Cooper River Rediversion Archeological Survey

Paul E. Brockington Jr.

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Cooper River Rediversion Archeological Survey

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TABLE OF CONTENTS

LIST OF FIGURES ........................................ iv

LIST OF TABLES ........................................ v

ACKNOWLEDGEMENTS ....................................... vi

PREFACE ................................................... vii

MANAGEMENT SUMMARY ..................................... ix

INTRODUCTION AND RESEARCH GOALS ......................... 1

ENVIRONMENTAL BACKGROUND PREDICTIONS FOR ARCHEOLOGICAL SITE LOCATION ........................................ 5

Environments and Archaeological Research .................. 5
Physiography and Geography ................................ 5
Climate .................................................. 6
Flora and Fauna ........................................ 8
Environmental Summary .................................... 11
Environmental Change Since the Late-Wisconsin Glaciation and its Effect on the Coastal Plain ............... 12
A Predictive Model for Archeological Sites in the Project Area ........................................ 14

ARCHEOLOGICAL AND HISTORIC BACKGROUND .................. 17

A General Outline of the Prehistory of the South Carolina Coastal Plain ........................................ 17
Early History of the Project Area .......................... 19

SURVEY METHODS ........................................... 23

Introduction ............................................. 23
Archival Research ....................................... 23
Field Methods .......................................... 27
Laboratory Methods and Analysis .......................... 33
Summary ............................................... 34

ARCHEOLOGICAL SITES AND THEIR SIGNIFICANCE .......... 35

Site Descriptions ........................................ 35
Contribution of the Archeological Survey to History and Prehistory ........................................ 86
Site Significance and the National Register .............. 90
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>MITIGATION PLAN</td>
<td>37</td>
</tr>
<tr>
<td>Introduction and General Features</td>
<td>97</td>
</tr>
<tr>
<td>Study Program and Scheduling</td>
<td>100</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>103</td>
</tr>
<tr>
<td>FIGURE</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>View of swamp zone</td>
</tr>
<tr>
<td>2</td>
<td>Lake Mattassee</td>
</tr>
<tr>
<td>3</td>
<td>Environmental zones of the project area</td>
</tr>
<tr>
<td>4</td>
<td>Aerial view of the uplands of the project area</td>
</tr>
<tr>
<td>5</td>
<td>View of the ecotone bluff and slope facing Lake Mattassee</td>
</tr>
<tr>
<td>6</td>
<td>A re-drawing of the 1773 map of northern Berkeley County by Henry Mouzon</td>
</tr>
<tr>
<td>7</td>
<td>Typical 25 cm square subsurface test excavation</td>
</tr>
<tr>
<td>8</td>
<td>Excavation procedure for subsurface testing</td>
</tr>
<tr>
<td>9</td>
<td>Typical view of firebreak cut allowing opportunistic inspection of ground surface</td>
</tr>
<tr>
<td>10</td>
<td>Recently disturbed area at the western end of 38BK229</td>
</tr>
<tr>
<td>11</td>
<td>Recent roadcut in swamp zone</td>
</tr>
<tr>
<td>12</td>
<td>Location of sites discovered during the reconnaissance and survey</td>
</tr>
<tr>
<td>13</td>
<td>View of 38BK73, facing south</td>
</tr>
<tr>
<td>14</td>
<td>View of 38BK75, facing west</td>
</tr>
<tr>
<td>15</td>
<td>View of 38BK76, facing northeast</td>
</tr>
<tr>
<td>16</td>
<td>Recently plowed surface of 38BK109, facing northwest</td>
</tr>
<tr>
<td>17</td>
<td>One meter test excavation at 38BK109</td>
</tr>
<tr>
<td>18</td>
<td>Graded surface of 38BK225</td>
</tr>
<tr>
<td>19</td>
<td>Historic structure at 38BK225</td>
</tr>
</tbody>
</table>
LIST OF FIGURES (CONTINUED)

FIGURE 20: View of 38BK225. ........................................ 62
FIGURE 21: One meter test excavation at 38BK226 .................. 63
FIGURE 22: View of 38BK226. ........................................ 63
FIGURE 23: 38BK230, facing north. ................................. 73
FIGURE 24: 38BK231, facing east .................................... 73
FIGURE 25: 38BK232, facing north. ................................. 77
FIGURE 26: 38BK233, facing north. ................................. 77
FIGURE 27: Subsurface test at 38BK235 ............................ 79
FIGURE 28: View of 38BK236, facing southeast. .................. 79
FIGURE 29: 38BK239, facing southeast. .............................. 82
FIGURE 30: 38BK240, facing east .................................... 85
FIGURE 31: One meter square test excavation at 38BK245. ........ 85

LIST OF TABLES

TABLE 1: Archeological Sites in the Cooper River Rediversion
Project area .......................................................... 37
TABLE 2: Archeological component distribution over environmental
zones and temporal periods ......................................... 87
TABLE 3: Sites outside project area .................................. 94
TABLE 4: Major site matrix ........................................... 98
The archeological survey of the proposed Cooper River Rediversion Canal area was a large project and many individuals contributed to its accomplishment. The Corps of Engineers, Charleston District, is to be commended for its concern with cultural resources and the friendly and complete cooperation of its staff. Mr. Steve Morrison and Mr. John Carrothers offered much helpful advice and aided us in negotiating the several extensions and modifications to the original study. Mr. Bob Benke provided the survey team with excellent maps and descriptions of the project as well as a useful history of the project. Mr. Louis Iacona, resident engineer in St. Stephens, was very helpful throughout the field phase of the survey. We are particularly indebted to him for arranging the temporary preservation of the historic structure at 38BK225. Mr. Bob Lawson, chief field representative of the Corps office in St. Stephens, assisted the survey team in numerous ways in negotiating the often difficult terrain of the project area.

The survey fieldwork was done by the author and Mr. Eric Neil. Mr. Neil gave unstintingly of his time and energy during the project, and I am particularly grateful for the death of one four-foot water moccasin arranged by Mr. Neil. Mr. Bill Lees and Mr. Joe Joseph worked long hours during the emergency excavations at 38BK225 and are especially thanked. Mrs. Margaret Higgins of Kingstree graciously provided her home as field headquarters during the survey.

The entire staff of the Institute of Archeology and Anthropology contributed to the survey project. Drafting of maps was done by Mr. Darby Erd and Mr. O'Neal Jackson. Mr. Gordon Brown prepared the photography with his usual care and Ms. Sue Jane Alsing conscientiously and carefully typed the entire manuscript. I am particularly grateful to Ms. Claudia Wolfe for her expert and devoted assistance in the analysis and cataloging of the artifacts. In charge of all aspects of the technical preparation of the report was Ms. Susan Jackson, Institute editor, and she is especially acknowledged for her timely and careful work. Mr. Kenn Pinson prepared the final manuscript for publication, continuing the fine editorial work of Ms. Jackson. Dr. Robert L. Stephenson was in overall charge of the survey project and contributed greatly with his calm advice and wise decisions throughout the project.
This report describes intensive archeological survey work and data recovery recommendations for the Cooper River Rediversion project of the Charleston District Corps of Engineers. At the time of this publication, much of the data recovery from project area archeological sites has already been accomplished. Final analyses and report preparations for those studies should be completed in 1981.

The survey report is based on fieldwork performed in 1977 and early 1978 by the author and several assistants from the Institute of Archeology and Anthropology, University of South Carolina. Also included are re-evaluations of several sites located during an earlier reconnaissance of the project area performed by Institute staff (Asreen 1974).

An initial draft of the survey report was submitted to the Charleston District Corps of Engineers in late 1977. In early 1978 a conference was held in Charleston among the author, Dr. Robert Stephenson (Director of the Institute), Mr. John Carrothers, Mr. Steve Morrison (Charleston District), and Mr. Marc Rucker (Southeast Division Corps of Engineers). Several changes in the draft report were recommended and accepted. Additional fieldwork was accomplished by the Institute in March, 1978, consisting of test pits in several sites, and revisions to the draft report were made. These revisions were also addressed to initial report review comments by staff of the Interagency Archeological Services-Atlanta office. Revisions included additions of appendices listing exact site and survey transect location data as well as more refined significance assessments and data recovery recommendations at several sites.

The revised report was submitted to the Charleston District in late Spring, 1978, and, after review by them, was accepted the following summer. Arrangements were then made by the Charleston District with IAS-Atlanta for that office to coordinate archeological mitigation efforts, including data recovery from sites to be impacted by the project. The Charleston District and Southeast Division Corps of Engineers offices, working with the staff of IAS-Atlanta and the South Carolina State Historic Preservation officer (Mr. Charles Lee), submitted data to the National Register staff for determination of eligibility for the sites involved and worked with the Advisory Council on Historic Preservation to effect a Memorandum of Agreement for the project.

Data recovery plans were then formulated by the IAS-Atlanta staff under the supervision of Dr. Bennie Keel. The Contracting Officer's Authorized Representatives for the project were Mr. Jim Thomson (prehistoric) and Ms. Marci Gray (historic). Data recovery was organized into three projects, two for groups of prehistoric sites and one for the group of historic sites, and requests for proposals made in January, 1979. In February and March, 1979, awards were made to Soil Systems, Inc., Commonwealth Associates, and the Institute of Archeology and Anthropology. Data recovery fieldwork began immediately and continued at the various sites through the Fall of 1979. Analyses by the three contractors continues to this date, with final reports due in 1981.
Although copies of this survey report are on file at various offices and repositories and are available to interested parties, it was thought that publication at this time would serve two important needs. First, basic methodological and substantive data concerning the archeology of the interior Coastal Plain are contained in the report. Much of this is unlikely to be duplicated in the various data recovery reports. Second, publication of the survey report presents publicly the process of archeological investigations for the project area, illustrating this process for the benefit of other projects and allowing a more complete evaluation of its effectiveness for historic preservation.

A careful study of this survey report in comparison with data recovery reports will show certain inconsistencies. Several recommended sites were not studied, while others not originally recommended as significant were studied. In part, this shows the different priorities held by various individuals in the review and management process, but also it indicates that survey data, and interpretations from them, can change quite radically as new data are accumulated. The public interest is thus served by a lengthy review process with numerous individuals and by a phased research program to allow new data input and strategy shifts.

This report is published as accepted by the Corps of Engineers, except for certain omissions. Appendices containing exact site location data and those documenting various conferences have been omitted. Also omitted is a final section of the report which estimated costs of a recommended data recovery program.

Paul E. Brockington, Jr.
July, 1980
Management Summary

The Corps of Engineers Cooper River Rediversion Project, consisting of a canal approximately ten miles long and associated dikes and spoil disposal areas as well as a hydroelectric power station, is scheduled to be built over several years beginning in the fall of 1978. At the request of, and with funding provided by the Corps of Engineers, Charleston District, the Institute of Archeology and Anthropology conducted, in the spring of 1974, an archeological and historical field reconnaissance of the project area (Asreen 1974). This reconnaissance located 44 archeological sites, of which 39 were described as being threatened by project construction. Two of the located sites were recommended for complete excavations and several others for smaller scale tests or sampling excavations as part of a plan for mitigation of impact.

After the reconnaissance study was completed, several route changes in the proposed canal were made by the Corps of Engineers, necessitating a second cultural resources survey to inspect areas newly included in the project area. This second survey was also designed to re-evaluate the results of the 1974 reconnaissance, to make assessments of significance of sites (in terms of criteria of the National Register of Historic Places) and to develop in detail a recommended plan for mitigation of impact to those cultural resources that were deemed significant. This survey was also funded by the Corps of Engineers, Charleston District.

In the summer of 1977, Eric Neil and Paul Brockington of the Institute staff conducted field examinations of areas newly included in the project by route changes. Twenty-two additional archeological sites were located bringing to a total of 66 the number located. Of the 66 archeological sites, 41 are included within the present boundaries of the project (the impact zone) and 25 are outside of, but near to, the impact zone. Assessments of significance of these sites, together with a study of expected impact, lead to recommendations for excavation and study of 10 of the sites, monitoring initial construction at 5 sites and no further work at 23 sites. Several minor design changes are also recommended so as to avoid and protect 3 additional sites.

Included in this report are descriptions of (1) the environmental background relative to cultural resources of the area, (2) the prehistoric and historical background of the area, and (3) the field and laboratory methods employed in the study. Discussions and assessments of significance are presented and a detailed mitigation plan is recommended.
INTRODUCTION AND RESEARCH GOALS

The Cooper River Rediversion archeological survey was performed under contract for the Corps of Engineers, Charleston District. Its major purpose was to locate and assess archeological and historical resources that may be impacted by construction of the proposed Cooper River Rediversion Canal project. The proposed canal will extend from the northeastern edge of Lake Moultrie across approximately 10 miles of interriverine Coastal Plain upland to connect with the Santee River. The project right-of-way will be approximately 2,000 feet wide throughout its length.

The purpose of the canal construction project is to divert water from the Cooper River system to the Santee River, resulting in a greatly decreased flow in the Cooper River and consequent decreased siltation in Charleston Harbor at its mouth. Water flow in the Cooper and Santee Rivers will be returned to approximately the same level as before construction of Lakes Marion and Moultrie in the 1930's and the original diversion from the Santee into the Cooper River. As water flow in the Santee River will not be increased beyond its natural state as existing before the 1930's, there should be little impact of the canal construction project below its connection with the Santee. The impact zone for potential cultural resources is thus restricted to the construction area and the canal right-of-way.

An archeological reconnaissance of the Rediversion Canal project area was conducted in 1974 by the Institute of Archeology and Anthropology. Reported by Asreen (1974), the reconnaissance located 44 archeological sites of which 39 were threatened by construction. Two of these sites were recommended for excavation and study and several others for small scale excavation or monitoring during construction (Asreen 1974). Asreen divided the study area into three environmental zones: uplands, swamp and the ecotonal border between these. Sites located in the upland and swamp zones tended to be small and probably representative of temporary or short-term use or occupation by both early historic and prehistoric groups. Sites located in the ecotone zone were larger and probably representative of more intensive occupation. Both historic (18th-19th century) and prehistoric (Woodland-Mississippian) sites were found in the ecotone zone (Asreen 1974).

Changes in project design and a need for more detailed assessment of sites already discovered necessitated further, more intensive archeological survey. This was carried out in the summer of 1977 by the Institute of Archeology and Anthropology under contract with the Corps of Engineers, Charleston District. Twenty-three additional archeological sites were located and several sites discovered during the reconnaissance were revisited. Data sufficient for determination of National Register significance were obtained from all sites within the impact zone. This included excavation of test pits at several of the sites and a restudy of all material collected during the reconnaissance.
Evaluation of significance of sites in the project area is based, in all cases, on their potential for providing information important in scientific studies of history and prehistory. Since very little previous archeological studies have been made in the area and in the Southeastern Coastal Plain region, evaluation of the potential contribution of the discovered sites is a difficult task. Only two synthetic studies of prehistoric resources in the region have been made (Larson 1970; Milanich 1972). Both of these authors predict few sites for the region and hypothesize that these would represent only temporary, perhaps seasonal, occupation by coastal peoples. Data from the reconnaissance of the project area cast doubt on these hypotheses, in that many sites were located, several of which were large and appear to have been occupied over longer periods of time than predicted by Milanich (1972) and Larson (1970). A major contribution to prehistoric studies appears to be probable with scientific study of sites in the project zone directed toward understanding the character of prehistoric settlement and subsistence.

Because so little previous work has been accomplished, little is known of cultural-historical sequences in the region. Prehistoric sites located in the project area could, with appropriate scientific study, contribute to an understanding of basic ethnic and cultural variability through time.

Historic period sites of the eighteenth and nineteenth centuries were expected for the project area because of known historic references to early occupation of the region by European settlers, especially French Huguenot colonists moving into the area before the Revolution (DuBose 1972). Several early historic sites were located during the reconnaissance. The intensive survey was designed to locate additional sites and to collect data sufficient to determine site function and specific time of occupation. Early historic sites expected for the project area should contribute to knowledge about plantation systems and their evolution through time, as well as ethnic variability relating to French Huguenots.

Because of its extension across large areas of three microenvironmental zones, the study area was felt to have potential for containing both prehistoric and historic sites representing a wide range of subsistence related activities. Study of such a corridor across the major riverine and interriverine zones would allow partial testing of the ideas of Larson (1970) and Milanich (1972) for prehistoric settlement and subsistence of the Southeastern Coastal Plain. In addition, sites with potential for providing information on culture history were expected in the project area. Large and small historic sites were also expected for the project area; these were predicted to have potential for understanding the nature of eighteenth and nineteenth century plantations and the processes involved in their evolutionary growth and decline. Questions concerning ethnic variability in the colonial and post-colonial periods should be able to be addressed with detailed study of potential sites within the project area.
The survey study was thus designed with these major goals and expectations in mind. Significance was evaluated on the basis of potential contribution of cultural-historical and evolutionary settlement-subsistence problem domains. Field methods were designed to use the project area as a sample of the physiographic-ecological diversity of the interior Coastal Plain so that existing hypotheses could be tested and so that data recovered could lead to formulation of new hypotheses where needed. Such study orientation, while hopefully allowing contributions directly to ongoing research, also should aid in the fulfillment of resource inventory and assessment needs of the Corps of Engineers.
Modern anthropological and archeological research is ecological in orientation and thus involves a thorough consideration of environmental variables. However, no detailed study of environmental variables in relation to human adaptation for the Coastal Plain of South Carolina has been carried out. A brief summary of the environment of the region of the Cooper River Rediversion Project is presented below in order that this information may form a basis for a more precise delineation of environmental factors and their inclusion in theories and models of human adaptation. Such theories of past human adaptation to the Mid-Coastal Plain region of South Carolina are important to decisions of site significance.

**Physiography and Geology**

The Cooper River Rediversion Project lies in the Atlantic Coastal Plain Province of North America (Shelford 1963), midway between the Atlantic Ocean, approximately 60 miles to the southeast, and the Fall Line, at the beginning of the Piedmont province to the northwest. The underlying geological formations are unmetamorphosed sedimentary rocks that tilt and thicken to the southeast. In the project area the uppermost geological formation is the Black Mingo, which is characterized by white to yellow sandstone and bioclastic limestone underlain by gray to black shales (Heron 1962). The white to yellow fine sandstone contained in the Black Mingo formation appears to have been utilized to a great extent by prehistoric Indians for tool manufacture. Although there is variability within this sandstone in terms of its suitability for flaking, much of it appears to be very fine grained and capable of being manufactured into tools of various sizes and shapes. The sandstone of the Black Mingo formation was thus an important local resource for prehistoric inhabitants of the area.

Lying above this sedimentary rock formation in the project area are loamy subsoils in the upland areas and more clayey subsoils in the Santee River swamp areas. The soils of the area are in general sterile, sandy, and low in mineral nutrients and water holding capabilities (U.S. Department of Agriculture 1973).

Detailed, established soil information is not yet available for Berkeley County; however, preliminary information (Glover n.d.) indicates the presence of several distinct soil series in the project area. The most common upland soils are Norfolk and Goldsboro series loamy sand. These have moderate to good drainage characteristics and provide fairly good support for general agriculture and pine/hardwood forest. Forming
a mosaic with these soils in the uplands are smaller areas of Rains, Lynchburg, and Coxville series soils, which have poor drainage characteristics and only average agriculture/hardwood forest capability. Much of the area of these latter three soils is today in pasture or pine woods.

Upland-swamp ecotone portions of the project area contain sandy loam soils of the Bonneau, Carolina, Dunbar and Duplin series, with lesser amounts of the Pantego and Wahee series. The former four series have very good drainage characteristics and provide good potential for various crops and for hardwood forests. The Pantego and Wahee series are more poorly drained and provide less agriculture/forest potential.

Swamp soils include Tawcaw and Chastain silty clay loam soils. These soils are poorly drained and support cypress/gum/tupelo forest. Chastain soils occur generally near small creeks in the swamp and are more poorly drained than Tawcaw soils.

The topography of the project area is generally level with relatively poor drainage characteristics. Elevations range from more than 80 feet above sea level at the Santee-Cooper watershed divide to approximately 40 feet along the edge of the Santee River swamp. A gradual to fairly steep drop of approximately 10 to 20 feet occurs along the edge of the swamp. The swamp floor is generally uneven and characterized by small ridges about five feet above their intervening "valleys" that run generally parallel with the course of the river (Fig. 1). Presumably these ridges were caused by erosion associated with the numerous small creeks within the swamp and with the occasional flooding of the Santee River, although eighteenth century rice and indigo agriculture in the swamp may also have been an important factor in creating this topography.

Water resources are abundant in the project area. The Santee River dominates the hydrology of the area; numerous small sluggish creeks flow through the Santee River swamp, and several other creeks originate in the upland flatwoods and flow into the swamp. Mattassee Run, the largest of the swamp creeks, widens out to over a hundred feet across at its intersection with the Santee River and is there referred to as Lake Mattassee (Fig. 2).

**Climate**

The project area has a temperate maritime climate with long, warm summers and short, mild winters. Data collected near the project area from 1941 to 1970 (U.S. Department of Commerce 1974) indicate on the average, July as the hottest month (80.4°F), and January as the coldest (46.5°F). Most precipitation occurs in July with the least falling in November.
FIGURE 1. View of swamp zone showing typical cypress-dominated vegetation and uneven terrain.

FIGURE 2. Lake Mattassee at its widest point near the proposed end of the tailrace canal.
Average first and last frosts are November 25 and March 5, respectively, indicating an average growing season of 255 days (U.S. Department of Agriculture 1941). One to four cold waves commonly occur during the winter. Sleet or snow is not common in the area, and temperatures below 0°F are extremely rare (U.S. Department of Agriculture 1941).

The summer months have many days with a temperature of 90° or higher, and thunderstorms are regular occurrences. Much of the precipitation of the year is provided by these thunderstorms, with almost 40% of the annual 50 inch average occurring during the three summer months (U.S. Department of Agriculture 1941).

Hurricanes occasionally sweep through the area, and more rarely, tornadoes. Floods and droughts occur, but are very seldom disastrous (U.S. Department of Agriculture 1941).

Flora and Fauna

Oak-hickory forest is the dominant natural potential vegetation of southeastern North America (Shelford 1963). However, in the Coastal Plain province, the sandy, sterile soil contributes to an increase in pine representation. Another contributing factor in the maintenance of a high frequency of pine is the rapid recovery of these trees after fire. There is much evidence that the Indians of North America, and of the South Carolina area in particular, intentionally fired forests regularly (Kroeber 1939; Lawson 1952). This, in combination with natural forest fires and the sterile, sandy soils of the area, has probably effected the subclimax pine-oak-hickory forest of the project.

