sites assigned to the medium or high density categories, only 25 represented chronologically indeterminate components (14.6 percent) but 90 of the 189 (47.6 percent) sites with low or with unknown material density were sites with chronologically indeterminate components. Thus the BWT sites yielded data amenable to the construction of predictive locational models. The sampling procedures themselves were well controlled and thus representative of the sites and environments of the project area. The recent BWT data are also useful for period-by-period analyses.

ANALYSIS OF ARCHAEOLOGICAL SITE DISTRIBUTION BY ENVIRONMENT

The classificatory terms employed for these analyses were discussed in Chapter VI. There were significant differences among sites assigned to the Archaic, Gulf Formational or Early Woodland, Middle to Late Woodland, and protohistoric cultural categories, and there are probably equally significant differences among sites assigned to the Mississippian period as well. Table 24 lists the number of sites assigned to the generalized cultural periods and their distribution among the physiographic zones. Table 25 lists the relative frequencies of these components with respect to the environmental data relevant to their locations.

Chronologically Indeterminate Site Locations

Significant numbers of sites (n=115) did not yield materials adequate for chronological assignment. Many chronologically indeterminate components are likely to represent rather ephemeral, specialized function occupations (Struever 1971, Binford 1982). Thus, the spatial distribution of such sites represent a significant supplement to the interpretation of prehistoric settlement-subsistence systems operative in the BWT project area over time.

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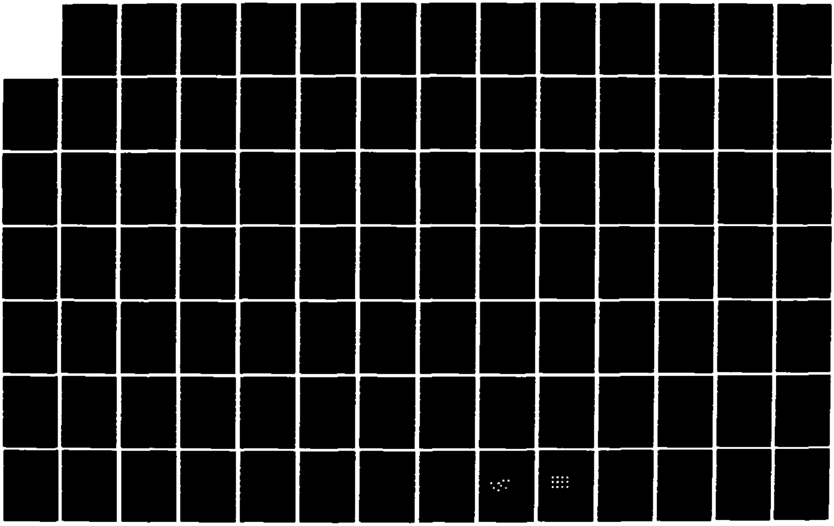

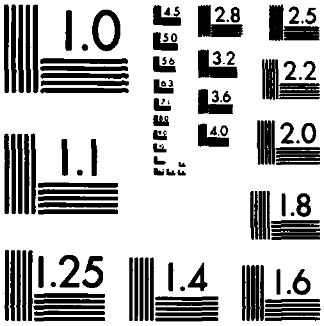

MICROCOPY RESOLUTION TEST CHART
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Table 24. Cultural Components vs Physiographic Zones.

	Black Belt n=24	Flat-woods n=34	Southern Red Hills n=26	Talla-hatta Hills n=47	Rolling Piney Woods n=30	Delta Meander n=28	Delta Swamp n=111	Delta Marsh n=60
<u>Indeterminate</u> n=115								
Count	5	7	10	23	7	3	36	24
Row %	3.4	6.1	8.7	20.0	6.1	2.6	31.3	20.9
Column %	20.8	20.6	38.5	48.9	23.3	10.7	32.4	40.0
<u>Multiple Component</u> n=149								
Count	5	7	11	20	13	13	57	23
Row %	3.4	4.7	7.4	13.4	8.7	8.7	38.3	15.4
Column %	20.8	20.6	42.3	42.6	43.3	46.4	51.4	38.3
<u>Archaic</u> n=34								
Count	4	4	5	9	6	1	5	0
Row %	11.8	11.8	14.7	26.5	17.6	2.9	14.7	0.0
Column %	16.7	11.8	19.2	19.1	20.0	3.6	4.5	0.0
<u>Early Woodland/ Gulf Formational</u> n=58								
Count	1	4	5	3	5	4	27	9
Row %	1.7	6.9	8.6	5.2	8.6	6.9	46.6	15.5
Column %	4.2	11.8	19.2	6.4	16.7	14.3	24.3	15.0
<u>Middle/ Late Woodland</u> n=176								
Count	11	21	14	22	17	17	54	20
Row %	6.3	11.9	8.0	12.5	9.7	9.7	30.7	11.4
Column %	45.8	61.8	53.8	46.8	56.7	60.7	48.6	33.3

ences between the various site survey strategies which have been employed in the past. Although the numbers of sites in most of the different designated environmental areas can be integrated for different methods of investigation there were statistically irreconcilable differences in the types of sites encountered in terms of sites class, material density, temporal period, frequency of reoccupation, and missing data. Of 360 sites, about 12 percent of the previously recorded sites represented site location only. Over 23 percent of previously known sites and about 28 percent of the new BWT sample sites encountered in our reconnaissance could not be assigned to a functional or morphological class. Our sampling sites were far more representative of all site sizes with 41 percent assigned to a "small coherent" or "small decomposed" category (Waselkov 1980). Less than 25 percent of the previously recorded sites were other than large or intermediate in size. The BWT complementary sample sites were well distributed over all identifiable site classes in terms of coherency of function or morphology as well as in terms of material density.

Indeed, nearly 75 percent of all previously recorded sites had to be assigned to either unknown or low material density classes but less than 22 percent of BWT sample sites were. This is especially significant when we realize that of the 171 sites assigned to the medium or high density categories, only 25 represented chronologically indeterminate components (14.6 percent) but 90 of the 189 (47.6 percent) sites with low or with unknown material density were sites with chronologically indeterminate components. Thus the BWT sites yielded data amenable to the construction of predictive locational models. The sampling procedures themselves were well controlled and thus representative of the sites and environments of the project area. The recent BWT data are also useful for period-by-period analyses.

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The classificatory terms employed for these analyses were discussed in Chapter VI. There were significant differences among sites assigned to the Archaic, Gulf Formational or Early Woodland, Middle to Late Woodland, and protohistoric cultural categories, and there are probably equally significant differences among sites assigned to the Mississippian period as well. Table 24 lists the number of sites assigned to the generalized cultural periods and their distribution among the physiographic zones. Table 25 lists the relative frequencies of these components with respect to the environmental data relevant to their locations.

Chronologically Indeterminate Site Locations

Significant numbers of sites (n=115) did not yield materials adequate for chronological assignment. Many chronologically indeterminate components are likely to represent rather ephemeral, specialized function occupations (Struever 1971, Binford 1982). Thus, the spatial distribution of such sites represent a significant supplement to the interpretation of prehistoric settlement-subsistence systems operative in the BWT project area over time.

Table 24. Cultural Components vs Physiographic Zones (Continued).

	Black Belt n=24	Flat-woods n=34	Southern Red Hills n=26	Talla-hatta Hills n=47	Rolling Piney Woods n=30	Delta Meander n=28	Delta Swamp n=111	Delta Marsh n=60
Mississippian n=124								
Count	1	3	6	14	9	17	49	25
Row %	0.8	2.4	4.8	11.3	7.3	13.7	39.5	20.2
Column %	4.2	8.8	23.1	29.8	30.0	60.7	44.1	41.7
Protohistoric n=20								
Count	0	0	1	0	1	5	11	2
Row %	0.0	0.0	5.0	0.0	5.0	25.0	55.0	10.0
Column %	0.0	0.0	3.8	0.0	3.3	17.9	9.9	3.3
Historic n=70								
Count	8	6	3	5	6	0	22	20
Row %	11.4	8.6	4.3	7.1	8.6	0.0	31.4	28.6
Column %	33.3	17.6	11.5	10.6	20.0	0.0	19.8	33.3

Table 25. Relative Frequency Comparisons: *Components vs Environmental Data.*

	Indeterminate n=115 %	Multiple n=149 %	Archaic n=34 %	Early Woodland/ Gulf Formational n=58 %	Middle/ Late Woodland n=176 %	Mississippian n=124 %	Protohistoric n=20 %	Historic n=70 %
Well Drained Soils	72.2	75.2	88.2	77.6	79.5	70.2	70.0	78.6
Floodplain Location	58.3	62.4	64.9	48.3	71.0	75.0	40.0	45.7
Active River, Less than 500 m	51.3	53.0	52.9	60.3	48.9	53.2	70.0	57.1
Floodplain Site Greater than 500 m from Old Channel	-	76.1	55.9	67.2	56.3	54.8	75.0	79.5
Major Tributary, Less than 500 m	37.4	36.0	11.8	32.8	39.8	44.4	25.0	27.1
Minor Tributary, Less than 500 m	43.5	49.0	58.8	43.5	47.2	51.6	45.0	12.9
Upland Site, Less than 500 m from Bluff Edge	47.0	92.9	100.0	55.2	26.1	24.2	55.0	94.0

As Table 24 suggests, these spatial distributions are neither uniform nor random. Both the riverine and delta regions of the project area appear to contain a similar relative frequency of sites with indeterminate components. Of the 161 sites in the riverine physiographic zones, 52 or 32.3 percent, were indeterminate and of the 199 sites in the delta region, 63 or 31 percent were indeterminant. This apparent similarity is, however, due entirely to the effect of indeterminate component site distributions for a single physiographic zone within each region. Within the riverine region, 48.9 percent of all sites in the Tallahatta Hills zone yielded indeterminate components, as compared to only 24.3 percent of the sites in other riverine physiographic zones. Within the Delta Meander zone only 10.7 percent of all sites yielded indeterminate components whereas 35.1 percent of other delta sites did so. It thus appears that there may be a lower relative frequency of short-term special purpose chronologically indeterminate sites in the riverine region of the project area and most of those which do occur are located in the Tallahatta Hills zone. While the relative frequency of such sites in the delta is higher than in the riverine region, the Delta Meander zone itself displays significantly little such occupation.

Table 25 presents a summary of component distribution in terms of the cultural resource utilizable designated environmental data (see Table 4, Chapter IV). Statistical analyses reveal that indeterminate site components do not differ significantly from the distribution of all known sites (Table 23) in terms of those environmental data, but there is a slight tendency for these indeterminate components to be somewhat more concentrated within the floodplain—61.7 percent of all sites and 58.3 percent of the indeterminate site components were floodplain sites.

Multicomponent Site Locations

Table 26 summarizes the co-occurrence of components at the 149 multicomponent sites recorded for the BWT project area. In all, the 360 sites represent at least 597 temporally distinct episodes of occupation. At 196 sites more than two temporally distinct components were represented. Furthermore, there were 39 multicomponent sites at which temporally distinct occupations could be recognized within these larger temporal classificatory terms. For instance, the Bottle Creek site (1Ba2) appears to have contained two distinct Mississippian occupations (Stowe 1978) in addition to a Late Woodland component. Over all, those 149 multicomponent sites represent 384 distinguishable components.

The distribution of multicomponent sites by the physiographic zones of the BWT project area is shown in Table 24. Statistical analyses of these data compared with the data presented on the relative areal frequency of each physiographic zone (Table 27), below, indicates that there are highly significant nonrandom distributions in terms of where reoccupied sites are located. In the Black Belt and Flatwoods only about 21 percent of all sites are reoccupied. In the Southern Red Hills, Tallahatta Hills, and Rolling Piney Woods about 42.5 percent of all sites are reoccupied. In the Delta Meander and Delta Swamp about 50 percent of all sites are reoccupied, and in the Delta Marsh only about 38 percent of the sites are reoccupied due no doubt to the relative youth of the land forma-

Table 26. Components Represented at Multicomponent Sites.

	Indeter-minate	Archaic	Early Wood-land/ Gulf Formational	Middle/ Late Woodland	Mississip-pian	Proto-Historic	Historic
Indeterminate	-						
Archaic	2	-					
Early Woodland/ Gulf Formational	5	11	-				
Middle/Late Woodland	9	20	41	-			
Mississippian	14	14	27	84	-		
Protohistoric	1	0	4	10	15	-	
Historic	12	6	13	27	25	5	-

tion itself. Despite that potential limit, a comparative ratio showing relative area: relative frequency of reoccupied sites for each physiographic zone is illustrative:

Table 27. Relative Areal Frequency of Physiographic Zones.

Physiographic Zone	Relative Area: Relative Frequency of Multicomponent Sites
Black Belt	1:06
Flatwoods	1:04
Southern Red Hills	1:09
Tallahatta Hills	1:09
Rolling Piney Woods	1:06
Delta Meander	1:06
Delta Swamp	1:1.81
Delta Marsh	1:1.56

The two lower delta zones constrain the possible location of sites so that the limited number of available areas are more frequently reoccupied. This represents an equalized overall difference of 2.62 percent between deltaic and riverine regions, as we had proposed in our initial model (Chapter III).

The summary statistics for the relative distributions of multicomponent site locations in terms of the environmental data are presented in Table 25. Analyses suggest that in general these multicomponent sites display only one locational characteristic not shared by all other sites as a general class. That is although only 24 percent of the uplands were less than 500 m from the bluff edge (Table 23), this area contained nearly 93 percent of the upland multiple occupation sites (Table 25), significant at a greater than 0.001 level of confidence. Thus, there is a strong tendency for particular bluff edge site locations, possibly favored game or warfare overlooks, to be reoccupied through time. This too was predicted in our initial BWT model.

Paleo-Indian and Archaic Site Locations

No Paleo-Indian and very few even probable Archaic lithic materials were encountered during this reconnaissance survey. Those sites which yielded the most consistent Archaic looking lithic materials have either turned out to be Gulf Formational or Early Woodland (such as at Site 1Ck45) or are not chronologically assignable to any specific post-Early Archaic phase (such as Site 1Mo69). The rare recovery of possibly early nonprojectile point artifacts does not provide even a sure Archaic provenience. We therefore have been obliged to collapse into a single analytical data set all 34 of the sites which yielded potentially Archaic materials.

Tables 24 and 25 summarize the data for all sites or components of sites which are considered to be (preceramic) Archaic. Those few sites with intact cultural deposits are likely to be important for future research into this poorly understood time period (see Appendix D). In only a few cases did an intact stratum produce the Archaic material. Undisturbed deposits are more often associated with other components. There was probably more reuse and reworking of older artifacts by more recent prehistoric groups than is recognized by most archaeologists (White 1981, Binford 1982).

Assignment of sites to specific portions of the Archaic was not possible, other than to state that sites without potsherds are not necessarily deposited by any preceramic culture, and upland sites subject to centuries of erosion and deflation are more likely to be noticed than are sites buried by centuries of alluvium.

As a general synthetic group, there was a statistically significant concentration of Archaic sites on well-drained soils in the floodplains adjacent to the present active river. This concentration to some extent is probably a result of postdepositional exposure. The statistically significant lower than random expectation frequencies of Archaic sites near major tributaries or old channel features in the riverine sections of the project, and their near absence in the lower delta indicates that the present locations of Archaic sites has little relationship to the modern floodplain geomorphology (Muto and Gunn n.d.). What is striking, and statistically significant as well, is the uniform location of all upland Archaic sites, in both the riverine and delta areas, on the bluff edges. Many seem to be on the broad terraced side of the floodplains or delta. Indeed, this appears to be the single best locational criterion for Archaic sites within the project area.

Gulf Formational or Early Woodland Site Locations

The summary locational distribution data of Early Woodland or Gulf Formational sites are presented in Tables 24 and 25. Although the delta physiographic zones contained only 45.4 percent of all areas (Table 23), they yielded 69 percent of all sites with Gulf Formational or Early Woodland components. This situation, capable of somewhat finer resolution, is intensified by the fact that there is a statistically very significant ($p=0.02$) low frequency of Early Woodland or Gulf Formational sites in the Black Belt physiographic zone (1.7 percent out of an area containing 6.7 percent of all other sites within 5.8 percent of the project area) and in the Tallahatta Hills physiographic zone, representing 14.8 percent of the project area with 13.1 percent of all other sites but only 5.2 percent of the Early Woodland or Gulf Formational sites.

To some extent differential sortability at the more recent end of this period may account for the distribution of these sites. That is, I believe that it is easier to separate components representing Bayou La Batre from McLeod or Porter, than it is to distinguish early Miller I from Miller I/II components when low frequencies of ceramics are recovered in testing (Jenkins, Chapter V).

From the distributions of the 58 Gulf Formational or Early Woodland sites in terms of their combined environmental characteristics, it is possible to construct a partial three-way matrix such as that presented in Figure 14. From such a matrix it is feasible to calculate the frequency of Gulf Formational or Early Woodland sites for all possible three-way states by the use of Venn diagrams and some elementary algebra (Figure 15). About 19 percent (n=11) of the Gulf Formational or Early Woodland sites were located on well-drained floodplain soils within 500 m of the active river. Since such areas represent only about 6.8 percent of the BWT project area we can determine that there is a statistically significant tendency for Gulf Formational or Early Woodland sites to be found on well drained riverine floodplains (X^2= 12.296; df=1). We could be expected to observe such a distribution by sampling error alone, if the sites were in fact randomly located, less than one time in a thousand. The significance of the frequencies of Gulf Formational or Early Woodland sites on well drained upland soils within 500 m of bluff edges and within 500 m of the active river but more than 500 m from any save a minor tributary, would require a six dimensional Venn diagram based upon a matrix with 61 cells: hardly a feasible hand calculation exercise. Such multiple regression correlation coefficient matrices could be generated by computer and subsequently used for a factor analysis of the major environmental variable states on a period by period basis. Such procedural data manipulation may well have resulted in highly questionable results, given the sources of bias in the data described above and the sample fraction of the Gulf Formational or Early Woodland sites. There is little reason to expect that Wheeler, Alexander, or early Miller I sites in the riverine region of the project area were located in response to the same criteria that structured Wheeler or Bayou La Batre site locations in the delta or that either was constant for over a millineum.

In general, most Gulf Formational or Early Woodland sites tend to cluster into two rather broad environmental zones. In the delta most Gulf Formational (mostly Bayou La Batre) sites were on the well drained floodplain basin soils on sand banks and levees along major distributaries. These sites were generally away from modern secondary distributaries, bays, or basins. Most of the Alexander or early Miller I sites in the riverine physiographic zones were on the upland bluff edges near minor tributaries where relatively level well-drained soils were directly overlooking the active river, or on the floodplain, or on poorly drained terraces near abandoned channels at major tributaries. These three general environmental situations account for almost 83 percent (n=48) of the Gulf Formational or Early Woodland sites within the BWT project area.

Middle to Late Woodland Site Locations

The summary locational distribution of Middle and Late Woodland sites as a whole, are presented in terms of frequency by physiographic zone (Table 24) and in terms of general environmental data (Table 25). With few exceptions there are no statistically significant geographic distinctions for sites of this thousand year period (100 B.C. to A.D. 900). There are somewhat higher than randomly expected frequencies of Middle and Late Woodland sites known in the Flatwoods zone, and fewer than randomly expected Middle and Late Woodland sites known in the Delta Marsh. The

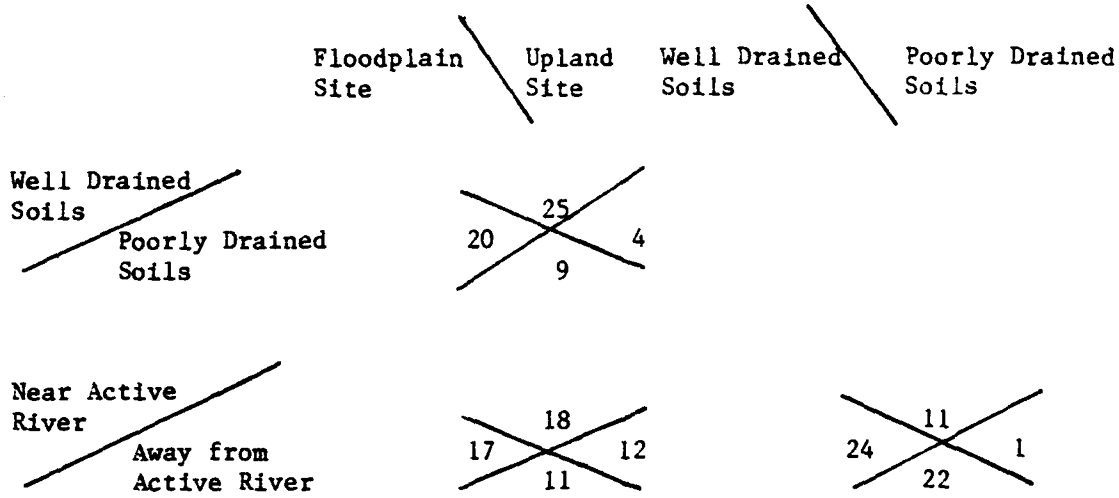
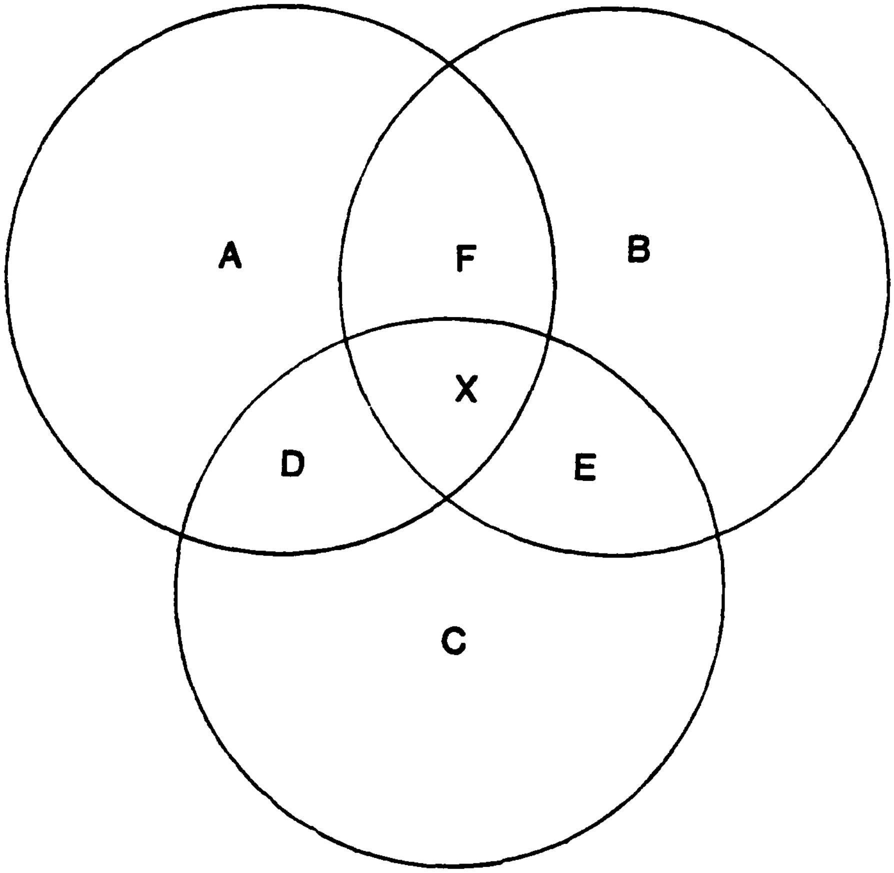


Figure 14. Partial Three-way Matrix for Gulf Formational/ Early Woodland Sites.



Where: A + B + C + D + E + F + X = 58
B (On Floodplain) + E + F + X = 28
A (Well Drained Soils) + D + F + X = 45
C (Less than 500 m from Active River) + D + E + X =35

and:
D + X = 24; A + D + C = 30
E + X = 17; C + E + B = 13
F + X = 20; A + B + F = 23

Then:
A + F + 24 = 45
A + F = 21
A + B + F = 23
B = 2
2 + F = 17 = 28
F = 9
A + 2 + 9 = 23
A = 12
X = 11 = Gulf Formational/Early Woodland Floodplain Sites on Well Drained Soils near Active River.
D = 13
E = 6
C = 5

Figure 15. Venn Diagram of Gulf Formational/ Early Woodland Sites Distributed by Topography, Soil Group, and Proximity to Active River.

former situation is principally due to the survey efforts of Sears (1962a, 1977) who investigated several Miller mound groups and villages in the Flatwoods while the latter situation is likely due to the geomorphological fact that most land surfaces of the present Delta Marsh were not in existence prior to A.D. 1000.

There are few general environmental considerations which appear to structure Middle and Late Woodland site locations as a group apart from all known sites in the BWT project area. The combined environmental characteristics of the 176 sites with Middle and Late Woodland components known in the BWT project area suggests that certain significant locational criteria may be identified as co-occurring at Middle and Late Woodland sites in frequencies sufficiently high that the hypothesis that these are sampling errors from randomly distributed sites may be rejected at a level of confidence associated with a probability around 0.05, that is, less than one chance in twenty of making a Type I error (Blalock 1964).

In the riverine region of the project area, Middle and Late Woodland sites in the floodplain (predominantly Miller I/II to III or Tuckabum components with a few late Porter/McLeod sites), tended to occur on well drained soils (X^2=5.02, df=2, p=0.08) and tended to be adjacent to abandoned channels but not to the active river (X^2=11.223, df=2, p=0.004). More of these sites areas are adjacent to minor tributaries than are adjacent to major tributaries (corrected X^2=8.317, df=1, p=0.004). Middle and Late Woodland sites in the riverine uplands appear almost uniformly distributed in terms of the frequency of well drained soils associated with various fluvial systems.

In the delta, the Middle and Late Woodland sites, especially Tensaw Lake complex sites in the floodplain, tended to occur on well drained soils adjacent to the active river or major distributaries near bays or basins (X^2=13.77, df=2, p=0.001) and frequently were in areas unassociated with any but minor tributaries (X^2= 3.115, df=1, p=0.078, Ø=0.126). Middle and Late Woodland sites in the delta uplands strongly tended to be located on well drained soils adjacent to the bluff or terrace edge (X^2=14.567, df=2, p=0.007) and usually where such areas immediately overlook the active river or a major distributary (X^2=12.235, df=2, p=0.002).

Mississippian Site Locations

The distribution of Mississippian site components for the BWT reconnaissance study (Table 24) indicates that there are relatively and absolutely more Mississippian sites in the delta than would be randomly expected in terms of either the relative area of any physiographic zone or in terms of the relative frequency of known sites of all periods. Application of Spearman's Rank Order Correlation Coefficient reveals that this distribution differs from sampling error in a nonstructural distribution of Mississippian sites by physiographic zone at a 0.05 level of significance in terms of all known sites (Rho=.653, n=8) and at nearly 0.01 level of significance in terms of the respective area of each zone (Rho=.844, n=8). For the most part, these high values derive from the respective rank differences between area: all sites: Mississippian sites in the Flatwoods (2:2:6), the Rolling Piney Woods (5:5:2), the Delta Meander

(3:6:4), and the Delta Marsh (2:2:6). This in turn reflects the seminal fact that below the Black Belt zone there were virtually no large Mississippian sites within riverine region of the BWT project area.

The distribution of the 124 sites with Mississippian components by environmental characteristics is presented in Table 25. There are several statistically significant aspects which may be noted. Mississippian sites tended to be located on the floodplain (X^2=13.378, df=1, p= 0.0003), and most of those floodplain sites in the delta tended be well away from bays or basins (X^2=15.258, df=2, p=0.0005). Those few upland Mississippian sites in the riverine physiographic zones were nearly all located directly along the bluff edges (X^2= 14.358, df=2, p=0.0008).

A more detailed analysis shows that several combinations of topography and soil drainage characteristics were important as Mississippian siting considerations. The summary ratio of sites with Mississippian components to sites of all other identifiable components is 1:2.9 and to the extent that the ratio of Mississippian to other components diverges from that ratio for particular states of environmental combinations, then those factors can be considered to represent criteria which had affected the normative BWT Mississippian siting strategies (either positively or negatively).

For poorly drained soils in the floodplain and uplands respectively, these ratios are 1:1.6 and 1:0.136 suggesting that although well drained floodplain soils were important for the location of Mississippian sites, well drained upland soils were far more important for Mississippian site location than they were for any other period. The ratios of 1:0.056 for proximity to the bluff edge, 1:0.096 and 1:0.45 for being away from either major tributaries or abandoned channels and the ratio of 1:0.33 for sites overlooking the active river rather than the broad floodplain terraces all clearly point out how different the Mississippian upland site location strategy was from that of other periods. These upland site locations were mostly in the riverine physiographic zones and nearly all represent small nonceremonial, short term ceramically early Mississippian campsites. We assume that these were occupied on a highly seasonal basis by groups which spent most of the year at relatively larger agricultural villages located well upstream, similar to the Lubbub Creek settlement.

Three previously reported large Mississippian temple mound sites were located on the floodplain above Jackson, but at least one of these, Moore's (1905a) mound at Horse Creek, does not appear to be aboriginal at all. The mound at Bryans Burn (Moore 1905a) failed to yield any cultural materials. The third mound, Site 1Ck20, the mound opposite Peaveys Landing (see Weisman, Appendix D, Jenkins, Chapter V) did yield shell tempered ceramics in association with a multistaged platform mound.

Within the delta both early and late Mississippian sites occur. Excluding river junctions below Jackson, the delta represents less than 46 percent of the BWT project area but yielded over 73 percent of the Mississippian sites. These sites appear to represent two rather distinct classes. Large linear Mississippian shell middens with some early but mostly late ceramic assemblages are the most common. These tend to occur on the well-drained soils representing overbank splays and levee formations along most major distributaries (e.g. Tensaw River and Tensaw Lake) and around bays in the Delta Swamp and Delta Marsh physiographic zones. Although these Mississippian sites are seldom within 500 m of major secondary distributary junctions, they occur at almost every junction of a major distributary (e.g. Middle River) with a minor tributary or tertiary distributary channel which cross-connects to another major distributary such as Little Lizard Creek. They also occur frequently on the recent islands formed by the major distributary fans in the lower Delta Marsh (Stowe 1978).