The Santee River swamp, included in the eastern edge of the project area, is typical of the cypress/gum/tupelo dominated swamps of the Southeastern Coastal Plain (Shelford 1963). Some oak is also present, as well as ash, hackberry and red maple. The ecotone or border area between the upland pine-oak-hickory flatwoods and the cypress-gum-tupelo swamp is of variable width and is dominated by oak and hickory, with some pines. The locations of these upland, swamp and ecotone microenvironment zones are shown in Figure 3. Upland and ecotone areas are shown in Figures 4 and 5, and typical swamp areas in Figures 1 and 2.

Fauna represented in the project area are both numerous and diverse. Mammals include white-tailed deer, oppossum, fox, rabbit, squirrel, muskrat, beaver, otter, mink, raccoon and bobcat. Black bear may be present today over part of the project area, and were certainly present before European contact. Snakes are common in the area surveyed and include rattlesnake, water moccasin and copperhead, as well as numerous species of water and grass snakes. Several turtle species are present, and the range of the American alligator extends into the project area as well.
FIGURE 3. Environmental zones in the area of the Cooper River Rediversion Canal project. The swamp zone is generally below the 20-foot (above mean sea level) contour level, the ecotone zone between this and the 30-40 foot contour level, and the upland zone above the 40-foot contour level.
FIGURE 4. Aerial view of the uplands of the project area showing mosaic of cultivated fields. U.S. Highway 52 is shown in this view.

FIGURE 5. View of the ecotone bluff and slope facing Lake Mattassee.
A great many birds range over the project area, including most importantly, such migratory waterfowl as ducks, geese and coots. Although these undoubtedly have been more numerous since the creation of Lakes Marion and Moultrie, they were surely common along the Santee River in prehistoric and early historic times (Lawson 1952). Perhaps an even more important food resource in the area was the wild turkey. Bobwhite and several species of rails and gallinules also range over the project area. Other birds present include common southeastern song birds, as well as eagles, hawks, owls and vultures.

The range of freshwater mussels extends over the survey area. That exploitation of this resource was important to prehistoric Indian groups is evidenced by the discovery of a large concentration of shell remains at 38Rk83, located during the first field reconnaissance. Snails also occur within the project area and may have served as a minor food resource for human groups.

Fish are a major faunal resource of the area. Several anadromous species are represented in the project area, including striped bass, sturgeon, shad, alewife and herring. Runs of these fish occur from February to May. The magnitude of these runs and their importance to the human groups of the Coastal Plain in the early 1700's is well documented by Lawson (1952). Catfish and sunfish species are common year-round and are particularly prevalent in oxbow lakes and backswamps of the Santee River. Freshwater drum and gar can be found in the main river channel as well as in backswamps and tributary creeks.

Environmental Summary

The environment described above is one with abundant biological resources, a mild climate, plentiful water resources, and soils adequate, although not excellent, for agriculture. Valuable minerals are not known to occur, but suitable stone for prehistoric and historic use is present. This picture of natural resource abundance, however, may be slightly misleading, in that the resources are not uniformly distributed throughout the project area. The three distinct micro-environments of the project area, upland flatwoods, lowland swamp-river, and the ecotone forming the border between these, have different soil and moisture characteristics and thus different biological communities. These differences were, and are, important to the human groups living in the area.

Larson (1970), in his study of aboriginal subsistence technology on the Southeastern Coastal Plain during the late prehistoric period (post-A.D. 1000), describes the interior Coastal Plain as an ecological zone dominated by Pine Barrens. He hypothesizes that there were so few resources available to human groups in this zone that it was largely uninhabited. His theory holds that because of the almost total dominance of long-leaf pine, created and maintained by natural, lightning-caused fires, the biomass of the area was very low and could not provide adequate food resources for human groups during the post-A.D. 1,000 prehistoric period. Larson does state that some minor, short-term sporadic habitation may have occurred along the major rivers of the Coastal Plain.
Milanich (1972) agrees in principle with Larson when he considers the earlier (1000 B.C.-A.D. 1000) occupations of the southeastern Coastal Plain. He does put slightly more emphasis on the floodplains of the major rivers as habitable areas for human groups, but he sees these habitations as only seasonal (fall and winter) exploitation of the riverine areas by coastal peoples.

The general picture of the history of human ecology in the Coastal Plain, as developed by Larson and Milanich, is one of avoidance of the area because of the supposed lack of resource availability to aboriginal groups. No prehistoric sites would be found, they predict, in the upland flatwoods zone of the project area, and only a few, small sites in the ecotone and swamp zones. A major scientific contribution of this survey study, as well as future studies which may follow, will be to test this Larson-Milanich model. A knowledge of environmental variables is also important and necessary to understand the historic European and African occupations of the area. The relationship and significance of these variables to economic and political variables will be carefully studied during the assessment of historical sites located in the project area.

Environmental Change Since the Late-Wisconsin Glaciation and its Effect on the Coastal Plain

It cannot be assumed that the environment of the project area was similar during the long span of human occupation to conditions as they exist today. Profound changes in climate and dependent biological communities have occurred over North America since the first occupation of the continent by human groups. The extent of such changes in the South Carolina Coastal Plain would have great impact on the evaluation of the Larson-Milanich human ecological model and the character of human settlement of the area.

Several summaries of environmental change in the Southeast since the Late Wisconsin glaciation have recently been published. These studies by Carbone (1974), Whitehead (1973), Olafson (1971) and Watts (1971) base their inferences about paleoenvironments on vegetational communities as documented by pollen studies of buried lake and bog deposits. The inferred climatic model describes a gradual warming trend from the end of the glacial period, climaxing in a period about 5,000 to 3,000 B.C. that was slightly warmer and dryer than today. From about 3,000 B.C. to the present, a gradual cooling trend is hypothesized.

Bryson and Wendland (1967) and Bryson, Baerreis and Wendland (1970) have challenged this model for the Midwest and have developed a series of shorter climatic episodes. There are two major differences between the model of Bryson and Wendland and that of other workers. Bryson and Wendland base their model in part on theoretical patterns of large,
relatively stable air masses and the role of these as an independent variable in climatic patterns. Also, and very important in consideration of human ecological studies, Bryson and Wendland hypothesize stable climatic episodes with rapid shifts in climate between them. The effect on vegetation, and thus faunal communities of these periods of stability and rapid shifts is not well known but it is hypothesized that vegetational communities would be characterized by a period of adjustment after a rapid shift in climate. Thus, although climatic changes may be dramatic, vegetational changes would be less so.

Although these hypothesized rapid shifts in climate and their poorly understood effects on biological communities are critical to an understanding of human ecological and evolutionary problems, it seems best at the present time to assume that gradual changes in climate and biological communities took place. In addition, Bryson and Wendland's work has been directed toward the paleoenvironment of the Midwest, not the Southeast, and no short episodes have been defined for this region. The four major episodes that have been described for the Southeast are (1) the full glacial, from 23,000 to 13,000 B.C., (2) the late glacial, from 13,000 to 8,000 B.C., (3) the post-glacial climatic optimum, from 8,000 to 3,000 B.C., and (4) the present period, from 3,000 B.C. to present.

There are no documented archeological remains from the full glacial period known from South Carolina or from the adjoining states. Hypotheses postulating human occupation of North America during this time have been advanced, and some documentation in other parts of North America has been presented (Krieger 1964). Paleoenvironmental research in the Southeast (Whitehead 1965, 1967) indicates that during this period most of the Coastal Plain was covered by boreal forest. Pine was dominant in South Carolina, with a small percentage of spruce and fir. Because of the low pollen counts of this time period, an open vegetation pattern is hypothesized, as well as a dryer climate with temperatures about 15°C lower in winter and about 9°C lower in summer. This hypothetical environmental situation would include a lower species diversity and abundance than today, and thus fewer food resources would have been available to human groups, if they were present. The environmental effects of now-extinct Pleistocene megafauna and its utility as a potential food resource are poorly understood for this full glacial period.

The late-glacial period of 13,000 to 8,000 B.C. contains the first well-documented evidence of human habitation in the South Carolina area (Michie 1978). During this period human groups were hunting the soon to be extinct Pleistocene fauna. Scattered finds indicate that all of the Coastal Plain was occupied, with heavier use of the extreme coastal and Fall Line areas than of the interior Coastal Plain. Oak-hickory forests gradually replaced pine woodlands during this period, with concomitant changes in species diversity and abundance. The climate became slightly warmer, although there is little indication of moisture differences from the preceding period. Pleistocene megafauna became extinct by the close of this period, and human groups appear to have readapted to a subsistence focused on deer, small mammals and wild plants.
From 8,000 to 3,000 B.C. oak-hickory forests in the Southeast continued their dominance and reached their maximum development. Some areas of open savannah were apparently present (Watts 1971), and natural biotic resources were abundant for human groups.

After 3,000 B.C. the oak-hickory forests, especially in the Coastal Plain, decreased in extent and were replaced by pines. Although some oak-hickory remained, the area became dominated by pine forests with lower biomass and thus fewer resources exploitable by humans. Large swamps began to form along the major rivers of the Coastal Plain, probably as a result of eustatic sea level rise and a lower gradient. These swamps, present today, are dominated by cypress, tupelo and maple, with some nut-bearing trees, as well as various shrubs.

In summary, there is evidence for great change in the environment of the Coastal Plain during the last 25,000 years. Boreal pine forest was gradually replaced by a dominant oak-hickory forest (with open areas) and this was in turn replaced by a pine forest in the uplands and extensive swamps along the major rivers. The floral and faunal communities associated with these forest types are different, and the nature and extent of resources available for human utilization would have been different.

A Predictive Model for Archeological Sites in the Project Area

For the period 23,000 to 13,000 B.C. there are no known archeological remains in the Southeastern Coastal Plain. In addition, the effects of glacial ice to the north on the physiography and hydrology of the project area are poorly understood. Even if human groups did occupy the region, it is impossible to predict where their sites would occur. Similarly, known archeological sites for people of the next climatic period in the Coastal Plain area of the Southeast are too few in number to allow prediction of their locations within the project area.

From 8,000 to 3,000 B.C. oak-hickory forest in the Coastal Plain developed and reached a peak. The Santee River floodplain was probably dominated by oak-hickory vegetation and the attendant faunal communities, while the uplands, although broadly similar in dominant vegetation, are hypothesized to have contained numerous open savannah areas. These areas would probably have more plant and animal (land mammals) resources than the floodplain, although floods on the Santee River may have created such open areas on the floodplain. Also, the Santee River and its tributary creeks would provide fish resources exploitable by human groups. In summary, all environmental zones within the project area during this time period contained abundant exploitable resources. We would hypothesize, then, that archeological sites dating to this time period would occur over all microenvironmental zones and would be relatively small.

During the last climatic period, 3,000 B.C. to the present, micro-environmental diversity was at its maximum. The upland zone was dominated by pine forest with some oak-hickory stands near streams and poorly-drained swampy areas. The Santee River swamp became wetter and...
dominated by cypress-gum hardwood forest. The swamp-upland ecotone remained oak-hickory and became the microenvironment richest in natural resources exploitable by human groups. Location of a settlement in this zone would maximize resource availability.

The swamp microenvironment does have abundant resources that could be exploited: (1) birds, particularly migratory waterfowl; (2) land mammals (in perhaps somewhat less density than the ecotone zone); (3) beaver, otter and mink; (4) fish, available year-round in creeks, ponds and in the river channel; and (5) anadromous fish, available in the spring. The swamp, however, is not so suitable for permanent occupation as the uplands or the ecotone zones, as it is wet over much of the year and is subject to flooding on a relatively unpredictable basis. Thus the best place to locate a settlement for exploitation of swamp resources would be near it on higher ground. This, of course, would again indicate the ecotone zone as the preferred settlement location area.

While Larson (1970) and Milanich (1972) are undoubtedly correct in their view of the Southeastern Coastal Plain as dominated by pine forest, it is contended here that they ignore the presence on the upland areas of many small creeks and swampy areas which would provide for a mosaic of oak-hickory and other hardwoods in the uplands. Associated with these remnant stands of the pre-3,000 B.C. oak-hickory forest would be plants and animals available for human subsistence. As these areas are small and scattered, we might expect archeological sites dating after about 3,000 B.C. in the upland area also to be small and widely scattered. We would hypothesize the presence of some sites, however, in contradistinction to Larson and Milanich, who predict no sites in the upland areas.

Larson and Milanich predict only small, intermittently occupied sites from this period occurring along the major rivers of the Coastal Plain. It is hypothesized here that there are sufficient resources available in the swamp-floodplain and in the ecotone zones to allow relatively large and more nearly permanent settlements. These are predicted to occur in the ecotone zone, especially when this zone is near to the Santee River, a large creek, or a backswamp pond.

In the late prehistoric and early historic periods, aboriginal groups would, from settlements located in the ecotone area, also be able to exploit for agricultural usage the contiguous, well-drained uplands. The loamy soils of the uplands would be preferable over the more poorly drained and clayey soils of the swamp. Early historic period settlements by Europeans should also have been primarily within the ecotone zone. Reasons other than natural resource availability (for direct subsistence use) are most important in accounting for this, however. These reasons include: (1) location between upland corn, tobacco and cotton agriculture and swamp rice and indigo agriculture, and (2) habitation of high ground while minimizing access distance to the river transportation system.

In summary, the predictive model presented expects sites dating from after 8,000 B.C. to occur throughout the project area. In the uplands these sites will be small, with a low density of artifacts, and
will be widely spaced over the area. In the swamp, if sites occur they will also be widely spaced, small and will probably represent temporary hunting, fishing or plant gathering camps. The ecotone area between the swamp and the uplands is predicted to have the most archeological sites. Sites dating from 8,000 to 3,000 B.C. are expected to be small, while sites dating after this time are expected to be larger and reflective of more permanent occupation. Testing this predictive model through survey and excavation of discovered sites should provide much information that would be a contribution to science and to an understanding of the cultural heritage of the State. In addition, with this model we have a tool for estimating significance of sites and eligibility for the National Register of Historic Places.
ARCHEOLOGICAL AND HISTORIC BACKGROUND

Previous research dealing with the prehistory of the South Carolina Coastal Plain has been limited. Much of what is known of South Carolina is inferred from Georgia and North Carolina data. Wauchope (1966) and Waring (Williams 1968) remain the best general authorities on the prehistory of Georgia, while Coe (1964) is the standard reference to North Carolina prehistory. General syntheses that discuss the South Carolina Coastal Plain include works by Griffin (1967), Phelps (1964), Larson (1970), and Milanich (1972).

Recent projects by Stoltman (1974) and Widmer (1976) on the South Carolina Coastal Plain have added to our knowledge, but the thrust of research in the 1960's and 1970's has been not in the interior Coastal Plain, but nearer the present coast (Calmes 1968; Crusoe and DePratter 1976; Hemmings 1969, 1970; Milanich 1976; South 1969, 1971, 1973; Sutherland 1974; Trinkley 1974). As discussed by Larson (1970) and Milanich (1972), settlement-subsistence data developed for the coast may not apply to interior Coastal Plain areas. Detailed understanding of the ecological adaptations of human groups in the interior Coastal Plain awaits further investigation. Summaries of the prehistoric sequence for the South Carolina Coastal Plain are presented below so as to provide a framework for discussion of sites located in the Cooper River Rediversion Project area and their significance.

The Paleo-Indian period of approximately 14,000 to 8,000 B.C. is the first well-documented time of human occupation in the South Carolina Coastal Plain (Michie 1978). Earlier occupation of North America is hypothesized (Krieger 1964), but no evidence has been presented for the South Carolina area, and a pre-Paleo-Indian period remains speculative. The general picture of Paleo-Indian times is of small human groups with a hunting and gathering way of life adapted to the environmental conditions of the terminal Pleistocene. It is hypothesized that these groups were small, not exceeding 25 or 30 members, and that they moved from one temporary campsite to another (Wilmsen 1968). This nomadic movement is thought to have followed the movement of game, particularly the now-extinct mastodon which is known to have existed in eastern North America during this time. No doubt also important to these groups was the exploitation of wild plants. Group movement was probably also scheduled so as to utilize these plants during the seasons of their availability.

Fluted spearpoints, considered diagnostic of Paleo-Indian period peoples, are found throughout South Carolina, particularly on the Coastal Plain (Michie 1978). Even so, few of these points have been found, indicating a low density of human occupation. No Paleo-Indian sites are known for the project area.
The Archaic period of about 8,000 to about 1,000 B.C. is considered to represent a long period of re-adaptation by human groups to changing environmental conditions. Nomadic hunting and gathering by small groups was still the rule, although wild plant and fish resources appear to have become much more important than during Paleo-Indian times. Caldwell (1958) describes this period as one involving a trend toward "Primary Forest Efficiency"; he sees human groups becoming more and more familiar with the Eastern forest and its exploitable products. During the Archaic period, population grew, although the size of each group may not have been much expanded; what appear to have been permanent settlements began in certain favored habitats. Political organization remained probably on the band level, although there is evidence for long-range and frequent trade as well as developed ceremonial and ritual activities (Coe 1964; Flannery 1966; Willey 1966; Winters 1968).

Archaic period occupation in South Carolina is represented by numerous small campsites and villages in the Coastal Plain and in the Piedmont. These sites are typically small scatters of stone tools and the waste flakes produced in their manufacture or maintenance (House and Ballenger 1976). Diagnostic are several types of bifacial spearpoints or knives (Coe 1964). These different points are the basis for temporal subdivision of the Archaic period into several phases.

The end of the Archaic period, particularly along the South Carolina and Georgia coast from 2,500-1,000 B.C., is characterized by the appearance of shell mounds and shell rings, and importantly, the introduction of pottery, apparently the earliest in North America (Hemmings 1971; Willey 1966). This time period has been called by Stephenson (1975) the Transitional period, and is important in that it signals the development of sedentism and more complex economic, social and religious organization.

The Woodland period of approximately 1,000 B.C. to A.D. 1,000 is characterized by the first widespread manufacture of ceramics, the appearance of burial mound construction, and the first evidence of systematic horticulture. Group size was probably larger than during the Archaic period, and there was a definite trend toward sedentism, or, at least, toward a tightly scheduled seasonal round of group movements, probably involving segmentation and re-merging of groups in a cyclical fashion (Milanich 1972; Streuver 1968). This seasonal round fission-fusion system was designed to optimize the still-dominant hunting/fishing/wild plant gathering subsistence focus.

Geographic variation in the Southeast possibly indicative of ethnic differentiation, is apparent during the Woodland period in terms of stylistic features, particularly ceramic surface designs. To the south of the South Carolina Coastal Plain, carved paddle stamped pottery designs predominate. These designs, particularly check stamping, are a marker for the Deptford phase (Milanich 1972) of the Woodland period of Georgia, as well as much of Florida and South Carolina. Fabric and cord marked pottery predominate during this time in North Carolina and further north. These are the Cape Fear-Wilmington ware groups of the Woodland period as defined for the North and South Carolina Coastal Plain
These two ware groups have long been assumed to represent distinct human social groups and the finding of both kinds of pottery in South Carolina has been thought to represent either the intermingling of separate peoples or stylistic influence from separate culture centers. The meaning of these distinct pottery decoration traditions in terms of their function as markers for distinct social groups and as correlated with other economic and social variables is an important ongoing research question in Southeastern archeology. Both Deptford and Cape Fear-Wilmington sites are found in the project area.

The Mississippian period of about A.D. 1,000 to 1,600 is characterized in eastern North America by the appearance of complex social organization, large, sedentary villages, the construction of large temple mounds, the elaboration of ritual and ceremonial activities, and the importance of corn agriculture. Several regional variants of this culture have been defined, based primarily on broad patterns of ceramic variation (Griffin 1967). In Georgia and the Carolinas the term South Appalachian Mississippian has been applied to those archeological components exhibiting the above features in conjunction with a persistent tradition of complicated stamped ceramics. South Appalachian Mississippian data have recently been summarized by Larson (1970) and Ferguson (1971).

Although large Mississippian period sites seem to cluster in the major river valleys near the Fall Line (Reid 1967; Stuart 1970), others are known from the coast (Caldwell and McCann 1941; South 1969). The large Mississippian mound investigated by Ferguson (1975) on the shore of Lake Marion and the numerous Mississippian ceramics found in the Santee River drainage, including several components identified near the project area by Asreen (1974), suggest the importance of this area to Mississippian development in the region. Unfortunately, many Mississippian period sites were destroyed without any investigation in the creation of Lakes Marion and Moultrie. Remaining sites of this period in the Santee drainage would be very important to our knowledge of South Appalachian Mississippian.

**Early History of the Project Area**

At the time of European contact, the Indians of the South Carolina Coastal Plain were divided into several distinct groups. Although commonly called tribes, they were organized in what might be more precisely termed chiefdoms (Service 1962). Some groups gave more power to the chief than others, but all were highly organized, complex societies with their populations living in large villages and dependent for subsistence on hunting, fishing, wild plant gathering and corn agriculture (South 1972). They were flourishing societies typical of what is known of the late Mississippian pattern.

The earliest European contact of these groups was by Spanish explorers; the first detailed account is by DeSoto in 1540. He described large villages and towns, with large ceremonial structures and a complex, stratified social organization (Baker 1974). The largest and most important
of these towns, Cofitachiqui, is now thought to have been near Camden, South Carolina, in the Santee River drainage north of the project area (Baker 1974). Interestingly, Spanish weapons and other articles were observed by DeSoto already to be present at Cofitachiqui in 1540. These probably were there as a result of trade from the abortive 1526 settlement by the Spanish under Allyon near Winyah Bay.

By the time the English settled at Charles Towne in 1670, the Indians of the South Carolina Coastal Plain had had much contact with Europeans, their artifacts and trade goods and probably their diseases. The English settlers explored the interior Coastal Plain, trading with the Indians, festering wars and capturing slaves. By the early 1700's French Huguenot settlers in the English colony had moved up the Santee River and were farming and trading with the Indians. These French settlers were described in 1701 by Lawson (1952) while on a trip up the Santee River, ultimately to North Carolina. Lawson also described Indian settlements as being stretched out for a mile or more along the river although they are difficult to place exactly from Lawson's description. These Indians described for the general project area probably belonged to the group known as the Santee. Although numerous in the early 1600's (Swanton 1922) and friendly to the English, the Santee were all but extirpated by 1716 (Milling 1969; South 1972). Other Indian groups, the Winyahs and the Cape Fears, were known to have lived briefly in the general area of the Cooper River Rediversion project (South 1972; Wesley White, personal communication).