Within-period Mississippian component separation is not possible based upon present data although it is likley that the larger Mississippian middens represent a considerable period of seasonally limited reoccupation. Within the lowermost riverine zones and at a few locations within the Delta Meander and Delta Swamp there are large Mississippian sites with some evidence of cemeteries, and with single or multiple temple mounds such as the Bottle Creek site. The limited past and present survey data suggest that these sites have relatively large associated domestic areas with early Mississippian, late Mississippian, and protohistoric ceramic assemblages present.

There are no data presently adequate to determine the cultural assignment of the temple mounds but, in our opinion, the majority of the mound construction is probably early--before A.D. 1350 to A.D. 1400--and the majority of the known mortuary populations are clearly late--A.D. 1450 to A.D. 1600--since they tend to be urn burials in sand mounds with Pensacola-like ceramics.

Knight (1980b, 1981; Knight and Adams 1981) argued that some Mississippian occupations in the Mobile Delta and Bay area were short-term seasonal farmsteads. While this hypothesis was never meant to deal with all of the sites in the Mobile Bay area south of the delta fan or major ceremonial centers such as Bottle Creek, although that site too is likely to have been occupied only seasonally, we believe that it is quite correct for the majority of Mississippian sites in these regions.

Along the rather low gradually rising uplands to the west of the delta, only a small number of small late Mississippian sites are known. Along the high eastern upland bluffs above the delta no Mississippian components have been recorded. Thus it appears likely to us that the Mississippian settlement-subsistence systems of the Mobile Delta involved the exploitation of a large regional catchment zone (see Higgs and Vita-Finzi 1972) more laterally extensive than those of most Mississippian societies (Smith 1978; Larson 1970) and well beyond those areas defined by the boundaries of the present project. This had been hypothesized in our preliminary model.

Protohistoric Site Locations

The clustering of 90 percent of the protohistoric components in the delta (Table 24) is a statistically significant difference from the sites of all other periods save Mississippian. Yet, as the relative frequency comparisons for protohistoric (Table 25) and Mississippian site locations in terms of general environmental characteristics suggest, even these are not equivalent. To a large extent, interpretations of known protohistoric site distribution in terms of their environmental locations must be tempered by the realization that, with data from only 20 known sites the expected and observed frequencies for any cell representing some specific environmental combination, is likely to be so low that no reliable statistical evaluation will be possible. That is, we are well below those minimally acceptable sample size limits of power-efficiency (Seigel 1956: 6, 20-21). Equally vexing from an analytical point of view, and far more vexing from a cultural resource management point of view, is the fact that while we have data on only 20 protohistoric sites in our BWT project area, a review of Lankford's (1983) area ethnohistory, suggests that at least 100 protohistoric sites should exist within the project area, most within the riverine physiographic zones. That many of those sites discussed in the historical documents have been mislocated, and thus really lie outside of our BWT project area, is possible. Many of those sites have been destroyed, but that many have either been misinterpreted or have not been yet encountered, is all too likely.

From combined environmental characteristics of sites with protohistoric components few protohistoric sites can be understood in terms of the environmental variables which occur where they were located. In apparent contrast to sites of any and all other temporal periods, protohistoric sites tended to be located outside of what we have defined as the floodplain. Of the eight protohistoric sites located on the floodplain, six occurred in the delta on levees, often with poorly drained soils, adjacent to 'ays and basins (X^2=8.870, df=2, p=0.012), and generally near where these drain into the major distributary channels (X^2=3.559, df=2, p=0.1687). Most of the delta within the project area, which is twice as wide as the riverine corridor, contains almost 3.5 times more floodplain area. Most sites represented in the early historic records for the delta appear to have been located in upland areas. Indeed, the location of the BWT riverine protohistoric sites were quite different than the locations of the historically described aboriginal sites in the riverine zones. The protohistoric sites tended to be located in the uplands within a few hundred meters of the bluff edges (X^2=6.070, df=2, p=0.0481). Most tended to occur on upland bluff edges with well-drained soils (X^2=9.6213; df=2, p=0.0081) especially where such locations lie immediately overlooking the junction of the active river with a major tributary (X^2= 5.0056, df=4; p=0.0819). These may be significant probabilities, indicating that the distribution of protohistoric sites in terms of these environmental factors could be expected from sampling error alone, if they were really randomly distributed, less than one chance out of one hundred. Due to the small sample, the strength of these relationships is not particularly high, but the close correspondence between the normative locations observed, and that represented in the historical records is striking.

The protohistoric sites show a shift away from traditional Mississippian patterns in terms of their riverine upland bluff edge location, and their frequencies of delta floodplain sites associated with old bays and connecting waterways. The details of protohistoric occupation have been virtually unknown for the BWT project area, as for most of the coast between Biloxi and St. Marks (Boyd et al. 1957; Tesar 1973, 1980; Walthall 1981; Brose 1981a), but it had been assumed that protohistoric sites would resemble those of the Moundville area. Such continuity is not the case within the BWT project area.

While a few of the protohistoric sites in the BWT region appear to meet the twin criteria of archaeological context and historical specificity, such sites are rare.

Ethnohistoric and Historic Site Locations

In all some 70 archaeological sites were investigated which contained historical archaeological components. However, over 67 percent of these (n=47) were represented by only a thin scatter of late nineteenth to early twentieth century nonstructural domestic refuse as an incoherent final component at some aboriginal archaeological site, especially in the delta (see Parker, Appendix E). Of the remaining third, over half (n=14) represented historical archaeological sites of that late (A.D. 1860-1930) period only; 5 represented historical archaeological sites with some remains of both late and relatively early (A.D. 1750-1860) occupation or discard, but only 4 sites appeared to be single component historical sites of the antebellum period only.

The distribution of sites with a historical archaeological component of any type or time by physiographic zones is presented as Table 24. There is little predictive capability inherent in this general distribution, but it is nonetheless true that the historic components are not randomly distributed with respect to the frequencies of all known archaeological sites by physiographic zone. There appears to be a higher concentration of historical sites than might be expected in the Black Belt and Delta Marsh zones, and a lower concentration of such historical sites in the Southern Red Hills, Tallahatta Hills, and Delta Meander zones. Most of these sites in the delta appear to represent farming of small floodplain terraces--a pattern of economic activity characteristic of the 1870 to 1930 period near Mobile. Most of these sites in the riverine physiographic zones appear to represent either tenant farms or their outliers, or to represent possibly seasonal occupation by hunters or fishermen. Indeed, much of the domestic remains recovered at these latter sites virtually duplicates the material culture found scattered about the decrepit travel trailers which still exist in the Coffeeville Lock 2 area.

The general environmental characteristics of sites with historical archaeological components are presented in Table 25. As expected, the significant associations in the riverine physiographic zones are seen in the high frequency of historic sites on the upland bluff edge overlooking the active river channel. In the delta most historic sites were on the lower delta floodplain or on well drained levees away from modern tributaries, bays, or basins--sites frequently were found on old aboriginal shell middens.

A PREDICTIVE MODEL OF SITE LOCATIONS

In describing the historic aborigines of the Mobile region, Hamilton noted that,

> All changed their locations from time to time as they exhausted the hunting grounds, soil, or pasture, to which the "Old fields" and "old towns" common in their names and country still bear witness, and the evidence of the Choctaws, who lived less in towns than the Creeks, are often scanty. Experience taught them to keep near bluffs in order to avoid the freshets of the rivers, but they did not always live on these exposed places, and certainly preferred to cultivate lower lands (Hamilton 1904: 117).

Recent ethnohistorical studies of Lankford (1983), Knight (1980b), Knight and Adams (1981), and Curren (1978) bear ample witness to the applicability of that tentative model into the late prehistoric Mississippian period, at least in the Delta. Yet, as the previous section has demonstrated, there were significant differences in the locations of archaeological sites in earlier periods, as there were significant differences in the locations of archaeological sites at all periods for which adequate data exist between the riverine and the deltaic regions of the project area. An example of how these overall differences in physiographic zones for the location of sites of all periods in terms of certain designated environments is illustrated for topographic location in Table 28.

Some significant differences appear when archaeological sites of all periods are considered together. This is seen in the relatively higher frequencies of sites on the uplands in those zones where the highest frequency of such uplands are farthest from the major active floodplain itself (the Black Belt, Rolling Piney Woods, and Delta Marsh zones). In terms of soil drainage characteristics, when adjusted for the actual relative frequencies of the soil classes types by physiographic zone, about 82 percent of all sites occur on well drained soil associations except in the Delta Meander and Delta Marsh zones. There less than 50 percent of the sites were located on well drained soils. In the riverine physiographic zones, south through the Tallahatta Hills, roughly 60 percent of all sites were within 500 m of the active navigable river. About 37 percent of the sites in the Rolling Piney Woods, Delta Meander, and Delta Swamp were so located, and over 66 percent of sites the Delta Marsh were near an active channel. While certainly not a random distribution ($X^2=25.821$, df=14, p=0.02), these relative differences closely approximate the availability of floodplain areas in those zones so that there is little statistically predictive significance to the observed distributions themselves. Indeed, the uncertainty coefficient, $U_A=0.0194$ suggests almost no predictive capability.

In the riverine region of the project area most floodplain sites are found well away from abandoned channels at a ratio of 8:1. In the delta the ratio of sites to areas away from bays and basins is only 2:1, again reflecting the fact that there are almost four times as many such areas available in the riverine physiographic zones as occur in the Delta floodplain.

The occurrence of sites on upland areas within 500 m of the bluff edges is both statistically significant in terms of site distributions

Table 28. Physiographic Zone vs Designated Environment.

	UPLAND	FLOODPLAIN	ROW TOTAL
Black Belt			
n	10	14	24
Row %	41.7	58.3	6.7
Column %	7.2	6.3	-
Total %	2.8	3.9	-
Flatwoods			
n	11	23	34
Row %	32.4	67.6	9.4
Column %	8.0	10.4	-
Total %	3.1	6.4	-
Southern Red Hills			
n	7	19	26
Row %	26.9	73.1	7.2
Column %	5.1	8.6	-
Total %	1.9	5.3	-
Tallhatta Hills			
n	16	31	47
Row %	34.0	66.0	13.1
Column %	11.6	14.0	-
Totl %	4.4	8.6	-
Rolling Piney Woods			
n	13	17	30
Row %	43.3	56.7	8.3
Column %	9.4	7.7	-
Total %	3.6	4.7	-
Delta Meander			
n	7	21	28
Row %	25.0	75.0	7.8
Column %	5.1	9.5	-
Total %	1.9	5.8	-
Delta Swamp			
n	44	67	111
Row %	39.6	60.4	30.8
Column %%	31.9	30.2	-
Total %	12.2	18.6	-
Delta Marsh			
n	30	30	60
Row %	50.0	50.0	16.7
Column %	21.7	13.5	-
Total %	8.3	8.3	-
COLUMN	138	222	360
TOTAL	38.3	61.7	100.0

RAW CHI SQUARE = 8.38317 WITH 7 DEGREES OF FREEDOM. SIGNIFICANCE = 0.3000
CONTINGENCY COEFFICIENT = 0.15085

alone (X^2=38.367, df=14, p=less than 0.004) and in terms of comparative areal significance. Over 80 percent of all upland sites investigated occurred within this 18 percent of the upland area. This was in part, however, an example of project limited sampling.

In the riverine zones about 20 percent of all sites were located in proximity to major tributaries. This exceeds the relative relative frequencies of area available. In the delta between 40 percent and 50 percent of all sites were within 500 m of connecting channels or secondary distributaries although only 30 percent to 35 percent of the land areas were so located.

In terms of the land areas adjacent to minor tributaries or bays and basins the site distributions were highly variable by physiographic zone. From the Flatwoods through the Rolling Piney Woods, the relative site and area frequencies were virtually identical suggesting no selection. In the Black Belt 75 percent of all sites were located within 500 m of a minor tributary although such areas represented only 22 percent of available land. In the Delta Meander, 7 percent of the sites, and the Delta Marsh, 60 percent of all sites, were within 500 m of either old channels, or bays and basins although these represented only about 40 percent of all available area--this indicates the variability present with regard to site location and old, inactive hydrographic features. In the Delta Swamp only 30 percent of the sites were located on lands within 500 m of a bay or basin although those areas represented 53 percent of the zone.

Before attempting to proceed from such relative comparisons of site and environmental area frequencies within each physiographic zone, it is perhaps appropriate to review the nature of statistical analyses thus far implemented in this BWT project reconaissance. All statistical data compilation from site tables, as well as the compilation of relative areal data, and all statistical tests were performed by the University of South Alabama Department of Geology and Geography.

Methodological Cautions

In relying upon similar data and analyses for determining the significance of geographic patterns in the Tombigbee River Multi-Resource District, Weaver and Doster (1982) noted as a cautionary tale that where the strength of relationship between site types and variables is measured by lamda and the uncertainty coefficient,

> . . . In every case, . . . the uncertainty coefficient, based on the whole distribution rather than the modal category, provided a more reliable measure of the relationship between site class and each of the independent variables than did lambda (Weaver and Doster 1982:180).

Weaver ended his analyses with little concrete conclusion noting that,

> Although chi-square indicates varying relationships lambda and uncertainty coefficient procedures show that the probability

> of accurately predicting type of site by having knowledge of the included characteristics is slight. The combined conclusion of the statistical tests therefore is that while there are demonstrative relationships between site type and environmental association these relationships appear too weak to enable accurate and reliable prediction of site occurrences.
>
> It is possible that the failure to measure stronger relationships is a fault of the data gathering precedure. The data base was generated entirely from the reading of topographic maps. It is possible that more predictively important variables were omitted from the study and that several of the variables were mis-specified as well as mis-identified during the data collection phase (Weaver and Doster 1982:186).

These statements apply to the BWT data as well. And further, based on the calculated area of each measured environmental combination, the frequency distributions of all known sites in terms of their locations, often approximate the actual or relative frequencies of those types of areas with or without sites. For instance, the distribution of all sites in a four cell table of upland or floodplain versus well drained group soils or poorly drained group soils shows a X^2=0.67 with df=1, with the probability that the observed frequencies differ from those frequencies which might be expected with random distributions due to sampling error of p=.45. That is, we could get this result almost half of the time with no aboriginal selection for site locations at all, simply in terms of the availability of these environmental combinations.

There are, however, several significant correlations which are noted on Table 29. The occurrence of all floodplain sites in areas away from either bays or basins or from abandoned channels has a chi-square probability of 0.001 with U_A=0.8705 and Lambda = 0.8165. The occurrence of all upland sites near the bluff edges is also significant at a less than 0.001 level with U_A=0.9253 and Lambda =0.9058. The distribution of floodplain sites occurring on well drained soils near the active river is also significant (X^2=17.08, df=1, p=less than 0.001. I believe this is very significant in the riverine physiographic zones but due to the areal nature of these zones which are combined in the areal and statistical compilations there is little predictive value unless we ignore all upland sites (U_A=0.11856, Lambda =0.1293). In a similar fashion, the areal distribution of all floodplain sites near the active river or major distributaries, but not near major tributaries or connecting distributaries, appears significant initially (X^2=171.56, df=1, p=less than 0.001). Although it is probably important in the riverine physiographic zones, it is of little real predictive value overall when combined areal frequencies of such zones are considered (U_A=0.0257, Lambda=0.0571). Future statistical analyses must distinguish those zones. Again, while Table 29 clearly indicates that there is no statistical analysis possible for those sites near the old channel features, or in the delta near bays or basins of the BWT project area, in terms of their relationship to bluff edge proximity, such may not be the case with undiscriminating statistical programs which calculate the probable distribution of inapplicable data versus inapplicable data to generate a spurious highly significant X^2 of 339.58 with 4 degrees of freedom. Such is the danger of mindless number-crunching. Remember also that in dealing with segmented and environmentally limited

Table 29. Relative Distribution of BWT Project Area Sites By Combined Environmental Characteristics.

	Flood-plain (n=222) Percent	Uplands (n=138) Percent	Probable Significance
On Well Drained Soil	74.3	80.4	
On Poorly Drained Soil	23.4	18.1	(X^2) $p = .45$
Less than 500 m from Active River	51.8	47.8	
N/A	0.4	0.7	
Greater than 500 m from Active River	46.8	51.9	(X^2) $p = .625$
Less than 500 m from Old Channel Feature	20.7	-	
N/A	2.7	99.3	
Greater than 500 m from Old Channel Feature	76.6	0.7	(X^2) = p less than .001
Less than 500 m from Bluff Edge	-	85.5	
N/A	99.1	1.4	
Greater than 500 m from Bluff Edge	0.9	13.0	(X^2) p greater than .001
Less than 500 m from Major tributary	43.7	23.2	
N/A	1.4	0.7	
Greater than 500 m from Major tributary	55.0	76.1	(X^2) $p = .213$
Less than 500 m from Minor tributary	40.1	55.1	
N/A	1.4	0.7	
Greater than 500 m from Minor tributary	58.6	44.2	(X^2) $p = .447$

	On Well-Drained Soils (n=276)	On Poorly Drained Soils (n=77)	Probable Significance
Less than 500 m from Active River	44.9	71.4	
Greater than 500 m from Active River	55.1	28.6	(X^2) p less than .001
Less than 500 m from Old Channel Feature	10.9	19.5	
N/A	41.3	31.2	

Table 29. Relative Distribution of BWT Project Area Sites By Combined Environmental Characteristics (Continued).

Greater than 500 m from Old Channel Feature	47.8	49.4	(X^2) p = .107
Less than 500 m from Bluff Edge	33.7	31.2	
N/A	59.1	68.8	
Greater than 500 m from Bluff Edge	7.2	-	Contingency Coefficient c = .189
Less than 500 m from Major Tributary	31.2	55.8	
Greater than 500 m from Major Tributary	68.8	44.2	c = .554
Less than 500 m from Major Tributary	43.5	57.1	
Greater than 500 m from Minor Tributary	56.5	42.9	c = .538

	Less than 500 m from Active River (n=181)	Greater than 500 m from Active River (n=175)	Probable Significance
Less than 500 m from Old Channel Feature	9.4	16.6	
N/A	37.0	41.1	
Greater than 500 m from Old Channel Feature	53.6	42.3	(X^2) p = .001

	Near Active River	Away from River	Probable Significance
Less than 500 m from Bluff Edge	35.9	30.3	
N/A	63.0	59.4	
Greater than 500 m from Bluff Edge	1.1	10.3	c = .21268
Less than 500 m from Major Tributary	31.5	41.1	
Greater than 500 m from Major Tributary	68.5	58.9	c = .7088
Less than 500 m from Minor Tributary	48.1	44.6	
Greater than 500 m from Minor Tributary	51.9	55.4	c = .70732

Table 29. Relative Distribution of BWT Project Area Sites By Combined Environmental Characteristics (Continued).

	Within 500 m of Old Channel Feature (n=46) Percent	More than 500 m from Channel Feature (n=171) Percent	(N/A = 30) Probable Significance
Less than 500 m from Bluff Edge	-	-	
N/A	100.0	100.0	
Greater than 500 m from Bluff Edge	-	-	
Less than 500 m from Major Tributary	6.5	54.4	
Greater than 500 m from Major Tributary	93.5	45.6	(X^2) p Less than .001
Less than 500 m from Minor Tributary	30.4	43.9	
Greater than 500 m from Minor Tributary	69.6	56.1	c = .372

	Within 500 m of Bluff Edge (n=118) Percent	More than 500 m from Bluff Edge (n=20) Percent	(N/A = 122) Probable Significance
Less than 500 m of Major Tributary	22.0	35.0	
Greater than 500 m from Major Tributary	78.0	65.0	(X^2) less than .009
Less than 500 m from Minor Tributary	54.2	60.0	
Greater than 500 m from Minor Tributary	45.8	40.0	c = .1617

	Within 500 m of Major Tributary (n=129)	Greater than 500 m from Major Tributary (n=227)	Probable Significance
Within 500 m of Minor Tributary	32.6	54.2	
More than 500 m from Minor Tributary	67.4	45.8	c = .715

zones, the actual frequences of observed sites may be so small that the resultant statistics, however significant, are rather worthless. Only larger samples can correct this problem.

Yet by ignoring sampling and analytical clustering problems, and by comparing frequencies of sites in any given environment with the areal distribution of such environments themselves, we see that the 51 percent frequency of floodplain sites in zones less than 500 m from the active navigable river exceeds the 21 percent areal representation of such zones at a level of probability less than 0.001 (X^2 = 171.56, df=1). So too does the fact that while only 20 percent of the project area represents zones within 500 m of both major riverine tributaries or deltaic distributaries and riverine minor tributaries or deltaic secondary distributaries or connecting channels they contain nearly 36 percent of all known sites (X^2= 15.682, df=1, p=0.025). The actual significance of these statistically significant results certainly depends on the project segment involved, however.

By integrating the present data and analyses several different zones of designated environmental combinations can be identified. The relative distribution of known sites for some areas can be determined. And, to some extent, the actual areal frequencies of such zones can be approximated for different regions and physiographic zones of the BWT project area. These represent specific locations within the study area which appear to contain a far higher frequency of archaeological sites than could be expected if sites were simply uniformly distributed throughout the area, or if sites were randomly distributed across each such designated environment in frequencies proportional to the areal availability of each such environment. These then can be considered as archaeologically sensitive zones or environments based upon the sample of sites presently known.

Archaeologically Sensitive Environments

Within the riverine region of the BWT project area a number of environments must be considered highly sensitive. Some of these have recieved strong statistical support while others are still in need of further analysis.

On the floodplain there are areas of well drained soils which are either within 500 m of the active channel or which lie at variable distances from the active river channel but which are less than 500 m from major tributary junctions and old channel features. Although such zones represent about 5 percent of available area, they yielded 18.7 percent of all sites on the riverine floodplain. Such areas may include terraces of either tributaries or the major river.

The upland areas within both the riverine and delta regions contain a few areas of well drained relatively level soils which occur within 500 m of the bluff or terrace edge, overlooking the active river channel less than 500 m away and which are cut by at least one minor tributary stream within 500 m but which are more than 500 m from a major tributary. Although such areas represent only about 2 percent of all available upland areas, they yielded over 10 percent of all recorded upland sites.

Within the delta there are areas of well drained levee soils which lie along the major distributary channels and within 500 m of one or more major connecting channels. These areas are also at least 500 m away from dead lakes, minor tributaries, bayous, bays, or basins. Although representing only 8.3 percent of the deltaic floodplains, these environments contained 24.7 percent of all known deltaic sites.

The uplands fringing the delta also contain a few level areas of well drained soil adjacent to major or minor tributaries and directly overlooking the junctions of major tributary or distributary channels. Although representing less than 2 percent of delta, such environments have yielded over 5 percent of all deltaic sites.

Thus four combined designated environments, representing in total less than 20 percent of the entire BWT project area, have yielded 58 percent of all known archaeological sites. They are the most easily demarcated, and certainly the most archaeologically sensitive of all areas within the BWT project area. The remaining 42 percent of the known sites as a group are nearly unsystematically distributed across the remaining 80 percent of the region. While the locations of specific sites of specific periods, and of many significant sites, have been discussed more throughly in the preceding sections of this report, these four integrated environments described in this predictive model section, account for the greatest frequencies of most sit of all periods in general, for which adequate data now exist.

SUMMARY

In this section of our report on the archaeological reconnaissance of the BWT project area, we have looked at the distribution of the 360 known archaeological sites in terms of the relative and absolute frequencies of a number of archaeological, geographic, and environmental variables.

We have discussed the significance of sites with temporally indeterminate components and of multicomponent sites and tentatively made some suggestions concerning the possible functional significance of their spatial distributions. We have also indicated the degree to which our methods, both analytical and logistic, have affected and have been affected by those phenomena.

We have evaluated the spatial distribution of archaeological components in terms of their assignment to Paleo-Indian/Archaic, Gulf Formational/Early Woodland, Middle and Late Woodland, Mississippian, protohistoric, and historic categories. In so doing we indicated the artificial nature of those categories. They are periods which are not entirely chronologically, stylistic, or morphologically determined and we confess our inability to avoid the resultant overlap which must result.

In looking at the distributions of sites with components representing each of these periods it is apparent that environmental criteria which account for the location of the sites differed in many significant respects. The observed distributions were due to a number of only partially related geomorphological phenomena, few of which can be controlled without significant new field investigations. We then attempted to reintegrate these various site distributions and environmental conditions into a coherent picture of where most potentially significant archaeological sites may be expected to occur within all of the BWT project area's physiographic zones. That predictive model of archeological site location was described in the last section of this part of our report.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

David S. Brose, Russell Weisman, and Ned J. Jenkins

METHODS AND RESULTS

These recent archaeological investigations of the BWT project area were begun in late 1980 by the Department of Geology and Geography of The University of South Alabama for the U.S. Army Corps of Engineers, Mobile District.

Because of the vast area of this reconnaissance study, over 1,000 square miles, field investigations had to be carefully structured to obtain as much controlled data for statistical analysis as was possible. The cultural resources reconnaisance consisted essentially of a literature search, records review, and field examination of selected study areas to assess the general nature of the resources probably present. Test excavations were required at some sites, but information appropriate to a National Register of Historic Places evaluation was not required at this level of investigation.

The BWT study area consisted of a 5 mile wide corridor extending along the Tombigbee River between Demopolis Lock and Dam and Highway 43. South of Highway 43 a 10 mile wide corridor formed the study area. Overall, the study area encompassed 150 linear miles from Demopolis Lock and Dam to Government Street in Mobile.

The study area encompassed portions of eight significantly different physiographic zones. The northernmost riverine region, from north to south, included portions of the Black Prairie or Black Belt, the Flatwoods, the Southern Red Hills, the Tallahatta Hills, and the Rolling Piney Woods. The Mobile Delta area, contains three additional physiographic zones, the upper delta or Delta Meander, the Delta Swamp, and the Delta Marsh. Within each of these physiographic zones, a number of different types of upland and floodplain topographic and hydrographic areas with different soils and vegetation are represented. Since the total number of possibly significant environmental combinations could not be investigated, we concentrated on first discovering which environmental variables seemed to be correlated with previously reported archaeological sites. Analyses of the significant environmental conditions which occurred at these sites were modified to account for survey bias. These analyses resulted in a tentative model of where archaeological sites of different cultural periods were likely to be located in terms of several key environmental variables.

From that initial model we developed a series of statistically justified sampling parameters. An ecological stratification of the project area was implemented in terms of those designated environmental variables, and a logistically feasible field reconnaissance method was established.

One of our first objectives was to relocate and evaluate a sample of the previously reported archaeological sites. This was accomplished after decisions were made as to what should be considered an archaeological site and how it could be recognized in the various phases of fieldwork. A further decision was required as to what environmental variables would be considered either paleoecologically significant or currently observable at some accepted level of confidence.

The field crew spent ten weeks in an examination of specific environmental areas within each of the physiographic zones which made up the BWT project. Some 138 previously unknown archaeological sites were located and data were collected for 222 previously recorded sites so that a total of 360 sites have now been identified within the BWT project area.

A second objective, to perform archaeological survey of several areas designated as critical by the project historians, was not easily accomplished. Nonetheless, several potentially significant early historic sites in the riverine zones were tested and found to have retained some archaeological context. Potential Mississippian mounds in those riverine zones below the Black Belt were investigated and some were revealed to be nonaboriginal in origin. This latter fact had been suggested in the initial model and was incorporated into the revised cultural history. In the delta those designated investigations revealed that historically predicted industries were too ephemeral to yield archaeologically significant remains.

We next proceeded to develop and implement an environmentally stratified, statistically acceptable, sampling program to locate archaeological sites in under represented or in unsurveyed areas. This sampling program was only partially achieved because of the size of the project area. The details of this program, its genesis and maturation, its verification, and the extrapolations derived from it, occupy substantial portions of this report. Achievement of this objective was hampered by several factors which forced a partial shift in emphasis from a system in which the archaeological sites within the project area were the sample and target populations, toward a system in which the areas potentially containing archaeological sites were the target population and ecologically representative areas, whether or not they contained archaeological sites, were the sample population. Although this emphasis resulted in recovering less data, it yielded a far better predictive map of archaeological sites than would a sampling program targeted upon the sites themselves.

The locational hypotheses generated from the intial model were evaluated in light of the data from 597 archaeological components represented at the 360 archaeological sites. Modifications of the model were developed and, in consultation with project ethnohistorians, geographers, oral historians, and historians, a limited series of archaeological sampling investigations were proposed to test the hypotheses derived from this modified model of archaeological site locations within the BWT project area.

Archaeological surveys were also implemented to test the accuracy of a representative sample of those areas predicted to contain archaeological sites, as well as to record areas which contained no archaeological sites. After a detailed revision of the cultural chronology, based upon the recovered artifacts, the anayses proceeded to determine the significance of archaeological site locations for discrete cultural periods: Paleo-Indian and Archaic, Gulf Formational and Early Woodland, Middle and Late Woodland, Mississippian, protohistoric, and historic; and for chronologically indeterminate and multicomponent sites.

The crew was returned to the field for two weeks, to investigate specific site data, and to evaluate locations or zones specified by this modified sampling strategy. This phase of field investigations confirmed some of the modified hypotheses and we were able to obtain a number of stratified artifact and radiocarbon samples. Ten absolute age determinations were obtained for culturally diagnostic and significant sites and for newly designated cultural phases. With all of these data we undertook analyses of the statistically significant relationships for the 360 archaeological sites.

Using the University of South Alabama computer, a series of statistical analyses were able to generate a preliminary picture of environmental data for probable archaeological site locations. Sampling frames were developed to investigate specific artifact densities and distributions. The significant site relationships were evaluated to determine whether the observed site distributions were statistically uniform or random, or whether they represented site selection preferences which could then be used to predict the probable locations of yet undiscovered archaeological sites.

Highly critical environments were determined. These areas contained 58 percent of the archeological sites but represented less than 16 percent of available land surface within the project area.

These archaeologically sensitive environments in the riverine physiographic zones were areas of well drained soils within 500 m of major tributaries--especially tributary junction terraces. In both the riverine and Mobile Delta physiographic zones, level well drained upland soils within 500 m of the bluff edge overlooking any major tributary but within 500 m of at least one minor tributary were archaeologically sensitive. In the delta, well drained floodplain soils along major distributaries more than 500 m from bays or basins and near cross connecting distributary channels proved archaeologically sensitive. In the delta uplands, level soils within 500 m of minor tributaries overlooking major floodplain distributary channels were favored site locations. As a general management recommendation, development or alteration of these archaeologically sensitive environments should be avoided if possible.

Our report discussed both the reliability of the final integrated model of probable archaeological site locations and offered some potentially refutable conjectures as to where and why such an approach was likely to be biased. It is as comprehensive a predictive model as could be produced with the limited contracted resources. The validity of our approach and the accuracy of our model can be evaluated only through further archaeological recovery, more detailed geomorphological study, and more extensive archival research all of which were beyond the scope of this project.

A CAUTIONARY NOTE

In a study of this type it is often valuable to go beyond the actual data to arrive not only at a general locational model that will estimate the probable frequency of unknown sites but also to compare data from adjacent or similar regions of the Southeast. In both efforts, it will be necessary to introduce some caution, for what appear to be very different data may result from different sampling and survey techniques alone.

Our BWT data on site types and periods were derived from so wide a variety of investigative methods that we may expect that at least the relative frequencies of known BWT archaeological sites by period will accurately represent the actual relative frequencies of all sites within the project area because of the reduced potential of significant internal bias. However, because of the significantly different frequencies of sites of various periods in different environmental zones, and such varied survey conditions, any such expectation is likely to be erroneous.

Based upon our revised model of site locations, we have estimated that there are four archaeologically sensitive environmental zones that account for over 58 percent of all site locations but represent less than 20 percent of the area.

As a control, we categorized two core USGS quadrangles, the Putnam 7.5" series for the riverine region and the Tensaw Lake 15" series for the delta in terms of the number of sites which occur within such highly sensitive zones and beyond them. For the riverine Putnam quadrangle there is an area about 75,000 m^2 which meets the statistical criteria to be considered highly sensitive, wherein 13 of the 19 known sites (68.4 percent) occur. For the delta Tensaw Lake quadrangle, the statistically highly sensitive area includes about 1,225,970 m^2 wherein 40 of the 65 (61.7 percent) known sites occur. If indeed archaeologically sensitive areas contain over 58 percent of all known sites, and if these sites average 60,000 m^2, we could expect that about 24,136,617 m^2 would represent approximately 4800 archaeological sites of average size. Only 7 percent of these are known. We could further suggest that as many as 42 percent of the potential archaeological sites (about 3500) would occur in the remaining 2,300,000,000 m^2 of the BWT project area. That is, in the less archaeologically sensitive zones only about 0.00015 percent of the area is likely to represent an archaeological site. The total potential number of archaeological sites of all types, times, classes, and significance expected in the BWT project area could thus be as high as a staggering 8300, of which only about 4.7 percent are presently known. Such an estimate is, of course, only as good as the statistics from which it was generated. Insofar as can be estimated, the best confidence level or interval which can be associated with these parameters, based on the variances found in the sampling performed thus far, is in the neighborhood of 0.25.

These estimations of the target population, i.e., all sites within the BWT project area, from the sample population of known sites requires the assumption of a population of sites normally distributed (Blalock 1960, Siegel 1956) in terms of the ecological variables which were used for structuring the high archaeologically sensitive zones. This assumption is almost certainly false, and there are insufficient data for any period prior to 3500 B.C. to correct for the major biases introduced. Therefore the accuracy limits to be associated with these estimated target population parameters are quite broad: at best guess, about ±33 percent. In short, the final series of high probability zones which we identify appear to represent the locations within which we can expect to have a 67.5 percent probability of finding 58 percent of the 8300±2700 archaeological sites which may exist.

Further refinements of this approximation in terms of discussing the potential nature of any probable site type in any particular microenvironmental zone, must await further investigation and data recovery at nearly all of those 360 presently known sites. Only then will improved confidence and accuracy be possible for population estimates such as this. And only then can evaluation of such experimental extrapolation methods for sampling in archaeology be based on firmer data.

REGIONAL COMPARISONS

Few southeastern river valleys as important as the lower Tombigbee River Valley and Mobile Delta have been subject to interpretations based on such a low level of systematic archaeological investigation. Any comparisons of our data with those from the upper Tombigbee, the Black Warrior, the Coosa-Alabama, the Chattahoochee, or from the distant Yazoo-lower Mississippi Valley farther west, or from the Ocmulgee-Oconee-Altamaha and Savannah River Valleys farther east, must result in a comparison of data based on limited surface sampling with data derived from multi-staged surface and subsurface sampling, evaluative testing, or extensive excavation. Thus comparative statements can only tentatively be made.

The 360 archaeological sites which we have investigated within the BWT project area may represent only a small sample (4.25 percent) of as many as 8300 sites which once existed. Few other regional studies have attempted to estimate the sampling fraction represented in their data. Waselkov (1980:136) is an exception. We offer no comparisons of the degree to which the differences noted in different data sets may be due to sample size alone. The sampling strategy and regional stratification was significantly different from the BWT in all of these studies. Surveys of post-impoundment lake margins (Sheldon et al. 1980, Oakley and Watson 1977, White 1981) must be expected to yield archaeological data different from surveys of relatively large areas including major rivers (Webb and DeJarnette 1942; Jenkins et al. 1975; Jenkins and Ensor 1981, Jenkins 1982; Rucker 1974; Atkinson and Elliott 1978; Stowe 1978; Taylor and Smith 1978) or from surveys of relatively unaltered river valleys themselves (Phillips et al. 1951; Phillips 1970; DeJarnette 1975, Jenkins and Paglione 1980; Belovich et al. 1982), regardless of the actual similarities which the archaeological data displayed.

It is also difficult to compare regional sequences when the terminological boundaries for cultural complexes; archaeological traditions and phases; chronological periods; site morphology, function, or size; ceramic types and varieties; and lithic types and type clusters follow neither consistent rules of application nor limits even within a single river valley in a single state. The terminology imposes artificial disjunctions between areas despite the frequent equivalence of the recovered materials.

In the recent study of the lands surrounding Demopolis Lake Sheldon (Sheldon et al. 1980:619-622) suggested that a combined approach of surface collection, shovel testing and subsurface testing is required to provide adequate samples. The strong correlations seen between site locations and land elevation at Demopolis Lake (Sheldon et al. 1980: 626-641), the apparent proximity of all types and periods of sites to areas adjacent to the river or its major tributaries (1980:653, 658-659), and the restriction of historic sites to the middle and high terrace edges (1980:693:693ff) may be a function of lands available for survey in that project. Such patterns are not replicated within the BWT area. We also suggest (contra Sheldon et al. 1980:626) that direct environmental variables are unlikely to offer much explanatory value for any but single purpose seasonal campsites (Peebles 1974, 1981a). Sheldon (et al. 1980) does conclude with a statistical model of general prehistoric site locations for the Demopolis Lake area which demonstrates the higher than expected frequencies of sites on well-drained soils and on middle elevation terraces or levees.

Waselkov's (1980) reconnaissance survey of the Coosa River Valley was limited to windshield survey and surface inspection of cultivated fields along four 800 m by 8,000 m transects, one in each major physiographic zone adjacent to the Coosa River (Waselkov 1980:133 ff). It appears that 111 sites of the 377 known in that study area were actually visited, and that there are 590 components represented at 403 or 404 sites within and beyond the project itself. As in the Demopolis Lake report (Sheldon et al. 1980), many of the areal frequencies of the available environmental variables were computed so that the probability of observed site distributions being random could be evaluated, Waselkov (1980) also presented the significant site-environment combinations by chronological period, by physiographic zone, by distance to streams, by soil types, and by elevation. Waselkov found a nearly random distribution of sites across the areas of available environments taken one-by-one. The significant exceptions appear to be related to postcontact changes in site location which have little to do with the direct exploitation of the environment itself.

Seventy sites are discussed in the recent report of a survey of the lower Alabama River (Jenkins and Paglione 1980) which was opportunistic, and explicitly oriented to the discovery of larger, potentially significant sites at some distance from the river itself. Although valuable for its presentation of cultural chronology in a little known region, no environmental site location data are presented, although we may expect most of the sites encountered to have been in the uplands.

The survey results of two projects on the lower Chattahoochee River are also of some comparative interest. At Lake Seminole (White 1981), an ecologically proportional stratified survey by transect and quadrant revealed a strong correlation of 325 aboriginal site locations with areas displaying proximity to soil and elevation ecotones and located near major tributaries or spring heads. However major sites did not fit this pattern and most of the original floodplain of the area was inaccessible. At G.W. Andrews Lake (Belovich et al. 1982), the close interval surface and subsurface testing survey was restricted to the floodplain levees, terraces, and bluff edges, nearly all of which were well-drained soils. Of the 287 sites identified, most major sites appeared wherever tributaries entered the main river. Site elevation was a statistically randomly distributed variable.

The general cultural periods in these different river valleys represent significantly differerent complexes, Miller III, McLeod, Whiteoak, Wakulla, but it may be instructive to compare an index based on the estimated site densities in terms of relative frequency of known components for each period, divided by duration of that period times 100. At least the relative differences in the index values (Table 30) indicate that, to the extent the survey data are representative, there are significant differences in site density between these project areas and that even these differences change significantly through time. Brose (Belovich et al. 1982) has pointed out potential pitfalls in placing too much trust in such broadly comparative indices. Nonetheless the data do show that general processual explanations which purport to be applicable to all of the Southeast (e.g. Peebles and Kus 1977, Jennings 1968) are unlikely to apply accurately to even those portions of the Southeast adjacent to major central Gulf Coast river valleys. There does not, however, seem to exist any coastal survey of comparable environmental sampling scope, although both Willey (1949) and Tesar (1973, 1980) have wrestled with the problems. Nor are there any regional data comparable to Stowe's (1978, 1981) study of site locations in the Mobile Delta and Mobile Bay, although Gibson's (1979, 1982) Achafalaya Basin studies suggest similar patterns of cultural period and environmental exploitation exist to the west of the Mississippi River.

We can compare the broad outlines of prehistoric cultural change in these river valleys to the BWT project area, and to what we infer for areas along the Gulf Coast itself. Many of the detailed regional prehistoric comparisons have already been presented in our discussions of previous investigations (Weisman, Chapter II), and of the cultural chronology (Jenkins, Chapter V). Volumes II and III of this report by Lankford (1983) and Weaver (1983) contain the detailed ethnohistoric and historic comparisons for the postcontact periods.

The locations of Paleo-Indian and Archaic sites have been obscured through alluviation or erosion. The more constrained river valleys within the upper Tallahatta Hills physiographic zone, like the Andrews Lake portion of the Chattahoochee Valley, reveal the highest frequencies of Archaic sites in any of these regions. Projectile point morphologies suggest that relatively homogeneous and apparently synchronous stylistic trends cross cut all of these riverine and coastal areas. The virtual absence of appropriate projectile point types in the lower delta is a problem to which large samples, geomorphology, and studies of raw lithic material should provide answers.

Table 30. Selected Project Areas.

Period Designation	Approximate Duration (Years)	Areal Index BWT	Lower Alabama	Demopolis Lake	Lower Chattahoochee	Coosa River	Mean
Historic	200–250	5.1	3.7	10.0	4.2	5.2	5.64 ± 2.52
Protohistoric	150–350	2.5	0.6	0.8	5.6	5.2	2.92 ± 2.36
Mississippian	500	6.1	2.4	1.7	5.8	0.6	3.30 ± 2.50
Middle to Late Woodland	1000	3.1	5.7	4.2	2.0	2.0	3.39 ± 1.59
Late Archaic/ Gulf Formational/ Early Woodland	2000–2500	0.65	0.4	0.6	0.4	2.0	0.82 ± 0.68
Archaic-Paleo-Indian	8000	0.10	0.2	0.2	0.3	0.1	0.16 ± 0.06

(Data abstracted from this report, Waselkov (1980), Sheldon et al. (1980), Jenkins and Paglione (1980), White (1981), and Belovich et al. (1982).

During that vague transitional period termed Gulf Formational, or Early Woodland, the Fall Line appears to mark a major stylistic and possibly ethnic boundary between interior riverine and Coastal Plain (in the strict sense) cultures in all of these river valleys. Coarsely tempered check stamped, fabric marked, and/or cord marked ceramics appear after 500 B.C. in the interior zones. The probably earlier coastal ceramics continue to shift from fiber to sand as a tempering agent with plain and fancy decoration. It is possible that this pincer movement of ceramics reached areas such as the lower Alabama and Tombigbee Valley rather late. Little beyond ceramic styles are really well understood for this period but it is likely that regionalization of resource exploitation and possibly ceremonial group-to-group exchange occurred. Differences in site frequencies for the various river valleys may well be due to regionally different diagnostic criteria used for this period. The BWT project area throughout most of its length could well be considered as a coastal complex at this time, and probably represented a single seasonally exploited resource area.

The shifts in ceramic style, the increase in ceremonial activities, and the development of more regionally specific economies and long distance exchange systems that characterize the Middle Woodland period are more intense and may be earlier within the BWT project area than in many of the comparable river valley or coastal areas east of the Mississippi. Marked differences between coastal and lower river valley and middle and upper river valley regions intensify in the Mississippi, Tombigbee, and Chattahoochee-Appalachicola systems. These certainly reflect stylistically different social units, but whether different economic strategies are also represented is presently unknown. Within the BWT project area, as in the Coosa and Chattahoochee River Valleys, and to some extent in the lower Mississippi Valley, such boundaries appear to correspond to particular areas of local resources (see Walthall 1980).

The various post-Middle Woodland cultural complexes of the lower central southeastern river valleys are apparently either poorly known local extensions of Caldwell's (1958) Middle Eastern tradition, or, in the lower Mississippi and Chattahoochee Valleys, are considered as continuations with regional elaborations of the preceeding more or less coastal (Gulf) traditions. Within the upper and lower BWT project area, both situations are represented by Miller and McLeod, respectively. Like the lower Alabama River, however, the central physiographic zones of the BWT project area seem to display a confusing series of cultural complexes that represent changing integrations of these two major cultural traditions. Known primarily form ceramic analyses, the differences between Miller and our Tuckabum or our Tensaw Lake complexes may reflect different economic and settlement strategies as well as different levels of ceremonial intensity and possibly different levels of sociopolitical integration. The temporal, economic, and social interrelationships of Miller, Tuckabum, Tensaw Lake, and McLeod are basically unknown in any detail--a situation paralleled by the Late Woodland Henderson, Autauga, Whiteoak, and Claiborne complexes in the Alabama River Valley (Walthall 1980).

The transition from Late Woodland to Mississippian, or the replacement of the former by the latter, in this region of the Southeast has certainly generated more archaeological controversy than any other single topic. It seems possible to distinguish areas, such as the zone between the lower edge of the upper Mississippi and the upper portions of the lower Mississippi River Valley, the Black Warrior River Valley, the western and possibly also the eastern Tennessee River Valley, and the lower Chattahoochee-upper Apalachicola River Valley, in which relatively coeval early Mississippian archaeological complexes appear, to develop out of the local Late Woodland archaeological complexes. This may not be the case for other areas, such as the upper Tombigbee River, the Yazoo River, the Mississippi River Valley below Vicksburg, the Alabama River and its major tributaries, the BWT project area, or along much of the Gulf Coast. In these areas there is little in the ceramic assemblage, cultural ecology, or site morphology that is unambiguously early Mississippian. Rather, what could be considered late Mississippian in the previously described areas appears almost fully developed, often as a rather obvious disconformity with the locally precedent Late Woodland complexes. (The situation in any area is rather more complex than this paragraph would otherwise suggest).

To what degree the Mississippianization of the BWT project area represents gradual or rapid development, diffusion, colonization, invasion, or some combination thereof, is certainly an unanswered question. Nor would it be safe to assume that whatever tempos and combinations of sociopolitical, demographic, and economic factors which operated in the Mississippi or Alabama Rivers or along the Florida Gulf Coast were similar to those operative in the BWT project area despite some similarities in their prehistoric ceramic assemblages. To a large extent the detailed comparisons of Mississippian cultural history, to say nothing of cultural processes, must await the results of further investigations at some level beyond those obtainable from a reconnaissance survey.

CULTURAL SPECULATIONS

Our exposure to the small sample of this BWT project area offered a first hand awareness of some of its more interesting archaeological materials, sites, and problems. Although few of the insights gained can be quantified and some are based on inadequate data, we variously support the following speculative statements which we feel are key hypotheses to be addressed by future research in the BWT area:

(1) There are a number of significant Paleo-Indian and Archaic sites on the BWT riverine terraces. There is, however, little Paleo-Indian or Archaic occupation on the delta floodplain. It is too recent. Brose feels there are probably a few buried Archaic sites on the old Mobilian River high terraces. There is almost no Paleo-Indian or Archaic occupation in the delta uplands. Weisman feels there may be a real sampling problem within these upland areas but Brose does not. Possibly the reliance on Tallahatta quartzite, which is subject to deterioration, is responsible for the lack of diagnostic lithic material.

(2) The Gulf Formational stage throughout this BWT region is primarily represented by Bayou La Batre as the local expression, not Alexander. Upstream Bayou La Batre sites had a broad range of ceramics and were associated with what appears stylistically as a Late Archaic lithic assem-

blage, whereas the Mobile Delta, bay, and coast sites had few (or no) lithic materials. We suggest that this pattern represents a settlement and subsistence system of seasonal transhumance between a number of scattered upland and terrace hunting camps in the riverine region and a small number of more localized sites rich in estuarine resources.

(3) There is direct continuity between Bayou La Batre and Porter ceramic styles. The final stages of this transition occurred between 200 B.C. and A.D. 1. Bayou La Batre is responsible for whatever Marksville was derived from. As corollaries, Brose argues that: (A) There is no Deptford (in the strict Early Woodland sense) in the BWT project area. There is probably not any real Deptford anywhere on the Gulf Coast either. (B) Santa Rosa is simply an eastern extension of Porter with local paste: there is very little Santa Rosa of any kind in west Florida. (C) The Alligator Lake site report (Lazarus 1965b) is incorrect in many of its interpretations.

(4) McLeod, for Brose and Weisman, is neither Deptford nor early, but rather a post-Weeden Island Late Woodland phenomenon. McLeod Simple Stamped postdates the ninth century A.D. Indeed, the earlier McLeod Check Stamped is stylistically and temporally equivalent to late Wakulla and Ponchartrain Check Stamped, but the pastes differ. Jenkins suggests a more cautious and conservative position for the simple stamped predating the check stamped McLeod and has argued (Chapter V) that McLeod developed from Deptford complexes along the nearby Alabama River drainage around A.D. 500.

We all agree that the conclusion to be derived from the three previous propositions and their corollaries is that fiber tempered ceramics, which reach their western limit on this portion of the Gulf Coast, probably lasted until 1100 to 500 B.C., and were gradually replaced during the later portion of that period by Bayou La Batre ceramics. Fiber tempered ceramics may not have been much earlier than the beginning of this period in the BWT project area either.

(5) Within the BWT project area there is a concentration of what Sears (1962a, 1977) called "Miller" mound and village sites along the Tombigbee River within the Southern Red Hills physiographic zone, north of the mouth of Bashi Creek and well up that tributary. This plethora of multimound sites suggests that the region represents a cultural heartland for the Miller variant. Although Weisman suggests that many of these sites may be rather late, Jenkins would add that this zone is ecologically equivalent to the areas of Mississippi where Miller I and II sites are located. Thus the upriver boundary of Weeden Island or McLeod within the BWT project area is not fixed by direct limits on coastal adaptive strategies. Rather we submit that in the Middle Woodland and well into the Late Woodland, the border between the Porter-McLeod continuum and the Miller I-III continuum was a temporally dynamic social tension zone closely associated with the exploitation of the resources within the physiographic zones occupied by Porter, McLeod, or Weeden Island populations.

Between 100 B.C. and A.D. 450 the border between Miller I-II and Porter approximates the region along the Tombigbee River about 50 miles above those areas from which salt from saline springs can be easily obtained. The border between Miller II or Miller II-III and Weeden Island/ McLeod from about A.D. 500 to A.D. 800 closely approximates the zone within which easily worked outcrops of Tallahatta quartzite are found (Walthall 1975, 1980). After A.D. 800 or A.D. 850, we suggest the archaeological complex along the northern border of this zone is represented by what we call the Tuckabum ceramic complex, resulting from the near millenial interactions of Miller and Weeden Island groups, but with a rather distinctive lithic assemblage which, at least in projectile point morphology shows prototypes of typical Late Woodland styles as early as A.D. 700. Jenkins suggests that the border between Miller II and Porter during the Middle Woodland and the border between Tuckabum and McLeod during the Late Woodland was the same. It is likely that at least some of the Miller mounds in this region are to be associated with the subsequent Tuckabum complex.

(6) The Tuckabum and Late McLeod complexes in the lower riverine region, along with the Tensaw Lake complex in the upper delta region of the BWT project area represent a late (A.D. 800 to A.D. 1250) non-Mississippian occupation of the region between those Mississippian components in the Black Warrior and upper Alabama, and in the lower delta or bay or coastal barrier islands region. That is, rather than just a simple down-river movement of early Mississippian, whether as styles, traits, colonies, or invading hordes, there appears to have been a down-river movement of non-Mississippian complexes, whose ceramics appear in many ways similar to those pre-Mississippian populations of the upper Tombigbee and Alabama Rivers, into the BWT area.

With the possible exceptions of the mounds at Bryans Burn, near the interface of the Red Hills and Flatwoods physiographic zones, and the mound at Peaveys Landing near the interface of the Tallahatta Hills and the Rolling Piney Woods physiographic zone, there may be no early Mississippian major occupations of the lower Tombigbee River Valley between the Black Belt and the top of the Delta Meander zone. Rather, Brose and Weisman suggest a very late development of simple stamping and linear check stamping after A.D. 850 or A.D. 900, out of a ceramic complex which resembles the late Weeden Island complexes of the adjacent west Florida Panhandle. Jenkins sees this as an intrusion from Deptford phases on the Alabama River. We all agree that a late check and/or simple stamped McLeod complex remains in the riverine region south of the Tallahatta and Flatwoods zones during early Mississippian developments upstream.

There is not much early Mississippian within the project area delta region, with the probable exception of Bottle Creek. There may be little early Mississippian in the Mobile Bay and Coastal Island area at all. In the delta floodplain, the Tensaw Lake complex appears temporally equivalent to early Mississippian elsewhere. It overlies a late check stamped ceramic complex (e.g. Site 1Ba181), sometimes called McLeod but which is possibly western Wakulla, and it underlies the Pensacola components with some temporal overlap noted by Jenkins at Site 1Ba196. In the lower Mobile Bay area and along the coast, a similar late Wakulla assemblage is directly overlain by Pensacola components sometimes with a few associated late Fort Walton types.

The Bottle Creek site on Mound Island represents at least three distinct post-Woodland aboriginal components. An early Mississippian (A.D. 1100-1250) ceremonial, mortuary, and domestic center, probably occupied year round; a seasonally reoccupied Pensacola late (A.D. 1250-1600) Mississippian-protohistoric socially integrative ceremonial center; and an aboriginal historic (A.D. 1700) mortuary and ceremonial area used intermittently. The majority, if not all, of the mound construction relates to the early Mississippian. All three post-Woodland components, and also the Late Woodland component, may well be the same physical population.

(7) As a distinctive ceramic complex, Pensacola was defined by Holmes (1903) and so used by Willey (1949) based upon ceramics from Bear Point, collected by Sternberg (1876) and Moore (1901a). Bear Point is one of the latest aboriginal sites in the region and may not be a substructure platform mound, despite its name. In its origins, growth, temporal, spatial, and stylistic aspects, and probably ethnolinguistically as well, Pensacola is significantly different from Fort Walton, which is both early and late Mississippian in various areas farther east. The conceptual conflation of Pensacola and Fort Walton has too long caused confusion of various sorts. If we keep the two separate, we can agree with Sears (1977) that Penascola is a Moundville-derived Mississippian complex. We suggest that it developed its distinctive styles in the Mobile Delta and Mobile Bay region after A.D. 1250 from whatever complex centered at Bottle Creek. Brose further suggests that it spread back up the Tombigbee and Alabama Rivers only after A.D. 1400, and west to east along the gulf coast well after A.D. 1500. Neither Jenkins nor Weisman are so incautious. Jenkins suggests that Pensacola developed primarily as a result of site unit intrusion from the Moundville area into the Bottle Creek or upper Mobile Delta region and subsequently spread southward and westward. Its morphological distinctiveness from Moundville is a product of Pensacola interaction with Palaquemine groups to the west and Fort Walton groups to the east.

There may be no major late Mississippian sites (A.D. 1300-1500) in the riverine segment of the BWT project area between the Black Belt and the Delta Meander zone with the exception of the mounds at Peaveys Landing, about four miles north of St. Stephens Bluff. There may be no Mississippian of any sort north of the Mobile Delta and south of Demopolis during the early protohistoric period; certainly DeSoto could not find anyone in the weeks following his departure from Mauvila.

The late Mississippian and protohistoric occupations within the Mobile Delta area consist of a number of possibly seasonally relocated family farmsteads; estuary resource procurement campsites, and short term ceremonial population aggregations at sites such as the mound at Bottle Creek or, for mortuary rituals at sites such as Gin House Island or the cemetery at Pine Log Creek. Major portions of the year were spent outside of the project area. Models from the ethnohistoric records of Lankford (1983) or Knight and Adams (1981) are more applicable in this unique region than are models of Mississippian settlement systems from the nearby Black Warrior or the Florida Panhandle (Smith 1978).

(8) The various early historic ethnolinguistic groups such as Mobilian, Tomeh, Pensacola, and Naniaba, may all be represented by shared material styles with ceramically similar Pensacola derived assemblages. All of these groups were apparently geographic variants of Choctaw speaking populations. Their material culture may well show minor clinal differences in ceramic type frequencies or in microstyles. Moundville, Fort Walton, and at some point, the Alabama River phase as defined by Sheldon (1974), all lie outside of this tradition but all share some motifs and techniques in the period after A.D. 1300.

(9) By 1830 groups occupying the BWT project area may have been so thoroughly acculturated that no material recoverable in surface surveys will be capable of distinguishing between the various ethnolinguistic groups. Indeed at small sites the traditional Indian/non-Indian distinction may not even be identifiable. The mortuary patterns alone may have some value in this regard. In a similar fashion it may be extremely difficult to distinguish between nineteenth century Spanish, French, British, or American occupations without stringent chronological and geographic documentary controls. In the absence of archaeological data based on technique and styles of building construction, only massive collections of artifacts are likely to reveal evidence diagnostic of the origins of the site's occupants.

(10) There is a large number of special purpose seasonal campsites scattered throughout the uplands and tributary stream valleys within the Tallahatta Hills zone. Some of these represent quarry and knapping stations ranging from Paleo-Indian through Late Woodland. There are also salt collecting and processing sites at springs forming the upper tributary valleys, and along the lower tributary valley terraces of all saline streams within the Rolling Piney Woods physiographic zone. These sites may range in age from at least Archaic through the mid-nineteenth century. In several major tributary valleys collapsed rockshelter sites above the higher terraces may range from the Paleo-Indian through the Civil War period. All of these will be multicomponent sites, and many will yield regionally exotic ceramics from the Gulf Formational through the Mississippian periods.

Perhaps at this point, it would be well to end our speculative litany. There are, no doubt, other significant research hypotheses which we could derive from the BWT project area data with which we are familiar, but these should suffice to indicate the scientific potential of the project thus far. It should be apparent that in our opinion the prehistory of Alabama and of much of the lower Southeast cannot be accepted as written unless these speculative hypotheses have been tested and rejected as incorrect. If they are tested and verified, as we believe they will be, they will require substantial revisions in almost all previous syntheses of cultural history and process within the lower Tombigbee River Valley, the Mobile Delta, and in part, with the Mobile Bay and coastal zone (DeJarnette 1952; Griffin 1967; Willey 1966; Jennings 1968; Walthall 1979; 1981). To that end, we offer, at several levels, our professional recommendation for future archaeological investigations in any portion of the BWT project area and for the region as a whole.

RECOMMENDATIONS

Although this present study yielded insights into the culture history of the BWT project area, it has also certainly been concerned with the problems of environmental variability and sampling adequacy. It would be overly generous to suggest that it had always dealt with them successfully. The modifications of our initial model have indicated that there are several combinations of environmental attributes and attribute states that appear to distinguish areas of high archaeological sensitivity. It is our recommendation that these indications be statistically evaluated by methods more rigorous than those which we were able to employ in this reconnaissance survey. Rather our investigations thus far should be considered as a pilot study from which more effective methods may be developed.

Such effective methods would require a program of subsurface testing and a determination of potentially significant archaeological sites, in the National Register of Historic Places sense. Significance must be based on those research questions that can be addressed by the data recoverable within a given project area (Brose in White 1981:86-88,90).

Based upon review of archaeological sites encountered in both nearby river valleys, as well as upon geomorphologically similar fluvial systems it appears that such archaeologically significant recovery is represented by sites which average about 2000 m^2 (ca. 20,000 sq ft) with the smallest sites, about 20 m^2 (75 sq ft), similar to ethnoarchaeological demographic estimates of family extractive campsites (Yellen 1977). These should thus be considered minimally significant archaeological sites for future survey efforts (see also Brose in White 1981:90).