The social breakdown and final extinction of these Indian groups after European contact is thought to have been brought about by disease, war and the disruption of subsistence productivity. The relative importance of these and other factors, the detailed sequence, and the relation to other forms of group activity form an important research problem of history and archaeology (South 1972; Baker 1974).

Settlement by Europeans in the project area began after the English colony was established in 1670 at Charleston, although earlier contacts and visits with local Indian groups probably were made from the Spanish settlements to the south and from unsuccessful colonization attempts along the North and South Carolina coasts by the Spanish, French and English. Reference to a Frenchman living among the Indians on the Santee River in 1609 is made by the Spanish explorer Ecija (Swanton 1922: 17). By the time of Lawson's 1701 trip up the Santee River, French Huguenots, accepted and encouraged by the English Lords Proprietors of the colony, were settled along the river and engaged in trade with the Indians (Lawson 1952: 7). Lawson mentions that there were about seventy families living along the river at this time, and describes them as being temperate and industrious, "some of them bringing very little of Effects, yet, by their Endeavors and mutual Assistance, among themselves...have outstripped our English, who bought with them larger Fortunes, though (as it seems) less endeavor" (Lawson 1952: 7).

Lawson visited with several French families as he traveled along the river near the project area. He describes the presence of several "French Ladies" lately arrived from England, a French doctor and "his Negro," all near to where the road from Charleston intersects the river (Lawson 1952: 9).
The picture presented by Lawson is one of a thriving, but low-density and scattered community. This community, although connected by land and water routes to Charleston and the rest of the English settlement, had its own identity deriving from the fact of being French in an English and Indian country. The people are described as being friendly and cooperative with each other, as well as particularly thrifty and ambitious in a land well known for ambitious peoples. Their subsistence appears to have been based on farming, hunting, fishing and trade with the Indians. The mention by Lawson of a "Negro" indicates at least a partial reliance at this time on slaves.

The next description we have of people in and around the project area is by Samuel DuBose, written in the 1850's about life in the area as he remembered it in the mid-late 1700's and early 1800's (DuBose 1972). DuBose describes the plantations and their locations near the time of the Revolutionary War and reminisces about the personal lives of the owners of these plantations. Although little mention of Indians in the area or the African slaves is made, DuBose does describe in detail the history of agricultural development; the methods of planting various crops; and the shifts over time in the popularity of corn, rice, indigo, tobacco and cotton. Effects of disease and climate on the people and their settlement patterns are noted and discussed. Descriptions by DuBose (1972) are abstracted below.

The picture presented by DuBose is that of a community in the St. Stephens area more sophisticated and developed than the one described in 1701 by Lawson, but with clear ties to patterns established by the first settlers. There were more inhabitants of English origin in the area in the late 1700's, but the community was still dominated by French Huguenots and their descendants. There appears to have been little strife in this area over matters of religion and national origin, although such strife was common in other parts of Berkeley County. The economic system dominant in the area underwent several profound changes in the eighteenth and early nineteenth centuries. The early focus on Indian trade was probably abandoned by 1715 or earlier; few Indians, at least as independent groups, remained in the area after this time. In the early 1700's rice and later indigo cultivation became prevalent. These crops were grown in the Santee River swamp. Trees were cleared and areas were diked within the swamp. Slaves and overseers lived in the swamp, while the plantation owners more often built and lived in houses on the river bluffs overlooking the swamp. More and more emphasis was placed on indigo as a market crop to be shipped to Charleston and from there to England, although some tobacco was grown for export primarily overland to Camden and from there to North Carolina and Virginia. Corn and various vegetables were commonly grown, and cattle and poultry were kept for home use.

During the Revolutionary War many of the wealthy planters in the St. Stephens area lost their fortunes because of the destruction of the war and the serious deterioration of the economy afterwards.
Added to these economic woes was the loss of the indigo subsidies formerly paid by the English, making indigo no longer a profitable crop. Floods on the Santee River, always a problem to swamp agriculture, were frequent in the years following the Revolutionary War.

It was not until the 1790's that a revival of the economy occurred in the area; this was due primarily to the introduction of a new market crop—cotton—and to the early series of cotton gins also introduced about this time. Cotton was the primary cash crop by the early 1800's and provided the basis for a stable economy until the Civil War. There was a trend during this period toward settlement in the uplands, where it was thought that the air was healthier. Pineville, a new, upland community, was established primarily for this reason, with many of the plantation owners building summer homes there to escape the humidity and fevers common to the swamp. By the middle of the nineteenth century many of the original plantation homes had been abandoned, with permanent residences established in Pineville or elsewhere in the uplands. During this time the swamp was virtually abandoned and used primarily as a hunting and fishing preserve.

The impact of the Civil War was great in the St. Stephens area as it was throughout the South. Disruption of markets, the loss of the slave labor force and destruction of the traditional political hierarchy forced the break up of many plantations and led to a focus on subsistence farming. This period of history of Berkeley County is well summarized by Orvin (1973).

In summary, the historic period in the St. Stephens area of Berkeley County is one of continued change throughout the eighteenth and nineteenth centuries. The extinction of the Indians, the Revolutionary War, changing conditions of the indigo market and the introduction of cotton and its associated technology all had dramatic economic effects on the local community. The pattern of disease incidence was an important factor in determining locations for settlement for the wealthy plantation owners, although apparently this was not the case for slaves, overseers, or small-time farmers. Little is known of the way of life of these politically and socially impotent groups, or changes in their lifeways through time. Hopefully, future research will more fully describe the lifeways of these groups and the roles they played in the social and economic systems of the day.
SURVEY METHODS

Introduction

This section is designed to describe the methods employed in carrying out the cultural resources survey. Archival, field, and laboratory research methods are in turn discussed and a rationale for their use is presented.

Before fieldwork was begun on the project, the National Register of Historic Places was consulted to determine if there existed, in the project area, any sites on the National Register. No sites currently on or nominated to the National Register were found to be located within the proposed project right-of-way. This determination was checked by consulting the latest edition of the Federal Register for possible National Register updates, and by inquiring of the office of the State Historic Preservation Officer as to National Register applications in process.

Archival Research

Early in the project, archival research into the history of the project area was begun. At this state the focus was on procurement of early maps of the area to help in locating cultural resources from the early historic period and in identifying the historic sites that had been noted in the reconnaissance by Asreen (1974), as well as sites which might be discovered. Contact was made with professional and amateur historians of the Berkeley County area, and known references were reviewed (Dubose 1972; Milling 1969, Orvin 1973; Cummings 1962; Mills 1965).

This work produced much information of a general nature, and to follow this up, Mr. Wesley White, a professional historical researcher, was hired to search out early maps, land grants and survey plats, as well as to record wills and property inventories that he might encounter. It was hoped that early maps might be found showing eighteenth and nineteenth century settlements, as well as trails, roads, swamps and creeks that do not appear on modern maps. Land grants and plats, in addition to identifying sites and thus aiding in their assessment, frequently provide a location and description of cultural resources existing at the time of the grant and encountered by the surveyors. Wills and property inventories were routinely recorded by Mr. White. Such inventories may often aid in the identification and assessment of sites, although their primary usefulness usually occurs during a mitigation phase study. A report of this archival research is on file at the Institute of Archeology and Anthropology (White n.d.).
Although much of the project area and contiguous land was covered by piecing together early land plats, no pre-existing cultural features were noted by the early surveyors. In addition, it was found that study of land grants and plats would have little utility for identifying actual sites discovered for two reasons. First, most of the land grants were made on condition that improvements to the land, or to land adjacent, be made. If such improvements were not made within a specified time the land reverted to the government and could be granted to someone else. This process appears to have occurred over the project area, as several land surveys overlap and enough of the records of this process are missing to make reliance on existing records uncertain. The second reason for a reduced utility of a study of plats is the large volume of land transactions involving individual pieces of property subsequent to the original grants. Land was apparently sold, broken up and resold several times, often among the same group of early settlers and their relatives. So many records of these transactions are missing that permanent or longstanding ownership cannot be well documented in most cases. These inadequacies in the land grant and plat data could possibly be resolved by a detailed and long-term study of the early records; however, such a time-consuming study was thought not to be cost-effective at this time.

The primary value at this time of the plat study, as well as of the recording of wills and property inventories, is to corroborate information presented by DuBose (1972) and an excellent document, a 1773 map of the area by Henry Mouzon, described by White (n.d.). A copy of this map is on display at the Charleston Library Society, and a re-drawing of a portion of it is presented as Figure 6, with the present project area delineated. The road shown northwest of St. Stephens (indicated by the church) is today Secondary Highway 64, and the road east of St. Stephens is today State Highway 45. The locations of plantations indicated on the map match precisely those described for the period by DuBose (1972), and these are in general agreement with data from land plats. Detail on the 1773 Mouzon map is remarkably precise, even by today's standards; landforms, as well as the locations of rivers, creeks and roads are accurately drawn. The map is perhaps the best of the project area, excepting the detailed contour map produced by the Corps of Engineers. Ironically, the 1773 Mouzon map was produced for the purpose of indicating alternate routes for a possible canal between the Santee and Cooper Rivers.

What are probably five of the structures indicated on the Mouzon map were discovered during the reconnaissance and survey. These are the Cantey and Dubois houses at the tailrace end of the proposed canal and the Muster House and the two Cordes houses near the central or power house area. The Cantey house and the Muster house indicated on the Mouzon map are outside the revised canal right-of-way, and will not be affected by construction. These sites will be discussed in detail below.

Other historic sites were located during the reconnaissance and survey which were not noted on the Mouzon map. These sites are most probably later than 1773 in origin, although Mouzon did not record every structure. Obviously missing from the map are slave quarters and dwellings of poor farmers, both of which structure types must have existed in the general area at the time.
FIGURE 6. Redrawing of a portion of the 1773 map of Berkeley County, S.C. by Henry Mouzon. Proposed right-of-way of the Cooper River Rediversion Canal project is superimposed and shown by dotted lines. North is to top of map and the scale is one inch to the mile.
Histories of the Cordes, Dubois and Cantey families were prepared to aid assessment of the sites tentatively attributed to them. In addition, accounts and inventories pertaining to another historic site discovered in the tailrace access road were researched (White n.d.). These historical data will be discussed in conjunction with the site descriptions.

In summary, archival research was helpful in the location and assessment of several historical sites. Further analysis of materials already collected, in conjunction with future research of a more specific nature, is expected to be very useful to any study program involving mitigation excavation of historic sites.

**Field Methods**

Before fieldwork was initiated, a general study was undertaken of the background archeology of the area to familiarize the author with possible local field problems and to aid in formulation of a general predictive model for site location, size and artifact density. Archeological and environmental reviews and studies of the region were checked and inquiries were made of those who had conducted fieldwork in the area previously. The most useful of these previous reports was, of course, the Cooper River Rediversion archeological reconnaissance report by Asreen (1974). Study of this report and other materials and discussions with Dr. Leland Ferguson, who directed the reconnaissance study, led to the formulation of a general field investigation plan.

The major field problem expected was the dense vegetation, especially in the swamp and ecotone zones, which would act to obscure evidence of archeological sites, as well as to impede access to and movement through the project area. In the upland zone of the project area much of the land to be surveyed was under cultivation, affording good to excellent ground surface visibility, access and movement. It was decided that subsurface testing in the form of small shovel or post-hole excavations, would have to be extensively employed in highly vegetated areas, and that the distribution of these small subsurface tests would have to be designed so as to insure representative sampling of the areas involved. A carefully-designed testing program was necessary to avoid possible bias that might be introduced by reliance only on opportunistic inspection of areas such as trails, roads, stream beds, firebreaks and overturned tree stumps where inspection of the ground surface was possible.

Several designs for the distribution of tests are possible. A patterned spacing could be employed; a randomized arrangement could be made; or various combinations of these two approaches could be utilized. The final selection of a specific design or combination of designs is dependent in part on environmental features and in part on a general prediction plan of site location, size and artifact density.
The general plan for prediction of archeological site location, size and artifact density for the interior Coastal Plain region was presented in the chapter above concerning the environment. The major features of this plan were predictions of large, dense archeological sites for the ecotone areas and of small, low artifact density sites for the swamp and upland zones. These major predictive features were corroborated by the results of the reconnaissance of the project area (Asreen 1974), with one important exception. Only a small portion of the swamp zone, a powerline right-of-way, was inspected during the reconnaissance study because of access problems at the time of those field investigations. This small portion of the swamp, however, contained four small prehistoric sites, indicating that there may be many such sites within the impacted swamp zone. The character and distribution of these sites, because they were not predicted by the general model, would be of significant information value. It was thus decided that while heaviest concentration of subsurface testing should be directed toward the ecotone zone, the swamp zone also must be thoroughly tested. In areas of the upland zone where vegetation obscured the ground surface, subsurface testing would also be necessary.

The portion of the ecotone zone lying within the project area is, in most cases, quite narrow (approximately 200-800 feet) although it extends, intermittently, parallel to the course of the proposed tailrace canal for over four miles (see Fig. 3). The topography of this zone is dominated by a continuous bluff line with a relatively steep slope from the upland zone to the swamp. It was decided that the most appropriate subsurface testing design for this zone would be a series of transects following the bluff line along the southern border of the proposed tailrace canal. Additional transects would be located perpendicular to the bluff line at 1,000-foot intervals and otherwise where appropriate, to be determined by field conditions. Shovel or posthole excavations would be placed at 100-foot intervals along the transects, although they might be omitted if ground disturbance or a lack of vegetation permitted adequate ground surface visibility. Such a transect approach has two advantages over methods employing extensive testing of several selected bounded areas within the ecotone zone. First, it assures continuous coverage of an important topographic and ecological feature, and second, the transect approach is efficient in terms of actual field time required. Transect origins and test locations along the transects are relatively easy to locate and to record.

The transect approach has been shown to be very effective in locating archeological sites and in providing a representative sample of sites in areas covered (Plog 1976). That such a survey method has great utility in terms of both efficient use of field time and effective discovery of sites is demonstrated by the successful use of the technique in the northern woodlands of Michigan (Lovis 1976; Chartkoff 1978).

Supplementing this transect approach would be the use of additional subsurface testing in areas determined to be likely locations for archeological sites, such as knolls or ridge projections. In addition,
all areas within the ecotone zone where the ground surface was disturbed would be thoroughly inspected. Such areas are expected to be dispersed over the zone in a near-random fashion, and this approach would, therefore, provide a balance against the possibility of bias being introduced by the regularly-spaced excavations along transects.

It was planned that the swamp zone would be similarly examined with transects, likely-area testing, and opportunistic inspection of disturbed areas. Transects were planned to be located at approximately 1,000-foot intervals perpendicular to the proposed canal centerline. Any high areas within the swamp (above the 18 foot contour level), as well as areas along Mattassee Lake and other creeks, were considered likely site location areas to be investigated. It was thought that there would be few areas of disturbed ground within the swamp zone, and that opportunistic inspections would, therefore, be limited.

Much of the upland zone within the project area was under cultivation, making ground surface visibility good. It was planned that survey in the upland zone would rely on complete coverage of these cultivated areas, as well as of roads, trails, etc., supplemented where necessary by subsurface testing along transects.

Fieldwork began on the survey in early June, 1977 and continued, with some interruptions through early September, 1977. The fieldwork was conducted by the author and Mr. Eric Neil of the Institute staff. It was planned to inspect first the ecotone zone, followed by survey of the swamp and upland zones; however, upon arrival in the area, construction was discovered to have already begun on two project access roads. These were checked first. Three sites--38BK244, 38BK225 and 38BK226--were discovered in these access roads and further survey was suspended while emergency mitigation excavations were conducted at 38BK225. After this necessary work was completed, and after suitable arrangements for temporary preservation were made by the Corps of Engineers, the survey continued.

The disposal area (see Fig. 3) north of Lake Moultrie was examined closely during the reconnaissance (Asreen 1974), and was not surveyed again. Similarly, the intake canal west of Secondary Highway 8-35 was not re-surveyed, although specific sites listed by Asreen (1974) were re-visited. Although the powerhouse area was examined during the reconnaissance, data presented by Asreen (1974) and other data on file at the Institute of Archeology and Anthropology were not considered sufficient to allow assessments of the several sites found there. Most of this area was resurveyed and several additional sites were located. Ecotone and swamp areas in the tailrace canal portion of the project area, as well as a portion of the intake canal between Secondary Highway 8-35 and the powerhouse, were not examined during the reconnaissance as they were outside of the project boundaries at that time. These areas were intensively surveyed as part of this study.
It is difficult to estimate the total number of acres within the project area and within each of the microenvironmental zones. It is estimated that approximately 25-35% of the upland and ecotone zones were actually examined, although transects were placed in both zones so as to minimize the potential for missing large sites. Only 5-10% of the swamp was examined; however, this was considered sufficient to evaluate the predicted low potential for that zone.

Three hundred and fifteen standardized subsurface tests were excavated during the study. These were routinely spaced approximately 30 meters apart along transects, although tests were omitted when cleared or locally-disturbed areas were encountered. Each subsurface test was 25 cm square and was excavated to sterile underlying clay or to at least 30 cm below the ground surface, if clay was encountered above that (see Figs. 7 & 8). Most of the subsurface tests were screened through 1/4" wire mesh, but where this was impractical because of roots, clay soil, etc., the earth removed was carefully examined by hand. No difference in artifact recovery could be noted between these two techniques. Many other small, irregular shovel tests were placed while traversing the project area. The number and location of these were not recorded unless artifacts were discovered, at which time the test was standardized and recorded. Of the 315 subsurface tests, 97 were in the uplands, 158 were in the ecotone zone and 60 were in the swamp.

Transect methods were highly successful along the ecotone zone, and recovery of artifacts from subsurface test excavations was excellent. In fact, the subsurface tests, in combination with good ground visibility along firebreaks and small, unimproved roads, (Figs. 9 & 10), indicated an almost continuous occurrence of artifacts along the bluff line dominating the ecotone zone. Thus, subsurface transect testing became not only a technique for site discovery, but a tool for measuring variability within the artifact distribution.

Subsurface transect testing was not so successful in the swamp zone. Most of the area was very densely vegetated and characterized by numerous wet and boggy gullies, making it very difficult to traverse planned transect lines. High ground within the swamp zone contained little soil and was characterized by a heavy leaf litter overlying a clayey ground surface. Investigation of the swamp zone revealed a relatively extensive network of hunting paths and jeep trails, many of which had been improved by the Corps of Engineers to allow movement of auger and core drilling equipment and vehicles (Fig. 11). This extensive road system was thoroughly inspected for artifacts as it allowed excellent visibility of the ground within the swamp zone. No artifacts were discovered in the swamp zone, either along the roads or in the subsurface transect tests, except when the two sites discovered during the reconnaissance, 38BK116 and 38BK117, were revisited. It is now felt that these two sites occur in a special environmental situation--on high ground immediately adjacent to a large creek but distant from the bluff and upland areas. This environmental situation is not elsewhere represented in the swamp zone included in the project area.
FIGURE 7. Typical 25 cm square subsurface test excavation. This test shows brick rubble exposed at 38BK245.

FIGURE 8. Excavation procedure for subsurface testing. This excavation is a 1 meter square test at 38BK226.
FIGURE 9. Typical view of firebreak cut allowing opportunistic inspection of ground surface. This firebreak runs the length of 38BK229.

FIGURE 10. Recently disturbed area at the western end of 38BK229, allowing opportunistic inspection of the ground surface.
FIGURE 11. Recent roadcut in swamp zone, allowing opportunistic inspection of the ground surface. Such roadcuts were extensive within the swamp portion of the project area.

Approximately 75-80% of the land in the upland zone within the project area was cultivated and covered with weeds, grass or standing crops, but ground visibility within these areas was still very good. The remaining portions within the upland zone contained scrub oak and young pine vegetation. In these forested areas, subsurface transect tests were employed and were arranged to fit the wooded portions. In addition, all disturbed ground, such as that provided by roads and trails (perhaps 1-2% of the upland area), was examined for the presence of artifacts. Only a few archeological sites were discovered in the upland zone, and most of these were near the proposed powerhouse area adjacent to Secondary Highway 64 and U.S. Highway 52. It is felt that this lack of sites is due to avoidance of the immediate area because of the extreme lack of topographical variation in the portion of the upland zone within the project area and also due to the difficulty of discovery because of the small size and low artifact density of the sites that do occur in this zone.

After sites were located, additional test pits were excavated as necessary to recover additional data to aid in basic description and assessment of site significance. These test pits were 50 cm or 1 meter square, and soil from them was uniformly screened through 1/4 inch wire mesh. At some sites data from the 25 cm square subsurface tests were considered adequate for description and significance assessment, and thus, larger test pit excavation was omitted. Placement of these test pits is discussed below on a site-by-site basis, in the site descriptions section. Several of these test pits, at 38BK225, 38BK229, and
38BK245, were excavated in March, 1978, by a team led by the author and consisting of Ms. Claudia Wolfe, Mr. Jim Scurry, Mr. Eric Poplin, and Mr. John Norris.

In summary, it is felt that the field methods employed were adequate to the tasks of discovering archeological sites and of providing enough materials to assess properly the significance of these sites. Subsurface transect testing proved very efficient and useful in its application to the area, especially when supplemented by opportunistic inspection of previously disturbed ground areas. Modifications to the original field methodology plan were minor, involving primarily a shift in emphasis from transects to opportunistic investigation within the swamp zone, and are thought to have produced an improvement in overall field coverage of the project area.

Laboratory Methods and Analysis

Most of the artifacts were cleaned and preliminarily sorted during evenings and weekends during the fieldwork phase of the survey. This was done to allow continuous feedback of results into the project while changes in field procedures were still possible. At the conclusion of the fieldwork phase, all artifacts were brought to the Institute laboratory where sorting and cataloging by artifact classification and location of discovery were accomplished. All specimens were then examined by the author and assistants and compared with other collections on file at the Institute and with published photographs, drawings and descriptions. The notes from these examinations formed the basis for a series of "site profiles" from which are summarized the archeological site descriptions presented in the following chapter. In addition, all artifacts and notes pertaining to the Cooper River Rediver's archeological reconnaissance reported by Asreen (1974) were studied and evaluated. Other necessary laboratory work included completion of standard forms on each site to insure proper curation of the artifacts, notes and photographs produced by the project.

Specific analyses included (1) the classification of historic ceramics into types according to South (1977) and the computation of South's ceramic formula date, where possible; (2) classification and tabulation of other historic artifacts such as glass, brick, nails, etc.; (3) classification and tabulation of prehistoric ceramics by characteristics of surface decoration and temper; and (4) classification of lithic artifacts into functional, stylistic and raw material groups. Artifact study and analysis were, in general, restricted to the minimum necessary for adequate description and significance assessment. It is anticipated that, if and when further studies are carried out at several of the sites located, artifacts and other data will be re-analyzed in more detail in the testing of more specific research hypotheses.
In conclusion, detailed, professional methods were employed in all phases of the archeological survey project. Archival research was initiated early in the project and proved to be useful in discovering, identifying and assessing archeological sites. Field methods were carefully planned before beginning actual investigations to insure adequate coverage of the project area. These methods involved stratifying the project area into three environmental and site predictive zones—upland, swamp and ecotone—and applying to each a combination of patterned subsurface transect tests, opportunistic examination of disturbed areas, and inspection of likely site areas. Using these methods, all land newly included in the revised project area since the archeological reconnaissance by Asreen (1974) was examined and all archeological sites recorded. Important sites recorded by Asreen (1974) were revisited, and more extensive notes and collections made. All artifacts were cleaned, cataloged, sorted and carefully studied, and all notes and artifacts recovered during the earlier reconnaissance were re-evaluated. Standard forms on the archeological sites were filled out and notes, photographs, maps and artifacts have been professionally curated.

Summary
Sixty-six archeological sites were discovered by the archeological survey of the Cooper River Rediversion project area and by the reconnaissance reported by Asreen (1974). The locations of these sites are shown in Figure 12. Table 1 presents a listing of the sites, together with other pertinent data, and with a mitigation recommendation for each. These mitigation recommendations are discussed in more detail within each of the site descriptions presented below and later sections in this chapter present and discuss, in detail, the criteria used for assessing significance. Of the 66 sites discovered, 48 are recommended for no further work; 5 for monitoring during initial construction, 10 for excavation and study; and 3 are recommended for preservation by project modification.

**38BK72.** This site is within the project impact zone. It is small and is represented by only two prehistoric artifacts— one chert and one sandstone flake—neither of which is diagnostic of temporal period. This site was located during the reconnaissance; a revisit to it and 38BK85 nearby produced no additional material. The site probably represents a small, upland temporary campsite or resource extraction station. Because of the dearth of artifacts, and thereby the limited potential of the site, no further work is recommended.

**38BK73.** This site is represented by a surface collection from a plowed field and an adjacent scrub oak area. The site is approximately 60 x 100 meters. Brick, iron and kaolin pipe fragments were recovered as well as 16 historic ceramic sherds dating from the late eighteenth to the late nineteenth century. South's (1977) mean ceramic date for the site is 1796, although 5 whiteware sherds from the middle-late nineteenth century were not included in the computation. Six plain, sand tempered Indian potsherds are also included in the collection and probably represent trade ware used by the European settlers.

Three 25 cm square subsurface tests excavated during the survey failed to produce subsurface material. Subsurface tests showed there to be about 20 cm of topsoil overlying a light yellow loamy sand. On the basis of the failure of subsurface tests to produce material, further excavations at 38BK73 are not recommended. However, it is possible that subsurface features exist at the site which were not detected in the limited tests performed. It is therefore recommended that the site be monitored during construction so that any features revealed can be quickly recorded and studied.

Only four eighteenth century sites were discovered in the upland environmental zone. Such continued monitoring of 38BK73 is urged to provide a sample of this site type for the upland zone before its destruction by the canal. Figure 13 presents a view of 38BK73.
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<th>Site Number</th>
<th>Visited During</th>
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<td>Yes</td>
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38BK74. This site is small and represented by only two potsherds and several fire-cracked rocks scattered over a plowed field area about 30 meters in diameter. All artifacts were recovered from the surface during the reconnaissance. About 20 cm of topsoil overlies yellow loamy sand at the site. It probably was a short-term camp or resource exploitation station existing as a part of a larger subsistence-settlement system. 38BK74 is assigned to the Woodland period because of the presence of two worn, sand tempered potsherds. No further work at the site is recommended. The scarcity of artifacts indicates little potential for the site providing significant data.

38BK75. This site is a large, early historic site located in a soybean field in the ecotone zone and within the impact area of the construction project. The site has two loci. Locus A covers an area about 80 by 160 meters along the edge of a field road. Locus B occurs in an upper portion of the field within a 50 meter diameter area. A 1 meter square test excavation in the first locus showed topsoil of about 30 cm depth overlying yellow sandy loam below the plow zone. Although no features were observed in the test pit, the undisturbed nature of the soil indicates that preservation was good and further excavation could reveal features. Figure 14 shows locus A of 38BK75.

The historic period of the late eighteenth and early nineteenth centuries is represented in the surface collection. The collection includes 447 ceramic sherds, 13 kaolin pipe fragments, 12 iron tool fragments, 103 wine and beer bottle glass fragments. Slave or Indian low-fired pottery (Colono-Indian) is probably represented by the 230 plain, sand-tempered sherds found at the site. The mean ceramic date (South 1977) for the site is 1792. 38BK75 is probably the site of the eighteenth century Cordes plantation shown by Mouzon on his 1773 map of the area (see Fig. 6). This plantation was called Yaugan and was inherited by Thomas Cordes from his father John Cordes. Much is known of the Cordes family genealogy, marriages and travels, and there exist records of wills and property inventories (White n.d.).

Data from 38BK75 should provide an excellent test of several hypotheses concerning human behavior, trade and economics of the eighteenth century. Two important problem domains for which 38BK75 can provide data are those involved in understanding the ordinary workings of an eighteenth century indigo plantation system and in analyzing possible differences in behavior deriving from ethnic variability. Plantation systems of the eighteenth century in the Southeast are poorly understood as to their internal economic system; and indigo plantations, so important in the early history of South Carolina, have never been studied. 38BK75 provides a unique laboratory for studying such systems and should in conjunction with the good documentary evidence available, allow for a complete, in depth analysis. In addition, few sites are known representing dwellings and associated behavior of eighteenth century French Huguenots, and none have been studied. 38BK75 again represents a unique opportunity for informing on an important part of the American cultural heritage, and could play a significant role in the development of theory and method in historical archeology.
FIGURE 13. View of 38BK73, facing south. Artifacts were recovered from the surface of the plowed field near the tree line in the background.

FIGURE 14. View of 38BK75, facing west. Artifacts scattered over field to right of road.
Analysis of the ceramics from the two loci at the site indicates a concentration of high status import wares at Locus B and low status wares (including what is probably Colono-Indian ware) at Locus A in the lower field. Such a pattern may be indicative of main house-slave quarters distinction between the two loci. If Locus A does indeed represent remains of slave quarters at a major plantation, excavation and study could provide extremely significant data on the lifeways and economic interactions of a very poorly understood sector of early historic life.

The data potential of 38BK75 recommends it as probably eligible for the National Register of Historic Places. The good preservation archeologically, the excellent historical documentation available, and the variety of research problems that can be addressed all indicate the site is eligible. Preservation where possible is recommended for 38BK75. Locus B appears to be very near the project right-of-way and can perhaps be avoided. This may not be possible with Locus A. Detailed excavation and study are recommended if such preservation is not possible.

38BK75 is a large, complex site with a high density of surface artifacts. It is suggested that excavations at this site be executed in two stages. First, a large number of small excavations should be made, distributed systematically over the site. Data from these excavations should be analyzed to show possible concentrations relating to different activities or structures at the site. Large block excavations should then be placed at the significant concentrations located. The site is shallow and excavation should proceed rapidly. All excavated material should be screened for artifacts, and all features carefully recorded and studied. Before destruction of the site, it is advised that heavy equipment be used to remove topsoil from unexcavated portions of the site, and features discovered there mapped and studied.

38BK76. This is a large, multicomponent site covering a wooded knoll or ridge extension in the ecotone zone overlooking the swamp and a small creek. The site appears to cover an area about 50 by 150 meters. Test excavations revealed artifacts extending to as much as 50 cm below the surface, although most were found in the top 30 cm. Several stains were encountered and recorded as features. They appear to represent small, shallow pits of the Woodland period occupation. Approximately 10 cm of topsoil overlies yellow loamy sand, which becomes progressively lighter with depth. The site has been recently timbered, causing some disturbance of the ground surface. A view of 38BK76 is shown in Figure 15.

A large surface collection and four one meter test excavations indicated the presence of a prehistoric Woodland period occupation. This period is represented by 229 flakes and chunks of the local sandstone and by 194 Woodland period sand-tempered potsherds. Of these 86 were plain, 53 check stamped, 4 simple stamped, 2 fabric marked and 49 were of indeterminant surface treatment. A Deptford
Woodland period. It may be possible to determine at 38BK76 whether or not these materials represent different occupations by culturally distinct peoples. As indicated by the four test squares excavated at 38BK76, preservation is good. Several subsurface features were located, and erosion, plowing, timbering, or other disturbance does not seem to have affected the integrity of the site. The site is relatively shallow (just over 30 cm). If preservation is impossible, it is recommended that 38BK76 be subjected to a two-stage excavation design with extensive small tests placed to determine concentrations denoting spatially distinct activities and temporal components. This should be followed by intensive excavation in large open blocks. Heavy equipment may be used at the discretion of the field archaeologist to remove overburden and concentrate on significant portions of the site.

**38BK77.** This site is a small, prehistoric Woodland period site located on the ecotone zone outside the impact area. One weathered sandstone flake, 1 blade, and 9 simple stamped, sand tempered sherds were recovered in the surface collection. This site has been disturbed by private construction activity and the artifacts may be redeposited from another location. No further work is recommended at this site.

**38BK78.** A Woodland period prehistoric site, 38BK78 is in the ecotone environmental zone but outside of the presently designated project area. No further work is recommended. One sandstone flake, one sand tempered, cord marked sherd, and eleven sand tempered, plain sherds were recovered from the surface of 38BK78. This site probably represents a small, temporary Woodland camp.

**38BK79.** One sand tempered, worn potsherd was recovered from the surface of the plowed field containing this upland zone site. 38BK79 is outside the project area. No further work is recommended because of this and the lack of data potential indicated by sparseness of material combined with good surface observation during the reconnaissance.

**38BK80.** This site was recorded in a plowed field in the upland zone on the basis of the finding of one sand tempered, worn potsherd. Because of the sparseness of the material, combined with the good collecting conditions, and the fact that it is outside the present impact zone, no further work at this site is recommended.

**38BK81.** This site occurs on a knoll overlooking a creek in the upland zone, and has been assigned to the Woodland period on the basis of 18 potsherds, 1 chert core fragment, 1 chert flake, and 2 sandstone flakes recovered from the surface. The pottery is all sand tempered and includes 4 fabric marked sherds, 2 dentate stamped sherds, 2 check stamped sherds, 5 plain sherds, and 2 indeterminant sherds. Although this is an interesting site in that it contains pottery representative of two Woodland period phases, it lies outside the present project area, and no further work is recommended. 38BK81 also contains an early twentieth century component represented by 3 ironstone whiteware ceramic sherds.

**38BK82.** This site is represented by 1 check stamped and 2 plain sherds, all sand tempered, recovered from the surface of a plowed field overlooking a small creek in the upland zone. 38BK82 probably represents a short-term
phase occupation is indicated by the check and simple stamped pottery, and a Cape Fear phase occupation by the two fabric impressed sherds. It must be understood, however, that whether Deptford and Cape Fear assignments represent different cultural groups, influence from different cultural centers, or simply status or functional differences in the pottery is one of the major questions to be studied in the South Carolina Coastal Plain.

A late eighteenth-early nineteenth century historic period occupation is also indicated at the site by 18 ceramic sherds. A mean ceramic date (South 1977) of 1773 was derived from these sherds. In addition, 14 early glass fragments, 2 clay pipe fragments, 7 nails, 7 brick fragments, and 2 tabby or crude mortar chunks were recovered. The presence of nails, brick and tabby indicate a structure at the site. Such a structure may have been part of the nearby Cordes Yaughan Plantation.

38BK76 is recommended as eligible for the National Register and worthy of preservation or excavation and study. Such recommendation for 38BK76 is justified by the same reasons as given for 38BK75. If study is necessary, excavations should be directed particularly toward answering questions of site function and its relation to the presumed main area of Yaughan Plantation represented by 38BK75. The prehistoric component can provide cultural-historical and economic-subsistence data; it is particularly interesting in that it contains materials from two supposed phases of the...
campsite of the Deptford phase of the Woodland period. It lies outside the present project area and no further work is recommended.

38BK83. A large, multicomponent ecotone site, 38BK83 lies in a pasture near the edge of the bluff overlooking Lake Mattassee at its confluence with the Santee River. The site is approximately 60 by 100 meters. A large surface collection and 2 two meter square test pits excavated during the reconnaissance indicate prehistoric Woodland and Mississippian occupations, as well as a late eighteenth–early nineteenth century Historic period component. A thin shell midden, apparently containing both Woodland and Mississippian artifacts, is present and extends from approximately the ground surface to 1 foot below. A low density artifact and shell scatter extends approximately 600 feet east–west along the ridge and 200 feet north–south. At least 2 concentrations occur, exposed along the north slope of the bluff. Historic period artifacts are thinly scattered over the surface of the ridge with no concentration apparent.

Prehistoric artifacts from the surface collection and test pits include 352 sand tempered potsherds. Complicated stamped sherds, assigned to the Mississippian period, number 42, and 4 cord marked and 6 check stamped sherds can be assigned to the Woodland period. Other sherds, including 50 simple stamped, 42 plain, 4 punctate, and 204 worn pottery fragments cannot be assigned to either period on the basis of surface decoration alone. Also included in the collection from 38BK83 are 6 sandstone, bifacially flaked tools and fragments; 1 uniface; 26 chunks; and 382 flakes. Three chert flakes are present, as are 3 flakes of an unidentified breccia-like material. These lithic artifacts cannot be definitely assigned to either the Woodland or the Mississippian period. Other artifacts include 1 "chunky" stone (made from a simple stamped sherd), 1 bone needle, 1 sandstone abrading tool, 1 antler tip with heavy use marks on the end, and 19 small pieces of burned clay daub. One unworked antler fragment and 33 unworked bone fragments (all tentatively identified as white-tailed deer) were also recovered, along with numerous small mussel shell fragments.

These prehistoric remains indicate a permanent or continuously re-occupied camp or village exploiting land (deer) and riverine (shellfish) resources. Site seasonality, precise subsistence data, and population estimates, as well as detailed cultural-historical information, could be recovered by intensive excavation.

The late eighteenth and early nineteenth century component at 38BK83 is represented by 24 ceramic sherds, 11 glass fragments, 1 musket flint, 1 lead fragment, 6 rusted iron lumps (nails), 2 tabby chunks and 25 brick fragments. These artifacts seem to indicate the presence of a structure at the site dating to the late eighteenth century. A mean ceramic date (South 1977) of 1786 was obtained for the site. Mouzon shows on his 1773 map (see Fig. 6) the Cantey plantation at the approximate location of 38BK83. Such a plantation, belonging to Charles Cantey, an early and prominent settler of the area, is also described.
by DuBose (1972) for this approximate area in pre- and post-Revolutionary War times. The name of this plantation was Mattassee, probably giving its name to the nearby Lake Mattassee. 38BK83 was probably a part of this plantation. Good historic documentation exists concerning Charles Cantey and his family. Excavation and study of the historic component at 38BK83 would yield significant information about early historic life in the area and would surely contribute much to method and theory in historical archeology. It is recommended as eligible to the National Register.

38BK83 lies outside of the presently designed project area, although conversations with Corps of Engineers personnel indicate that there is a possibility of usage of this location as a spoil disposal area. It is recommended that this step not be taken if at all avoidable. As long as 38BK83 remains outside the project impact zone, no further work is recommended. If plans for this location change so as to impact the site, a large scale excavation and study project is recommended.

38BK84. This is a large 150 by 60 meters, multicomponent site covering the pasture and bluff edge west of, and adjacent to, 38BK83. It is probable that 38BK83 and 38BK84 represent together one village or large camp. The area intervening between the two sites contains a large gully. Erosion since occupation and use of the site could have destroyed artifactual evidence in the gully; or, if the gully was present at the time of prehistoric and historic occupation, it could have forced a small break in an otherwise continuous occupation.

A large surface collection from 38BK84 indicates prehistoric occupation during the Woodland and Mississippian periods and during the Historic period of the late eighteenth and early nineteenth centuries. The prehistoric period is represented by 7 small, sandstone projectile points, 9 quartz and sandstone bifaces and fragments, 1 sandstone unifacial scraper, 3 quartz cobble hammerstones; 11 large, sandstone cores/choppers, and 74 sandstone flakes. In addition, 160 sand tempered potsherds were recovered, along with 1 fiber and sand tempered sherd. This fiber and sand tempered sherd is worn and probably dates to the early part of the Woodland period. The Woodland period is also indicated by 10 check stamped, 2 cord marked, and 13 fabric marked sherds. The check stamped sherds are presumably from the Deptford phase of the Woodland period, while the cord and fabric marked sherds are from the Cape Fear phase. Twelve complicated stamped sherds indicate occupation by later Mississippian peoples.

Indeterminant as to Woodland or Mississippian occupations are 52 simple stamped, 39 plain, and 31 worn sherds. This artifact inventory probably represents a permanent or continuously re-occupied village or camp that is likely a part of 38BK83. Although two conch shell fragments were recovered, there was no evidence of a shell midden at 38BK84.

Seven late eighteenth century ceramic sherds providing a mean date (South 1977) of 1742, along with 4 dark green glass fragments, and 1 kaolin pipe stem fragment, indicate historic occupation of that time period. No evidence of a structure (nails, brick, window glass) was recovered.
and the historic occupation may represent an activity (e.g., dumping of trash) not directly associated with a structure. Most probably this historic component at 38BK84 represents activities that were part of the Cantey plantation system described above for 38BK83.

A limited amount of ground disturbance, plowing, erosion and/or bulldozing, seems to have occurred at 38BK84. Nevertheless, the site contains important information that should be recovered if threatened, and is recommended as eligible for the National Register. 38BK84 is outside the present project impact zone and will not be disturbed. Thus no further work at the site is recommended unless project design changes so as to impact the site.

38BK85. This site covers a small area approximately 20 by 30 meters in a poorly drained upland zone near Lake Moultrie. One chert flake and one sand tempered, fabric impressed sherd indicate a Woodland period occupation. Seven late nineteenth century ceramic sherds indicate an historic occupation in addition. Disturbance of the site area by heavy equipment limits the potential of this site. No further work is recommended.

38BK86. Two late nineteenth-early twentieth century ceramic sherds, 1 rusted iron fragment, and 1 brick fragment indicate an historic occupation at this upland zone site. No further work is recommended because of low artifact density, the large number of similar sites in better preserved condition, and the lack of specific research problems for sites of this period.

38BK87. Four brown salt-glazed stoneware sherds, dating from 1690 to 1775 and probably deriving from the same vessel, were found at this site located in a plowed field outside the project area. Since no other artifacts were located, even though surface observation conditions were good in this upland zone plowed field, it is improbable that the site represents anything more than an unusual accident distant from an area of regular occupation or use. No further work is recommended.

38BK88. One chert flake indicates an indeterminant prehistoric occupation at this site, while 66 late eighteenth and nineteenth century ceramic sherds are representative of an Historic period occupation. These sherds indicate a mean date of 1797 (South 1977). 38BK88 covers an area 100 meters square in an upland zone plowed field within the disposal area north of the proposed canal entrance. Before its destruction, small scale excavations, involving 5-10 two meter squares, should be performed at the site to gather a controlled artifact collection from this site type. Such a collection would better allow assignment of function to 38BK88, and thus provide comparative information for better understanding of the settlement system of the late eighteenth and early nineteenth centuries.

Fragments of brick observed on the surface of the site indicate the presence of a structure in the past. 38BK88 may represent the remains of a tavern indicated for the area by Mouzon in 1773 (see...
Fig. 6). If so, the site may yield data significant to understanding eighteenth century behavior and architecture. 38BK88 is one of only four eighteenth century component sites located in the upland zone. Components from this period were not predicted for the upland zone. If not a tavern, 38BK88 may represent some other specialized site and thus could provide significant new data for understanding economic patterns of the eighteenth century. 38BK88 is recommended as eligible for the National Register.

38BK89. Only 1 piece of late nineteenth-early twentieth century ironstone whiteware was recovered at this site, even though collecting conditions were good in this upland zone plowed field. No further work is recommended at 38BK89, although it is within the impact zone.

38BK90. Nine weathered cow bone fragments were recovered at this site during the reconnaissance investigation. Similar finds noted during the later survey phase field work were not recorded as they indicate only that a cow has died without burial. No further work is recommended at this site. 38BK90 is within the impact zone.

38BK91. A nineteenth century historic period occupation is indicated by the presence of 34 ceramic sherds, 2 glass fragments, and 1 kaolin pipe fragment dating to this time period. These artifacts were scattered over an area approximately 60 meters square in an upland zone plowed field within the present project right-of-way. It is recommended that the site be monitored during construction, so that if any features are uncovered they can be quickly recorded and studied. Detailed excavations are not recommended. It is felt that many similar sites exist in protected areas and can be studied if specific research problems develop in the future for which study of this site type is necessary.

38BK92. This site was located in a plowed field of the upland zone within the present project right-of-way and covers an area approximately 90 meters square. Brick and nineteenth century ceramic fragments (15 sherds) were scattered over the area and probably represent a structure and occupation covering most of that century. It is recommended that the site be monitored during construction so that any features that might be revealed can be quickly recorded and studied. It is felt that many similar sites exist in protected areas and can be studied as necessary if future research problems develop for this site type. Detailed excavations are not recommended for 38BK92.

38BK93. Eight ironstone whiteware sherds, 1 white porcelain sherd, and 1 milk glass fragment date this site to the late nineteenth-early twentieth century. Brick was also observed in the 30 meter square area of the upland plowed field containing the site, with a portion of a fireplace still standing. The site is on the edge of the impact zone. Conversations with local residents indicate that the house was built in the 1900's and has been abandoned for approximately 25 years. Excavation at the site would provide interesting data most useful for methodological problems in historical archeology. However, because of the lack of uniqueness of 38BK93, no further work is recommended.
38BK94. One ironstone whiteware sherd was located in this upland plowed field, dating this site to the late nineteenth-early twentieth century. Although the site is within the project impact zone, no further work is recommended because of sparseness of material. This site is probably related to 38BK93 nearby.