Thus we recommend that future investigations should be structured within less ambitious boundaries, or more money should be put into acquiring samples from such a vast 1,000 sq mi. region. We recommend that more detailed environmental mapping be performed for each major physiographic zone to better depict the soil, floral, and hydrographic characteristics of the topographic zones they contain. We also recommend that the physiographic ecotonal areas be investigated as part of these studies. When a series of component maps have been prepared it should be possible to identify the potential geomorphological and historical alterations that have occured within any one of them. Each such microenvironmental zone should then be categorized and prioritized lists of similar zones developed. Archaeological investigations should systematically inspect the entire area within an environmentally representative sample. From these results, a discriminant function analysis should be performed to determine which environmental attributes best predict the occurrence of archaeological sites. From those weighted attributes a second phase of environmental stratification should be developed and ranks assigned to each microzonal type. These can then be evaluated by a second phase of archaeological reconnaissance. Such a procedure should result in the location of most of the potentially significant archaeological sites, if they are observable under the survey conditions and with the field survey methods employed. This is, of course, a major qualification.

A major problem is the all too probable disjunction between the distribution of archaeological sites identified predominantly from surface reconnaissance and the potential distribution of archaeological sites which are buried. This problem can only be addressed through a program of subsurface archaeological investigation.

A subsurface testing program for the riverine region of the project area can be planned by identifying alluvial and colluvial-covered deposits. The deltaic portions of the project area have a very different geological history and thus must be also dealt with separately. All of these different zones must be investigated by somewhat different techniques.

Three types of investigations would have to be implemented within the riverine region of the BWT project area: systematic surface collection, a combination of systematic surface collection and subsurface testing, and deep stratigraphic testing.

To confirm the distribution of archaeological sites in the riverine area, it will be necessary to investigate the possibility of old archaeological sites which lay below those depths where agricultural disturbance might have brought cultural remains to the surface, or which lay at depths greater than could be investigated through a program of hand excavation. Therefore, where geomorphological or soil studies indicate the possibility of intact and buried river terraces of an appropriate age to have served for prehistoric site locations, a systematic program of deep stratigraphic evaluative investigations should be implemented to discover whether potentially significant cultural remains exist. Backhoe trenches should be excavated until pre-Citronelle (Holocene) alluvial bedded sands or gravels are encountered. All profiles should be examined for evidence of culturally altered paleosols (Chapman 1977, Collins 1979, Bense 1979, Muto and Gunn n.d.) and for archaeological artifacts, remains, features, or strata.

Similar subsurface efforts, described below, should be implemented in the Mobile Delta. There, however, the depositional and exposure problems mandate a somwhat different approach.

The geomorphological history of the Mobile Delta is poorly known but recent information covering the westernmost counties in Florida (Marsh 1966, Morgan n.d.) may be applicable to the Mobile Delta.

The relationships of the Pleistocene marine terraces and Critonelle formation to underlying, older sedimentary units are shown by Marsh (1966) and Morgan (n.d.). The Citronelle formation outcrops as a river bluff exposure near Citronelle in northern Mobile County and extends across the lower part of the project area for an undetermined distance.

Marsh (1966) has constructed several north to south topographic profiles which show remnants of three Pleistocene surfaces. The oldest and highest of these, the Upland Surface, is correlated with the Citronelle and perhaps the upper Pleistocene terraces. A topographic scarp at 70 to 80 ft AMSL is considered to be the shoreline cut by the Penholoway Sea.

The profiles used by Marsh (1966) and Morgan (n.d.) to delineate terraces and shorelines in the western Florida Panhandle counties were constructed using 15-minute topographic quadrangle sheets made during the early 1940s at the scale of 1:62,500. Modern (1968-1971), 7.5 minute topographic sheets at a scale of 1:24,000 should make possible the construction of detailed profiles which may result in more precise delineation of the marine terraces and their seaward scarps or shoreline limits. A series of such north to south profiles across the width of Mobile Delta within the project area would refine existing knowledge of the distribution of these several marine terraces and also reveal their shoreline limits.

Some portion of those marine terrace edges in the delta region of the BWT project area are almost certainly remnants of the 25 ft AMSL Pleistocene barrier Island trend which Marsh (1966) called the Fairpoint Penninsula, assigned to the Penholoway Terrace stage, although the exact age of these formations are uncertain (Morgan n.d.).

The distribution of inferred archaeological sites in the delta region suggests that all Archaic sites were located near now buried shorelines. Thus, it is important to evaluate shoreline changes resulting from eustatic sea level changes of the past 15,000 years with special emphasis on the latter half of this time which overlaps the advent of man in the area.

The marine terraces mapped by Marsh (1966) and Morgan (n.d.) in Escambia and Santa Rosa Counties in Florida can be traced westward into Baldwin and Mobile Counties in Alabama. The distribution and extent of these terraces and their wave-cut escarpments should be worked out in detail for the BWT project area.

As a corollary to these recommended geomorphological studies, aimed at locating and investigating the earliest Paleo-Indian through Middle Archaic occupations of the area, we recommend a serious revision of the current criteria by which the lithic assemblages have been used to construct phases, stages, complexes, and periodization within the nearly 10,000 years represented.

Beyond general lithic comparisons it would be useful to deal with the actual variations within the lithic types or type clusters described in this general area as well as to perform functional analyses to characterize the temporal and regional variability of different tool types. We will be unable to discuss the nature of nonceramic archaeological sites, and hard pressed to justify much discussion of any site, until we have performed those analyses of debitage and use-wear essential to understanding variation in raw material procurement, and subsequent patterns in the thermal treatment and sequences of industrial technology.

Only after such analyses have been performed for sites within the BWT region, and the results compared with analyses for adjacent regions will it be possible to understand site functions and settlement changes or prehistoric exchange systems through time.

In much the same way, our understanding of the processes of cultural change within the BWT project area is tainted by the confusion of stylistic, temporal, and spatial variability inherent in our ceramic analyses. This should certainly come as no news to those archaeologists who have already wrestled with the aboriginal ceramics of this region. Unfortunately, the problem has always been easier to identify than has the solution. Our minimal recommendation at this point must be for all future studies to provide adequate time and support for the detailed inspection of relevant ceramic collections from other sites to obtain representative ceramic samples from any site investigated.

A number of different Civil War archaeological sites exist within the project area (Stowe 1981, Stowe 1977, Curren 1980). The triple ring of defense built around Mobile has largely been destroyed by urbanization of the area. Portions of this defensive network remain intact, but none have been archaeologically tested. Other Civil War period sites, the salt works in Clarke County, a shipyard at Oven Bluff, a battery known as Fort Sidney Johnson also located at Oven Bluff, and a battery known as Fort Gullet located on Carneys Bluff are located within the project area. These may have archaeological potential and should be evaluated.

In April 1887 Geronimo and his band of Chiricahua Apache Indians, prisoners of the United States Government were transferred to the Mt. Vernon Arsenal. Geronimo was later imprisoned at Fort Boyer, but his 300 followers established a camp outside the arsenal where they remained for the next seven years. During this period, the Apache were given free reign of the countryside during the daytime. The site of the Apache camps has not been identified but should be specifically sought. Its remains should prove to be archaeologically interesting.

Finally, a series of United States Army Corps of Engineers locks and dams opened 387 miles of the Black Warrior-Tombigbee river system to year round navigation. Portions of Old Locks 1, 2, and 3 are preserved in public use areas within the BWT project area. These sites have not been archaeologically evaluated. In addition a shoreline survey of Coffeeville Lake should be implemented.

Beyond these recommendations, we feel that a number of specific methodological studies might be undertaken for the location and evaluation of cultural resources within portions of the BWT project area. For example, undisturbed shell middens in the Delta Marsh are likely to contain well preserved floral and faunal remains which may provide valuable clues to the solution of larger questions regarding seasonal economic behavior, settlement patterns, and diet.

In our initial proposal we had suggested, as one avenue for modeling site locations, that we explore the use of EROS Remote Imagry in several band widths, which was not in fact feasible, as well as the use of black and white and false color infrared aerial photography. Although those infrared explorations were proposed in addition to geochemical and floral studies, it was well understood that the data sets were not independent. Some of the cultural anomalies visible in the infrared aerial photographs, whether black and white or false color, were likely due to cultural disturbance, but most of these were probably not. Considerable difference in infrared reflection, refraction, and absorption seen on open ground is the result of scalar or vector differences in sedimentary environment, whether or not such sediments are consolidated (Anonymous 1968, Brose 1965, Brose et al. 1981, Cannon and Miller 1974, Colwell 1968, Lyons and Avery 1977).

But by far the greatest source of anomalous infrared aerial imagry in this region has been attributed to the differential infrared absorbtion and reflection of vegetation (Anonymous 1968, Andreucci 1964, Cook 1972, Digiovanni 1980, Gates and Tantradorn 1952, Lyons and Hitchcock 1977, Stranberg 1967). Unfortunately, these studies demonstrate that the causes of such floral infrared differences may be due to species differences, or to edaphic differences within relatively homogeneous communities, or to microenvironmental geochemical or pedological differences between plants within a single edaphic community (Connor and Shacklette 1975, Hodgson et al. 1971), or to biological vectors within a single microenvironment (Heller et al. 1966), or to the interactions of such variables which may become over time either orthogonal or synergistic. There can be little question that in many cases archaeological sites can be discovered through aerial infrared floral anomalies, but such investigations appear to be most reliable where the vegetation is relatively homogeneous or where the potential prehistoric and/or historic cultural alterations have been less complex or of shorter duration than are those of the Tombigbee River Valley and Delta Meander zone of the BWT project area (Brose et al. 1981). Such conditions appear to be met in the Delta Swamp, and Delta Marsh zones (Lamb, Appendix B; Lelong, Appendix C). Black and white aerial photographs were found to be useful for identifying shell middens frequently associated with historic ditched fields. Color infrared aerial photographs (transparencies) were investigated and found to be very useful in identifying the shell midden sites.

The slightly higher and better drained areas of shell midden accumulation have created a microhabitats which permit the growth of woody vegetation, absent elsewhere in the marsh. This vegetation has a distinctive signature on the color infrared photographs. The woody vegetation concentrated on the middens makes them appear in the photographs as island hot spots among the cooler oceans of (siteless?) grass.

The distinctive infrared signature exhibited by many of the previously known shell middens was used by the BWT archaeological reconnaissance to prospect for previously unknown sites. Where this prospecting method was attempted, previously unrecorded shell midden sites (1Mo220, 1Ba399) were found corresponding with the vegetation pattern which had been identified by its signature on the infrared aerial photographs. It is likely that other previously undiscovered shell midden sites located within the Delta Marsh may be identified in this manner. The location and areal extent of previously recorded sites may also be confirmed and it is our recommendation that such investigations be implemented prior to any development in these portions of the Mobile Delta.

One final project-specific recommendation concerns the development of logically appropriate and logistically feasible archaeological research questions which can be of assistance in the evaluation of potential site significance. We have already discussed the need for such efforts in this area. In our modified model of site locations and in our brief regional comparisons, and surely in the speculative cultural history portions of this part of our report, we believe we offer a range of research questions phrased as highly controversial, and possibly correct, hypotheses. Many of these general hypotheses are capable of analytical reduction into a number of limited archaeological data recovery expectations. Once we determine our "boundary conditions" (Nagel 1961, Popper 1966) i.e., to what degree we are willing to accept apparently wrong results as a function of the stochastic, (noncausal) nature of much social phenomena (Blalock 1971, Brown 1963), it should be possible to determine whether our conjectures as to the past 10,000 years of cultural change and continuity can be refuted by the recovered data from any archaeological site in any portion of the BWT project area.

SOME UNRESOLVED QUESTIONS

In our conclusions we have identified by our failure to agree a series of general questions and issues relating to future archaeological and historical research. Frequently such issues represent either gaps in the present data base or gaps in our methods and theories. Several examples of these are listed below:

1. What is the detailed geomorphological chronology of the delta portions of the project area?

2. What types of archaeological sites exist in the ecotone areas between project sample areas?

3. What is the fluvial history of meanders, terraces, oxbows, bays, basins, and deltaic distributary channels?

4. What is the expected life history of a tool made from Tallahatta quartzite? What kinds of use-wear will it exhibit?

5. How do fiber tempered ceramics of the coast and bay differ from those of the Tennessee Valley?

6. When do fiber tempered ceramics first appear in the BWT study area?

7. What is the sequence of Middle Archaic to Late Archaic to Gulf Formational projectile point styles in the various BWT areas?

8. When does the Bayou La Batre ceramic style begin in the Mobile Bay, delta, and lower riverine physiographic zones?

9. When does Alexander pottery first appear below Demopolis?

10. What are the social and functional relationships between Bayou La Batre and Alexander sites?

11. Is all McLeod as late as Brose and Weisman think, or is some McLeod as early as Jenkins thinks?

12. Are any ceremonial burials or earthworks or exotic exchange items associated with BWT Gulf Formational sites?

13. How late is late Alexander? How does it relate to earlier Orange Incised and later Weeden Island Incised when there seems to be an intervening 500 year gap?

14. How does Porter relate to Santa Rosa, if they are in fact different?

15. When does the Tuckabum complex begin and end? How many, if any, of the Miller mound groups are actually Tuckabum complex sites?

16. What is inside of all those Miller mounds?

17. Where does the Tensaw Lake complex come from? When? Where does it go? When? What is it doing while it is in the Mobile Delta area? Do the Tensaw Lake sites represent seasonal occupations? Which season(s)?

18. Is there a BWT equivalent of the West Jefferson phase?

19. When do the ceramics which look like Moundville I/II actually appear in the BWT area? Is Bottle Creek intimately related to Moundville? When?

20. When does Pensacola appear in the Mobile Delta? Do the sites represent seasonal occupations? Which season(s)? Is Bottle Creek Pensacola? When?

21. Where is the village of Nanipacna which was visited by DeLuna? Did the people buried at Pine Log Creek once live at that village?

22. Which specific ceramic types, or varieties, or which different frequencies of similar ceramic types, or varieties, can be tightly associated with ethnohistorically documented villages occupied by Tomeh, Mobilians, Naniaba, Taensa, Tawasa, or Apalachee in our project area?

23. How does the grog tempered plain and cord marked ceramic complex found in the Delta Marsh zone and at a few sites in the western uplands relate to Miller III?

24. Were the Naniabas and/or their predecesors the makers of Washington projectile points?

25. In light of the artifacts recovered from Site 1Wn69, to what extent were local Gulf Formational populations involved in Poverty Point exchange systems?

Naturally enough, the data needed to answer these research questions can come only from well planned and more extensive survey, evaluative testing, and larger scale site excavations than this reconnaissance could have undertaken. To the extent that any area or site within the BWT is likely to yield the data which addresses these issues it should be considered potentially eligible for the National Register of Historic Places. They will be those cultural resources which best display significant value in understanding much that is presently unknown about the prehistory and history of the entire BWT study area.

We therefore conclude our recommendations with the oft-reiterated need for further archaeological investigations within what, from our perspective, is best thought of as the lower Tombigbee, Mobile Delta, Mobile Bay, and Barrier Island project area. Our investigations thus far have been stimulating, at least to us. We trust, we have demonstrated the role which this region played throughout the prehistory of the Southeast.

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APPENDIX A

AREA SAMPLING

Victoria L. Rivizzigno

INTRODUCTION

The purpose of this chapter is to briefly review area sampling with an aim toward establishing guidelines for the BWT project. The sheer size of a particular study area as well as the constraints of time, money, and amount of effort needed has made it necessary to examine a portion of a study area rather than the entire area. The results of the analysis would then be construed to be the results as if the entire study area was examined. This procedure is known as sampling.

TERMINOLOGY

A brief overview of some sampling terminology is needed before pursuing a general discussion of area sampling. The total area being studied is referred to as the target area. A sample is a subset or portion of the target area. Sampling units are the units of observation which make up the sample. The process of choosing the sampling units is called sampling. Because inferences are being made about the total area, the sample chosen must be representative of the target area. If the sample is not representative of the target area the inferences made will be filled with error and thus will be misleading.

Before choosing the sample it is necessary to evaluate, (1) the needs of the research project, (2) the availability of money, personnel, and time needed to collect the sample, and (3) the extent of information known about the target area. This information will help the researcher determine what type of spatial sampling should be used, as well as the type of spatial sampling units, the sample size, and the type of spatial sampling design. Once this groundwork is laid the researcher then has to decide what measurements should be collected as well as what type of statistical analyses should be performed. All of the above decisions must be made with the problem statement and the research hypotheses in mind (Nachmias and Nachmias 1976).

TYPES OF SPATIAL SAMPLING

Lounsbury and Aldrich (1979) have identified four types of spatial sampling which are differentiated according to intensity of the sample. The first type is called exploratory spatial sampling which should be used in studying regions where little information concerning a particular phenomenon or phenomena exists. This type of spatial sampling would be used to identify proper classification schemes, mapping keys, and undocumented data.

Reconnaissance spatial sampling, which is similar to exploratory spatial sampling, is carried out in a region or area where more data and documentation exists. This type of spatial sampling, which can be carried out in a more systematic manner than an exploratory spatial sample, covers a maximum area at a minimum cost with a maximum data return.

Extensive spatial sampling differs from reconnaissance which would allow a more comprehensive research design to be developed. Generally there is less generalization and abstration of data in extensive spatial sampling and the minimum areal units that are studied are smaller than those used in reconnaissance samples.

Intensive spatial sampling differs from extensive spatial sampling in that it focuses upon localized phenomena rather than regional phenomena. Intensive spatial samples also have a larger percentage of representation than does extensive spatial sampling. What particular spatial sampling type a researcher uses will depend upon what is known about the area to be studied, and the amount of time, money, and personnel that are available.

TYPES OF SPATIAL SAMPLING UNITS

Once a particular type of spatial sampling is chosen it is necessary to consider what type of spatial sampling unit is to be used. The first type is called the point sampling unit. Points at specific geographic locations are chosen for examination. These points are one-dimensional and will not vary in size with scale of presentation. Although aerial photographs or topographic sheets can be used to easily identify points for examination, some of the chosen points may prove to be difficult to find given dense vegetation or rugged terrain and thus some locational error may result.

Area sampling units or quadrat samples, the second type of sampling unit, and can be fixed or variable. Fixed area sampling units remain constant and their shapes are uniform. Variable area sampling units may vary in size and/or shape. If fixed area units are used, shape, size, orientation, degree of symmetry, and plot density must be considered.

The last type of spatial sampling unit to be discussed is the linear plot which consists of one or two dimensional transects extending from one point to another point. This spatial sampling unit is widely used because it is simple, fast, and may be used along roads, thus making it convenient to use. Once a line or transect is chosen, points or areas along the line may be examined, thus the linear plot can combine some of the features of the two previous spatial sampling units.

SAMPLE SIZE

The number of sampling units which need to be collected is determined by the sample size which, along with the sample design, helps to establish the representativeness of the sample. How large or how small a sample size will be depends upon the amount of variance or heterogeneity within the target area, the level of accuracy the researcher wishes to achieve, and what level of confidence the researcher wishes to use. The greater the degree of variance and the higher the level of accuracy and confidence, the larger the sample size.

There are instances, however, when the degree of variance is unknown and a plausible sample size will be extremely difficult to ascertain. In this instance a researcher could rely upon her or his previous research experience with similar target areas as well as upon the amount of time, money, and personnel available to calculate the sample size.

Sample sizes for exploratory and reconnaissance samples are generally determined in the aforementioned manner, and while the results can not be construed to be representative of the target area, the results can establish variances which can be used to determine sample sizes for future extensive or intensive samples (see Blalock 1960; Cochran 1963; and Mendenhall et al. 1971 for discussions concerning sample size formulae).

SPATIAL SAMPLING DESIGNS

Spatial sampling designs focus upon how the sampling units, i.e., points, areas, or lines, are to be placed within the study area. While there are a number of different spatial sampling designs, this paper will focus upon the three most commonly used spatial designs (see Sudman 1976, Taylor 1977, and Stoddard 1982 for a description of other spatial designs).

The random spatial design refers to the random selection of points, areas, or lines within the study area. These random selections can be done using a random number table or by using a computer program specifically designed to randomize with equal probability that the points, area, or lines will be chosen. In each case, all possible point coordinates, areas, or lines need to be known and identified. Figures 1, 2, and 3 illustrate randomly selected spatial designs for points, areas, and lines.

The systematic spatial design refers to selecting the points, areas, or lines in a systematic ordering. Once possible point coordinates, areas or lines are identified, the individual units to be examined can be chosen by using a uniform criterion such as choosing every third area or every fourth line. Figures 4, 5, and 6 illustrate the systematic choice of points, areas, and lines. The uniform criterion chosen depends upon the sample size and availability of money and time.

The third design that all three spatial sampling units have in common is the stratified design which divides the study area into different strata based upon the phenomena or phenomenon present. This subdivision or stratification of the study area is done to account for differences

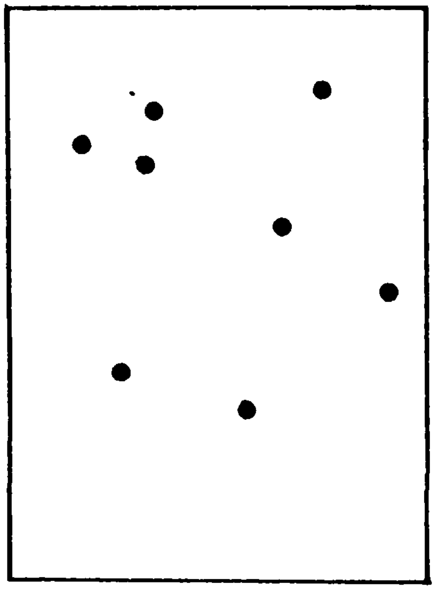

Figure 1. Random Points

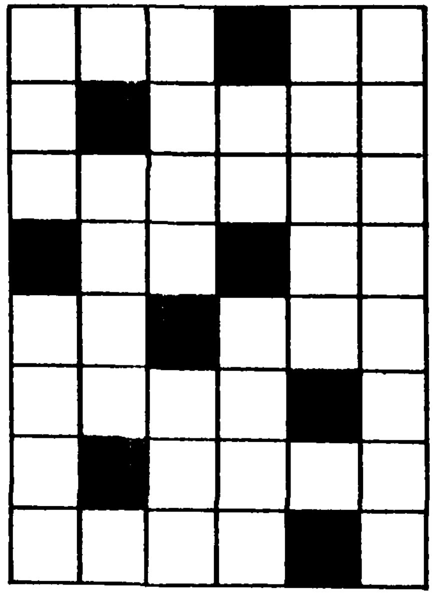

Figure 2. Random Areas.

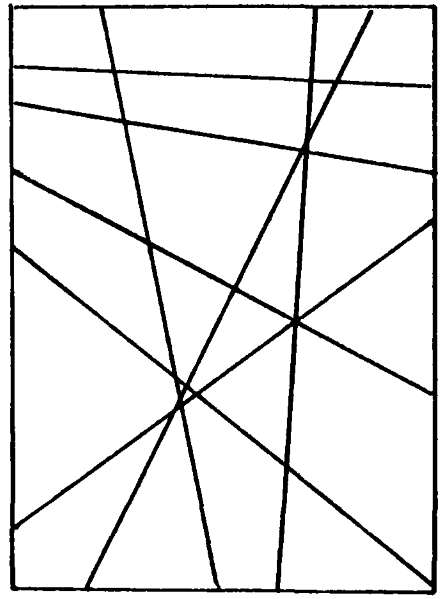

Figure 3. Random Lines.

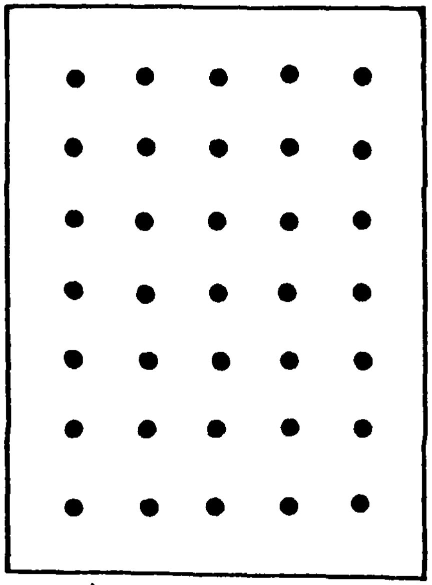

Figure 4. Systematic Points.

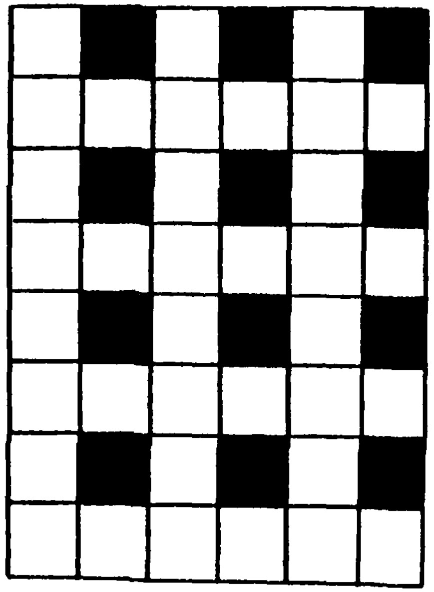

Figure 5. Systematic Areas.

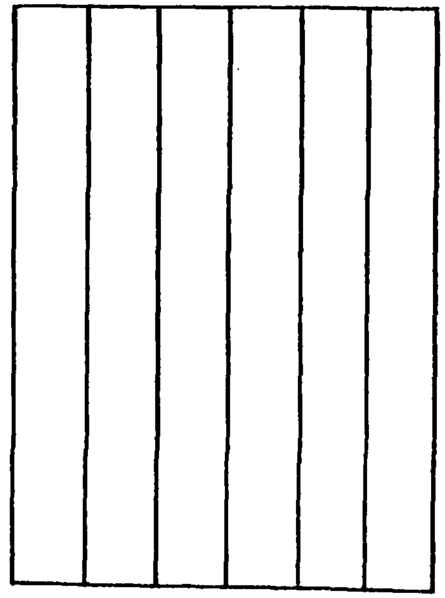

Figure 6. Systematic Lines.

which may influence the outcome of the analysis. Figures 7, 8, and 9 illustrate stratified sampling designs for points, areas, and lines for a study area which had been stratified into three parts. These three parts could, for example, refer to three different soil types. Once stratification is made the points, areas, or lines could be randomly or systematically chosen.

TYPES OF MEASUREMENT

Measurement is a procedure by which a researcher assigns numerals to properties, events, or objects according to a set of rules. The result of this process of measurement is more commonly known as data. It is important to understand the various types of measurement for they have properties which restrict the type of statistical analysis which can be used to analyze the data. Table 1, which was adapted from Siegel (1956) and Miller (1977), summarizes the four different types or levels of measurement, their properties, and examples of appropriate statistical tests.

Nominal measurement, which is the weakest level of measurement, uses numbers or other symbols to classify properties, events, or objects. These numbers or symbols cannot be ordered, added, subtracted, divided, or multiplied because they have no meaning. If a researcher was examining a site, the soil type could be noted and the equivalent number from a previously established list could be given to that site. Hence, if the site had sandy loam soil, that site would be assigned the number one. All sites that are assigned the number one under the soil property have sandy loam soil. This is known as equivalency.

Ordinal measurement, which is one step above the nominal measurement, categorizes properties, events or objects by using a scale to indicate rank order and nothing more. Thus, if one site was given the number two for a particular property or event and another site was given a three for the same property or event, than the property or event of the former site ranked before the property or the event of the latter site. For example, one site could have been the site of a middle class house and was assigned the number two, the second site could have been the site of an upper class home and was assigned the number three. Assigning numbers in order of rank is portraying the property of monotonicity where the numbers used are assumed to be in increasing order.

Interval measurements have all the characteristics of ordinal measurements with the added information as to the distance between any two numbers of the scale being assigned to the objects. These numbers can be added and subtracted. For example, 10° C is five units greater than 5° C.

Finally, ratio scale measurements are the highest form of measurement and have, in addition to all of the properties of interval measurements, a true zero point as its origin. A site with 10 sherds has twice as many as a site with only 5 sherds. This type of measurement can be added, subtracted, multiplied, and divided.

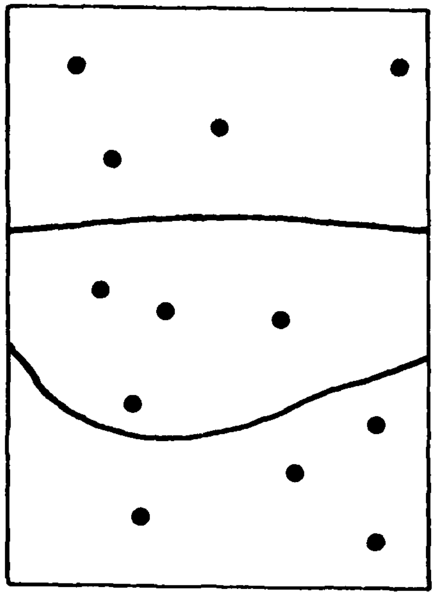

Figure 7. Stratified Points.

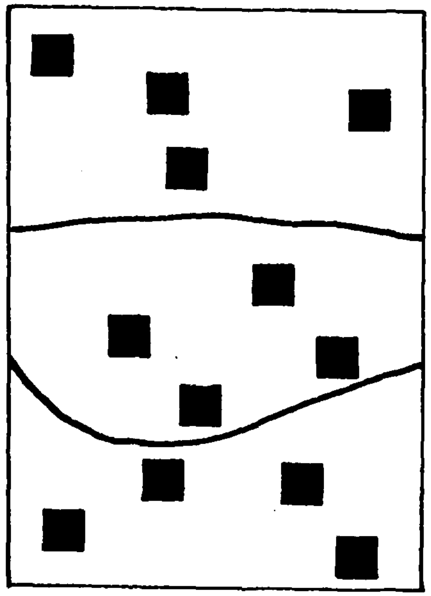

Figure 8. Stratified Areas.

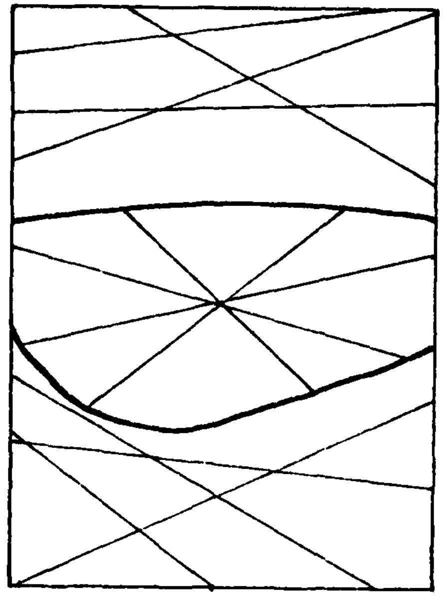

Figure 9. Stratifed Lines.