38BK95. Several twentieth century ceramic, glass and brick fragments were found at this site which is located in a plowed upland zone field. The site is outside the project impact zone and no further work is recommended.

38BK96. Twelve ironstone sherds dated to the late nineteenth-early twentieth century were located at 38BK96. These artifacts were found concentrated in an area about 10 meters square in an upland, poorly drained wooded area within the project impact zone. Logging and burning have disturbed the site context and no further work is recommended.

38BK97. A prehistoric component is indicated at this site by the discovery of a single sandstone bifacially flaked tool from which a specific cultural period could not be determined. One ironstone ceramic sherd indicates in addition a late nineteenth-early twentieth century component. 38BK97 is located in a plowed field in the upland environmental zone, within the project right-of-way. No further work is recommended because of the very low density of artifacts at the site.

38BK98. A prehistoric Woodland period occupation is indicated at this upland zone site by the recovery of 8 sand tempered, plain surface potsherds. These were found within a disturbed wooded area (30 by 60 meters) near brush and dirt piles produced by recent logging operations. Because of the disturbed nature of 38BK98 and its location outside the present project impact zone, no further work is recommended.

38BK99. This site is outside the project impact zone in an upland plowed field. Twenty-one late nineteenth-early twentieth century ceramic sherds and 4 glass fragments were recovered from the surface of a 120 by 75 meter area. No further work at the site is recommended.

38BK100. Thirteen ironstone sherds and 1 melted glass fragment, dating to the late nineteenth-early twentieth century period, were recovered from the surface of an area 240 by 90 meters in a large upland plowed field. The very low density of artifacts and the location of the site outside the present project area both indicate that no further work is necessary for 38BK100.

38BK101. This site covers an oval area 30 by 15 meters in a low-lying upland zone field near a small, isolated marsh area. A Woodland period occupation is indicated by 1 plain and 2 fabric impressed potsherds (both sand tempered), as well as 1 bifacially flaked sandstone tool fragment. 38BK101 probably represents a short term upland camp of the Woodland period. The site is outside the project area, and no further work is recommended.
38BK104. Six ironstone whiteware sherds, dating to the late nineteenth-early twentieth century were located at this site covering an area 30 by 60 meters in a lowlying and poorly drained plowed field in the upland zone. 38BK104 is outside the present project right-of-way, and no further work is recommended.

38BK105. A prehistoric component of undetermined cultural period is indicated by the discovery of 1 sandstone biface fragment at this upland zone site. One nineteenth-twentieth century ironstone sherd was also recovered from the surface of this poorly drained cultivated field. 38BK105 is outside of the project impact area and no further work is recommended.

38BK106. Fire-cracked quartz and 12 sand tempered pot sherds at this site indicate a Woodland component. Eleven of these sherds are badly worn, but 1 is check stamped, indicating a Deptford phase occupation. A nineteenth century occupation is also indicated, as 24 ceramic sherds, 7 glass fragments, and 1 kaolin pipe fragment were also recovered. 38BK106 covers an area 300 by 100 meters in a plowed field and timbered woodland in the upland zone. A creek and marsh border the site to the east and most of the material is concentrated on a low knoll overlooking this creek. 38BK106 probably represents a small temporary Woodland camp. The historic component may be representative of a nineteenth century dumping area. 38BK106 is outside the present project impact zone and no further work is recommended.

38BK107. Five late nineteenth-early twentieth century ironstone ceramic sherds were recovered from this site within a 10 meter diameter, timbered upland zone area. The site lies outside the present project right-of-way and no further work is recommended.

38BK108. This upland zone site contains Archaic, Woodland and eighteenth-nineteenth century components. Artifacts are widely scattered over a plowed field 300 by 400 meters in size and include an Archaic period Guilford spearpoint or knife; 2 Woodland period dentate stamped, sand tempered sherds; and 1 slate and 1 sandstone scraper. These artifacts indicate the site may have served as a short term camp or resource exploitation station during both Archaic and Woodland times. The historic component is represented by 23 ceramic sherds dating to the late eighteenth and nineteenth centuries. The Muster House shown on Houzon's 1773 map (see Fig. 2) corresponds approximately with the location of 38BK108. Both the prehistoric and historic components thus have the potential for contributing significant information. 38BK108 lies outside the present project area and no further work is recommended as part of the Cooper River Rediversion Canal project.

38BK109. This site is located on the edge of the project area and probably will be disturbed. 38BK109 covers an area approximately 60 meters square in an upland plowed field and contains a relatively high density of Woodland period and nineteenth century artifacts (see Fig. 16). Artifacts were recovered from the surface and from a single one meter test pit (see Fig. 17). The Woodland component is represented by a small sandstone projectile point and 96 sand tempered sherds. Fabric
FIGURE 16. Recently plowed surface of 38BK109, facing northwest.

FIGURE 17. One meter test excavation at 38BK109. Artifacts were recovered in the plow zone and the first 10 cm of loamy sand, to a depth of 30 cm.
marked (23) sherds indicated a Cape Fear phase occupation, while simple stamped (30) sherds probably represent a Deptford phase occupation. Indeterminant as to cultural phase are 24 worn and 15 plain surfaced sherds. Also present were 1 sandstone biface, 2 quartz bifaces, 1 quartz hammerstone, 14 sandstone flakes and chunks, and 2 quartz flakes. These artifacts indicate a woodland period upland campsite. Preservation is good at 38BK109 and the artifacts are tightly clustered on the surface, making the site potentially very significant for understanding the role of small, upland Woodland period sites in a subsistence-settlement system also involving larger ecotone sites. In addition, the presence of both Deptford and Cape Fear type pottery in such a tightly clustered area indicates a high potential for the site containing data that can help resolve questions pertaining to the variability between these two pottery groups.

A nineteenth century component at 38BK109 is also present and is evidenced by 59 ceramic sherds of this period, as well as 24 glass fragments; 1 whole, small medicine bottle; 2 brick fragments; 1 iron file; 1 iron hinge; and 1 small, metal crank handle. This nineteenth century material is probably related to the foundation and rubble of an old barn or building on the edge of the site adjacent to the road. Late nineteenth century material, as well as recent trash and junk, was found in this rubble.

It is felt that 38BK109 can be preserved by avoidance during construction. The site lies just on the edge of the project right-of-way, and avoidance of it should not pose undue interference with construction plans. If such protection is not possible, excavation and study of the site is recommended. The potential contribution of the Woodland component data toward understanding upland settlement-subsistence patterns indicates that the site is eligible for the National Register. A one-meter test pit excavated at the site (Fig. 17) indicated a shallow occupation zone. Artifacts from this test pit (6 potsherds, 1 nail) occurred in the plow zone and about 5 cm into the underlying yellow loamy sand. This underlying sand should show features very well if they exist at the site. If excavation is necessary, a 3-phase program is recommended: (1) excavation of numerous small (25 cm square) pits dispersed over the site; (2) depending on data from the small pits, excavation of 5-10 two-meter squares; and (3) removal by machine of the plow zone and recording of any features exposed.

38BK110. This upland zone site was located during the reconnaissance in a plowed field and contains three components: Archaic, Woodland and Historic eighteenth-nineteenth century. Artifacts are distributed over a 90 meter square area on a slightly elevated rise overlooking a small creek and marsh approximately 300 meters to the southeast. The Archaic component is represented by a sandstone Morrow Mountain point/knife basal fragment, and the Woodland component by seven sand tempered, plain surfaced potsherds. Several pieces of fire-cracked rock were also present at the site and could represent hearths or cooking fires associated with either the Archaic or Woodland components. Evidence for a late eighteenth-early nineteenth century component at 38BK110 includes 8 ceramic fragments dating to this period; as well as 1
green, wine bottle glass fragment; 1 kaolin pipestem fragment; 1 rusted iron spike; and 1 fragment of rusted flat iron.

The Archaic and Woodland components probably represent small, temporary campsites. The behavior responsible for the historic component is not known. A structure may have been present in the area or the artifacts may represent a small dump of that time period. 38BK110 lies outside of the present project area and no further work at the site is recommended as part of the Cooper River Rediversion Canal project.

38BK111. Six ironstone whiteware sherds dating to the late nineteenth-early twentieth century were recovered from the banks and bed of a little-traveled logging road in the upland zone. The area has been disturbed to some extent by the road and by logging. Even though 38BK111 is located within the project right-of-way, it may not be disturbed by canal construction. Sparseness of material and previous disturbance indicate a decision for no further work at the site.

38BK112. This site contains 2 components, Woodland and late nineteenth century, each defined on the basis of 1 sherd. The Woodland sherd is sand tempered and check stamped. It dates from the Deptford phase of the Woodland period. The late nineteenth century component is represented by a single ironstone whiteware sherd. Because sparseness of material indicates little potential of 38BK112 containing significant information, no further work is recommended. The site is within the impact zone.

38BK113. A multicomponent Woodland, Mississippian and nineteenth century historic site is represented in the artifact collection from 38BK113. The site is located on a ridge forming the bluff overlooking the swamp to the north and covers an area approximately 60 meters in diameter. There has been considerable destruction of 38BK113 by construction of a railroad and access road through the ridge at what was perhaps the center of the site. Artifacts are now found on both sides of the railroad cut and in the bed of the access road.

The nineteenth century component is represented by 7 ceramic sherds dating from this time, 1 early nineteenth century green wine bottle fragment and 1 late nineteenth century milk glass fragment. Four complicated stamped, sand tempered sherds represent a Mississippian component. One cord marked sherd definitely indicates a Woodland period occupation of the site. This sherd, and 12 other worn sherds, have very small bits of ground-up sherds mixed with sand and used as temper. This trait is common for Wilmington phase pottery found in Georgia and South Carolina, although the ground-up sherd bits are usually larger than those seen in the 13 sherds from 38BK113. These 13 sherds may thus be representative of a Wilmington phase occupation at the site. Five simple stamped, sand tempered sherds were also found at the site. These are probably representative of a Woodland period, Deptford phase occupation, although some simple stamped pottery was made during Mississippian times. Six plain surfaced and 29 worn sherds, all sand tempered, are indeterminant as to cultural period, as are the 24 sandstone flakes and the small, sandstone, stemmed point found at the site.
If 38BK113 were undisturbed, it would represent an excellent laboratory for testing ideas of culture history regarding the importance of different pottery surface decorations and tempering agents, as well as for investigating subsistence and other activity behavior for the time period represented. A revisit to the site during the survey indicated that disturbance is so extensive that even small-scale excavations could not be effectively carried out. No further work is recommended.

38BK114. This site was located within the swamp zone on a slight rise overlooking 2 small, apparently seasonal creeks. Recovered from an area approximately 60 meters square in a cleared power transmission line corridor were 29 sandstone flakes and 65 sand tempered potsherds representing Woodland and Mississippian period occupations. Two complicated stamped sherds probably indicate Mississippian use of the area and 2 cord marked sherds represent the Woodland period, indicating a Cape Fear phase occupation. Eleven simple stamped sherds probably indicate a Woodland period Deptford phase occupation, although simple stamping was also used as a decorative element in Mississippian times. Indeterminant as to Mississippian or Woodland times are 50 worn potsherds.

As one of only four sites located in the swamp zone, 38BK114 probably represents a small fishing camp situated to exploit the seasonally available fish resources of the small creeks nearby. The site would be an excellent laboratory for investigating this specific activity if it were not extensively disturbed by the transmission line clearing and construction. 38BK114 is only 120 meters away from 38BK115 and thus may represent part of a larger camp and activity set. No further work is recommended for 38BK114 as part of the Cooper River Rediversion Canal project, as the site lies outside the present impact zone.

38BK115. This Woodland period site is 120 meters north of 38BK114 in the swamp zone along a powerline right-of-way. It is represented by 2 sand tempered, worn potsherds and 5 flakes and cores of chert. 38BK115 may be associated with 38BK114 and represent part of a seasonal fishing camp. The chert flakes and cores recovered indicate that the site may also have been the locus of chert procurement and early stage tool manufacture. The heavily disturbed context of the site did not allow gathering of a controlled artifact collection, and this precludes more specific assignment of site function and temporal placement. 38BK115 lies outside the present canal right-of-way and no further work is recommended as part of the Cooper River Rediversion Canal project.

38BK116. Seven sandstone flakes and 13 sand tempered potsherds indicate a Woodland period occupation at this small (10-15 meters in diameter) swamp zone site. The site is located on a slight rise adjacent to and north of a permanent, small creek (Mattsassee Run)
in a powerline right-of-way. The site has been extensively disturbed during construction and maintenance of the powerline. Nine of the sherds recovered at the site were worn and indeterminant as to surface decoration, while 3 evidenced cord marking and 1 showed fabric marking, allowing designation of the site as of the Cape Fear phase of the Woodland period. 38BK116 probably represents a small fishing camp situated to exploit the resources of the adjacent creek. If disturbance were not so great at the site, it would provide an excellent laboratory for investigating this activity. The site lies just outside the present canal right-of-way, and no further work is recommended as part of the Cooper River Rediversion Canal project.

38BK117. Three sand tempered, worn and 1 sand tempered, check stamped potsherds were recovered from this small site adjacent to and south of a small, permanent creek. Directly across Matassee Run from 38BK116. 38BK117 probably represents a small fishing camp, and can be assigned to the Woodland period, Deptford phase on the basis of the pottery. The site covers an area only about 10 meters in diameter and is heavily disturbed by construction and maintenance of the powerline passing overhead. A portion of the site appears to be within the project boundaries, but because of disturbance and sparseness of material, no further work is recommended.

38BK225. This large, multicompontent ecotone zone site was discovered in the tailrace access road shortly after it had been graded. Artifacts covered an area for approximately 500 meters on the freshly graded and disturbed surface. It appears that about 30 cm of topsoil and underlying yellow sand were removed by the preliminary grading. Other disturbance occurred because of vegetation clearing and heavy equipment movement over the area. Artifacts were easily observable on this cleared surface and were collected from the 150 foot wide graded area in 100 foot segments corresponding with the road survey stations. Prehistoric and historic artifacts were concentrated in a 600 foot segment of the roadbed that represents the break in slope toward a small creek and the Santee River swamp to the north. The historic specimens exhibited even tighter clustering within a 100 foot segment near the eastern edge of the road right-of-way at this break in slope. Later investigations revealed a structure present in this area. The graded road surface at 38BK225 is shown in Figure 18.

Besides the extensive surface collection, 8 small subsurface tests (25 cm square) were excavated in the pine woods adjacent to the east side of the graded road bed to define the limits of the site. In addition, 10 test squares, of one to two meters square, were excavated in the road right-of-way to gain a better understanding of the information potential of this site and to determine if deeper cultural deposits that had not yet been disturbed by grading still existed. One of these test squares revealed the corner of a brick foundation of a relatively small structure. The structure was dated to the late 1700's by the ceramics found associated with it. South's (1977) mean ceramic date was 1757. Negotiations with the Corps of Engineers were initiated in an attempt to preserve as much as possible of this structure from destruction by second stage road grading and excavation of roadside drainage ditches. Emergency
FIGURE 18. Graded surface of 38BK225 as it appeared when site was discovered. 38BK226 is shown on ridge in the background to the north. Artifacts were scattered over the disturbed surface at both sites.

FIGURE 19. Historic structure at 38BK225 showing western edge of brick floor and walls, as well as feature representing chimney. Chimney feature has been removed by road construction.
mitigation excavations were begun to salvage information while this negotiation process was under way (Fig. 19). Fortunately, the Corps of Engineers was able to modify slightly the access road design so as to preserve, at least temporarily, most of the eastern portion of the structure and emergency excavations were terminated. Partially excavated, the remains of this structure are presently perched atop a road cut bank. The excavated remains are clearly visible from the road, inviting vandalism and unintentional destruction by passers-by. It is evident that remaining portions of this structure will soon be destroyed by vandalism and erosion. Figure 20 shows the present condition of the site.

FIGURE 20. View of 38BK225, facing north and showing completed tailrace access road running through site.

Full description and analysis of 38BK225 are not appropriate for this archeological survey study but a summarized description of the artifacts recovered is presented below to provide some understanding of the site and to provide a better basis for discussion of site significance. This discussion is organized into sections concerning three provenience units at the site—the surface collection, the test pits, and the historic structure.
The surface collection at 38BK225 includes artifacts from the Archaic, Woodland and Mississippian periods as well as from the late eighteenth-early nineteenth century. One sandstone Guilford type point/knife base indicates Archaic period occupation of the site. In addition, the very large proportion of sandstone flakes and chunks, produced as by-products of tool manufacture, relative to the small proportion of potsherds present indicates a heavy occupation during the preceramic Archaic period. The Woodland period is represented at the site by 3 small projectile points; 5 sand tempered cord and fabric marked sherds (indicating Cape Fear phase occupation); and 3 check stamped, sand tempered sherds (indicating Deptford phase occupation). Seven dentate stamped, 1 simple stamped, 21 plain and 69 worn sherds, all sand tempered, may indicate Woodland or Mississippian occupation. Eight sherds exhibiting complicated stamping are representative of the Mississippian period. One temperless clay pipe stem was recovered and may date to either the Woodland or Mississippian period. In addition to ceramics, a large number of stone flakes and tools was found on the surface of the site. Fifteen sandstone bifaces, 1 slate and 6 sandstone unifaces, and 5 sandstone flake tools were recovered in addition to the projectile points described above. Six hundred and forty three of the 711 sandstone flakes and chunks recovered from the surface are specialized flakes of the type produced in biface manufacture. This large number of flakes of biface reduction indicates that such manufacture was a common activity at the site. In addition to the sandstone flakes, 6 quartz, 3 chert and 1 slate flakes were present, indicating use of materials found in locations distant from the site. The 8 subsurface tests in the pine woods show that the prehistoric component of the site extends approximately 120 meters east of the road and covers the entire ridge between the road and a small creek valley to the east. A large borrow pit west of the road has destroyed portions of the site that may have existed there.

Ten test squares were excavated at the site and 1 revealed the historical structure described below. The other 9 test squares recovered data primarily of the prehistoric period, although some late eighteenth-early nineteenth century material was also recovered from them. One test excavation, a five foot square located on the eastern edge of the road right-of-way just below the break in slope, will be discussed here as typical of the test squares excavated at the site.

The topsoil in the area of the test square had been removed by grading, although it appeared that only about 6 inches had been so affected. The square was excavated and screened in 6 inch levels down to 24 inches below the graded surface, where sandy clay deposits, containing no cultural remains, were encountered. The first level of the test square, 0-6 inches, contained 101 sandstone flakes and chunks; 24 sand tempered, worn sherds; 1 punctated or dentate stamped, sand tempered sherds; and 9 fragments of daub (burned clay lumps). The daub indicates a Woodland or Mississippian structure at the site, and the pottery and sandstone flakes, a general occupation during either of these periods. Representative of an historic occupation were 2 sherds
of late eighteenth-early nineteenth century ceramics, 1 window glass fragment, 1 bottle glass fragment, 9 wrought nails, 459 grams of brick and 203 grams of mortar and plaster. The brick, mortar, plaster, nails and window glass indicate a structure, most probably the one already discovered 50 feet upslope to the south. Four fragments of recent period glass indicate a twentieth century visit to the area.

The second level of this test square, 6-12 inches below surface, contained 47 grams of brick and mortar and no other historic artifacts, indicating concentration of these in the upper portion of the deposits. Nine sand tempered, worn sherds were recovered from this level. Sandstone flakes from this 6-12 inch level number 344, showing a dramatic increase over the 0-6 inch level. It may be that early Woodland and Archaic period occupations are documented in the 6-12 inch level. The 12-18 inch level contained 625 sandstone flakes and chunks, another increase, as well as 1 sandstone uniface and 1 sandstone Guilford point or knife. The Guilford point and a complete lack of pottery strongly indicate an Archaic period occupation for this level. The fourth level, 18-24 inches, contained 109 sandstone flakes and chunks, a decrease in number from the 2 levels above. One chert flake was also recovered from this 18-24 inch level. At the depth of 24 inches sandy clay subsoil was encountered. This deposit was void of artifacts and the excavation was terminated.

This square shows definite evidence, not only of a very densely occupied site but one in which deposits from different time periods are stratified. Although this stratigraphy is not visible by examination of the color and texture of the soil, excavation in arbitrary levels indicates that it is present. Such a stratified site is rare for the Coastal Plain of the Southeast and the information that may be recovered is significant in terms of understanding culture history, as well as behavioral differences among groups living successively at the same location.

The historic structure, discovered at the top of the ridge on the eastern edge of the road right-of-way, was excavated in part (Fig. 19). The excavations were concentrated in the western area of the structure where destruction was most imminent and were designed primarily to recover and record architectural details. The structure was revealed to have a low brick foundation constructed of 3 courses of half bricks, although the eastern end of this foundation was not discovered. The structure was approximately 15 feet wide and 30 feet long with the long axis oriented east-west along the ridge or bluff. A floor made of half bricks was discovered at the western end of the structure, covering the entire width and extending eastward approximately 15 feet. This brick floor was approximately 2 feet below ground surface and the fill above the floor contained a large amount of brick, mortar and plaster fragments as well as large and small nails, window glass and ceramic sherds dating to the late eighteenth and early nineteenth centuries.
An 11 by 8 foot dark brown, sandy stain containing many brick and mortar fragments was discovered adjacent to the western end of the structure. This rectangular feature was "hollow" in that it contained at its center a 3.5 foot undisturbed rectangle of yellow sand. Four postmolds were found around the outside of this feature; these were approximately 1 foot square and extended to flat bottoms 1.4 feet below the graded surface. Excavation of the large feature recovered 3 bricks at the southwest corner. The feature extended only 0.3-0.5 foot below the graded surface. This feature is interpreted as a fireplace and chimney footing attached to the western end of the structure. Brick from the chimney was not present and probably was salvaged and removed soon after abandonment of the structure.

The high-status, expensive ceramics found associated with this historic eighteenth-nineteenth century structure indicate that it was part of an early plantation owner's central house system. Windows and plaster walls also point to this conclusion. The small size of the structure, however, and the relatively simple and crude construction techniques employed indicate that it was not the main house of such a plantation. The large fireplace and brick floor indicate strongly that the structure was a kitchen serving an unattached main plantation house nearby. If the eastern end of the structure contained the doorway, the main house might be expected to be located in that direction.

Although most impact of the access road construction has already been made, mitigation is not complete. Detailed study of artifacts and other data recovered during the emergency excavations at 38BK225 should be performed as part of the overall project mitigation plan. In addition, further excavation at the site should be carried out to provide a better sample of the prehistoric components of the site. A series of squares should be excavated along the eastern edge of the right-of-way, at the top of the bluff or ridge and downslope approximately 60 meters. Data from these excavations, in addition to providing a more reliable and larger sample of artifacts from the site, should improve the usefulness of data collected by survey phase test squares and surface gathering. This survey phase data was collected largely from disturbed areas of the site and potential bias introduced by this factor should be checked by further excavation in undisturbed areas.

Although it is commendable that the Corps of Engineers acted quickly to rescue the historic structure from destruction by road grading, this feature of 38BK225 cannot be considered to be preserved. Secondary impact in the form of erosion and vandalism is almost certain to destroy fully this aspect of the site. Vandalism had already occurred during the time between termination of emergency excavations in July and a visit to the site in September, 1977. Several exposed bricks were displaced from their original location and others had been taken, perhaps as souvenirs. Small holes had been dug by visitors. Such activity poses a real threat to the remaining portion of this important part of 38BK225. It is recommended that mitigation study be undertaken to salvage information from this structure and the surrounding area.
It is possible that the exposed portion of the historic structure could be covered with earth and thus protected; however, this is not recommended. Erosion of this covering, over a period of several years, is an obvious danger. The redesign of the road drainage ditch for temporary preservation necessitated that the bank on which the structure rests be steeper than usual. This makes the site even more susceptible than usual to destruction by erosion. In addition, vandalism would continue to be a problem, especially with the opening of the canal and boat ramp area planned for the access road terminus. The existence and location of the site is well known in the community; two local newspaper articles were published concerning the project in the summer of 1977 and numerous visitors came by while emergency excavations were in progress. With an increase in traffic on the access road, vandalism will be an increasing problem and could eventually result in much more destruction. Because the structure remains are so close to the ground surface, covering the exposed remains with earth would not deter vandals. Excavation and study of the remaining portions of the site seem much more advisable.

Particular attention should be given the eastern end of the structure to determine precisely where the doorway was and to investigate trash disposal practices in the area. The Brunswick Pattern as defined by South (1977) predicts trash disposal near the entranceway for British colonial sites. French Huguenot customs in this regard may differ and be indicative of other activity differences. If the structure was a kitchen as hypothesized, work performed there would probably have been done by slaves of African heritage. Artifacts and patterns informing on activities by this ethnic group would add significantly to our knowledge of the behavior of this historically neglected group.

Attention should also be directed in the mitigation excavations toward understanding in more detail the architecture of the structure. It appears from recovered fragments of glass that windows were present. Detailed excavation and quantification should indicate the number and placement of these windows. Another architectural detail which should be explored is the method of wall and roof support of the structure. The foundation wall discovered was only 1 brick wide, with no footings in the corners or along the wall. Such a wall is very rarely the sole support of a structure as large as this one. Documentation of such construction methods as intentionally employed would be a significant contribution to understanding building activity in the late eighteenth century, particularly at such inland plantations where brick and other building materials may have been scarce.

Historical documentation of the structure is scarce, but some data (White n.d.) indicate that it may have been part of the original Charles Cantey plantation, Mattassee, indicated on Mouzon's 1773 map (Fig. 6) to be about a quarter of a mile to the east across a small creek. The historical remains at 38BK225 may represent part of a plantation house complex built by Cantey for his widowed daughter, Margaret Walter, a somewhat colorful resident of the area in the late eighteenth and early nineteenth centuries (DuBose 1972; White n.d.). Other data pertaining to this site probably exists and could be revealed by
further archival research. Historical documentation already known and barely summarized here, would be very helpful to an in-depth study, greatly increasing the potential for contributions significant to history and to archeology and anthropology.

Mitigation excavations at 38BK225 would involve field time of approximately one to two weeks for the prehistoric component and four to six weeks for the historic structure with a supervising archeologist and a crew of about five laborers for each excavation. Laboratory and study time associated with these excavations should be extended to allow for detailed analysis of artifacts and other data collected during the survey and emergency excavation performed at the site.

38BK225. This large, multicomponent site was also discovered in the cleared and graded area of the tailrace access road approximately 120 meters north of 38BK225. The access road terminates at the crest of a low ridge or terrace directly facing Lake Mattassee and the Santee Swamp to the north. This ridge, which is parallel to the swamp, is separated by a small, intermittent stream from the higher ridge to the south containing site 38BK225. Conditions in the graded access road were similar to those described for 38BK225 (see Fig. 18). Artifacts were discovered on the surface of the graded road and along a pre-existing, but enlarged, road extending along the ridge to the west from the terminus of the tailrace access road.

Subsurface transect testing in the wooded area east of the access road showed artifacts present on this extension of the ridge also. Ten test pits were excavated at 38BK226. These included a 2 foot test and a .5 foot test in the cleared road area, as well as a one-meter square, 2 50 cm squares, and 5 25 cm tests east of the access road. In addition, 3 25 cm tests were excavated to the west of the access road to supplement the surface collection from that area. Figure 8 shows excavation of a test pit at 38BK226; the completed excavation of this test is shown in Figure 21, and the surrounding eastern area of the site in Figure 22.

In all, 38BK226 was determined to extend east-west along the Lake Mattassee bluff-ridge for over 700 meters. Opportunistic inspection of roads and trails, as well as subsurface transect testing indicate that along this 700 meter length the site reaches a maximum width of about 100 meters at the access road, tapering to a width of about 30 meters at the eastern and western ends. In addition, 38BK226 may be related to and may have once been continuous with 38BK229 immediately to the west. The gap between these two sites contains a large drainage ditch and adjacent area heavily disturbed by bulldozers. This disturbance could account for the lack of artifacts discovered between the two sites. 38BK226 may also be related to the prehistoric occupations at 38BK225 to the south.

Woodland and Mississippian occupations are represented in the collection from 38BK226. The 256 sherds that were recovered from the surface of the entire site are all sand tempered. Representative of the Woodland period are 10 punctated sherds (Thom's Creek phase), 8 check stamped sherds (Deptford phase), 29 fabric marked and 7 cord
FIGURE 21. One meter test excavation at 38BK226. Artifacts were recovered from humus zone and loamy sand extending to about 40 cm. Trowel is resting on hard sandy clay matrix.

FIGURE 22. View of 38BK226 showing dense vegetation east of tailrace access road.
marked sherds (Cape Fear phase). A Mississippian period occupation is indicated by 3 complicated stamped sherds, as well as by the discovery of, in 1 of the 2 test squares excavated in the tailrace access road, a glass trade bead indicative of early historic trade with late Mississippian period groups. Indeterminant as to Woodland or Mississippian periods were 41 simple stamped sherds, 1 dentate stamped sherd, 47 plain sherds and 90 worn sherds.

Lithic artifacts were numerous, although not so numerous or in such a high proportion relative to ceramics, as at 38BK225. Lithic remains recovered from 38BK226 include 1 chert and 6 sandstone projectile points, 1 quartz and 6 sandstone bifaces, 2 sandstone unifaces, 1 chert and 1 sandstone flake tool and 2 quartz cobble hammerstones. Sandstone flakes recovered from the site number 139, of which 80 were of the specialized type produced in biface reduction. Two chert flakes of biface reduction were also discovered. None of the lithic artifacts was diagnostic of cultural period, although the projectile points are all small and appear to be representative of either the Woodland or Mississippian period. One small bone bead completes the inventory of artifacts recovered from 38BK226.

38BK226 lies completely within the project right-of-way and will be almost entirely destroyed by construction of dikes and disposal areas to the east and west of the access road terminus. A boat ramp planned for construction to the northeast of 38BK226 may also impact the site and as stated above, a large portion of the site has already been destroyed by construction of the access road. What was perhaps the part of the site with the highest artifact density is now destroyed by the access road, with the only recovered information being the artifacts discovered on its disturbed surface and in two small test pits there. 38BK226, before its partial destruction, was probably eligible for the National Register because of its size, artifact density, range of cultural components and the significant information it could thus provide for study of prehistory of the Southeastern Coastal Plain.

Much of 38BK226 remains undisturbed at this time, however, and a large excavation and study are recommended to mitigate the damage that has been and will be done to the site. Such excavation should be done in two phases. First, a large number of small, sampling squares should be arranged over the site and excavated so as to provide a detailed picture of the patterns of occupation at the site over different time periods. Particular attention in this phase should be given to attempting to isolate house clusters or other activity areas. Some degree of internal temporal patterning at the site is evident in the survey data (e.g. Thom's Creek phase materials were clustered at the eastern end of the site, while Cape Fear phase sherds occurred mostly in the center). This internal patterning should be more evident in the first stage intensive sampling excavations and should allow the placement of second stage, large block excavations at areas determined to be significant from a temporal or behavioral standpoint. Using this approach, it should be possible to determine whether the site represents a large village that was occupied relatively permanently or a series of small, successive occupations.
The second stage large block excavations should be located to maximize discovery of houses and other features so as (1) to gather faunal and floral data to provide information on seasonality and subsistence; (2) to recover architectural and population size data; and (3) to examine closely the indications of ordinary, day-to-day behavior that occurred near houses. This excavation project will probably require about four months with a crew of about ten laborers, one supervising archeologist and one field assistant. Approximately 16 months of laboratory and analysis time will be necessary to study the data recovered and prepare a report. An archeologist and assistant archeologist, as well as a laboratory assistant and part-time technical staff, would work on the project during this 16 months.

38BK227. This is a large, multicomponent ecotone site located outside the present project area on a ridge extension overlooking Lake Mattassee to the north. Sites 38BK225 and 38BK226 are located about 200 meters across a small creek to the west and 38BK84 lies 130 meters to the east along the same, continuous ridge. Artifacts scattered over an area about 130 meters in diameter were observed on the surface of the sparsely-weeded pasture covering the bluff top.

Woodland, Mississippian and early Historic periods are represented in the artifact collection from the site. Woodland period specimens include 2 sand tempered, check stamped sherds (Deptford phase) and 3 fabric marked, sand tempered sherds (Cape Fear phase). A Mississippian occupation is indicated by the recovery of 2 sand tempered, complicated stamped sherds. Fifteen simple stamped, 6 plain, and 16 worn sherds, all sand tempered, could have been made during either Mississippian or Woodland times. Prehistoric lithic remains include several sandstone flakes, as well as 1 chert and 1 quartz flake. Five sandstone bifaces and 1 small, triangular chert point fragment were also recovered. An early historic component was evidenced by several chunks of tabby on the surface.

38BK227 is probably eligible for the National Register and would provide an ideal laboratory for testing settlement, subsistence and culture history hypotheses for the Woodland and Mississippian periods. The historic component could also be important, as the location of the eighteenth century Cantey plantation was in the general area (Fig. 6), and the tabby found at the site could represent a specialized structure functioning as part of that plantation system. 38BK227 lies outside the present project area, however, and no further work at the site is recommended as part of the Cooper River Rediversion Canal project.

38BK228. One sandstone Morrow Mountain type projectile point indicates an Archaic period occupation at 38BK228. Also found at this site were 1 chert flake, several sandstone flakes and chunks, and several pieces of fire-cracked rock. The site covers an area approximately 75 meters in diameter and is located in the ecotone zone on a knoll above the Santee River Swamp about 200 meters south of the bluff line. 38BK228 was discovered in the surface of a small road and slightly disturbed area while walking in to survey a segment of the project area. The site
probably represents a small and temporary Archaic camp and would be suitable for excavation and study. As the site lies outside the present project area, no further work is recommended as part of the Cooper River Rediversion Canal project.

38BK229. A large, multicomponent ecotone site, 38BK229 is located along the bluff or terrace slope facing Lake Mattasee and the Santee Swamp directly to the north. The site covers an area approximately 400 by 60 meters and has a high artifact density revealed by subsurface transect testing and opportunistic observation of ground disturbed by recent cutting of firebreak ditches (Figs. 9 & 10). Potsherds recovered from the site were relatively large, often measuring 7-8 cm in diameter and indicating little previous disturbance in the approximate 30 cm of deposit. Eight 25 cm square tests were excavated at the site. Six of these were placed at 60 meter intervals along the east-west extent of the site and 2 additional tests were excavated at the site's southern edge. These tests indicate that about 10 cm of humus overlies approximately 20 cm of yellow sandy loam. Underlying this sandy loam is a matrix of yellowish sandy clay. Artifacts occur in the top two strata.

Occupations at the site may be related to those at 38BK246 and 38BK241 to the west and 38BK226 to the east. The site lies completely within the project area and will be entirely destroyed by dike and disposal area construction.

Woodland and Mississippian period components are represented at 38BK229. A Woodland occupation is indicated by 27 fabric marked, sand tempered sherds (Cape Fear phase) and 16 check stamped, sand tempered sherds (Deptford phase). Indicative of Mississippian occupation at the site are 15 sand tempered, complicated stamped sherds. These Mississippian potsherds are large in size and were found concentrated in a 60 meter transect segment at approximately the east-west center of the site. Indeterminant as to cultural period are 42 simple stamped, 12 plain and 77 worn sherds, all sand tempered. Lithic artifacts recovered from the site could have been manufactured during either or both of the Woodland and Mississippian periods. These lithics include 7 small projectile points, 7 bifaces and fragments, and 1 uniface, all of sandstone. Sandstone flakes recovered from 38BK229 number 165, of which 70 were the specialized flakes of biface reduction. One quartz cobble hammerstone completes the artifact inventory at the site. Observed, but not collected from the site, were numerous tabloid sandstone chunks exhibiting no evidence of modification, several pieces of fire-cracked rock and several small shell fragments.

The artifact sample from the site, consisting of a total of 181 lithics and 189 sherds, is indicative of a high artifact density when it is considered that only a small percentage of the site was examined using the subsurface testing and opportunistic survey. An intensively occupied village or continually re-occupied camp is indicated for both the Woodland and Mississippian components. The site surely contains detailed culture-history, subsistence and demographic data relative to the Woodland and Mississippian periods and thus would be eligible for the National Register.
It is recommended that excavations at 38BK229 be performed to mitigate the impact of project construction. These excavations should be carried out in two stages. First, a large series of small sampling excavations that are arranged so as to gather precise data about internal variation within the site should be made. Concentrations, activity areas and hopefully, house clusters, should be isolated by this approach. Evidence described above indicates that one concentration of the Mississippian occupation has been already isolated. These concentrations should then be excavated in large blocks during a second phase of the field study. The combined stages of excavation would require about four months of time by a crew of ten laborers, supervised by an archeologist and one or two field assistants. Approximately 15-17 months of study time should follow and be devoted to laboratory analysis of data collected and preparation of a report. Consultation with and ancillary analyses by experts in other fields, e.g., geology, paleobotany, carbon-14 analysis, would be necessary during the study program to add important supplemental data.

The proposed study program should be designed to answer archeological and anthropological questions in several problem domains for which 38BK229 offers a unique opportunity of contributing to knowledge of Southeastern prehistory. First, cultural historical problems can be solved by proper isolation, excavation and comparison of temporally distinct components at the site. Precise relationships between Deptford and Cape Fear phase materials should be revealed if activity or occupation areas from these groups can be isolated. These relationships have long been a problem in Southeastern prehistory and materials from 38BK229 could aid in the solution. Second, little is known of the house types, demography, subsistence and ordinary behavior of Coastal Plain Woodland and Mississippian peoples. 38BK229 represents a unique, well preserved set of data for investigating these aspects of prehistoric life. Third, very few sites have been discovered that contain such evidently intensive occupations by both Woodland and Mississippian groups. 38BK229 may be very significant in analyzing and understanding the factors involved in the shift in lifeways of peoples of these two time periods. In summary, 38BK229 is a very significant site because of its potential contribution to prehistory in several different ways. Mitigation study of this site is strongly recommended.

38BK230. This ecotone zone, Woodland period site covers an area about 60 meters in diameter in a plowed field and wooded area adjacent to the Santee swamp bluff (Fig. 23). Artifacts were discovered on the surface of the plowed field and in two 25 cm squares excavated as part of the subsurface transect tests. Cultural materials occurred in the top 30 cm of soil and sandy subsoil. Artifacts recovered from the site include 3 chert flakes, 5 quartz chunks and 25 sandstone flakes and chunks. Seven worn, sand tempered sherds and 2 check stamped, sand tempered sherds were also discovered. The 2 check stamped sherds indicate a Deptford phase occupation.
FIGURE 23. 38BK230, facing north. Artifact surface scatter concentrated in field near the test pit excavation in progress.

FIGURE 24. 38BK231, facing east. Artifacts scattered over surface of eastern edge of field and into woods to the east and north.
The small size and low density of the surface artifact scatter at 38BK230 indicate a small village or camp. Lack of materials from other temporal-cultural phases and periods indicates that this small camp may be undisturbed by re-occupation and mixing of artifacts from later groups. Study of such a "pure" component is very desirable in that it allows construction of subsistence and behavioral inferences without the possibility of distortion and bias introduced by disturbance of the original artifact and feature distribution by later groups re-occupying the site. A more limited number of archeological and anthropological problems can be studied at sites such as 38BK230 than can be studied at complex, multicomponent sites like 38BK225, 38BK226 and 38BK229. These limited problems can, however, usually be studied in greater detail and with more success because the archeological record at such small, single component sites can be interpreted with less difficulty. Architectural, subsistence and activity patterns inferred from sites such as 38BK230 are often used to aid in interpreting the archeological record at large, complex, multicomponent sites.

For these reasons excavations at 38BK230 are strongly recommended before destruction of this site by construction of the Cooper River Rediversion Canal. Such excavations should be oriented toward collection of a large and representative artifact collection that could indicate subsistence strategies of the occupants of the site. To complement this, excavations should be designed to reveal subsurface features, e.g., storage pits, house remains and fire hearths. Excavation and study of these features could allow documentation and confirmation of patterns inferred from artifact analyses. Because of the high probability that 38BK230 can produce such data, it is probably eligible for the National Register.

Excavations at 38BK230 should require a crew of ten laborers, a supervising archeologist, and one or two field assistants for approximately 2 weeks of time. The first few days of this field time should be spent in intensively sampling the site with small (1 meter or less, square) excavations. These should allow specific determination of the few Deptford phase structures expected at the site, and should be followed by placement of a large block excavation over one of these areas, so as to study it in detail. Laboratory analyses and study of data collected from the excavations should require 1-2 months, including time for preparation of a detailed interpretative and comparative report. Such a study program is felt to be necessary to mitigate the impact of complete destruction of this important site.

38BK231. This large, ecotone zone site was discovered in a wooded area and adjacent pasture covering a relatively high knoll that slopes northward to the Santee swamp. The site covers an oval area approximately 180 by 240 meters and is adjacent to 38BK230 to the northwest. Figure 24 shows a view of the site. 38BK231 has a large, late eighteenth-early nineteenth century component represented by many brick and tabby fragments, several rusted iron fragments, 3 window glass fragments, 1 green glass wine bottle fragment and 29 sherds of late eighteenth-early nineteenth century ceramics. The mean ceramic date (South 1977)
for 38BK231 is 1773. This historic component probably represents the house of Issac DuBose III, indicated by Mouzon (as Dubois) on his 1773 map of the area (Fig. 6). Much is known about Issac DuBose, including data on his marriage, ancestors and descendants, his land dealings, his property, and his community prominence and social activities (White n.d.).

Probable location of the house site of Issac DuBose is a very significant find. If possible, the site should be preserved, as it is probably eligible for the National Register of Historic Places. If preservation of this site is not possible, it should be fully excavated to salvage the significant information it probably contains concerning early plantations in the area, including their architecture and methods of construction and the role they played in the Coastal Plain economic and status systems of the late eighteenth and early nineteenth centuries.

It is felt that preservation of 38BK231 is possible without major modification to the Cooper River Rediversion Canal project design. The site appears to be intersected by the project right-of-way. Much of the site is thus already outside the project impact zone. Complete protection and preservation of the site should require only a slight movement to the north of the dike and disposal area to be located over the northern portion of 38BK231. Care should be taken during construction and filling of the disposal area to avoid the site with heavy equipment. The cultural remains at 38BK231 are contained in the uppermost 35 cm of soil and subsoil (as shown by 10 subsurface tests) and can be disturbed quite easily by movement of heavy equipment. It is felt that with these slight project modifications and the precautions recommended, preservation of 38BK231 can be accomplished.

It is recommended that a field check be made by an archeologist and a project engineer or surveyor to insure precise location of the site in relation to project features and the proposed design modification recommended here. This should be done before final mitigation decisions are made.

A prehistoric, probably Woodland period, occupation at the site is evidenced by the recovery of several lithic and pottery artifacts at the site. These were found primarily along the northwestern edge of the site and are related to, and continuous with, the similar occupation at 38BK230. Should preservation of 38BK231 not be possible, excavations at the site should be designed also to investigate this prehistoric component. The artifacts from this component include 1 chert and 10 sandstone flakes, as well as 1 sandstone uniface. Thirteen sand-tempered potsherds were also recovered. These included 3 worn, 9 plain and 1 simple stamped sherd. The simple stamped sherd probably represents a Woodland occupation of the Deptford phase, thereby dating the other prehistoric artifacts as being of this period, and indicating probable relationship of this component at 38BK231 to the Deptford occupation at 38BK230 to the northwest.
38BK232. This site is a low density artifact scatter over the surface of a pasture covering the northern terrace edge and gently sloping bluff edge facing the Santee swamp to the north (Fig. 25). The site covers a roughly oval area about 180 by 120 meters and appears to be badly disturbed by plowing, bulldozing and/or erosion over most of this area. Artifacts were recovered from the surface because of the good visibility through the sparse, low grass covering the site. These include several pieces of fire-cracked rock, 1 quartz hammerstone and 10 sandstone flakes. Two sand tempered, check stamped sherds indicate that the occupation was of the Deptford phase of the Woodland period. One simple stamped and 7 worn sherds, all sand tempered, were also recovered. Small test excavations revealed that little or no cultural deposits remain at the site.

38BK232 was probably a large campsite of the Deptford phase. It may have been an excellent site for excavation and study before extensive soil removal at the area. Although approximately half of the area at this site is within the project right-of-way, the detailed project design indicates no construction feature or disposal area affecting it. This apparent lack of impact, together with the disturbed nature of 38BK232, indicates a recommendation for no further work at the site as part of the Cooper River Rediversion Canal project.

38BK233. This site is located in a powerline right-of-way as it crosses the north sloping Santee swamp bluff (Fig. 26). The site covers an area approximately 120 by 60 meters within the cleared powerline corridor and has been badly disturbed by erosion and construction of the powerline. Only a portion of 38BK233 lies within the project right-of-way, and the site is not recommended for further work.