Table 1. Four Levels of Measurement and Some Statistics Appropriate to Each Level*

Scale	Defining Relations	Examples of Appropriate Statistics	Appropriate Statistical Tests
Nominal	Equivalence	Mode Frequency (histograms) Contengency coefficient Chi-square	Nonparametric
Ordinal	Equivalence Monotonicity	Median Percentile Rank correlation (Kendalls or Spearmans) Kolmogorov-Smirnov Kruskal-Wallis one-way ANOVA	Nonparametric
Interval	Equivalence Monotonicity Known ratio of any two intervals	Mean Standard deviation Product moment correlation Probability measures	Nonparametric and parametric
Ratio	Equivalence Monotonicity Known ratio of any two intervals Known ratio of any scale values	Geometric means Coefficient of variation	Nonparametric and parametric

*Adapted from Miller (1977) and Siegel (1956).

APPROPRIATE STATISTICAL ANALYSES

Appropriate statistical analyses for the four different types of measurement must consider the properties of each type of measurement (Siegal 1956, Blalock 1960, Cochran 1963, Silk 1979). Referring to Table 1, nominal data can be analyzed using nonparametric statistics such as the chi-square and the contingency coefficient. How often a particular category occurs can be ascertained by doing a frequency distribution which can then be pictorally displayed in a frequency diagram.

Ordinal measurement, given its added property of monotonicity, can use other nonparametric statistics such as Kendall's rank correlation coefficient or the median. Interval measurement with its known ratio of any two intervals can use both nonparametric and parametric statistics. The parametric measures of the mean and the standard deviation can be calculated. The final type of measurement is the ratio measurement and given that there is a known ratio of two scale values, all previous statistical analyses mentioned can be used as well as the geometric mean and the coefficient of variation.

The researcher must be aware of what type of measurement she or he requires before applying a statistical technique to the data. Using an inappropriate statistical technique will invalidate the data analysis, and thus any inferences made would be meaningless. The success of a research project depends upon the coordination of each successive step in the scientific process. The preceding discussion focused upon the interrelatedness between sampling, measurement, and statistical techniques. Proper sampling procedures will help to ensure that the information or measurements collected will be as representative of the target area as possible.

RECOMMENDATIONS FOR THE BWT PROJECT

Given the size of the study area and the amount of information available, it was recommended that a reconnaissance sample be taken. Information from this preliminary sample could then form the basis for determining new or reaffirming (1) research hypotheses, (2) levels of measurement types, (3) sampling procedures, and (4) the statistical techniques.

The type of sampling units should relate to the concept of the archaeological site and therefore area units or quadrats should be used. These areas, however, should be chosen along a east-west transect to account for any variation across the river segment. The spatial sampling design suggested was the stratified design to account for the variety of environmetal regions that run from north to south within the river segment.

The sample size was difficult to determine because of the lack of information and it was suggested that the number of areas to be examined be determined by how many areas are feasible to examine given one day in the field times the number of days and the number of field workers.

The types of measurements should be as high a level as possible but given the level of knowledge about the area more nominal and ordinal data probably had to be collected. It was strongly recommended that a stan-

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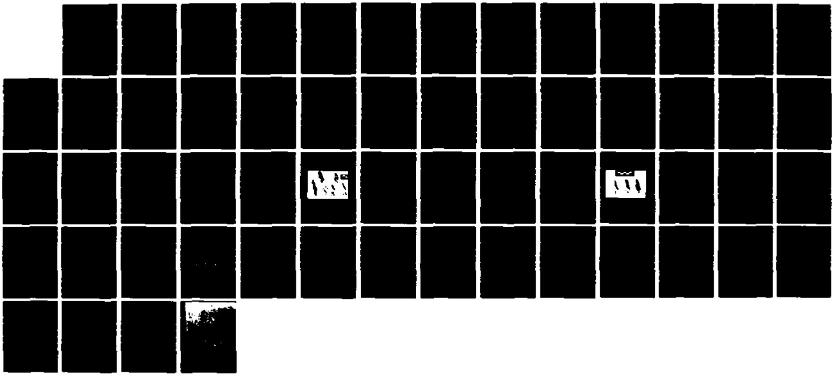

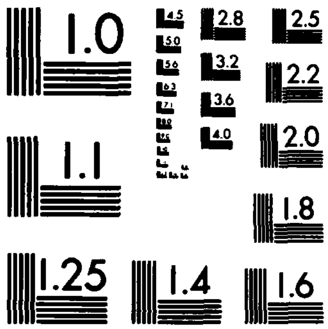

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dardized form be used to record the data. This would ensure that the data collected would be fairly consistent between the sites and that the coding of the data would be made much easier and subject to less error.

Finally the statistical techniques used must conform to the data that had been collected. If nominal and ordinal data were collected then nonparametric statistics, such as frequencies and the contingency coefficient, should be used. Put into perspective, this project was a preliminary study which was to produce information that would facilitate any future, more intensive, study of the target area.

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APPENDIX B

THE GEOLOGY AND GEOMORPHOLOGY ALONG THE TOMBIGBEE-MOBILE RIVER VALLEY

by George Lamb

INTRODUCTION

The outcrop of the sedimentary layers which make up the Eastern Gulf Coastal Plain in Alabama forms a broad arc which is convex toward the southwest. In western Alabama, the outcrop pattern, or strike, of these beds is generally northwest to southeast. Farther north, the strike becomes more nearly north to south, and farther south, the strike begins to approach an east to west direction.

Northwest of Demopolis, the Tombigbee River Valley follows the strike of the relatively easily eroded Selma Chalk for some distance. Immediately south of Demopolis, however, the river turns in a more southerly direction and begins to cut through, or across, the successively younger formations of the Coastal Plain. The character of the various layers that are transected by the river valley determines the landforms bordering the valley, as well as having a distinct influence on the valley itself. Since the sedimentary layers involved are diverse in character, the landforms along the river are equally different from place to place.

Near the confluence of the Tombigbee and Alabama Rivers, the river valley changes character. The valley has been cut through essentially flat-lying sands and clays of Miocene, and younger, age. The stream has built up a wide, deltaic floodplain and the river itself is braided, splitting into a number of irregular, anastomosing channels. These deltaic deposits have filled in the ancient river valley, and continue to fill the upper portion of Mobile Bay at the mouths of the several channels (Figure 1).

DEMOPOLIS TO THE MOBILE DELTA

The Demopolis Lock and Dam is near Mile 216 on the Tombigbee River, and its foundations are in the Demopolis Chalk. This formation is about 500 ft thick at this locality and is made up of light-gray silty, micaceous, fossiliferous chalk which weathers almost white on the outcrops. The chalk is relatively easily eroded and the river has cut a broad floodplain in this area. The floodplain is covered with alluvium. These deposits are very thin, as can be seen in the Cretaceous formations outcropping along the river banks.

Profile I (Figure 2) shows the relation of the floodplain to the

Generalized Map of the Physiographic Regions and Geologic Formations in Southwestern Alabama

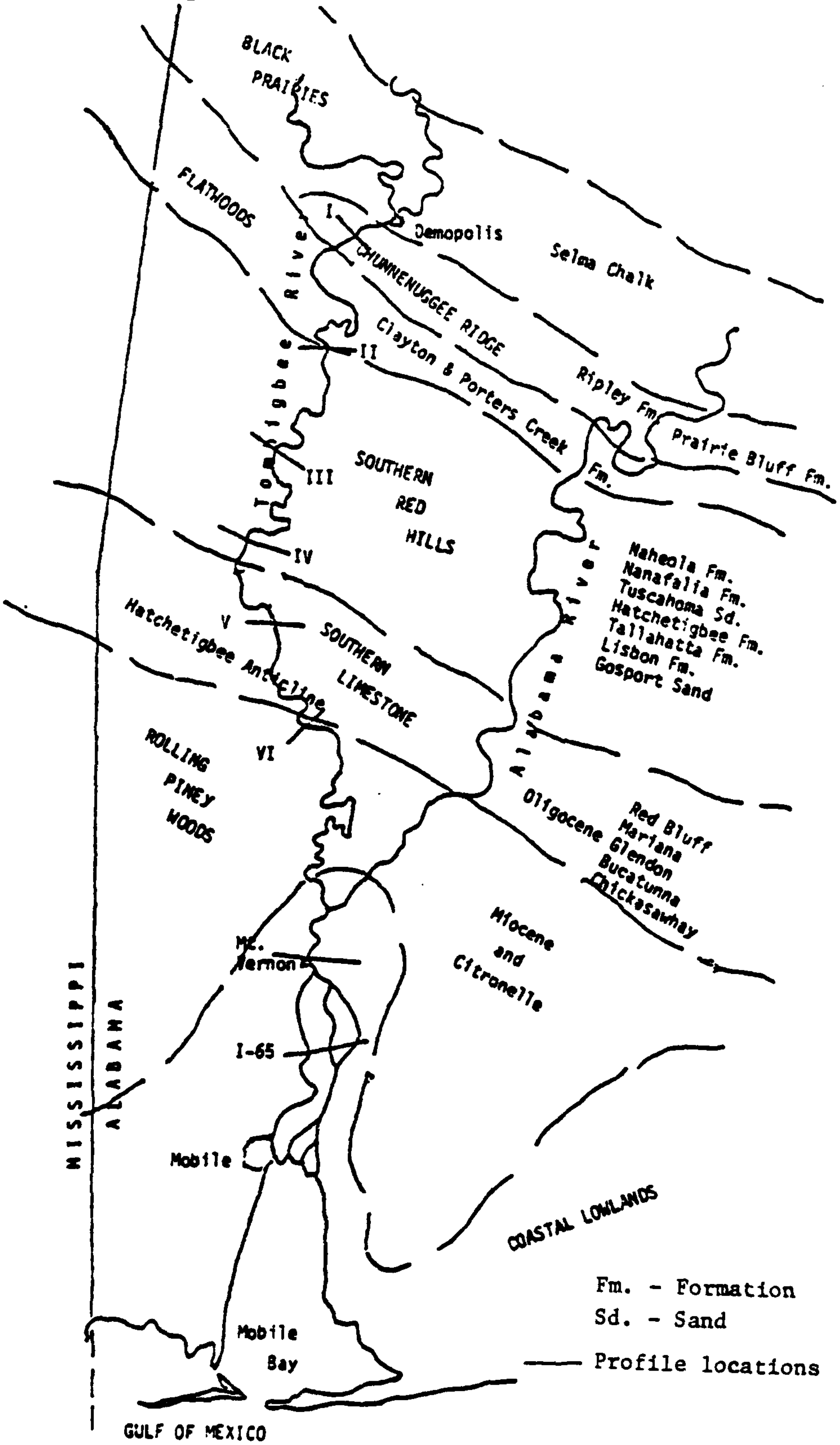


Figure 1.

PROFILE I
Sumter and Marengo Counties
at Mile 212

Approximately 4.5 mi below
Demopolis Lock and Dam

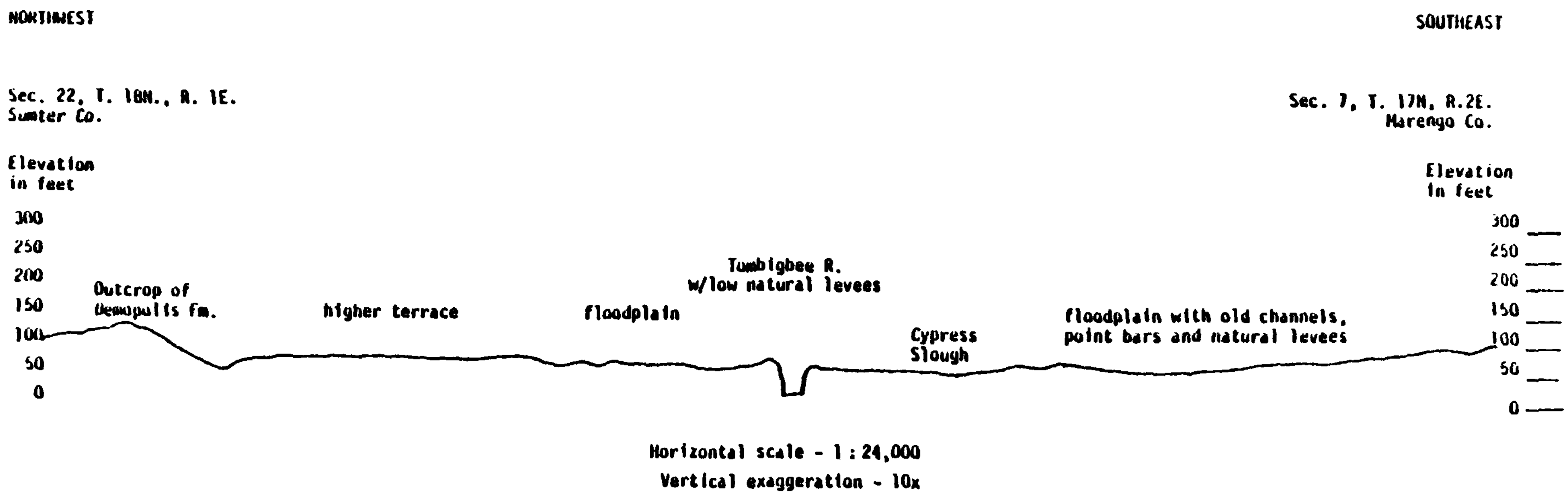


Figure 2.

valley walls approximately 4.5 mi below the Demopolis Lock and Dam. This profile is near the contact of the Demopolis Chalk with the overlying Ripley Formation. The strike of the beds through this area is approximately N 45° W, and there are many relatively small faults essentially parallel to the strike, bringing the Demopolis Chalk up into the Ripley throughhout the area of the Ripley outcrop. The Ripley itself is almost 200 ft thick where the complete section is exposed and is made up of light-gray, calcareous, clayey sand with some interbeds of dark-gray, calcareous, sandy clay and light-gray chalk.

On the northwest side of the river, the floodplain widens from two to almost five miles and the hills developed beyond the floodplain in the Ripley Formation have some 200 ft of relief. The relief in the hills on the southeastern side of the river, beyond a floodplain extending 1.5 mi to 3 mi from the river, is only about 100 ft.

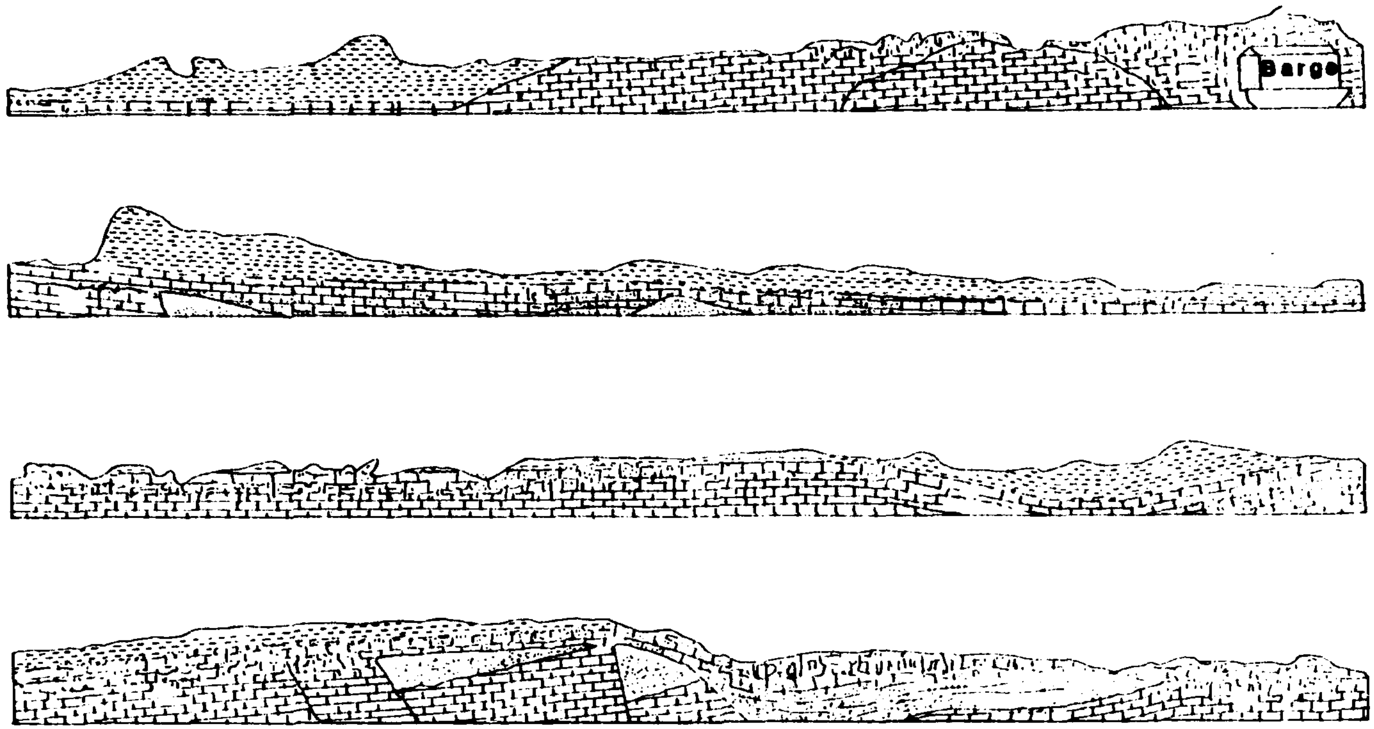
As the river swings to the west it cuts into the Prairie Bluff Chalk, which overlies the Ripley Formation, and into the Clayton and Porters Creek Formations, which, in turn, overlie the Prairie Bluff. The Prairie Bluff is made up of about 60 ft of white, fossiliferous, sandy chalk. The combined thickness of the Clayton and Porters Creek is quite variable, ranging from 330 ft to over 500 ft in this area. The lithology of the Clayton is also quite variable, but it is largely calcareous clay and silty chalk, with some clayey, glauconitic sandstone. The Porters Creek Formation is predominantly dark gray, micaceous clay, but has some sandy beds in the upper and middle parts and a thin bed of limestone near the base. These beds, broken by numerous small faults, are shown in the geologic section exposed along the west bank of the river downstream from the Highway 80 bridge at Mile 201.7 (Figure 3). The hills cut into the Clayton and Porters Creek beds west of the river are low, with some 50 to 60 ft of relief. These hills are interrupted by the valley of the Sucarnoochee River coming in from the west, causing a widened floodplain area on that side of the river.

On the east side of the river the floodplain is almost seven miles wide with numerous meander scars, old channels, and the other features of the typical slip-off slope. On the west side of the river are more bluffs cut into the Porters Creek Formation, with Black Bluff, at Mile 197, rising abruptly 80 ft or more above river level. The hills cut into the Porters Creek Formation beyond the bluff are more prominent than those north of Sucarnoochee River, and some of them are capped with terrace deposits.

As the river swings back to the east, the western floodplain widens, and there is more than 2.5 miles of floodplain on either side of the river. The floodplain is bordered by low hills cut into the Porters Creek Formation.

Another large meander back to the west causes the river from Mile 188 to Mile 186 to cut a low bluff into the Porters Creek Formation on the southeast side of the river. These bluffs rise between 30 and 40 ft above the river. At Mile 179 there is another low bluff on the northwest side of the river, still cut into the Porters Creek Formation. The bluff is about 20 ft high and the hills beyond have about 50 ft of relief. On the

GEOLOGIC SECTION
EXPOSED ALONG WEST BANK
TOMBIGBEE RIVER, SUMTER COUNTY, ALABAMA
DOWNSTREAM FROM U.S. HIGHWAY 80 BRIDGE



(No vertical exaggeration)

0 — 50 Feet

Tpc Porters Creek Clay - Paleocene

Tc Clayton Formation (lime facies) - Paleocene

—— Faulted

Clayton Formation (sand facies) - Paleocene

Kpb Prairie Bluff Chalk - Upper Cretaceous

- - - Inferred

Geology by D.E. Jones

Figure 3.

southeast side of the river a wide floodplain has developed on the inside of the meander.

Kinterbish Creek joins the Tombigbee River from the west at Mile 176, near the contact of the Porters Creek Formation with the overlying Naheola Formation. The Naheola Formation is nearly 180 ft thick, and consists of two members: the Oak Hill Member at the bottom and the Coal Bluff Marl Member above. The Oak Hill Member is made up of some 125 ft of gray laminated and thin bedded carbonaceous micaceous clay, silt, and very fine-grained sand. Near the top are several beds of lignite. The Coal Bluff Marl Member is from 40 to 60 ft thick and consists largely of gray and yellow thin bedded clays and sands. The Naheola outcrop makes a poorly defined cuesta with a highly erose scarp slope to the north into Kinterbish Creek Valley and a more gentle dip slope to the south into Tuckabum Creek Valley. The cuesta is strongly dissected with a high drainage density and relief near 200 ft. Profile II (Figure 4) shows these hills on its western end.

Beaver Creek, entering the Tombigbee River from the east at Mile 170.5, and Tuckabum Creek, from the west at Mile 167.5, contribute to a wide floodplain for the river through this area. Tuckabum Creek has shifted laterally to the south along the dip of the Naheola Formation and has cut a steep scarp on the northern side of another series of cuesta-like hills formed on the Nanafalia-Tuscahoma outcrop. These hills have from 100 to 140 ft of relief.

The Nanafalia Formation and the overlying Tuscahoma Sand seem to form similar topography, with no recognizable break between the two formations. The Nanafalia Formation is made up of three members. The lower Gravel Creek Member is largely sandy, consisting of some 40 ft of white and yellow cross-bedded medium to coarse sands. The middle member, which is unnamed, consists of 40 to 50 ft of silty clay, sand, and marl with abundant shells of the oyster, Ostrea thirsae. The uppermost Grampian Hills member is made up of approximately 20 ft of dark gray blocky clay. The Tuscahoma Sand is almost 350 ft thick and is made up chiefly of cross-bedded sands and greensand marl with some thin beds of clay and silt.

At Mile 167 the Tombigbee cuts bluffs 160 ft high into the Nanafalia-Tuscahoma outcrop in the eastern side of the river. High terrace deposits cover flat terrace remnants on top of the hills behind the bluff. On the western side of the river there is a floodplain 2 mi wide rising gently into the hills cut into the Tuscahoma Sand.

Cotahoma and Sucabowa Creek contribute to the wide swampy floodplain on the western side of the river and the Tuscahoma Sand forms hills with up to 150 ft of relief on the eastern side. This relationship is shown in Profile III (Figure 5), at Mile 160.7.

The Tombigbee turns west below Mile 160, forming a floodplain from 3.5 mi to 4 mi wide on the eastern side, the inside of the meander. This floodplain, again, has all of the typical features of a slip-off slope with old meander scars and the remnants of point bars and natural levees. Low bluffs, some 40 to 50 ft high are formed on the western side at Tuscahoma Landing at Mile 156. Below Tuscahoma Landing Mellen and Wahalak Creeks coming in from the west make a broad, swampy floodplain.

PROFILE II
Choctaw and Marengo Counties
Mile 175

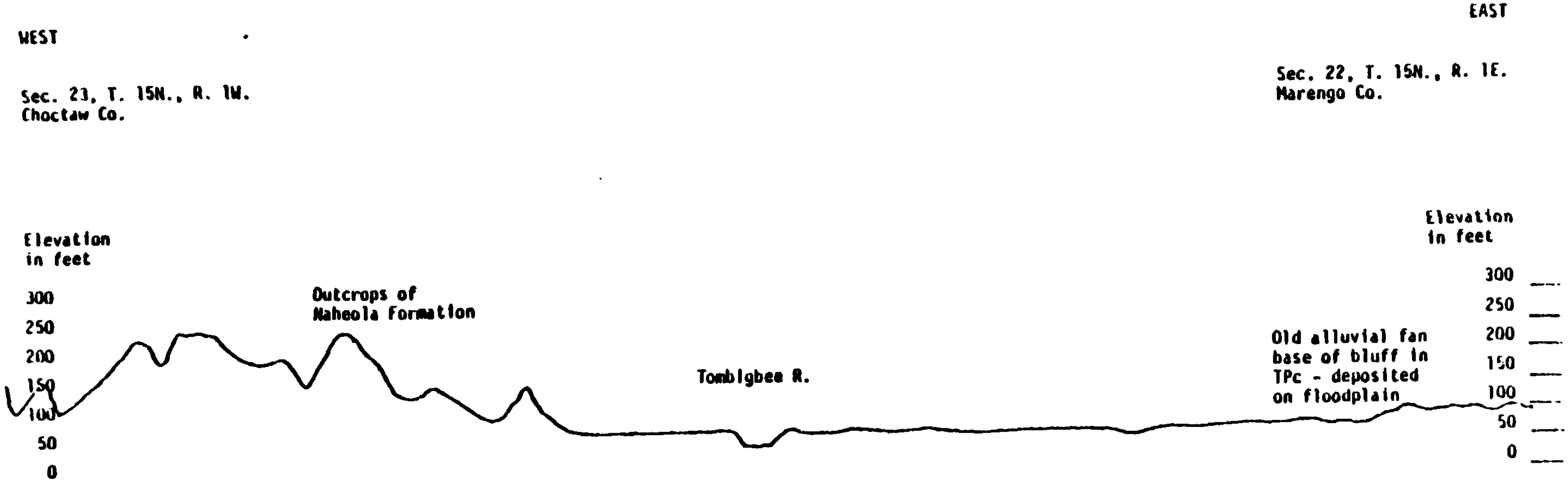


Figure 4.

PROFILE III
Choctaw and Marengo Counties
Mile 160.7

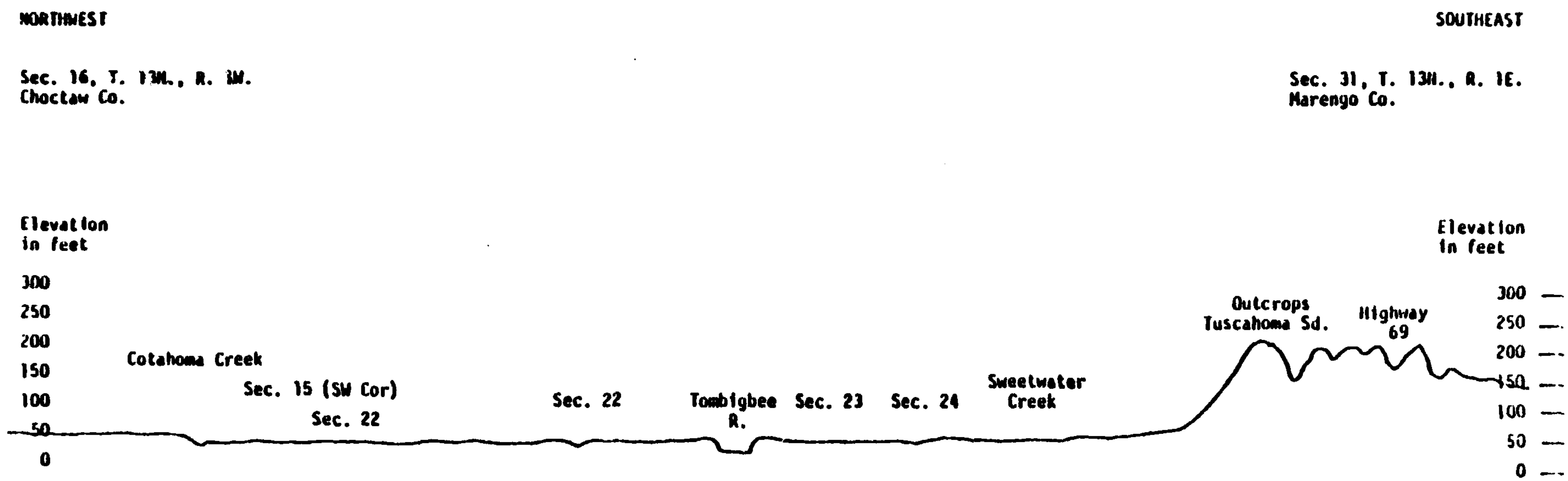


Figure 5.

From approximtely Mile 150 to Mile 130, the river goes through a series of sharp, angular bends. The nature of these meanders suggests that they are controlled by joints, or faults, in the underlying formations. At Mile 145 Bashi Creek enters from the east flowing nearly along the contact between the Tuscahoma Sand and the overlying Hatchetigbee Formation. The Hatchetigbee Formation is about 250 ft thick. The lower 20 to 30 ft consist of green-gray calcareous glauconitic sand. The remainder of the formation is made up of gray laminated clay, silt, and sand. The overlying Tallahatta Formation is made up of about 100 ft of light gray claystone with some sandy or silty layers. This claystone has a siliceous content, in part, and is generally relatively resistant to erosion, thus forming some of the most rugged topography along the Tombigbee River.

Bluffs along the east side of the river increase from approximately 50 ft high at Woods Bluff at Mile 136, where they are cut into the Hatchetigbee Formation, to 65 ft high at Davis Bluff at Mile 135, to more than 270 ft high at Whites Bluff at Mile 134.5 where the more resistant Tallahatta Formation overlies the Hatchetigbee. The sandy Gosport and Lisbon Formations outcrop on top of these hills, cut into the Tallahatta, and on top of the sharp cuesta that the Tallahatta forms on the east.

The floodplain of the Tombigbee narrows from 5 to 6 mi wide to less than 1 mi wide at Mile 131 due to the resistance of the Tallahatta Formation. The river continues through the Tallahatta outcrop with steep bluffs developed on both sides of the river and strong relief in the hills bordering the river valley. These hills and the relatively narrow floodplain are shown on Profile IV (Figure 6) which crosses the valley at Mile 129.4.