Artifacts recovered from the site include 50 sandstone flakes, 13 sand tempered potsherds and 1 sherd of late nineteenth-early twentieth century ironstone whiteware. The prehistoric pottery includes 1 check stamped, 7 worn and 5 plain sherds. The check stamped sherd indicates a Woodland period, Deptford phase occupation at the site. The site probably represents a camp or small village, perhaps occupied only during certain seasons. It is likely related to the small, swamp zone sites immediately to the north. 38BK233 would probably have had excellent research potential had it not been disturbed by the powerline construction and associated erosion.

38BK234. This is a very small ecotone zone site discovered by opportunistic survey in and near a road and an adjacent heavily logged area on the bluff overlooking the Santee swamp to the north. Only 2 sandstone flakes were discovered in the heavily disturbed area, making assignment within the prehistoric period impossible. Disturbance at this site is such that no further work is recommended.

38BK235. Located by subsurface transect testing, this large, multicomponent site covers an area along the sloping Santee swamp bluff in the ecotone zone. It extends approximately 360 meters along the bluff within an area only 30-60 meters wide and has a depth of up to 40 cm below the surface. Sixteen 25 cm square subsurface tests were excavated over the site (Fig. 27). The site will be entirely destroyed by construction of a dike and disposal area.
FIGURE 25. 38BK232, facing north. Artifacts thinly scattered over surface. Tests showed previous grading or other disturbance at the site and a lack of artifact bearing deposits.

FIGURE 26. 38BK233, facing north. Artifacts scattered over the surface of bluff and slope facing the Santee Swamp. 38BK114, 115, 116 and 117 are in the swamp along this powerline cut and appear in the distance.
Three phases of the Woodland period are represented at the site: Deptford, Cape Fear and Thom's Creek. Artifacts recovered from subsurface transect tests and from opportunistic observation of a recently cut woods road include 181 sandstones, slate and quartz flakes and chunks and 67 potsherds. Forty-nine of these sherds were sand tempered and worn and thus, indeterminant as to cultural period. Two sand tempered, linear punctate sherds, as well as 4 fiber and sand tempered worn sherds, indicate occupation during the Thom's Creek phase. Two sand tempered fabric marked sherds indicate Cape Fear phase occupation and 9 cross simple stamped, sand tempered sherds are representative of a Deptford phase occupation.

38BK235 probably represents a successive series of small and perhaps temporary camps located in a favorable environmental setting. A small creek, approximately 150 meters northwest of the western end of the site and another, smaller creek, 30 meters south and east of the eastern end of the site, both feed into a large, marshy pond located some 300 meters north in the Santee swamp. These nearby water sources make the high ground of 38BK235 a particularly favorable location for settlement.

38BK235 has excellent research potential in several problem domains in prehistory. First, the site has good potential for providing cultural-historical data of use in analyzing the temporal extent and relationships among the three major Woodland period phases of the Southeastern Coastal Plain. Second, baseline data on subsistence, architectural, demographic and activity patterns need to be defined and compared for these Woodland phases. Third, the occurrence of three distinct lithic raw materials indicates that the site may provide data concerning specialized tool manufacture. The occurrence of slate indicates long range trade or transport of this non-local material. Documentation of trade network participation by occupants at the site would add significantly to our understanding of Southeastern prehistory. 38BK235 offers a unique and excellent potential for providing such data. As such, it is almost certainly eligible for the National Register.

Large scale mitigation study should be undertaken at 38BK235 before its destruction by the Cooper River Rediversion Canal. This study should involve intensive excavations and thorough laboratory study and analysis. Excavations should be in 2 phases. First, a large number of small excavation squares should be placed over the site to reveal the internal variation and allow placement of second phase, large block excavation at locations of highest significance. Concentrations already discovered at the site through subsurface testing appear to be located in a central 60 meter segment and the western 60 meter segment along the sloping bluff. Detailed verification of this and discovery of other clusters of material not possible with the limited survey tests should reveal precise locations of the different Woodland occupations of the site. Intensive excavation of these should produce data significant to the problem domains described above.

This excavation program at 38BK235 would require a crew of ten laborers, one supervising archeologist and one or two field assistants for approximately four months. This field time should be followed by
FIGURE 27. Subsurface test at 38BK235. Artifacts in humus (top 10 cm) and loamy sand to a depth of 70 cm.

FIGURE 28. View of 38BK236, facing southeast. Recent timbering has slightly disturbed the surface of the site.
laboratory study and analyses requiring approximately 14-16 months, including time for preparation of a detailed descriptive, analytic and comparative report. It is felt that such an intensive study is necessary to mitigate the impact of destruction to this unique and important site.

38BK236. This large, single component site within the ecotone zone covers an oval area approximately 120 by 90 meters on a knoll overlooking a small creek to the northwest. The Deptford phase, Woodland period component at 38BK236 is almost certainly related to that component at 38BK76 directly across the small creek and 60 meters to the north. The Santee swamp begins about 300 meters to the northeast of the site although it extends up the small creek valley past 38BK76 and 38BK236.

The site was discovered during the survey by opportunistic observation of material in an eroded logging road at the western edge of the site and by subsurface transect testing across the top and north-sloping face of the knoll. Nine subsurface tests indicated cultural deposits extending down approximately 30-40 cm below the surface. Preservation over the site is generally good; however, the road at the western edge has disturbed a portion of the site and a large, rectangular excavation approximately 10 by 15 feet and of unknown function has destroyed a small segment. Recent timbering has disturbed the surface at the site and left litter over a wide area (Fig. 28).

Artifacts recovered from the site include 10 sandstone chunks and flakes and 8 sand tempered potsherds. Most of these artifacts were found in the small subsurface tests, thus indicating a moderate artifact density for the site. The pottery included 4 plain, 1 cross simple stamped and 3 checked stamped sherds. The checked and cross simple stamped sherds indicate a Woodland period, Deptford phase occupation. 38BK236 offers a significant research potential for isolating Deptford phase cultural-historical, architectural, subsistence and demographic data and, thus, is probably eligible for the National Register of Historic Places.

Study of 38BK236 is necessary before its destruction by the Cooper River Rediversion Canal. Such excavation and analysis of data recovered would mitigate the impact of this destruction. Excavation at the site should consist of 2 phases, an intensive sampling phase and a large block excavation phase. The intensive sampling phase would allow delineation of activity areas and other clusters at the site and efficient placement of large block excavations at these significant locations. It is estimated that such an excavation program would require a crew of 10 laborers, 1 supervising archeologist and 1 or 2 field assistants for about 2 months or less. About 8 months of laboratory study and analyses by an archeologist and 2 assistants would follow and result in a complete descriptive, analytical and comparative report.

Such an intensive study program is felt to be necessary to salvage the significant information at 38BK236. Excavation and study of 38BK236 goes hand-in-hand with similar mitigation study at 38BK76. The 2 sites are very probably related, almost certainly being simultaneously or successively occupied during Deptford times and study of each is necessary for understanding the other.
38BK237. This specialized site was located in the upland zone, approximately 60 meters southeast of the powerhouse access road and within an area slated to be the Canal headquarters and office. The site consists of a tar well of the type commonly used in the nineteenth century for production of tar from pines. The production process involved slow, controlled burning of pine logs placed in such a way as to let the tar escape and be funneled into a pit or well. The tar was collected from this well, placed in barrels and marketed.

Tar kiln sites are common in the Southeastern pinelands. Excavation and study of such a site by Combes (1974) indicates similarities with 38BK237. Although a temporal and spatial distributional study over northern Berkeley County of these sites would provide interesting economic data for the late nineteenth century, further work at 38BK237 would not produce significant information and is not recommended.

38BK238. This Woodland site probably represents a small, upland zone, resource extraction camp and thus might possibly contain significant information concerning subsistence-settlement problems. The very low artifact density, however, indicates little potential for further study. One sandstone stemmed or corner-notched projectile point and 2 small, worn, sand tempered potsherds were found in a large, plowed field with excellent surface visibility. The individual artifacts were spaced 60 meters apart, offering little indications of placement of such a camp or hunting/gathering station. No further work at the site is recommended.

38BK239. This Woodland period, Cape Fear phase site was located in the upland zone by subsurface transect sampling and opportunistic inspection of small disturbed areas on a knoll overlooking a small creek about 50 meters to the east. Three of the 4 potsherds located were fabric marked and 1 had a worn surface. All were sand tempered. These sherds were found within a semicircular area about 60 meters long around the southeast slope of the knoll and facing the small creek. Visibility of the surface was such that the artifacts recovered indicated a moderate density for this site. The 25 cm square tests indicate a depth of about 30 cm for the site, with about 10 cm of topsoil and 20 cm of yellow loamy sand. Figure 29 presents a view of the site.

A small scale excavation is recommended to gather a larger artifact collection from 38BK239 to allow meaningful comparisons with other site collections. Analysis of such a collection and its comparison with others large and small, upland and ecotone, sites would allow better understanding of Woodland settlement-subsistence patterns for the area and the region. Data at 38BK239, meager as it is, is thus important and significant for certain research questions and can thus be considered as making the site eligible for the National Register. The small scale excavation recommended should take a crew of 5 laborers and an archaeologist no more than 2 days field time. Such mitigation is felt to be necessary before destruction of the site and the information it may contain.
38BK240. This site was represented by an isolated find—a sandstone projectile point base fragment—discovered on the edge of a plowed field in the upland zone. Morphology of the point indicates that it represents the Guilford phase of the Archaic period. This isolated find may represent a small Archaic camp or resource extraction station, but discovery of this single projectile point does not warrant further investigation at the site.

38BK241. Four sandstone flakes were discovered at this ecotone zone site on the gently sloping, north facing bluff edge of the Santee Swamp. The flakes were recovered from the surface of a small road cut by the Corps of Engineers to provide access to a drill test location. Subsurface transect tests nearby failed to reveal additional material. The site is located 60–90 meters west, along the bluff of 38BK246 and approximately 180 meters west of 38BK229. 38BK241 thus may represent occupation related to these sites and takes on greater significance than might otherwise be indicated.

It is recommended that the area of 38BK241 be monitored during construction. Any features discovered during this monitoring could thus be quickly recorded and studied. If additional data can be recovered in this manner, the functional assignment of 38BK241 can perhaps be made and its relationship to 38BK246 and 38BK229 established.
38BK242. This site is located on the edge of a slight knoll of a rise overlooking a small stream in the upland environmental zone. Artifacts were discovered on the surface of a freshly plowed field and were scattered over an area approximately 50 meters square. The artifacts included 1 Woodland period, sand tempered, simple stamped sherd probably representing occupation at the site during the Deptford phase. A late nineteenth century historic occupation was indicated by several brick fragments, 3 ironstone sherds and 2 glass fragments.

The very small amount of material at the site, representing possibly a small, Woodland camp and a nineteenth century structure, combined with the excellent observation conditions in the plowed field, indicate little potential for further study at 38BK242. No excavations at the site are recommended.

38BK243. One sand tempered, plain surfaced potsherd was recovered on the edge of an upland zone plowed field, defining this site as a probable small, Woodland period camp or resource extraction station. A small creek occurs 60 meters east of the isolated find, indicating a good location for such a camp. Good ground visibility in the plowed field yielded no additional artifacts and further study of 38BK243 is not recommended.

38BK244. Twentieth century glass, ceramics and brick fragments were recovered from this site, located in the powerhouse access road adjacent to Secondary Highway 64. The artifacts were found on the graded surface of the access road during its early phase construction and are probably related to one or several nearby wooden frame structures. No further work is recommended at this site.

38BK245. This two-component ecotone zone site was discovered on the edge of a pasture and wooded area facing the Sanfee swamp to the north. The artifacts (19 sandstone flakes, 31 sand tempered, plain sherds), recovered from the surface and from 5 subsurface transect tests, represent Woodland period occupation. A late eighteenth-early nineteenth century structure is also indicated at the site by 3 ceramic sherds, 2 glass fragments, 1 iron fragment and numerous pieces of brick occurring over the surface. The site will be destroyed by borrow pit excavation associated with reconstruction of the nearby railroad bridge over the proposed canal.

Artifacts were scattered over a wide area approximately 120 meters by 30 meters. Disturbance over some of the site and adjacent pasture area has apparently taken place and may be responsible for the low artifact density and wide scatter. The pasture had no apparent topsoil and was sparsely covered with weeds. The unconfirmed impression gathered during the survey was that this pasture area had been bulldozed at some time in the past, possibly as part of a borrow excavation associated with the original railroad construction. Wooded areas just north of the pasture contained most of the artifacts, although these may have been placed there by the bulldozing. This edge of the field is shown in Figure 30.
Three test pits (1 meter square, 50 cm square, 25 cm square) were excavated at the western edge of the site, in open woods adjacent to the pasture. These tests indicated a low mound of brick rubble about 6-10 meters in diameter. The three test excavations at the edge of this rubble produced 11 square nails, 9 ceramic sherds with a mean date (South 1977) of 1769, 16 window and bottle glass fragments, over 400 fragments of brick and plaster/mortar, 2 pieces of unidentifiable iron and one piece each of shell, charcoal, cinder and tar. The low-fired earthenware sherds classified here as prehistoric may actually be the low status Colono-Indian pottery found on many early historic sites. A view of the one-meter test square excavated at the edge of the rubble is presented as Figure 31. What appears to be a feature is present at the exposed surface of the underlying sandy clay matrix. This may be a portion of a wall trench or perhaps a small drainage ditch. It is probable that preservation is such that excavation and study of this area of the site could reveal other archaeological features and patterns of artifacts that could provide significant information on architecture and lifeways of the early Historic period.

Significance of the site is increased by the fact that the area is designated on Mouzon's 1773 map (Fig. 6) as being the location of the Cordes plantation. Artifacts found at the site confirm antiquity approximating the date of Mouzon's map. It is improbable, however, that the site represents a typical plantation main house; the area of brick rubble appears too small and the location so near the swamp edge (less than 30 meters) seems more appropriate for a manager's or overseer's house. If the low-fired earthenware sherds found at the sites are indeed Colono-Indian, additional support for this hypothesis is provided. The site may also represent a specialized, non-residential function, although this does not appear probable as the ceramic and glass bottle fragments are typical of a residential structure. Study of such a non-main house structure could add significantly to our understanding of the workings of early plantation systems.

The area encompassing the location of brick rubble is slated for borrow excavation associated with construction of the railroad bridge nearby. It is recommended that this small portion of the proposed borrow area be fenced and preserved. The brick rubble covers an area only about 10-15 meters in diameter. It is at the extreme western edge of the proposed borrow area and its preservation should pose few problems to efficient borrowing excavation in the remaining area. Test pits in other parts of the borrow area show no other concentration of material and surface artifacts probably represent a wide scatter from original infringement by plowing near the rubble area. No further work is recommended for the proposed borrow area other than at the rubble location.

It is probable that because of its data potential 38BK245 is eligible for inclusion on the National Register. If preservation cannot be effected, complete excavation and study of the rubble area is recommended. Such excavation should require an archeologist and a crew of 5 approximately 4 weeks of field time and about 3 months of laboratory time and analysis.
FIGURE 30. 38BK245, facing east. Artifacts occurred on surface of field edge in low density. Photograph taken from western edge of field.

FIGURE 31. One meter square test excavation at 38BK245, showing brick rubble and linear stain extending across square at 30 cm.
38BK246. Ten sandstone flakes and 2 sand tempered, fabric marked potsherds were recovered from 4 25-cm square subsurface transect tests at this ecotone zone site. The site appears to cover an oval area approximately 90 by 45 meters along the bluff overlooking the Santee swamp to the north. A small creek lies 120 meters to the northwest, and Lake Mattassee is 120 meters to the northeast, making the high ground of 38BK246 a favorable location for settlement during the Woodland period, Cape Fear phase.

A large and complex site, 38BK229, lies 60 meters to the east of 38BK246 and its Cape Fear component is almost certainly related to that component at 38BK246. It may be that 38BK246 represents a specialized activity of a larger village at 38BK229 or perhaps, simply an outlying house or group of houses. Preservation is good at 38BK246 with cultural materials restricted to the top 30 cm of soil and subsoil.

It is recommended that close monitoring of 38BK246 be carried out during initial construction at the site area. In this way any features revealed can be quickly recorded and studied. Detailed excavations, however, are not warranted because of the sparseness of material recovered during the survey.

**Contribution of the Archaeological Survey to History and Prehistory**

The archeological reconnaissance and survey study, besides its primary use as a cultural resource management tool, contributes important and significant data to ongoing prehistoric and historic research of the Southeastern Coastal Plain. Previous synthetic treatments of the mid-Coastal Plain area by Larson (1970) and Milanich (1972) saw the area as of such low resource potential to prehistoric groups that very little occupation was predicted. Both Larson and Milanich saw the major river valleys as zones of possible short-term temporary habitation, but the inter-riverine, upland zones were predicted to be devoid of occupation.

The results of the Cooper River Rediversion archeological reconnaissance (Asreen 1974) and survey projects show dramatically that this predicted pattern is not confirmed with data from the Santee River valley and the Santee-Cooper inter-riverine upland zone. Perhaps the Larson-Milanich model does apply to other areas of the Southeastern Coastal Plain. The Santee-Cooper area is biotically a very rich resource zone in that it contains, in addition to the large Santee River and swamp, numerous isolated marshes and bogs associated with frequent small upland depressions and creeks. Rather than the unbroken pine "barrens" described for the Coastal Plain by Larson (1970) and Milanich (1972), the Santee-Cooper area provides a mosaic of creeks and topographical depressions and associated hardwood forest zones. Although upland, non-riverine sites are almost uniformly small, they are relatively numerous and indicate that there was occupation throughout the Woodland period.
Cooper River Rediversion archeological data also indicate that large, possibly intensively occupied sites exist along the major river valleys. These are not the small, intermittent camps predicted by Larson and Milanich and are representative of all phases of the Woodland and probably Mississippian periods. Detailed excavation and study of several of these upland and riverine sites, as recommended for mitigation of impact of the proposed Cooper River Rediversion Canal, should provide substantive and conclusive data regarding these settlement patterns and their subsistence bases.

In addition to producing general data relevant to the hypotheses of Larson and Milanich for the Coastal Plain, the Cooper River Rediversion archeological survey provides important detailed information regarding distribution of cultural-historical components over the three environmental zones studied. This allows general inferences about settlement-subsistence patterns and their variation over time. Table 2 presents a listing of the archeological components discovered during the reconnaissance and survey, stratified by the environmental zone in which they were found.

<table>
<thead>
<tr>
<th></th>
<th>Upland Zone</th>
<th>Ecotone Zone</th>
<th>Swamp Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historic, 18th century</td>
<td>4</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Historic, 19th century</td>
<td>20</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Historic, 20th century</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Historic, unknown</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL HISTORIC</td>
<td>29</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Prehistoric, Archaic</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Prehistoric, Woodland</td>
<td>17</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>Prehistoric, Mississippian</td>
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<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Prehistoric, Unknown</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL PREHISTORIC</td>
<td>23</td>
<td>27</td>
<td>5</td>
</tr>
<tr>
<td>Sites with multiple Prehistoric components</td>
<td>3</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Sites with Prehistoric and Historic components</td>
<td>11</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>Sites with one Historic component only</td>
<td>19</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Sites with one Prehistoric component only</td>
<td>11</td>
<td>12</td>
<td>3</td>
</tr>
</tbody>
</table>
Several general patterns can be seen from the data in Table 2. First, although more total components were found in the upland rather than the ecotone zone, this is a reflection of the large number of historic components in the upland zone. Prehistoric components were more numerous in the ecotone area, although it contained fewer surveyed acres than the upland zone. The swamp zone contained very few (no historic) components, although these may exist in areas of the swamp not included in the project area and not inspected for sites. The 5 swamp zone components occur near streams where these are relatively distant from the ecotone zone high ground. Although Mattassee Run Creek and Lake Mattassee are streams within the project area swamp zone, they occur (within the project area) almost always near high ground, and it is this high ground ecotone zone area, not the swamp zone that contains the majority of prehistoric components. Multicomponent prehistoric sites are more than twice as common in the ecotone zone as in the uplands, confirming other size and artifact density data that show the large, possibly intensively occupied prehistoric sites to be located in the ecotone.

Historic period components with occupation beginning in the eighteenth century were almost twice as numerous in the ecotone area as in the uplands, while components with occupations beginning in the nineteenth century were 10 times as numerous in the uplands as in the ecotone. This dramatic settlement pattern reversal, as well as the actual decrease in ecotone components from the eighteenth to the nineteenth century, indicates the virtual abandonment of the ecotone and swamp area during the nineteenth century. This was probably due to increased focus on land, as opposed to riverine, transport and movement; increased exploitation of the uplands during the cotton boom; avoidance of the ecotone and swamp areas because of presumed disease factors; and because of the abandonment of indigo cultivation in the swamp. The increase in number of nineteenth century components indicates the general increase in population of the area during that time, particularly in the middle class, small farmer segment.

The Archaic period components were few in number, although additional Archaic components may be present and not recognized at other sites because of a lack of diagnostic artifacts. Larger artifact samples collected during proposed mitigation excavations should include diagnostic Archaic artifacts, if these components are indeed present and should resolve this problem. Archaic components are evenly distributed over the upland and ecotone zones as predicted, although none occur in the swamp zone. No evidence was found during the survey that Archaic sites may be deeply buried in swamp or river terrace deposits, and geological evidence indicates that this is not probable for the area.

Woodland period components are slightly more numerous in the ecotone zone than the uplands, especially when it is considered that more upland area is included in the project and inspected for sites. Woodland components in the ecotone zone are larger and have a higher artifact density than the upland Woodland components, indicating larger and/or more intensively occupied camps or villages in the ecotone zone.
addition, the 2 Thom’s Creek phase, Woodland components isolated during the survey and reconnaissance were located in the ecotone zone, indicating that the earliest Woodland occupation of the region was along the major river valleys.

Data recovered during the reconnaissance and survey concerning Cape Fear and Deptford phases is interesting in terms of cultural relationships between these 2 supposed groups. Six "pure" Cape Fear and 12 "pure" Deptford components were discovered, while 13 components contained both cord and fabric marked pottery (Cape Fear) and check and simple stamped pottery (Deptford). The discovery of 18 "pure" components during the survey, even though numbers of sherds at these sites are small, may indicate cultural or ethnic separation. Further documentation of this is expected through analysis of larger artifact samples, architectural features, and subsistence data that should be recovered from components of the two phases during the proposed mitigation study.