Another sharp change in relief occurs near Mile 126 as the river leaves the outcrop of the Tallahatta Formation and cuts through the less resistant beds of the sandy Gosport and Lisbon Formations. On the western side of the river the broad valley of Okatuppa Creek is cut into these formations. On the eastern side of the river the change to these and younger formations has been brought about by crossing the West Bend Fault which is downthrown to the south and brings Oligocene beds into contact with the middle Eocene Tallahatta Formation.

Between Mile 120 and Mile 121 the river is again influenced by the resistant beds of the Tallahatta Formation on the west side. This is due to a reversal of the dip of the formations caused by the Hatchetigbee Anticline, a subtle structure with a maximum dip on the order of 100 ft per mile. The strike of the anticline is approximately N 55° W, which is essentially parallel to the strike of the formations exposed through Choctaw County. To the east in Clarke County, the formations on the northern limb of the anticline turn so that their strike is almost east-west. South of the West Bend Fault, however, the Coffeeville Fault, the Hatchetigbee Anticline, and finally the Jackson Fault bring structural confusion to the general dip of these formations and both the geology and the topography in southern Clarke County are less uniform and regular.

The eastern end of Profile V (Figure 7) shows the topography developed on the sandy Gosport and Lisbon Formations, which are locally capped

PROFILE IV
Choctaw and Clarke Counties
Mile 129.4

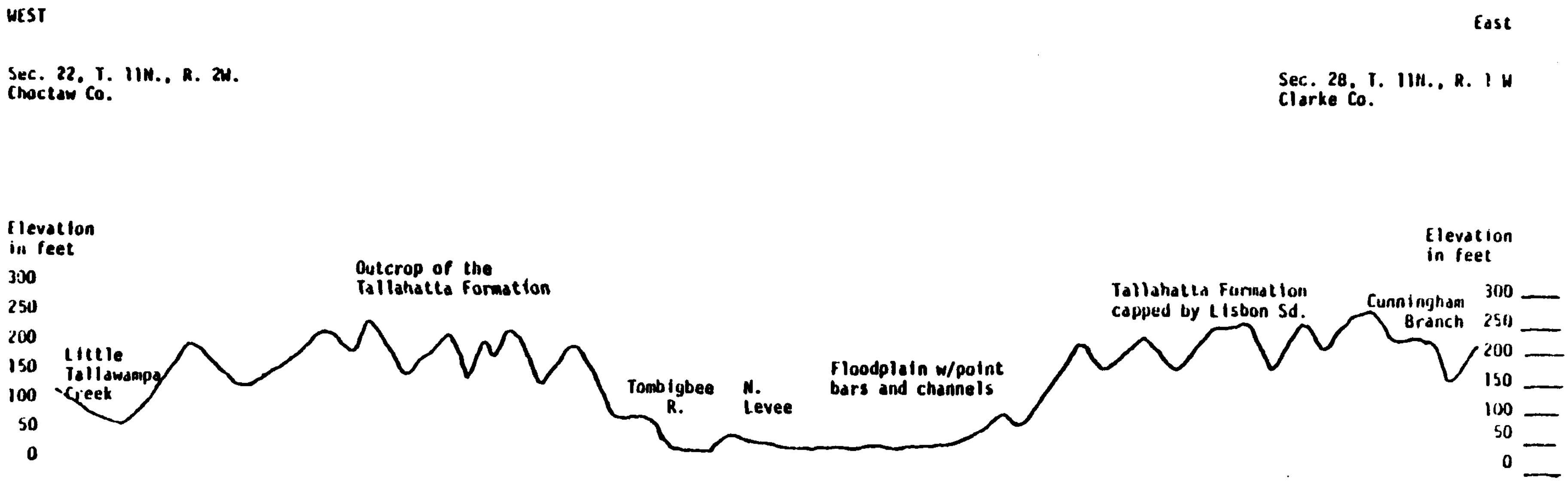


Figure 6.

PROFILE V
Choctaw and Clarke Counties
0.25 mi South of Mile 114

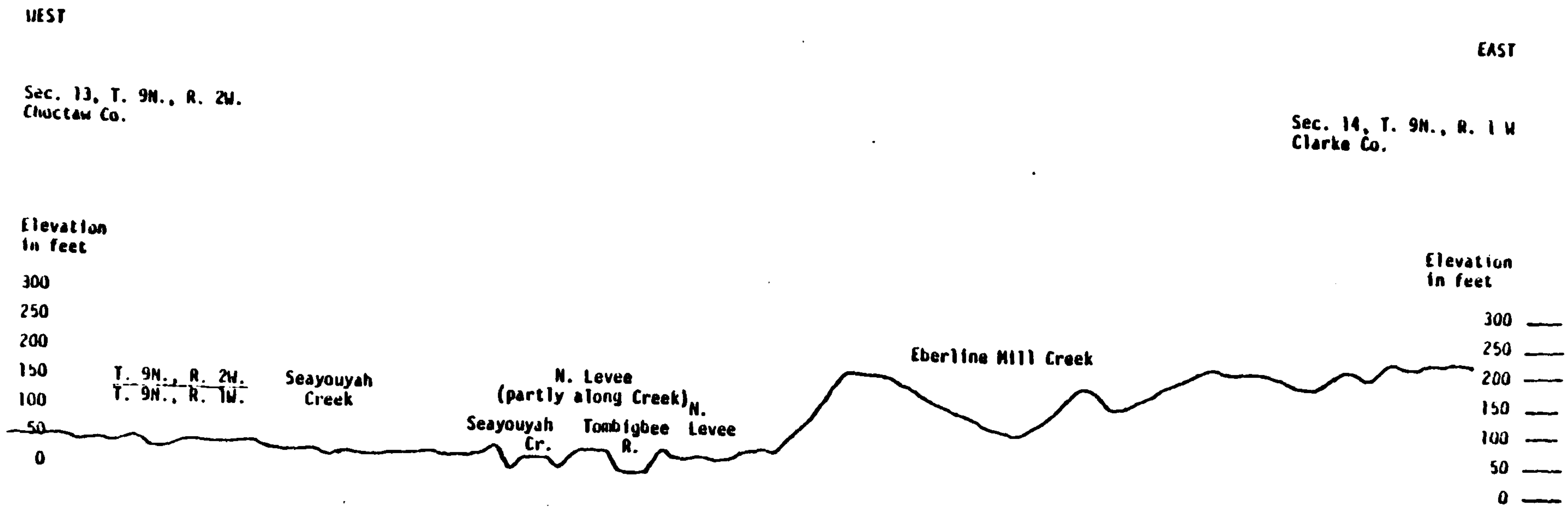


Figure 7.

with terrace deposits. The western end of this profile is in the broad floodplain formed where Seayouyah Creek enters the valley of the main river near Mile 114.

In the middle of the Hatchetigbee Anticline the less resistant beds of the Hatchetigbee Formation form low hills with relief on the order of 70 to 80 ft on either side of a floodplain that narrows to less than 1 mi wide between Mile 111 and Mile 112.

On the southwestern side of the Hatchetigbee Anticline the Tallahatta Formation is again exposed, forming bluffs almost 100 ft high along the river at Mile 107. The area on the western side of the river at this point shows relief of some 150 ft.

The course of the river has been strongly influenced through this stretch by the anticline and it flows southeasterly, parallel to the axis of the anticline, cutting steep bluffs into the resistant rocks on the southwestern side. There are other steep bluffs cut into the Oligocene rocks from Mile 100 to Mile 97 at St. Stephens. Profile VI (Figure 8) shows the relief developed on the Oligocene limestones and overlying Miocene sands on the south side of the river at St. Stephens. These are the last consolidated rocks encountered along the river except for a small outcrop brought to the surface by the Jackson Fault at Oven Bluff at Mile 76.8.

From Mile 100.8 to Mile 99.8, the river flows through a man-made channel called the "Old Lock One Cut-Off." This leaves a large abandoned meander in the floodplain on the north side of the river.

The bluffs along the south side of the river make a very narrow floodplain until the river turns south at the Highway 43 bridge at Mile 92.5. Bluffs 1 mi north of the river at Mile 94 are within 656 ft of the river at the bridge. These bluffs are cut into the Oligocene limestones which support Miocene sands, and which are, in turn, capped by high terrace deposits.

As the river turns south the floodplain on what is now the west side widens to almost five miles. West Bassetts Creek coming in from the west contributes to this widening and the joint swampy floodplain is a complex of meander scars, old natural levees, and crevasse splays.

Bluffs remain near the river on the east side, interrupted by the influx of East Bassetts Creek and Salt Creek at Mile 87.3 and Mile 83, respectively. Steep rugged bluffs form the eastern bank of the river at Mile 83 and again at Carney Bluff near Mile 80. These bluffs rise over 200 ft above the river and are cut into the Miocene sands.

From Mile 79.3 to Mile 77.3 the river flows through a man-made channel cutting off meanders on both sides of the river. Sunflower Bend on the western side is made up of some five miles of old river channel.

At Mile 76.8 Oven Bluff rises 150 ft above the river. Oligocene limestone, brought up by the Jackson Fault, is exposed along the river. The upper part of the bluff is composed of highly erose Miocene sands.

PROFILE VI
Choctaw and Washington Counties
Mile 98.6

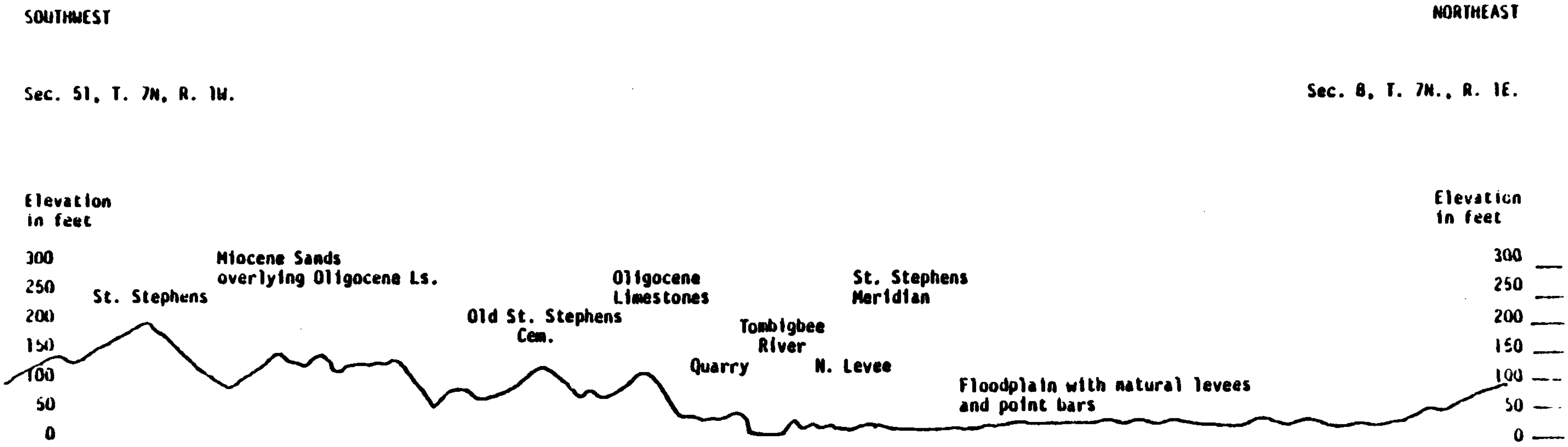


Figure 8.

Below Oven Bluff the bluffs on the eastern bank disappear and the floodplain on this side widens rapidly, essentially forming a continuous floodplain with the Alabama River which is only five miles to the east at this point. Almost all of the land between the two rivers is less than 20 ft above sea level and much of it less than 10 ft in elevation. This area is essentially the upper end of the Mobile Delta.

THE MOBILE DELTA

From the area in southern Clarke County where the Tombigbee and Alabama Rivers begin sharing a common floodplain to Mobile Bay, the several channels of the river system are cut into sediments which have been deposited by the rivers themselves. This deltaic floodplain is bordered on both sides by bluffs cut into the Miocene sands and clays and the similar sediments of the overlying Pliocene Citronelle Formation. These bluffs are a minimum of 6 mi apart near Mt. Vernon and have spread to some 13 mi apart at the head of Mobile Bay.

The origin of the valley in which the deltaic floodplain has been built-up is not clear. It has been suggested that it is a structural valley, or graben, and this graben continues to the south and largely influenced the formation of Mobile Bay. The Jackson Fault is thought to be a part of this graben, and other faults have been cut in oil wells drilled north of Mobile in Hatters Pond Field. The relationships of all of these faults and the exact configuration of the "graben", if it does exist, cannot presently be seen either in the surface or the subsurface. The suggestion that the bluffs on the eastern side of the delta and bay are fault scarps is not corroborated by any known geologic evidence. On the other hand, fault scarps in the easily eroded sediments that make up the surface would not maintain their position and would retreat rapidly under ordinary conditions of erosion in this area so that this lower part of the Mobile Valley may be controlled by faulting to some presently unknown extent.

Whether the valley is structurally controlled or not, the deposition of the sediments which form the delta is undoubtedly related to the sea level changes that were the result of Pleistocene glacial advance and retreat. When the large continental glaciers were at their maximum extent, sea level was several hundred feet lower than it is at the present time. As the glaciers melted and retreated the melt water filled the ocean basins. This rise in sea level filled the ancestral Mobile River Valley with water, greatly decreasing the gradient and therefore the velocity of the river, causing deposition. The ice sheets had finally disappeared and sea level had reached essentially its present elevation some 6,000 years before present.

Information form the Alabama Geological Survey indicates that these river deposits range from 50 ft thick in the northern part of the delta in Clarke County, to 150 ft thick at the lower end of the delta where the rivers enter Mobile Bay. The rivers are still building the delta by infilling of the bay but at a much lesser rate than in the past.

THE TOMBIGBEE-MOBILE RIVER FROM OVEN BLUFF TO MT. VERNON

South of Oven Bluff the Tombigbee flows through a series of large meanders. To the east is the broad flooplain between the Tombigbee and the Alabama Rivers. To the west of the Tombigbee is much more irregular topography with a number of large oxbow lakes, such as Fishing Lake which nears the river on the north side at Mile 67 and Three Rivers Lake which enters the Tombigbee at Mile 64. Some of these old meanders had cut bluffs 20 ft to 40 ft high into the Miocene sediments on the west side of the floodplain. Between Mile 58 and Mile 59 another lake, also called Fishing Lake, fills an abandoned channel on the eastern side of the river.

Many tributary creeks were partially flooded as the sea level rose and the delta was deposited. Hals Lake which enters the river from the northeast at Mile 57 is such a feature. Also, the same process helped created Bilbo Island between Mile 55 and Mile 57. The Alabama River Cutoff enters the Tombigbee from the east at Mile 52.5. Although there is current moving through this channel, it is extemely shallow near the Alabama River and is essentially impassable at times. Without man-made interference it would probably be closed off by deposition at the Alabama River end.

From Mile 48 to Mile 49 the Tombigbee makes a large bend to the west and cuts a steep bluff into the Miocene sediments on the western side of the valley. The lower end of this bluff is called Seaboard Bluff and rises to some 50 ft in elevation. After another meander to the east the Alabama River joins the Tombigbee, and the resulting stream is called the Mobile River. The Mobile River swings slightly to the west and at Mile 41 cuts another steep bluff, over 50 ft in elevation, into the Miocene and overlying terrace deposits.

This bluff at Mt. Vernon is one of the last high bluffs cut by the Mobile River. South of Mt. Vernon the western side of the river valley widens out so that the 50 ft line is some 7 mi west of the river at Mile 20. Although there are bluffs, they generally have elevations of 20 ft or less. Profile VII (Figure 9) shows the bluff at Mt. Vernon and the broad floodplain on the eastern side of the river.

Throughout the delta there is a natural levee of very low relief along much of the river bank. When the river is at normal water level, banks 7 to 10 ft above water level are common. From the top of the bank there is a very gentle slope away from the river back into a lower floodplain. The floodplain is wet to varying extents, and some areas seem to be permanently under a shallow sheet of water. Typical of this is the cypress-gum swamp just south of Seaboard Bluff at Mile 47.5 on the west side of the river and the gum swamp at Mile 46 on the north side of the river. In addition to the swamps, the floodplain area contains many creeks and channels, most of which are shallow and demonstrate very little flow except at high water.

FROM MT. VERNON TO MOBILE BAY

Two miles south of the bluffs at Mt. Vernon the Mobile River bifurcates forming the Tensaw River as one of the principal distributaries of

PROFILE VII
Mobile and Baldwin Counties
Mobile Delta at Mt. Vernon

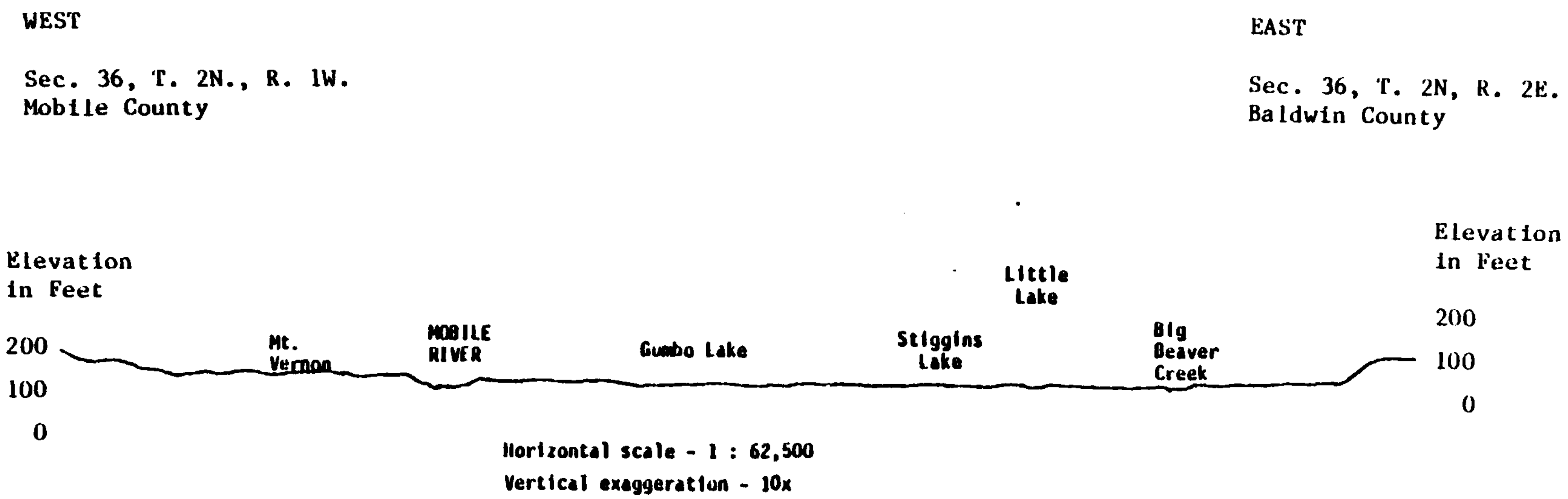


Figure 9.

the system. The Tensaw River meanders toward, and eventually cuts into, the bluffs on the eastern side of the valley while the Mobile River generally stays to the western side. Between the two, for a distance of some seven or eight miles, is another large channel, the Middle River. The floodplains between these main channels have essentially no elevation above 10 ft, are especially swampy, and have numerous lakes and channels. The most prominent elevation within this area is an Indian mound between Bottle Creek and Dominic Creek, approximately 1 mi south of the northern junction of Tensaw and Middle Rivers.

On large meanders to the west the Mobile River cuts several more bluffs. The most prominent are at Mile 35 at Chastang and at Mile 31, near the Barry Steam Plant at Bucks. Still farther south, Twenty-seven Mile Bluff, and Twenty-one Mile Bluff are cut into terrace deposits and rise only some 20 ft above the river. South of Twenty-one Mile Bluff there is no high land along the river on the west side.

The terrace into which Twenty-one Mile Bluff is cut on the Mobile River is dissected by a number of channels and is made up largely of point bar deposits. This is essentially the location of the I-65 bridge and the sediments across the valley are shown in the cross section derived from the information from some 54 holes drilled along this line to test foundation conditions (Figure 10).

The Tensaw River cuts a prominent bluff into the eastern side of the valley at Stockton which is almost due east of Twenty-seven Mile Bluff and nearly 8 mi across the deltaic floodplain. To the south the Tensaw cuts even higher bluffs at Upper Hall Landing, Sizemore Landing, and Lower Hall Landing. The tops of these bluffs are terraces which are some 60 to 70 ft in elevation.

As the Tensaw River is flowing along the foot of the bluffs on the east side of the valley the Mobile River meanders through the middle of the delta with broad swampy areas and numerous channels, lakes, and bayous on both sides. Somewhere south of Mile 12 the character of the floodplain starts to change from swamp to marsh, probably due to the influence of the more saline waters moving up the rivers with the tidal flow. As the rivers approach the bay there are very few of the trees which completely covered the upper reaches of the delta and most of the interstream area is marsh which is only a few feet above water level and frequently flooded.

A few miles north of the bay the Tensaw River divides, and then divides again, so that there are four principal channels entering Mobile Bay. From east to west they are: the Blakeley River, the Apalachee River, the Tensaw River, and the Mobile River. The Blakeley flows along the bluffs on the eastern side of the valley. The Mobile River has some five or six miles of low terrace area between it and the bluffs to the west.

SUMMARY OF LATE QUATERNARY SEA LEVEL CHANGES AND THE MOBILE DELTA

With the melting of the Wisconsin glaciers sea level rose, the ancestral river was drowned, Mobile Bay was formed as an estuary, and the upper

GENERALIZED CROSS SECTION THROUGH THE MOBILE DELTA
BASED ON I-65 TEST BORING INFORMATION

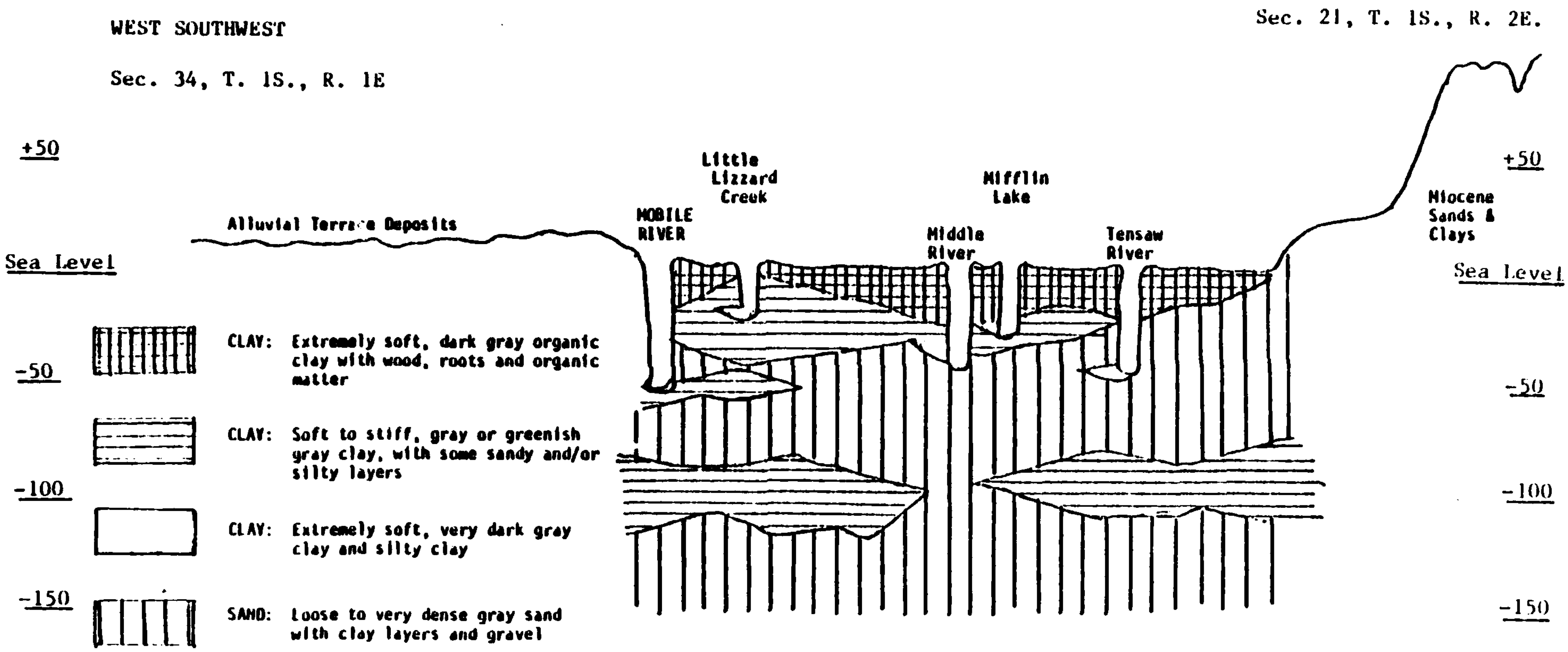


Figure 10.

part of the estuary was filled by sedimentation from the rivers forming the present day delta and the Mobile River itself. The most recent data concerning this rise in sea level is summarized by C. Wylie Poag (1973). Poag illustrated a summary of the data, and his information is used in Figure 11. These data show a sea level some 40 meters below present day sea level within the past 10,000 years. At that level the mouth of the river would have been out in the present day Gulf of Mexico and Mobile Bay would not have existed. Much of Mobile Bay is less than 4 m deep so that if sea level rose at a constant rate for the last 10,000 years the bay would not have begun to be formed until approximately 2,000 years before the present. On Figure 11, the curves from the data of Curry, and from Ballard and Uchupi, show a rapid rise followed by a tapering off. This would put the formation of the bay and the delta beginning some 4,000 to 6,000 B.P. Further, it would mean that the delta was formed by exceptionally rapid dumping of sediment from the contributing rivers.

The curves in Figure 11 closely coincide at a point representing an age of approximately 8,500 years B.P.and a depth of 40 m below present sea level. With sea level at that elevation, base level for the rivers would also be correspondingly lower. The rivers throughout the delta area would be flowing through a relatively deep steep-sided valley. As sea level rose with the further melting of the glaciers, the base level of the streams was raised, and deposition began. It was the filling of the valley that built the delta, and the fact that it was a rather steep-sided narrow valley meant that the delta grew rapidly southward. In contrast to the birdsfoot delta of the Mississippi River, which has grown in various directions, the steeper-walled valley of the Mobile River permitted only infilling to the south. The thickness of this infilling reflects the gradient of the ancestral stream, and consequently the deltaic sediments are much thicker to the south. As previously mentioned, information from the Alabama Geological Survey indicates that these river deposits range from 50 ft thick in the northern part of the delta to 150 ft thick at the lower end of the delta where the rivers enter Mobile Bay.

Unfortunately, relatively few holes have been drilled through these young delta sediments and those that have been drilled were largely to obtain engineering and foundation data. There is even less information on the age dating of these sediments. Any attempt to locate the delta front or the major channels at any specific time would be highly conjectural. From the available drill hole information it would appear that the deltaic deposits are particularly sandy at depth which is what should be expected with a rapidly forming delta. The many small tributary streams flowing into the steep valley from both the east and west would contribute sediment and also contribute to the complexity of the buildup of the delta.

The Jackson Fault is thought to be responsible for the high bluffs in southern Clarke County around Mile 76-77. South of that point there is no definite topographic expression of the fault, and no surface trace has been recognized. As previously mentioned, much of the delta and the bay are thought to lie within a fault-controlled structural valley. However, the faults have never been precisely located although several different faults have been encountered at depth in several oil wells. There is no evidence that there has been any movement along any of these faults in Quaternary time so that topographic relief directly associated with fault

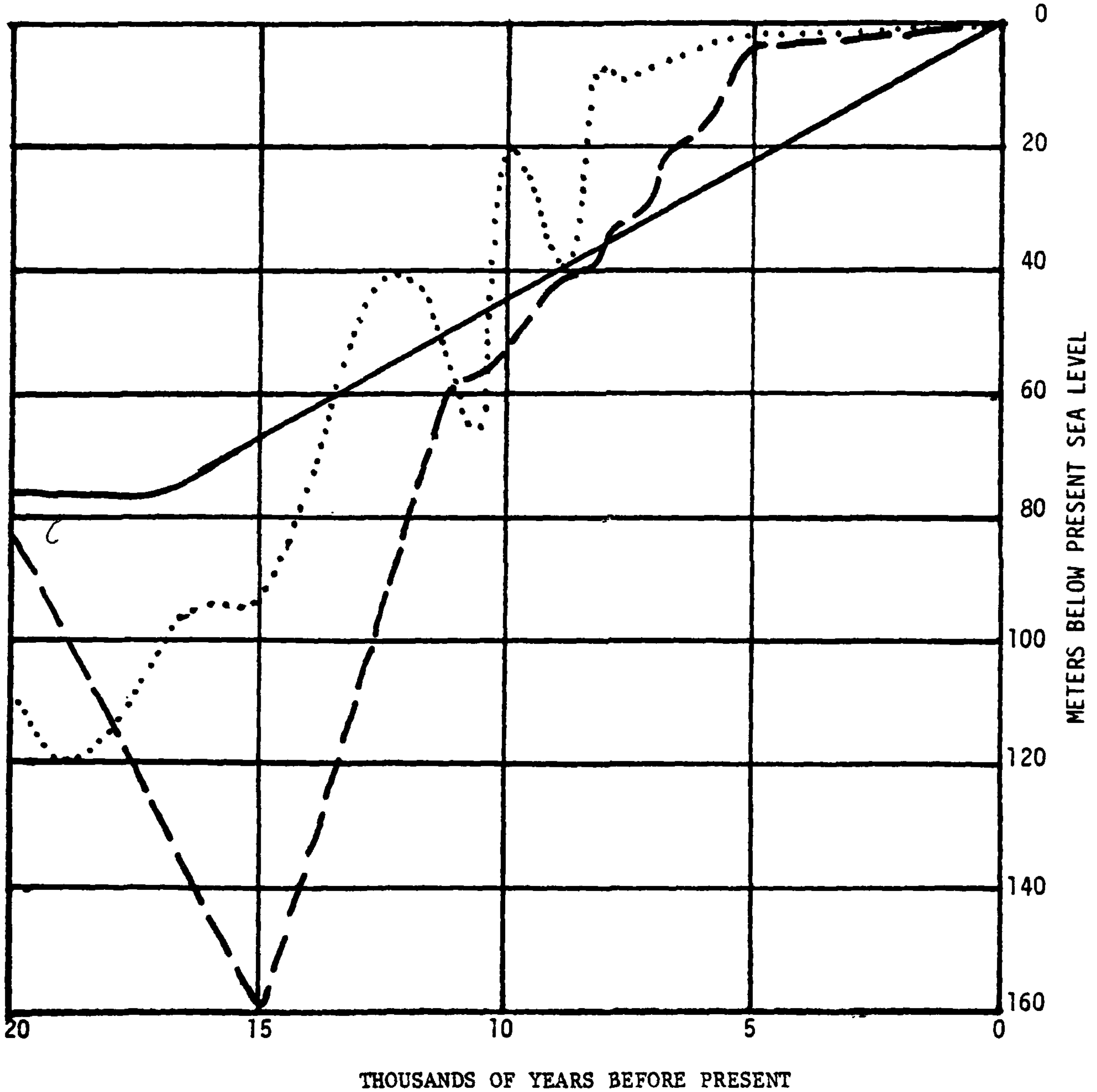


Figure 11. Late Quaternary Sea Level Curves for Northern Continential Shelf of Gulf of Mexico. Modified from Poag (1973). Dotted curve is data from Curry (1965); dashed curve is data from Ballard and Uchupi (1970); solid curve is data from McFarland (1961).

movement is lacking and the faults seemingly have influenced the topography only by their influence on the erosive processes.

Based on the observation that steep bluffs are formed by lateral erosion of the river into the valley walls some idea of the location of the principal channels of the river can be afforded. The bluffs at Mt. Vernon would lead to the speculation that the main channel has been where the Mobile River is at that point, possibly continuing on the western side of the valley to the area near Bucks. Below this the steeper bluffs on the eastern side of the valley would support the idea that the main channel followed a course near that of the present Middle River and then the channel of the Tensas below the confluence of the Middle and Tensas Rivers. Some of the particularly deep parts of the Tensas may represent portions of the ancestral channel which were never filled because the principal flow was diverted into other distributaries.

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APPENDIX C

REPORT OF THE VEGETATION OF THE MOBILE DELTA

Michel G. Lelong

The vegetation of the Mobile Delta conforms primarily to the topography of the area, to the extent and duration of flooding, and to the nature of adjacent waters.

The lower Delta which extends northward to the northern part of Gravine Island and the northern shore of Chuckfee Bay is largely below 5 ft of elevation and is under the influence of tidal brackish waters of upper Mobile Bay. The vegetation there consists primarily of marshes often dominated by tall grasses and sedges such as reed (Phragmites australis), big cordgrass (Spartina cynosuroides), switch grass (Panicum virgatum), saw grass (Cladium jamaicense), wild rice (Zizania aquatica), as well as torpedo grass (Panicum repens), and alligator weed (Altarnanthera philozeroides).

Scattered trees and shrubs may be found in these marshes and they may become dominant in low hammocks rising slightly above the marsh or along stream banks. Some of those hammocks result from man's recent action, for example, Fort Huger and Fort Tracy on the east bank of Appalachee River north of its confluence with the Blakeley River. The dominant trees at this site are Southern Magnolia (M. grandiflora), Sugarberry (Celtis laevigata), red cedar (Juniperus virginiana) and laurel cherry (Prunus caroliniana). Yaupon (Ilex vomitoria), and wax myrtle (Myrica cerifora) are common shrubs.

Plants of wetlands occur at the base of the hammock, in the transition zone between it and the surrounding marshes, for example black willows (Salix nigra), red maple (Acer rubrum), green ash (Fraxinus pennsylvanica) and sweet bay (Magnolia virginiana).

Extensive beds of submerged, floating, and emergent plants occur along river banks and along the numerous bays and ponds of the lower delta. They consist of plants such as eelgrass (Vallisneria americana), southern naiad (Najas guadalupensis), horned pondweed (Zannichellia palustris), widgeon grass (Ruppia maritima), and numerous species of pondweeds (Potamogeton spp.), duckweeds (Lemma, Spriodela, and Wolfia spp.) as well as the so called musk grasses (Chara, Hitella spp.). The white water lily (Nymphaea oderata), the tall yellow lotus (Nelumbo lutea), cow lily (Nuphar advena), and the potentially troublesome water hyacinth (Eichornia crassipes) also form colonies in those habitats.

In the northern part of the lower Delta, salinity of the water in major streams becomes greatly reduced so that eventually fresh water prevails. Plants less tolerant of salinity and fresh water plants gradually become more abundant and replace the plants more tolerant of salinity. A slight rise in topography also contributes to the gradual replacement of marshes typical of the lower delta by dense swamps typical of the middle delta.

The northern limit of this predominantly marshy middle delta, which comprises most of the delta, can be drawn about midway between the confluence of the Alabama and Tombigbee Rivers in the north and the confluence of the Mobile and Tensaw Rivers to the south. Vegetation there consists primarily of poorly drained swamps which remain more or less flooded throughout the growing season. Dominant trees of these deep swamps are bald cypress (Taxodium distichum) and water tupelo (Nyssa aquatica) with a very sparse understory of carolina ash (Fraxinus caroliniana), occasional swamp tupelos (Nyssa biflora), red maple (Acer rubrum), water elm (Planera aquatica), and sweetbay (Magnolia virginiana) grow on slight rises in these swamps. The shrubby Virginia willow (Itea virginica) and winter berry (Ilex verticillata) also grow in this habitat. Few herbs grow in the densely shaded and mucky ground of those swamps except in openings; those shade tolerant plants are a St. John's wort, Hypericum walteri, water hemlock (Cicuta maculata), ladies' tress orchid (Spiranthes cernua var. odorata), the panic grass (Panicum gymnocarper) and rice cut grasses (Leersia lenticularis and L. virginica).

This type of deep swamp occurs along major rivers behind the natural levees and along the numerous minor streams, oxbow lakes, and ponds in the Delta. Natural levees and hammocks in those swamps support a more diversified bottomland hardwood forest consisting of species which tolerate less extensive flooding of shorter duration. This forest often intermixes with swamps in areas of undulating topography. Dominant trees of those low woods are red maple (Acer rubrum), green ash (Fraxinus pensylvanica), swamp tupelo, and american elm (Ulmus americana).

On slightly higher ground, water oak (Quercus nigra), sugarberry (Celtis laevigata), honey locust (Gleditsia triacanthos), American hornbeam (Carginus caroliniana), American holly (Ilex opaca), and sweetgum (Liquidambar styraciflua) may occur. River birch (Betula nigra), water hickory (Carya aquatica), and shrubs like buttonbush (Cephalantus occidentalis), hazel alder (Alnus serrulata), and lead plant (Amerpha fruticasa) often gain dominance on low stream banks. A great variety of woody vines groww in this bottomland community, especially in openings or near the banks of large streams. These weedy vines include poison ivy (Toxicodendron radicans), trumpet creeper (Campsis radicans), cross vine (Bignonia capreolata), peppervine (Ampelopsis arborea), and numerous wild grapes (Vitis spp.) and greenbriars (Smilax spp.).

The forest floor of these bottomland woods is occupied by such herbaceous plants as swamp milkweed (Asclepias perennis), the day flower Commelina virginica, flash nettle (Boehmeria cylindrica), mist flower (Eupatorium coelestinum), ditch stonecrop (Penthorum sedoides), Justicia ovata and Samolus parviflorus. A greater diversity of woody plants and herbs grow on more open and somewhat drier sites.

Bottomland hardwood forests grade upward into dry upland woods, usually over 10 ft in elevation, which are not subject to regular flooding. The transition zone between these two types of vegetation may consist of more mesic trees such as southern magnolia (*M. grandiflora*), sweetgum (*Liquidambar styraciflua*), swamp chestnut oak (*Quercus michauxii*), laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), live oak (*Quercus virginiana*), pignut hickory (*Carya glabra*), American beech (*Fagus grandifolia*), and silverbell (*Halesia diptera*).

The drier ridges support a more open type forest dominated by longleaf pine (*Pinus palustris*) and shortleaf pine (*Pinus echinata*), southern red oak (*Quercus falcata*), turkey oak (*Quercus laevis*), blackjack oak (*Quercus marilandica*), post oak (*Quercus stellata*), sparkleberry (*Vaccinium arboreum*), blueberries such as *V. elliottii*, and many additional shrubs as well as herbaceous plants such as grasses, legumes, and species of the sunflower family. Those last two vegetation types are prevalent in the upper delta, especially along the Tombigbee and the Alabama Rivers on high bluffs of Pliocene and Pleistocene age.

Occasionally, dense cane brakes of native bamboo (*Arundinaria gigantea*) occur on high banks in the middle and upper delta. Recently deposited sand-silt bars on active channel bends throughout the delta support a scant vegetation of herbaceous weedy pioneers such as Cocklebur (*Xanthium strumarium*), Mexican tea (*Chenopodium ambrosioides*), spiny pigweed (*Amaranthus spinosus*), dog fennel (*Eupatorium cacillifolium*), and many grasses and sedges such as the panic grasses *Panicum rigidulum* and *P. dichotomiflorum*, goose grass (*Eleusine indica*), the love grass (*Eragrostis glomerata*), and red-root sedge (*Cyperus erythrorhizos*). Willow thickets soon form on those bars and a few other intolerant trees such as cottonwood (*Populus deltoides*) and sycamore (*Platanus occidentalis*) appear in the early successional stages of plant community development. Increasingly more bottomland hardwood species invade this pioneer willow-cottonwood community as it becomes shadier and as litter and humus accumulate on the ground.

Prehistoric and historic sites composed of shells, midden, and other material often support a vegetation which is different from that of adjacent areas. The topographic change and the nature of the substrate probably account for most of those differences. Typical woody vegetation of those mounds are live oaks, red cedars, sugarberry, persimmon (*Diospyros virginiana*), red buckeye (*Aesculus pavia*), buckthorn (*Bumelia lanuginosa*), red mulberry (*Morus rubra*), and dwarf palmetto (*Sabal minor*).

One of the rarest shrubs in the region, *Sageretia minutiflora* seems to be nearly restricted to shell mounds and middens. Characteristic herbs of the habitat are Elephant's foot (*Elephantopus carolinianus*), 3-seeded mercury (*Acalypha rhomboidea*), and *Sida rhombifolia*. Many vines grow in this habitat including trumpet creeper, coral berry (*Cocculus carolinus*), climbing milkweed (*Matelea gonocarpa*), and yellow passionflower (*Passiflora lutea*).

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APPENDIX D

RADIOCARBON DETERMINATIONS

Russell Weisman

The chronological implications of radiocarbon dates obtained by the BWT reconnaissance and other studies within the BWT project area are discussed in this section.

PALEO-INDIAN AND ARCHAIC

No Paleo-Indian sites have been recorded within the BWT project area, but it is expected that the local artifact complex will be similar in both content and relative age to assemblages identified elsewhere within the Gulf Coastal Plain (DeJarnette and Knight 1976, Goodyear 1982).

Few Early Archaic sites, and none with intact cultural deposits, have been recorded within the BWT project area. As with Paleo-Indian assemblages, these are not expected to differ drastically in content or age from the dated deposits at Stanfield-Worley (DeJarnette et. al. 1962, Josselyn 1964), St. Albans (Broyles 1966), or Russell Cave (Griffin 1974).

The local raw material, Tallahatta quartzite, is far less durable in archaeological contexts than most of the other lithic materials used for the manufacture of chipped stone tools. Because of the rapid rate at which it weathers, tools made from Tallahatta quartzite during the Paleo-Indian and Archaic periods are less likely to survive than tools of similar age made elsewhere from more durable materials such as Fort Payne chert. Therefore, the paucity of early sites, defined by early projectile point types, within the project area is more likely a reflection of the preservation properties of the local lithic material than a function of settlement pattern, lower population density, or of radically different archaeologically unrecognized tool types.

One Middle Archaic (?) component was encountered at Site 1Mo69 on the left bank of the Tombigbee River five miles south of Demopolis. A sample of carbonized hickory nut (Carya) hulls was derived from 50 cm thick midden deposits exposed 2.3 m below the site's surface.

Site 1Mo69

Provenience: Midden 2.3 m below surface.
Radiocarbon Determination: 5430±65 B.P.:3480±65 B.C. (DIC-2454).
Component: Middle Archaic?

Associated cultural materials included medium sized stemmed projectile point/knives made from Tallahatta quartzite, Tallahatta quartzite, red jasper, and white quartzite debitage, as well as a small percentage of exotic material.

At 3480±65 B.C. (DIC-2454), Site 1Mo69 is the earliest dated site within the BWT project area. Several stemmed projectile point/knives of distinctive but unspecified types (Figure 1) were recovered from the midden at this site. These weathered and friable projectile points were fashioned exclusively from Tallahatta quartzite.

In the upper Tombigbee Valley, Benton projectile points, (Cambron and Hulse 1975:13) dated at 3360 B.C. (DIC-2483) at Site 22It623 (White, personal communication) are diagnostic of this period, but no Benton projectile points were found at Site 1Mo69.

Within the Gainesville Lake Area documentation of Middle Archaic materials was "severely hampered by small excavations, survey limitations and the lack of previous work in the area" (Jenkins and Ensor 1981:15). Jenkins and Ensor, however, suggested that Benton, Opposum Bayou, Vaughn, and Demopolis projectile points should be characteristic of this period (see also Nielsen and Moorehead 1972).

Elsewhere in Alabama stemmed projectile points of medium size, such as the Kays type, which are morphologically similar to projectile points from Site 1Mo69, have been assigned to the Middle Archaic period (Futato 1977a). The Middle Archaic remains a question mark across much of the Southeast largely because archaeologists have failed to isolate local distinctive lithic assemblages (Walthall 1980:58).

The 3480 B.C. date from Site 1Mo69 appears to be good. The large sample of carbonized hickory nut (Carya) hulls was directly associated with Middle to Late Archaic projectile points in the midden.

The preliminary data from Site 1Mo69 suggest that the deposits at this site may provide an opportunity to recover and isolate a large sample of distinctive projectile point/knives. The recovery of these projectile points, and additional radiocarbon documentations should be useful in developing the local stone tool chronology and in defining spatial and temporal variation in stone tool morphology within the region.

GULF FORMATIONAL/EARLY WOODLAND

Site 1Ba176

A determination made in the late 1950s on Rangia shells collected by Trickey and Homes in 1957 from Shell Layer 4, the lowest shell lens recorded at the Bryants Landing 4 site was derived from a stratified multicomponent shell midden on the south shore of Tensaw Lake.

Bryants Landing 4 (Trickey and Holmes 1971) Provenience: Shell Layer 4. Radiocarbon Determination: 4100±250 B.P.: 2150±250 B.C. (M-824). Component: Preceramic ?

No artifacts were recovered from Shell Layer 4, although over 60

Figure 1. Site 1Mo69: Tallahatta Quartzite Stemmed Projectile Point/Knives.

cubic feet of midden was excavated and screened. This determination was made on Rangia shell, using equipment and procedures which by today's standards were primitive and imprecise. This date is of questionable reliability, and is probably too early.

Trickey and Holmes have correlated dated strata at the Bryants Landing 4 site, with an adjacent exposure of midden at Bryants Landing 3. Fiber tempered ceramics and Poverty Point like objects recovered at Bryants Landing 3 have been placed between 2150 B.C. and 1140 B.C. (M-823) based on this correlation. This may be an acceptable range for early fiber tempered ceramics in the region. Gagliano and Webb (1970:69) obtained dates of 1240 B.C. and 1150 B.C. for Wheeler fiber tempered ceramics at the Claiborne site near the mouth of the Pearl River. The correlations between Bryants Landing 3 and 4 also appear to be valid, but the dates from Bryants Landing do not necessarily support this early placement because of the sample composition and the manner in which the dates were determined.

Site 1Ba176

A Rangia shell sample was collected by Trickey and Holmes in 1957 from the Bryants Landing 4 Shell Layer 3.

Bryants Landing 4 (Trickey and Holmes 1971).
Provenience: Shell Layer 3.
Radiocarbon Determination: 3090±200 B.P.: 1140±200 B.C. (M-823).
Component: Early Gulf Formational ?

This date is the earliest ceramic date in Alabama (Futato 1977b).

Associated artifacts included only 19 sherds in approximately 15 cubic feet of excavated and screened midden. These were identified by Trickey and Holmes as: 11 Bayou La Batre Plain, 4 Bayou La Batre Dentate Stamped, 1 Bayou La Batre Scallop Impressed, and 3 Tensaw Plain (sand tempered).

As with the other early Michigan dates from this site, this determination is of questionable accuracy, and is believed to be as much as 500 years too early. No other early Bayou La Batre dates are available, and until more dates become available this determination must be viewed with cautious skepticism.

Site 1Ba195

A determination was made on a grab sample of Rangia shells obtained by May(1976) from a multicomponent shell midden near the junction of Little Lizard Creek and the Middle River at a depth of 1 m (?) below the site's surface.

The Little Lizard Creek site (May 1976, Stowe 1981).
Provenience: 1 m ? below surface.
Radiocarbon Determination: 2520±85 B.P.: 570±80 B.C. (I-7655).
Component: Wheeler ?

No list or description of associated cultural material was provided by May.

Stowe (1981) recovered fiber tempered ceramics from this site which may correspond to the dated deposits. The archaeological usefulness of this date is seriously diminished by its vague provenience, and lack of directly associated diagnostic cultural material.

Fiber tempered ceramics in the region have been dated as early as 1240 B.C. (Jenkins 1975:6, Gagliano and Webb 1970:69), but there are no dates for late fiber temper horizons. A date of 500 B.C. would be acceptable for the end of this period, but this date is poor evidence upon which to base any conclusion.

Site 1Wn69, a midden exposed on the right bank of the Tombigbee River 3 miles northwest of Jackson, is the only site investigated by the BWT project known to contain substantial intact Wheeler deposits. Mr. Ben Griffin of Jackson, Alabama has a large collection from this site which includes fiber tempered ceramics, steatite vessel fragments, and large stemmed projectile points. A small jasper bead, similar to Poverty Point type lapidary beads, was also found at Site 1Wn69 by Griffin.

Further investigations at intact stratified sites bearing fiber tempered pottery such as Sites 1Ba195, 1Ba176, and 1Wn69 should help to define the material assemblage. Additional radiocarbon dates are required to fix the temporal range of these assemblages.

Site 1Ck45

Wood charcoal and carbonized hickory nut (Carya) hull samples were derived from midden deposits in a 1 m by 1 m test in Arbitrary Level 3, 30 to 45 cm below the top of the midden exposed in the left bank of the Tombigbee River opposite old St. Stephens.

The Griffin Site (BWT Reconnaissance, Chase 1972).
Provenience: Arbitrary Level 3.
Radiocarbon Determinations: 1870±45 B.P.: A.D. 80±45 (DIC-2456),
2000±65 B.P.: 50±65 B.C. (DIC-2534).
Component: Late Bayou La Batre.

Radiocarbon determination DIC-2534 was made from a sample of carbonized hickory nut (Carya) hulls also derived from Level 3 in the same 1 m by 1 m test. It is probably the more accurate of the two determinations.

Associated cultural materials from the 0.15 cubic meters of excavated midden in Level 3 included the following ceramics: 49 Bayou La Batre Dentate stamped, 41 Bayou La Batre Plain, 2 plain clay tempered, and 1 plain sand tempered. A large projectile point/knife similar to the Little Bear Creek type, and a smaller stemmed projectile point of indeterminate type were also recovered along with 35 Tallahatta quartzite flakes and one white quartzite flake. Associated faunal remains included white-tailed deer, box turtle, and unidentified fish, shellfish, birds, and small mammals.

A sample of wood charcoal and carbonized hickory nut (Carya) hulls was derived from the base of exposed midden deposits along the left bank of the Tombigbee River opposite old St. Stephens.

The Griffin Site (BWT Reconnaissance, Chase 1972).
Provenience: Arbitrary Level 4.
Radiocarbon Determination: 2145±70 B.P.: 195±70 B.C. (SI-5347).
Component: Late Bayou La Batre.

Associated cultural materials included 10 plain and 7 dentate stamped Bayou La Batre ceramics with 2 clay tempered plain, 1 cord wrapped dowel impressed, and 1 clay tempered incised sherds as accessory types. Tallahatta quartzite debitage and a few pieces of sandstone were the only recovered lithic materials from this level. Overlying levels contained projectile point/knives similar to Pickwick and Little Bear Creek types as well as other stemmed projectile points of indeterminate type.

A sample of wood charcoal and carbonized hickory nut (Carya) hulls was recovered from a 1 m by 1 m test in Level 2 deposits, 15 to 30 cm below the top of the midden.

The Griffin Site (BWT Reconnaissance, Chase 1972)
Provenience: Arbitrary Level 2.
Radiocarbon Determination: 2120±100 B.P.: 170±100 B.C. (SI-5346).
Component: Late Bayou La Batre.

Associated cultural material included two medium sized stemmed Tallahatta quartzite projectile point/knives of indeterminate type as well as 71 Bayou La Batre plain and 51 Bayou La Batre dentate stamped sherds.

The series of five radiocarbon dates now available from late Bayou La Batre associations make this the most thoroughly and consistently dated phase in the project area.

Four of these dates are from Site 1Ck45, the Griffin site, investigated by this project and by Chase (1972). The fifth was provided by Trickey and Holmes (1971) from the Bryants Landing Site 4, 1Ba176.

Site	Level	Laboratory Number	Date
1Ck45	Arbitrary Level 2	SI. 5346	170±100 B.C.
1Ck45	Arbitrary Level 3	DIC 2456 DIC 2534	A.D. 80±45 50±65 B.C.
1Ck45	Arbitrary Level 4	SI 5347	195±70 B.C.
1Ba176 No. 4	Shell Layer 2	M-822	90±150 B.C.

As discussed previously, the old Michigan dates from Bryants Landing are of questionable accuracy, however the 90 B.C. date for Shell Layer 2 is not out of line when compared with the 1Ck45 dates or Stowe's (1977) dates from the Blakeley Shell Midden (UGa-2183, UGa-2184), and may be acceptable.

The 1Ck45 dates are internally consistent with the exception of DIC 2456 from Arbitrary Level 3 at A.D. 80±45. The laboratories responsible for these determinations were consulted in an effort to discover the source of a discrepancy of between 3 and 6 standard deviations which exists between their respective results. No obvious solution was discovered, and a second sample from Site 1Ck45, Level 3 was submitted to the Dicarb laboratory. The resulting determination (DIC 2534) of 50 B.C. is in better agreement with the Smithsonian dates from Arbitrary Levels 2 and 4.

It is our conclusion that DIC 2456 from Arbitrary Level 3 is a "bad" date; and that the other dates are "good". Samples from Site 1Ck45 were all large, clean, well provenienced, and were recovered from undisturbed sealed deposits in association with significant quantities of diagnostic lithic and ceramic artifacts. Tallahatta quartzite stemmed projectile point/knives recovered from Site 1Ck45 are shown in Figure 2.

These dates place Site 1Ck45 in a more recent position than that posited by Chase (1972), and indicate the maintenance of a stemmed projectile point lithic tradition throughout the Bayou La Batre period. The comparatively low frequency of chipped stone tools found in coastal Bayou La Batre middens (Wimberly 1960) suggests differences in economic strategy between riverine and coastal sites which is probably due to seasonal variation and not to temporal or cultural differences.

Stowe (1977), in an analysis of ceramics from his test excavations at the Blakeley Shell Midden, noted a concomitant shift in temper type from early grit in Bayou La Batre levels to later grog in Porter Marksville levels. Jenkins (Chapter V) has recognized a similar temper change at Site 1Ck45, from a dominance of sand/grit temper in the Bayou La Batre ceramics in the earliest levels to a majority of fine sand in the latest levels. This shift in temper is accompanied by the appearance of a few stamped and crudely zoned stamped clay tempered sherds in the latest level, foreshadowing the ceramic transformation from Bayou La Batre to Porter. Early and late Bayou La Batre assemblages may be provisionally distinguished on the basis of temper. Coarse grit tempered ceramics, consisting of Mobile Cord Marked (Trickey 1958, Trickey and Holmes 1971) and the associated check stamped and plain types, which re-emerge in the terminal Woodland Tensaw Lake Complex may present interpretative problems (cf. DeJarnette et al. 1978). These plain sherds may easily be confused with early Bayou La Batre material in small collections.

Site 1Ba176

A determination made from a sample of Rangia shells from the second shell layer below the surface, at the stratified multicomponent Site 1Ba176 on the south shore of Tensaw Lake (Trickey and Holmes 1971) may date a late Gulf Formational to early Middle Woodland component.

Figure 2. Site 1Ck45: Tallahatta Quartzite Stemmed Projectile Point/Knives.

Bryants Landing Site 4 (Trickey and Holmes (1972).
Provenience: Shell Layer 2.
Radiocarbon Determination: 2040±150 B.P.: 90±150 B.C. (M-822).
Component: Late Gulf Formational-Middle Woodland.

Associated cultural materials in the thin shell lens included 7 Santa Rosa Punctated and 193 Tensaw Plain sherds. Mud Layers 1 and 2 which bracketed Shell Layer 2 contained Bayou La Batre Stamped and Tensaw Plain ceramics. A total of approximately 60 cubic feet of midden was excavated and screened from Mud Levels 1 and 2 and Shell Layer 2 combined.

MIDDLE WOODLAND

Site 1Ck209

A determination made from wood charcoal recovered by the BWT project from a 30 cm thick midden exposed 120 cm below the surface dates a Middle Woodland component at the Jackson Creek site, 1Ck209 on the left bank of the Tombigbee River above the mouth of Jackson Creek.

The Jackson Creek Site (BWT Reconnaissance).
Provenience: Midden 120 cm below surface.
Radiocarbon Determination: 1750±50 B.P.: A.D. 200±50 (DIC-2455).
Component: Middle Woodland.

The associated ceramics included: 11 plain sand tempered, 10 eroded sand tempered, 2 Furrs Cord Marked, 2 Saltillo Fabric Marked, 2 Basin Bayou Incised, 2 Santa Rosa Punctated, 2 Porter Zone Incised (square vessel), 2 Marksville Incised, 1 clay tempered plain, and 1 clay tempered residual incised.

Site 1Ba229A

Stowe (1977) obtained a wood charcoal sample from a charcoal lens encountered 5 ft below the surface.
at the large multicomponent Blakely Shell Midden site on the Apalachee River below the old town of Blakeley.

The Blakeley Shell Midden (Stowe 1977, Moore 1905).
Provenience: Zone D, Level 17.
Radiocarbon Determinations: 1905±60 B.P.: A.D. 45±60 (UGa 2183),
1700±55 B.P.: A.D. 250±55 (UGa 2184).
Component: Middle Woodland.

Associated cultural materials were Bayou La Batre, Santa Rosa-Swift Creek and Porter-Marksville ceramic types and projectile point/ knives of indeterminate type as well as lithic debitage, hammerstones, bone tools, *Rangia* shells, and other faunal remains.

Site 1Ba2

May (1976) obtained two radiocarbon determinations from a grab sample of Rangia shells from the base of a shell midden encountered north of the large temple mound at Site 1Ba2.

The Bottle Creek Site (May 1976, DeJarnette 1936-1942, Bigelow 1853, Stowe 1981).
Provenience: Base of shell midden. Radiocarbon Determinations: 1440±85 B.P.: A.D. 510±85 (I-7656A),
1440±85 B.P.: A.D. 510±85 (I-7656B).
Component: Middle Woodland.

Apparently shells from two different locations were combined, and separate determinations were made on this mixed sample. There is no account or list of the cultural materials found in association with these samples.

Discussion

Within the BWT project area, two separate and distinct Middle Woodland complexes have been identified. The Miller complex (Jennings 1941, Jenkins 1981) is confined to the northern portion of the project area in the Black Belt, Interior Flatwoods, and Southern Red Hills. The Porter complex (Wimberly 1960, Walthall 1980) which is derived from the preceeding Bayou La Batre variant of the Gulf Formational period, is limited to the Tallahatta Hills, Rolling Piney Woods, and Delta Meander, Delta Swamp, and Delta Marsh zones in the southern portion of the project area.

No radiocarbon dates are available from Miller complex sites in the northern section of the project area. Based on data from the Gainesville Lake Area project in the upper Tombigbee Valley, Jenkins has estimated that Miller I components in the BWT project area should date between 100 B.C. and A.D. 300, and Miller II components should date between A.D. 300 to A.D. 600.

Most sites recorded by the BWT archaeological reconnaissance in the northern section of the project area are known only from surface collections. Some difficulty in isolating Miller I-II components within surface assemblages collected from complex plow disturbed multicomponent sites arises, in part, from the effects of "overprinting" by similar Late Woodland Tuckabum Complex component ceramics on Miller I-II sites.

The temporal position and cultural affinity of many of the mounds at the multimound sites such as Breckenridge Landing, Site 1Mo9 (Moore 1905, Sears 1962), McAlpine Place, Site 1Mo8 (Sears 1962), and the Cedar Hummock Group, Site 1Su97 (Thomas 1894), once considered to be of probable Miller I-II origin, should be reassessed in light of the Tuckabum complex which has now been defined for this area (Jenkins, Chapter V).

The BWT reconnaissance recorded two sites, 1Mo109 and 1Mo106, which demonstrate simple intact Miller I-II deposits. Additional investigations at this type of site are required to assess the content and temporal position of the local Miller complexes. Drastic variation in Miller I-II temporal position and material content is not expected between the BWT and Gainesville Lake Area projects, but this assumption must be tested, as the Tuckabum complex has potential for variability.

Jenkins (Chapter V) estimated that the Porter complex in the southern dates between A.D. 1 and A.D. 500. The only three radiocarbon determinations on Porter sites support these estimates.

At the Blakeley Shell Midden, Site 1Ba229, Stowe (1977, see also Moore 1901) obtained dates of A.D. 45 (UGa 2183) and A.D. 250 (UGa 2184), from samples associated with Porter Marksville, Santa Rosa-Swift Creek, and Bayou La Batre ceramics in the charcoal rich Zone F encountered 5 ft below the surface. These are acceptable Porter dates, but the discrepancy of 200 years or 3 to 4 standard deviations between determinations, on samples from the same well defined horizon is disconcerting.

At the Jackson Creek site, Site 1Ck209, the BWT project obtained a small sample in association with Porter ceramics which has yielded a date of A.D. 200±50 (DIC 2455). This is a perfectly acceptable date for the middle of the Porter period. The associated ceramics include a few of almost all of the diagnostic Porter types. Because of the small size of the associated ceramic sample (n=35), we cannot, however, confidently quantify the character of this assemblage. Jenkins has postulated the development of the Porter type, Alligator Bayou Stamped, from the preceeding Bayou La Batre Dentate Stamped type. This theory is supported by Trickey's (1958) ceramic seriation, and by the dated sequence at Site 1Ck45 where zoned dentate stamped sherds appeared in the latest level. Alligator Bayou Stamped is, therefore, considered to be an early Porter type, and its absence from the small sample at Site 1Ck209 appears to support this contention.

The ceramic type, Basin Bayou Incised, which is stylistically related to the later type, Weeden Island Incised, is considered to be an indication of late Porter. This assumption is apparently supported by the dated assemblage at Site 1Ck209, which included two Basin Bayou Incised sherds. The presence, absence, and relative proportions of these types within Porter assemblages may eventually prove to be reliable chronological indicators, but a great deal of additional research will be required to realize the potential indicated here.

LATE WOODLAND

Site 1Ba194A

A determination was made on a grab sample of Rangia shell obtained by May (1976) from a test pit at a depth of 1 meter (?) at Site 1Ba194A.

The Lower Hall Landing Site (BWT Reconnaissance, May 1976, Stowe 1981).
Provenience: Test Pit.
Radiocarbon Determination: 1150±80 B.P.: A.D. 800±80 (I-7539).
Component: Late Woodland.

No account or list was provided of the associated cultural materials.

Both Stowe (1981) and the BWT Reconnaissance obtained large surface collections from this site which indicate an occupation beginning during the Late Woodland period and extending through the Mississippian.

Site 1Ba176

A Rangia shell sample was collected by Trickey and Holmes in 1957 from a 5 ft by 6 ft test excavation at the stratified multicomponent Bryants Landing 4 site on the south shore of Tensaw Lake. This Rangia shell sample was derived from Shell Layer 1, the uppermost shell lens at this location.

The Bryants Landing Site 4 (Trickey and Holmes 1971).
Provenience: Shell Layer 1.
Radiocarbon Determination: 1080±50 B.P.: A.D. 870±150 (M-821).
Component: Late Woodland.

The associated cultural materials included: 17 shell tempered "Three Rivers Plain" (Trickey 1958), 111 sand and coarse grit tempered Mobile Cord Marked, and 27 residual sand tempered plain.

Site 1Ba2

May (1976) obtained a radiocarbon determination made on a grab sample of Rangia shells from a "1 meter pit near temple mound."

The Bottle CreekSite (May 1976, see also Stowe 1981, Bigelow 1853).
Povenience: Test Pit. Radiocarbon Determination: 1098±85 B.P.: A.D. 860±85 (I-7141).
Component: Late Woodland.

The depth of the sample, and a description of the cultural material found in association with it were not provided.

Site 1Cw45

A determination from Site 1Cw45 on the right bank of the Tombigbee River above the mouth of Tuckabum Creek was made on wood charcoal recovered from a test trench excavated in the prehistoric dump at the north end of the site.

The Tuckabum Creek Site (BWT Reconnaissance).
Provenience: Test Trench.
Radiocarbon Determination: 1140 ± 50 B.P.: A.D. 810±50 (SI-5349).
Component: Late Woodland.

Associated cultural materials included 55 plain sand tempered sherds similar to Weeden Island Plain, and 222 sand/grit tempered cord marked sherds similar to Furrs Cord Marked. A single sand tempered net marked sherd and one sand tempered incised sherd were the only other ceramics recovered. Lithic artifacts included four small triangular projectile points and fragments of red jasper and Tallahatta quartzite . Associated debitage included 71 red jasper, 17 Tallahatta, 4 yellow jasper, 1 non-local blue gray chert, and 2 white quartzite flakes.

Site 1Ba181

Stowe (1981) obtained a determination from a wood charcoal sample recovered from a 1 m by 1 m test excavation at the Hubbards Landing site. The sample dates Zone F, a layer of Rangia shell and earth middens which extended from 95 to 125 cm below the surface. The site contained stratified multicomponent deposits.

The Hubbards Landing Site (Stowe 1981).
Provenience: Zone F.
Radiocarbon Determination: 1120±60 B.P.: A.D. 830±60 (DIC-2106).
Component: McLeod/Weeden Island.

Associated cultural material included the following McLeod/ Weeden Island plain and stamped ceramics: 3 McLeod simple stamped rims, 8 McLeod check stamped rims, 22 Weeden Island plain rims, 237 sand tempered plain, 23 sand tempered check stamped, 3 sand tempered linear check stamped, 5 grit tempered check stamped, 13 grit tempered plain, 1 sand tempered engraved (?), and 1 eroded sand tempered stamped.

Zone F was overlain by earth midden Zones E and D (approximately 10 cm thick) which contained grit tempered Mobile Cord Marked and grit tempered check stamped and plain ceramics, and by a shell lens, Zone B, which yielded exclusively shell tempered Mississippian ceramics.

Site 1Ck5

The James Village Site (BWT Reconnaissance, see also Wimberly 1960, DeJarnette 1936-1942, and Moore 1905).
Provenience: BWT Feature 1.
Radiocarbon Determinations: 680±50 B.P.: A.D. 1270±50 (DIC-2453),
820±50 B.P.: A.D. 1130±50 (DIC-2512).
Component: Terminal Woodland.

Two radiocarbon determinations were obtained by the BWT reconnaissance for the James Village, Site 1Ck5. Wood charcoal samples were recovered from a basin shaped 106 cm (42 in) diameter trash pit northeast of an old house which appears in early photographs of the site (Wimberly 1960).

Sample DIC-2453 was obtained 38 to 61 cm (15 to 24 in) below the surface, from the lower portion of a dark zone of organically stained pit fill which characterized the upper half of this feature. Sample DIC-2512 was obtained from the upper half of this dark zone, between the base of the plowzone 23 cm (9 in) to a depth of 38 cm (15 in) below surface.

The following cultural materials were recovered from this feature: 3 McLeod Linear Check Stamped, 4 McLeod Simple Stamped, 3 Wakulla Check Stamped, 15 sand tempered check stamped, 32 sand tempered linear check stamped, 34 sand tempered simple stamped, 20 sand tempered plain, 1 white quartzite flake, and 1 sandstone grinding stone fragment. No changes in artifact content were noted between the two zones of pit fill.

Discussion

Seven radiocarbon determinations are available from Late Woodland and presumed Late Woodland contexts within the BWT project area. The Late Woodland period (ca. A.D. 600 to A.D. 1200) within the BWT project area is manifested by no less than five different ceramic complexes: Miller III, Tuckabum, McLeod, Weeden Island, and Tensaw Lake. Yet a sixth complex may be present in the Mobile Delta, represented by grog tempered cord marked ceramics but the data necessary to support this possibility remains incomplete.

The Miller III complex, confined to the Black Belt, Interior Flatwoods, and Southern Red Hills in the northern section of the project area remains undated. No single component Miller III sites containing intact deposits suitable for radiocarbon dating have been identified in this section. Jenkins has estimated that Miller III sites in the area will range from A.D. 600 to A.D. 1050. The content of these sites is expected to parallel that of Miller III sites in the Gainesville Lake Area. A series of recently dated features at Site 22It606, in the upper Tombigbee Valley, suggest a possible later upper limit for late Miller.

At Site 22It606, a group of features containing an assemblage of 4 to 16 percent shell, 4 to 27 percent mixed shell and grog, 50 to 80 percent grog, and 3 to 20 percent sand tempered ceramics have been dated between A.D. 1090 and A.D. 1350 (White, personal communication).

The Tuckabum complex sites, like Miller III sites, are confined to the northern sections of the project area north of the Tallahatta Hills. A single radiocarbon determination for the Tuckabum complex obtained by the BWT Archaeological reconnaissance for the Tuckabum complex dated to A.D. 810±50. This date for wood charcoal from a trash dump at the Tuckabum Creek site, Site 1Cw45, although later than originally anticipated, is probably accurate.

The Tuckabum complex is distinguishable from partially earlier Miller manifestations on the basis of ceramic content and distinctive projectile point style (Figure 3). The ceramic assemblage is dominated by sand tempered cord marked, (80±5 percent) and sand tempered plain (20 ± 5 percent) types. The associated projectile points are small triangular arrow (?) points of red jasper and Tallahatta quartzite similar to Sand Mountain and Madison types (Cambron and Hulse 1975:84,112). Other Tuckabum traits may include the use of multiple mound mortuary sites. The temporal range of the Tuckabum complex remains unknown, as does its vari-

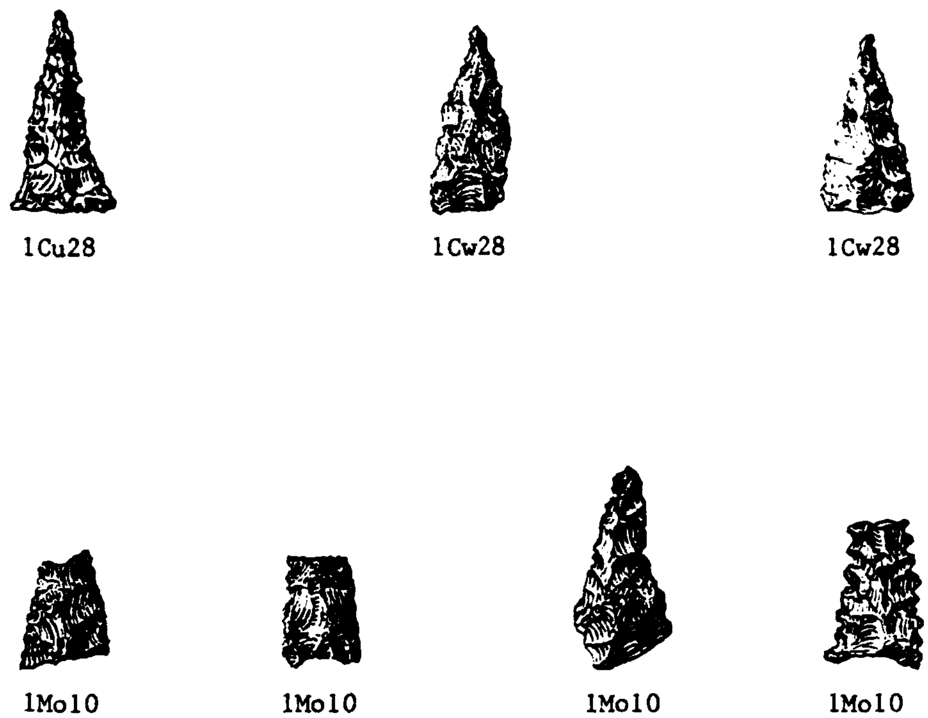

Figure 3. Tuckabum Projectile Points Chipped from Heat Treated Red Jasper Pebbles.

ability in content over time and space and by season and function. A high percentage of the mound and occupation sites recorded in the northern section of the project area contain Tuckabum complex components.

The terminal Late Woodland McLeod ceramic complex is represented in the central and southern portions of the BWT project area south of the Flatwoods physiographic zone. The temporal position of the McLeod ceramic complex and its variability in content through time have perplexed archaeologists working in the region since this cultural manifestation was first recognised and described (Wimberly 1953, 1960; Trickey 1958; Trickey and Holmes 1971; Knight 1977).

Until now radiocarbon determinations have not been available for McLeod ceramic assemblages and considerable debate has developed. Wimberly (1960) placed these ceramics in the Early to Middle Woodland period based on morphological similarities to coastal Georgia Deptford ceramics (Williams 1968), and on his interpretation of the ceramic sequence, derived from the field notes of Tourtelot's WPA excavations (DeJarnette 1936-1942) at the McLeod Estate Village, Site 1Ck2.

Trickey (1958), based on stratigraphic evidence from the Salt Creek I and Salt Creek II test excavations, placed the McLeod assemblage in a terminal Woodland position following the Weeden Island period. Based on Trickey's ceramic seriation, Trickey and Holmes (1971) maintained this late placement of McLeod even after Wimberly's (1960) publication of the WPA Clarke County data.

The BWT project obtained two radiocarbon dates from wood charcoal recovered from a McLeod feature at the James Village, Site 1Ck5 (Wimberly 1960). The large and apparently uncontaminated samples were were collected from an undisturbed trash pit. A pure assemblage (n=111) of McLeod complex sherds comprised of 16 percent check stamped, 31 percent linear check stamped, 34 percent simple stamped, and 20 percent plain was recovered from the trash pit.

Sample DIC-2453 yielded a date of A.D. 1270±50 from material collected between 30 and 61 cm below the surface in the lower half of a dark lens of pit fill. This determination was considerably later than had been expected by Jenkins, although it supported Trickey and Holmes' (1971) interpretation favored by Weisman and Brose.

Sample DIC-2512, run as a check, yielded a date of A.D. 1130±50. The second sample was obtained from charcoal in the upper portion of the same lens in the same pit from 23 to 38 cm below the surface. The second date supports the previous determination and the late placement of the associated McLeod complex ceramic assemblage. Although the discrepancy of three standard deviations between these dates is somewhat disconcerting, the general range of the James village dates is believed to be correct.

Weisman believes that McLeod is a local terminal Woodland development with origins in the preceding Weeden Island period, and that it has no direct temporal or ceramic relationship to coastal Georgia Deptford (Caldwell and Waring 1939, Williams 1968:135-144, 198-208, 216-221). The temporal range of the McLeod ceramic complex and its variability through time remains uncertain, however, the James Village dates do indicate a significant percent of simple stamping was present late in the continuum. The relative frequency of ceramic types within the McLeod complex is expected to be temporally sensitive, but additional data are required before variation in these ceramic assemblages can be adequately understood.

The Weeden Island ceramic complex (Willey 1949) is confined to the southern section of the project area, in the Rolling Piney Woods, Delta Meander, Delta Swamp, and Delta Marsh physiographic zones. Weeden Island burial mounds at Kimbells Field, Carneys Bluff, and Paynes Woodyard were investigated by Moore (1905). Although Moore's sites have not been relocated, a number of other Weeden Island occupation and shell midden sites have been identified by Trickey (1958), Stowe (1981), and the BWT reconnaissance. Jenkins (Chapter V) has estimated that Weeden Island sites within the BWT project area were occupied between A.D. 500 and A.D. 900.

A single radiocarbon determination is available from Weeden Island related deposits in the BWT project area. Stowe (1981) obtained a date of A.D. 830±60 (DIC-2106) from a wood charcoal sample from Zone F at the stratified multicomponent Hubbards Landing site on the western shore of Tensaw Lake northeast of Bryants Landing. The dated ceramic assemblage in Zone F was dominated by sand tempered plain (n=259) with small percentages of associated check stamped (n=28). A small percentage of McLeod Simple Stamped sherds (n=3) were also recovered. No Weeden Island series types were present. The Hubbards Landing date is believed to be correct.

The Tensaw Lake complex, which includes the coarse grit tempered Mobile Cord Marked ceramic type and unnamed minority companion types of grit tempered plain and check stamped ceramics, is known only from sites in the southern portion of the project area south of the Tallahatta Hills region.

The dated Weeden Island component in Zone F at Hubbards Landing, Site 1Ba181, was overlain by a low density Tensaw Lake component in Zones D and E (Stowe (1981). The Tensaw Lake component was in turn overlain by a horizon containing shell tempered Mississippian ceramics. The evidence from Site 1Ba181 suggests a post-Weeden Island lower limit for the Tensaw Lake complex with an upper limit set by the local appearance of shell tempered Mississippian ceramics ca. A.D. 1250.

An old radiocarbon date (M-821) of A.D. 870±150 on Rangia shell recovered in association with Mobile Cord Marked ceramics from Shell Layer 1 at the Bryants Landing Site 4 supports the Hubbards Landing evidence. The questionable reliability of the old Michigan dates applies to this determination as well as the others from Bryants Landing. It is Weisman's opinion that while this determination falls within the hypothetical range for the Tensaw Lake complex it may still be somewhat too early for the deposits and assemblage it dates.

A date of A.D. 800±80 (I-7539) obtained by May (1976) from the base (?) of the midden at the Lower Hall Landing site, Site 1Ba194, may refer to a Tensaw Lake component (Stowe 1981, Curren and Stowe 1971), but an earlier Weeden Island occupation is also indicated, and the A.D. 800 date may well refer to the Weeden Island component. The vague provenience and unknown cultural materials which may have been associated with this determination limit its archaeological utility.

The relationship between Tensaw Lake, earlier Weeden Island, and later Mississippian occupations within the project area is uncertain. The ceramic discontinuity is, however, clear. Where the Tensaw Lake complex came from, and where it went, are problems for future research, as is the relationship between Tensaw Lake and the contemporaneous McLeod manifestations to the north.

MISSISSIPPIAN

Site 1Ck210

A radiocarbon determination made on wood charcoal recovered by the BWT reconnaissance from a slumped trash pit exposed in the left bank of the Tombigbee River opposite old St. Stephens dates a Mississippian component at Site 1Ck210.

Provenience: Trash Pit.
Radiocarbon Determination: 665±65 B.P.: A.D. 1295±65 (SI-5348).
Component: Mississippian.

Associated cultural material recovered from the slumped pit fill and from the surface of the adjacent river bank included: 324 coarse shell tempered plain, 17 fine shell tempered plain, 9 Moundville Incised var. Snows Bend, 5 Moundville Incised var. Moundville, 11 Moundville Engraved, 8 Pensacola Incised, 4 O'Olive Incised, 3 residual shell tempered incised, 12 Mobile Cane Impressed (salt pan ware), 4 Langston Fabric Marked, and 2 sand tempered plain.

Site 1Ck20

A sample composed of wood charcoal and charred acorn fragments was recovered from a ceremonial (?) activity surface near the base of a small temple platform mound exposed in the left bank of the Tombigbee River.

Mound(s) opposite Peaveys Landing (BWT Reconnaissance, DeJarnette (1936-1942, Moore (1905).
Provenience: Floor near base of Mound A.
Radiocarbon Determination: 210±55: A.D. 1740±55 (SI-5345).
Component: Mississippian.

Directly associated ceramics included: 3 coarse shell tempered plain, 2 fine shell tempered plain, 2 Moundville Incised var. Snows Bend, and 3 Mobile Cane Impressed sherds.

A surface collection along the river bank north of this mound yielded 61 coarse shell tempered plain, 16 fine shell tempered plain, 1 Moundville Incised var. Snows Bend, 1 Moundville Engraved, 15 Pensacola Incised, 1 D'Olive Plain, and 2 sand tempered plain sherds.

Discussion

The Mississippian stage within the BWT project area is dated by only a single determination from Site 1Ck210, a site located by the BWT reconnaissance on the left bank of the Tombigbee River opposite old St. Stephens.

The 1Ck210 date (SI-5348) of A.D. 1295±65 is on wood charcoal recovered by Jenkins and Weisman from a slumped trash pit exposed in the eroding river bank. The associated ceramics (n=400) were local analogues of the coarse and fine shell tempered Moundville types and varieties, with the addition of a few local types such as Mobile Cane Impressed (salt pan ware) and D'Olive Incised.

No obvious early or late ceramic indicators were included in the 1Ck210 assemblage and the date is probably acceptable.

Although the 1Ck210 determination falls into the Moundville II or Summerville II-III phase range, the ceramic assemblage in some respects does not. The dominant decorated variety in the northern assemblages at this time was Moundville Incised var. Carrollton. At Site 1Ck210 the local analogue of var. Carrollton was absent, and vars. Snows Bend and Moundville were present. The Moundville Incised analogue at Site 1Ck210 was the dominant decorated type (n=114) but the Moundville Engraved (n=11) and Pensacola Incised (n=8) types were present in nearly equal relative frequencies.

A disappointing radiocarbon determination (SI-5345) of A.D. 1740±55 was obtained from a small sample of wood charcoal and charred acorns recovered by Jenkins and Weisman from a floor near the base of the Peaveys Landing temple platform mound, Site 1Ck20. Directly associated cultural materials were limited to a small sample of shell tempered ceramics (n=10). This date is without question unacceptably late. The reasons for this late determination remain unknown. This site should date to about the same time as Site 1Ck210.

From the Peaveys Land Mound sample provenience, we expected that this determination would provide an upper limit for the advent of Mississippian ceremonialism in the southern portion of the project area. It does not. The Peaveys Landing Mound, Site 1Ck20, is in immediate danger of destruction by lateral channel migration. This process has already removed a larger mound from this site which was described by Moore (1901, 1905). The present exposure at Site 1Ck20 offers a good opportunity to gather additional samples that may yield more acceptable dates bearing on the earliest Mississippian activity in the area.

At present there is little evidence for early Mississippian within the BWT project area. Most Mississippian sites exhibit ceramic assemblages characteristic of later dated phases in the northern sequences. The search for, and identification of, early Mississippian sites is a problem for future research.

Dates from Mississippian sites adjacent to the southern section of the project area are all relatively late. May (1976) obtained a series of four radiocarbon determinations from the Dauphin Island Shell Midden, Site 1Mb72: A.D. 1590±80 (I-7654), A.D. 1435±80 (I-7658), A.D. 1400±80 (I-7657), and A.D. 1430±80 (I-7142). The dates were obtained from oyster shell samples recovered from contexts without control on associated cultural material, but they appear to correspond to a late Mississippian occupation (Knight 1975). Similar ceramics in west Florida occur with Spanish materials.

A date of A.D. 1365±60 on a Moundville component at the Liddell site, 1Wx1, in Wilcox County on the lower Alabama River (Sheldon 1974) and recent dates obtained by Curren and Little (1981: Table 11) also document the late aspect of Mississsppian ceramic manifestations in the region.

The relationship between the northern and southern portions of the project area during the Mississippian stage cannot be approached beyond a speculative level given the quantity and quality of data available. Observed variations may be due to sampling error, local differences, mixed assemblages, or some uncontrolled combination of these and other unknown factors.

Local Mississippian ceramic developments and variations through time can only be understood after the careful collection of well provenienced and temporally controlled data from a representative sample of sites in the region. The wealth of data available from Mississippian phases elsewhere in the BWT drainage must be used cautiously in interpreting and attempting to understand the local Mississippian manifestations, especially in the southern section of the project area.

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APPENDIX E

HISTORIC MATERIAL CULTURE

James Parker

The material culture recovered during the field seasons of the BWT project came from sources and sites which varied in temporal provenience and location. The wide range of locations is related to the development of the area by white settlers and their increasing independence on the location of water and biotic resources. The earliest sites were found in close proximity to natural resources and aboriginal settlements.

THE COLONIAL AND AMERICAN FRONTIER PERIODS: 1699-1830

The colonial period in the southwestern Alabama area began in 1699 with the arrival of the French in Mobile Bay and continued until 1813 when the Spanish were forced out of the Mobile-Baldwin County region. The American frontier was established in the late eighteenth century. Frontier conditions continued until the early 1820s when the threat of Indian problems and the influx of settlers brought about a stable settlement pattern throughout most of the survey area.

The colonial and frontier periods have been combined to accomodate some material which could be remains from either or both eras. A refined cream colored earthenware called creamware is an example of overlapping usage. These ceramics were introduced to North America during the third quarter of the eighteenth century. Use of creamware declined, but production continued after the introduction of pearlware. Some patterns were discontinued, but others continued to be used (Noel Hume 1970, 1972). In the south Alabama region recent excavations have recovered large amounts of creamware from contexts dating to the 1817-1821 period.

The colonial-frontier era came to an end as lands in southwestern Alabama were opened and the military pushed remnants of hostile Indians eastward into Florida. The years which followed were developmental to the state and a broad range of material culture was introduced into the area. Time markers are not as well defined for the years following the colonial-frontier period up until the present. In many cases reoccupation or continued use of various materials cloud the chronological issue. The dates used in this study were based upon broad patterns.

The earliest sites of this group are considered the most important. This is not a bias toward age, but toward frequency and sensitivity to activities associated with the development of the BWT corridor. Because of the dependence upon natural transportation routes and biotic resources the early sites were clustered near the river.

Colonial and frontier period components were investigated at 15 sites. Site 1Ba215 contained a small assemblage including brown salt glaze stoneware and light green bottle glass. The wares were similar to types found at eighteenth and early nineteenth century sites in Alabama and the Gulf Coast area (Parker 1981, Brooms and Parker 1979, Brain 1980, Noel Hume 1970).

Site 1Mb60 contained a small historic assemblage including creamware and dark green bottle glass. At Site 1Mb203, only one Euroamerican historic item was present. The single piece of medium green colored bottle glass was of a type similar to that recovered at Forts Tombecbe and Toulouse (Parker 1981, Brooms and Parker 1980). At Site 1Mb212 a single piece of blue shell edged pearlware was recovered which may have been introduced during the late colonial or frontier period. This ceramic type was produced into the 1820s and later (Noel Hume 1970, Parker 1981, Brooms and Parker 1980).

Another small assemblage at Site 1Mb213 contained creamware, a kaolin pipe stem, and dark green bottle glass (Noel Hume 1970). This is a possible colonial or contact period site. A subarea of Site 1Ba213, designated 1Mb213B, produced a Civil War period Minnie ball and two pieces of tin enameled earthenware. The sherds of tin enameled ceramics did not contain sufficient definable attributes to suggest a cultural affinity. It is probable that the peices are of French or British manufacture, but Spanish affinity is also possible (Noel Hume 1970).

Site 1Mb216 had a larger number of colonial period items than other sites within the corridor. A piece of red transfer printed whiteware post-dates the colonial-frontier era. Pearlware and creamware were present as was medium green and aqua bottle glass. Of particular interest were tin enameled earthernware sherds and a clear, ribbed glass tumbler fragment. The tin enameled ceramics cannot be assigned a national origin, but they are possibly colonial. The style of the ribbed tumbler is found at French related sites in the Southeast (Parker 1981, Brooms and Parker 1980).

Only one piece of ceramics at Site 1Mb218 suggested colonial-frontier affinity. The well weathered sherd appeared to be a portion of an Iberian style earthenware vessel. The ware was brought into North America throughout the colonial period and was used by all European colonial groups. Twelve pearlware sherds were present at Site 1Ck203. Ten pieces were undecorated and the others had blue shell edged decorations. Site 1Mo97 produced creamware, pearlware, and blue transfer printed pearlware. The assemblage at Site 1Su101 was limited with no late items present. Creamware and pearlware were recovered.

The majority of the material recovered from Site 1Wn73 was associated with the last half of the nineteenth century and early twentieth century. Significant exceptions were blue shell edged and blue transfer printed pearlware and creamware. Plain creamware was present but so was Royal or "Queens shape" patterned remains. The Queens shape pieces originated during the last quarter of the eighteenth century. Recent excavations in the lower Alabama-Tombigbee River basin have shown this pattern to be a minority type at the early nineteenth century sites.

Site 1Wn65 produced a large amount and many types of pearlware. Shell edged, transfer printed, and undecorated items were present. Banded whitewares and transfer prints were also present. This site has potential for an occupation in the first quarter of the nineteenth century.

A single sherd of pearlware and a single creamware fragment were recovered from Site 1Wn76.

Site 1Ba198 was first occupied in the early nineteenth century. A very large assemblage contained material dating from the first quarter of the nineteenth century to the 1980s. The largest portion of the finds dated to the second half of the nineteeth century and the first quarter of the present century. Of interest were creamware and pearlware fragments and gun flints. The flints were prismatic in form. One flint was of rifle size and the other was from a pistol.

THE POST-FRONTIER PERIOD: 1830-PRESENT

In the strictist sense the frontier period in the BWT area continued to the removal of the Choctaws in the 1830s, but the settlement pattern and development of trade and commercial centers had surpassed the frontier stage in the early 1820s.

It is more difficult to assign strict cultural-temporal dates to much of the material culture of the later period because of the length of use of the ironstone-whiteware ceramic bodies. The late historical period is undergoing much study and chronologies are yet to be established. For this report of reconnaissance level recovery, broad groupings have been proposed to suggest temporal spans for the original occupation and a terminal date for each period.

The material should undergo intensive study when a full research design for the BWT study area is prepared. The absence of subsurface and contextural data does not allow in depth study at this time.

Mid-nineteenth century materials were recovered from Sites 1Ba460, 1Ck211, and 1Mo106 (a long term occupation).

Third quarter nineteenth century to the first half of the twentieth century materials were recovered from Sites 1Ba393, 1Ba398, 1Ck16, 1Cw28, 1Mo10, 1Mo63, 1Mb97, 1Mb206, and 1Wn67. Sites 1Ba398 and 1Wn67 contained large assemblages. Site 1Wn67 appeared to be assiciated with an upper class residence.

Early twentieth century to recent materials were recovered from Sites 1Ba197, 1Ba200, 1Ba392, 1Ba400, 1Ck5, 1Mb210, 1Mo63, 1Mo64, 1Mo104B, 1Mo106, 1Mo107, 1Mo109, 1Su99, 1Wn73, 1Wn75, and 1Wn81.

A number of sites contained undatable historic material. The usual artifacts were metals without diagnostic merit. Sites with undatable historic components were: 1Ba397, 1Ba431, 1Ck20, 1Ck206, 1Cw28, 1Cw30, 1Cw31, 1Cw39, 1Mb210, 1Mb211, 1Mb214, 1Mb215, 1Mo9, 1Mo65, 1Mo66, 1Mo67, 1Mo102, 1Mo105, 1Su95, 1Su96, 1Su98, 1Wn70, 1Wn72, 1Wn73, 1Wn76, and 1Wn81.

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