Eight Mississippian components were discovered during the survey and reconnaissance. All of these were located in the ecotone and swamp zones. Furthermore, 6 of these 8 components were located overlooking Lake Mattassee and the Santee River. A strong bias is thus evidenced for habitation during Mississippian times near large bodies of water and presumably, the abundant fish resources that would have been available there.

More upland components representing the Mississippian period were expected than were found and it is not presently known why these did not occur. Perhaps there were environmental changes in the upland zone at the end of the Woodland period, making it less productive. Most likely, Mississippian subsistence was focused on such labor intensive and/or high return activities that exploitation of upland resources was precluded as not being worth the extra effort. In addition, there may have been scheduling difficulties between exploitation of upland and riverine resources that forced elimination of upland exploitation. Resolution of these problems should be a major focus of the proposed mitigation study of several of the Mississippian components.

In summary, the archeological survey study contributes greatly to the understanding of human groups occupying the project area, and the mid-Coastal Plain region, from the Middle Archaic period to the late nineteenth century. It provides baseline data for future studies in the region and allows formulation of more specific research designs. Such research designs permit the assessment of scientific significance for individual sites and for broader questions that might be involved in future survey programs. As indicated from the survey data, the following general picture of prehistoric and historic subsistence and settlement can be constructed. This is, of course, a tentative model that should be extensively tested.
First systematic occupation of the area was during Middle Archaic times. Population density was probably low and individual groups small. Subsistence was focused on hunting, fishing and wild plant gathering and was not concentrated in any single environmental zone. Archaic components are represented at 38BK108, 110, 225, 228 and 240.

Early Woodland occupation was along the Santee River and swamp. Subsistence and demography were probably similar to that of the Archaic, but there was probably less movement and more concentration on riverine resources. Early Woodland components occur at 38BK226 and 235. During Middle Woodland times there was apparently a large increase in population, with the formation of large camps or villages in the ecotone zone and perhaps smaller related outpost camps in the uplands. The upland camps may also have been temporary, perhaps seasonal, exploitation camps or stations, serving as foci for hunting and gathering in the upland zone. An additional hypothesis is that these upland camps represent seasonal (probably winter) dispersion of groups living the rest of the year in ecotone villages. Such dispersion would be undertaken to increase resource area in a time of limited availability. Middle-Late Woodland components number 39 in the areas examined during the reconnaissance and survey.

Mississippian occupation of the area was different in character, in that all 8 identified camps or villages were located near large water sources. Perhaps fishing was more important than previously. The role of agriculture and the possible reasons for avoidance of the upland zone during Mississippian times can be answered best and perhaps only through detailed excavations.

Historic occupation of the area showed distinct changes through time. Late eighteenth century sites were located primarily in the ecotone zone near available river transportation and swamp rice/indigo cultivation. The difficulty of rice agriculture, the destruction of the indigo market, the growth of the cotton market, presumed disease patterns and better land transport systems tended to promote, in the nineteenth century, abandonment of the swamp and ecotone zones and habitation in, and exploitation of, the upland areas. Population increase during this time is documented by the location of many more sites in the upland area.

Site Significance and the National Register

Assessment of the significance of archeological sites is a difficult matter and often cannot be completely done even years after detailed study and description of a site. Limited resources available for study of archeological sites, however, force decisions regarding significance in order to construct priorities and insure proper consideration of important sites. The National Register of Historic Places is
an important tool in this decision-making and management process in that it is a list of high priority historic and prehistoric sites that must be carefully considered in any projects affecting them.

Included in the criteria for determining National Register significance, and most often used with respect to archeological sites, are the following. First, does the site involve famous persons or events in national or local history? Second, is the site of importance to history or prehistory? No sites discovered in the project area can be considered to be of great significance to famous persons or events in local or national history. Although several historic sites were found that probably relate to persons famous or at least prominent in their day, their fame is today restricted to a small number of local and state historians. The second criterion, however, may possibly apply to many, if not most, of the sites discovered.

This criterion of importance to history or prehistory has usually been interpreted as scientific importance, determined by the potential for providing information relevant to significant theories or hypotheses regarding past human lifeways and evolutionary processes. Thus, not only do the quality and quantity of the data have to be assessed, but also the theories and hypotheses to which they relate. In historic and prehistoric studies of the Southeast, particularly the mid-Coastal Plain region, such theories and hypotheses are not well developed, primarily because of a lack of baseline data. As the data are slowly being provided, such theories are beginning to emerge within several problem domains. Archeological sites located in the Cooper River Rediversion Canal project area have much potential in terms of providing substantive data and developing regional hypotheses and theories within these problem domains.

The culture-historical problem domain involves questions regarding the ethnic, technical and behavioral boundaries of human groups over time and space. In the mid-Coastal Plain region culture-historical relationships are only generally known.

It is commonly hypothesized that Archaic period ethnic boundaries were loosely drawn and that groups were primarily kinship related (Milanich 1972; Willey 1966). This is suggested by the widespread occurrence of similar artifact styles and economic activities. One problem in culture-historical studies involves the temporal, spatial and ethnic relationships between the Archaic and Woodland periods. During the Woodland period population apparently increased greatly and ethnic groups became more sharply drawn (Milanich 1972; Willey 1966). Woodland period artifact styles, particularly pottery decoration, became more diverse and specialized, as did behavior concerning economic, social and religious activities. Several constellations of these styles and behavior patterns, called here "phases," have been defined, but the temporal and spatial boundaries of these, and their correlations with ethnicity, are still poorly understood. The shift from Woodland to Mississippian period patterns poses great culture-historical problems regarding temporal, spatial and ethnic boundaries.
In historical archeology the placement of these temporal, spatial and ethnic boundaries is relatively well known and the problem becomes the correlation of boundaries with other data known from the archeological record in order that, for example, the economic correlations with ethnicity can be established.

Several of the archeological sites in the project area have great potential for contributing to understanding culture-historical relationships for the Southeastern Coastal Plain. Although no vertically stratified sites occur (with the possible exception of 38BK225), the components at many sites may be isolated and dated relatively, or absolutely with radiocarbon analyses. This would allow comparisons of behavioral and stylistic patterns that could contribute greatly to cultural history studies and theory development.

Settlement pattern studies form another problem domain important in prehistoric and historic studies of the region. Tentative and general indications of settlement patterns for each of the major prehistoric periods of the region were provided by the project survey data. These need to be refined to the phase level within each of the periods by documentation of site size and function. Such documentation can usually be provided only by detailed site excavation and study. Proposed mitigation studies of the project sites should provide such documentation. It is crucial to know, for example, whether a large site represents one permanent village or several successive, smaller camps and whether these camps were occupied year round or during one season only. Such settlement information provides necessary data for answering questions regarding demography and adaptational strategies toward the environment. This information is important for study of evolutionary processes.

Study of subsistence patterns forms a third problem domain poorly understood for this region. Strategies of natural resource exploitation and agricultural involvement vary over time in response to environmental, social, technological and demographic changes. Understanding of these strategies and their shifts over time and space is essential to the development of cultural evolutionary theory. Several of the project area sites offer excellent opportunities for collecting data regarding subsistence patterns of the site occupants. Preservation at these sites is good, allowing inferences from morphological, distributional and statistical artifact patterns, permitting recording and study of features at the sites and hopefully enabling the recovery of pollen and macro-fossil evidence of plants and animals utilized.

Although not on the same theoretical level as the other problem domains, study of architectural features for different time periods and ethnic and economic groups is an important concern because of its significance as a data source for the other problem domains. Little is known of architectural features, e.g., houses, outbuildings, and pits for the region. Their style, arrangement, method of construction and artifact associations can tell much about social, economic and religious behavior of the occupants and users. Several of the project area sites
offer excellent opportunities for recovering detailed evidence of such architectural features and a focus on this recovery is a major aspect of each of the recommended mitigation studies.

The uniqueness of the sites and the data they may bring to bear on problems outlined above is not precisely known, since few archeological sites within the region have been discovered or studied. Sites such as those located in the ecotone zone of the project area are rare, however, in relation to what is known of the prehistory of South Carolina and surrounding states. Although it may be that similar sites exist in the region that have not yet been discovered, this cannot be depended on for making important, immediate management decisions. At this time, no other sites comparable in size and density to the large, multicomponent ecotone zone sites of the project area are known to exist for the region.

The unusual microenvironmental situation produced by the proximity of a high bluff and terrace area directly overlooking a large, but sluggish, backwater creek (Lake Mattassee) may be responsible for a unique concentration of large archeological sites in this area. The sluggish Lake Mattassee would probably have provided greater amounts of fish than the fast-moving Santee River channel and the smaller swamp and upland creeks. In addition, Lake Mattassee is of such size and shape that it could have been the site of fish traps, impoundments or other mass collecting or killing operations. These operations would have been very difficult to carry out in the main Santee River channel and no other appropriate tributaries are located nearby.

The probability for discovering other, similar microenvironmental situations and associated archeological sites is not presently known, but must be considered greatly diminished by the destruction of many potential and known site areas by Lakes Marion and Moultrie. The few records available indicate that many significant archeological sites were destroyed in the creation of these lakes. Modern industrial and housing development might be expected to add to this destruction in future years, further limiting the archeological resource base. Several of the archeological sites in the project area thus appear to be of unique significance relative to what is known today and what may potentially be known.

Twenty-five of the 66 archeological sites discovered are outside of the present project area. Their significance will not be discussed here, although several of them are very important and may be nominated to the National Register by independent groups (Table 3). Of the remaining 41 sites within the present project area, 13 are considered to be important sites, significant to research involving several of the problem domains discussed above and thus, potentially eligible for nomination to the National Register. Their excavation and study are essential to a full understanding of the history and prehistory of the area, and it is highly probable that they are eligible for the National Register. These sites are 38BK75, 38BK76, 38BK88, 38BK109, 38BK225, 38BK226, 38BK229, 38BK230, 38BK231, 38BK235, 38BK236, 38BK239, and 38BK245. Of these sites, 38BK109, 38BK231 and 38BK245 are
recommended for avoidance and preservation and the others for excavation and study. If these, or other appropriate measures are taken, actual nomination to the National Register will not be necessary, as the primary significance of these sites is their research potential. As long as this research potential is realized, preservation, although preferred, is not necessary.

TABLE 3
Sites Outside Project Area.

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Reason for Visiting</th>
<th>Probably Eligible for National Register</th>
</tr>
</thead>
<tbody>
<tr>
<td>38BK77</td>
<td>original impact zone</td>
<td>unknown</td>
</tr>
<tr>
<td>38BK78</td>
<td>original impact zone</td>
<td>unknown</td>
</tr>
<tr>
<td>38BK79</td>
<td>lost or misdirected</td>
<td>no</td>
</tr>
<tr>
<td>38BK80</td>
<td>lost or misdirected</td>
<td>no</td>
</tr>
<tr>
<td>38BK81</td>
<td>lost or misdirected</td>
<td>yes</td>
</tr>
<tr>
<td>38BK82</td>
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<td>original impact zone</td>
<td>yes</td>
</tr>
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<td>38BK84</td>
<td>original impact zone</td>
<td>yes</td>
</tr>
<tr>
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<tr>
<td>38BK99</td>
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<tr>
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<td>38BK104</td>
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<td>original impact zone</td>
<td>no</td>
</tr>
<tr>
<td>38BK227</td>
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<td>yes</td>
</tr>
<tr>
<td>38BK228</td>
<td>ingress, egress</td>
<td>yes</td>
</tr>
</tbody>
</table>
It should be emphasized that these 13 sites form a "package" of potentially significant information for the region. Each site probably contains uniquely significant data but perhaps most importantly, each site contains data relevant to most, if not all, of the other sites. The best way to approach official determination of eligibility to the National Register may therefore be to propose inclusion of all 13 sites in an Historic District. Given the complementary nature of data expected from several groups of sites, this seems advisable. For example, historic components at 38BK88, 75, 76, 231, 225 and 245 all appear to represent different aspects of a colonial plantation system. These different aspects are hypothesized to be a tavern, slave quarters, a main plantation house, a kitchen and an overseer's house. Each of these sites, if adequately studied, could contribute part of a significant and more complete understanding of the whole system. Prehistoric components are not so distinctly complementary, although it is probable that upland and ecotone sites, particularly, are functional parts of larger systems for resource exploitation and general subsistence.
In this chapter a relatively detailed plan is proposed for the implementation of mitigation studies recommended in the preceding chapter. A study program as large and complex as the one recommended can be designed in several ways to recover essentially the same information. The major variable controlling the selection of many of these alternative designs is the time allowed for field study before construction and destruction of sites begins. The Cooper River Rediversion Canal is slated for construction beginning in the fall of 1978. Presently, decisions regarding details of this construction schedule are not final, and it must be assumed that cultural resources mitigation field studies must be completed by the beginning of construction. This limits alternative archeological study designs by allowing only the spring and summer of 1978 for site excavations.

Degree of impact is often an important criterion in designing mitigation studies of cultural resources. Study of areas of secondary impact can often be delayed, while minor impact, direct or secondary, can be met with limited study. The Cooper River Rediversion Canal project is somewhat unusual in that, while it makes major changes in the land surface, these changes are tightly restricted spatially, and are not expected to lead to other indirect or secondary modifications affecting cultural resources. Direct impacts of the project thus involve complete destruction of archeological sites and no indirect or secondary impacts are anticipated except that at the historic structure at 38BK225. Few recommendations for preservation of sites by modification of the project design are made. The late stage of the project indicates that these modifications would be very costly and difficult to arrange. Preservation is almost always preferable to destruction of a site even if appropriate mitigation measures can be taken. For this reason, if project design modifications can be made to preserve sites recommended for excavation and study, these measures are preferable. It is realized, however, that such action is not probable. Decisions regarding level of mitigation study necessary are therefore dependent only on the significance assessments presented in the preceding chapter.

The general features of the mitigation plan presented are described below. More detailed descriptions and justifications for individual sites are included in Tables 1 and 4 and in the site descriptions in the preceding chapter. No further work is recommended at 48 of the 66 sites discovered during the reconnaissance and survey because of their locations outside the presently designated impact zone, their presently disturbed condition or their limited significance. Three sites are recommended for preservation by modification of the project design and avoidance. These modifications are minor and are detailed above.
<table>
<thead>
<tr>
<th>Site Number</th>
<th>General Surface Collection</th>
<th>#25cm Tests</th>
<th>#Other Larger Tests</th>
<th>Eligible for National Registera</th>
<th>Adverse Impact</th>
<th>Mitigation Recommendation</th>
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<td>1</td>
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<td>partial</td>
<td>excavation and study</td>
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<td>excavation and study</td>
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<tr>
<td>38BK91</td>
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<td>0</td>
<td>0</td>
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<td>monitor during construction</td>
</tr>
<tr>
<td>38BK92</td>
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<td>0</td>
<td>possibly</td>
<td>complete</td>
<td>monitor during construction</td>
</tr>
<tr>
<td>38BK109</td>
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<td>probably</td>
<td>partial</td>
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<tr>
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<td>yes</td>
<td>8</td>
<td>10c</td>
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<tr>
<td>38BK226</td>
<td>yes</td>
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<td>excavation and study</td>
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<tr>
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</tr>
<tr>
<td>38BK246</td>
<td>no</td>
<td>4</td>
<td>0</td>
<td>possibly</td>
<td>complete</td>
<td>monitor during construction</td>
</tr>
</tbody>
</table>

a - Judgement of eligibility for National Register is determined on the basis of a site's potential contribution to the scientific study of history or prehistory.

b - An intensive, controlled surface collection was made in addition at 38BK75.

c - In addition, larger excavations were made near the historic structure at the site.

d - Several 25 cm tests were excavated but failed to yield material.
in the site descriptions for 38BK109, 38BK231 and 38BK245. Monitoring during initial construction is recommended for 5 sites, 38BK73, 91, 92, 241 and 246. These sites were not recommended as eligible for the National Register because of their low data potential. It is possible, however, that significant information can be recovered. Site monitoring, to allow quick recording and study of possible features, is recommended as the most cost-effective way to preserve possible resources.

Excavation and study are recommended for 10 sites. Nine of these sites (38BK75, 38BK76, 38BK88, 38BK226, 38BK229, 38BK230, 38BK235, 38BK236 and 38BK239) should be excavated according to a two phase plan. During Phase 1 small, dispersed squares should be excavated at the site so as to provide a representative sample of the artifact and feature patterns predicted to be present. Specific sampling designs should be drawn up and justified before their implementation by the archeologists responsible for the individual sites. Testing of a 1% to 5% sample of the site would be considered appropriate. Data collected from these sampling excavations should, at least in a preliminary fashion, be analyzed before Phase 2 excavations begin. This would allow placement of large block excavations at significant areas such as structural feature concentrations or activity areas revealed by artifact clusters. It is expected that such large block excavations would normally be about ten by ten meters, although this decision is best made by the archeologist in the field. It is felt that this two phase excavation program is most efficient for study of large, complex sites. It allows for information feedback before commitment of major resources, thereby providing additional assurance that the research potential of the sites will be realized.

Excavation at one site, 38BK225, should not follow this two phase program. This site, located in the disturbed tailrace access road, presents unique problems. The prehistoric and historic components at 38BK225 should be approached differently. The prehistoric component should be studied by placement of a series of excavation squares along the eastern, undisturbed edge of the road right-of-way. The historic component, a partially excavated and exposed structure dating to the late eighteenth century, requires detailed, concentrated excavation of the remaining portions with supervision by a specialist in historical archeology.

A long period of laboratory study and analysis will be necessary to complete the recommended mitigation study. This period is not restricted by construction schedules and can be extended as necessary. A common estimate for such laboratory study is based on a ratio of three or four to one of laboratory time to field time. This, of course, is dependent in large part on personnel allocation as well as quantity and complexity of data recovered from excavations. Responsibility for direction of this laboratory study and preparation of final report normally falls to the field archeologist assisted by graduate level research assistants, laboratory assistants and an administrative, clerical and technical support staff.
Proper mitigation also includes dissemination of the study results to interested parties, usually the historical, archeological and anthropological professions. Methods of dissemination most often include presentations at professional meetings, production of a published report available to scholars and publication of articles in professional journals. Permanent curation of artifacts, notes, drawings, photographs and other data are also necessary for proper mitigation. The recommended mitigation study program will certainly produce a large amount of such data and careful curation arrangements must be made.

Study Programs and Scheduling

The recommended study program is divided into three stages. Reasonable suggestions for staff, equipment, supply and other needs are made. Of these the most difficult decisions concern staffing during the three stages. It is here recommended that extensive use be made of M.A.-level archeologists and advanced graduate students to minimize costs while assuring high quality, competent excavation and study. It is further recommended that only one contractor perform the mitigation study to provide integration of all stages and phases of the project and to insure collection of comparable data from all sites involved.

Excavation stages are recommended to begin as soon as possible to provide flexibility in dealing with unanticipated problems. If construction is delayed or if final construction scheduling indicates later impact at several of the sites, it is recommended that archeological excavations be extended, with concomitant staff reduction so that they may proceed more slowly and carefully.

A long period of laboratory study time with retention of field supervisory staff to perform the analyses and write the study reports is recommended to follow the excavation stages. Different parts of the study program will require different amounts of laboratory time and staff terminations and adjustments will be necessary during this stage.

Stage 1. This study stage should involve sampling excavations, analysis of data recovered and detailed design of the Stage 2 studies to follow. Hiring of supervisory staff for the duration of the project is recommended during this stage. These supervisory personnel should be utilized to perform the limited field excavations with hiring of additional laborers as necessary in order to familiarize the supervisory staff with all details and aspects of the project. A field laboratory should be established and staffed with a director and an assistant, in order to rapidly process excavation data and allow feedback of information to the detailed design of Stage 2 excavations. Arrangements for consultation work by historians, geologists and others should be made during this period. Hiring of the laborers and other temporary staff
for Stage 2 excavations should be done during the later phases of Stage 1 and necessary equipment procured. A field camp should be established and all other necessary arrangements made for management and administration of the large crews of Stage 2. A project Supervisor should be in charge of all these matters and be responsible for monthly progress reports to the Corps of Engineers.

Stage 2. This study stage will be the most complex administrative phase of the project. Large numbers of personnel will have to be coordinated and masses of data organized and processed. The project supervisor should be in charge of all these matters and should spend a large portion of his time in the field. A field laboratory director and several assistants should be responsible for rapidly cleaning, cataloging and curating artifacts and other data so that preliminary analyses can be performed to guide the progress of the excavations. An M.A.-level archeologist or advanced graduate student should be in charge at each site excavation, assisted by graduate students or others with extensive training.

Selection of crew laborers should be arranged to give priority to local persons, primarily to ease administrative and other burdens associated with a field camp. It is not expected, however, that local labor will be sufficient and hiring of other persons, primarily interested college students desiring summer work, will probably be necessary. These persons will have to be accommodated, along with the supervisory staff and field laboratory, in a field camp. Arrangements for this field camp, housing rental, cooks, maintenance staff, equipment, and supplies should be made during Stage 1 in the spring. Food expenses for crew laborers should not be paid by the project.

Field equipment necessary will include excavation tools; screening devices; tool sheds; vehicles; and heavy equipment for limited but efficient earth moving. It is recommended that this equipment be leased for the duration of Stage 2 (except heavy equipment) where possible. Construction of screening devices and tool sheds may be more cost-effective and, if so, they should be made during Stage 1. Vehicle leasing will probably be the most costly aspect of equipment rental. At least five trucks or carryalls will be necessary for crew transport during Stage 2 and temporary use of a larger, flatbed truck will be required.

Stage 3. This stage should extend for a period of about two years, with retention of field supervisory staff for laboratory analyses, library research and report preparation. Different aspects of the laboratory study will terminate at different points in Stage 3, with appropriate staff adjustments. Additional personnel for administration, clerical and technical support will be necessary. Consultation with experts in fields such as palynology, faunal analysis, geology and history will be necessary.
Most of this laboratory time will be spent in artifact studies, construction of explanatory models and theories and drafting of reports. Artifact studies should involve classification, identification, comparison, measurement and statistical and computer analyses. Theory construction will involve primarily, library research and independent study by staff researchers, although discussions with other staff and with professional experts will also be necessary. Report preparation will include writing, editing and preparation of tables, drawings and photographs.

The laboratory research period should result in a final report of at least two volumes—one concerning prehistoric sites and one concerning historic sites. These reports should have extensive chapters devoted to data description, field and analytic methods, comparative studies, relevant environmental data as well as a synthetic discussion of the study results in relation to the problem domains important to the region.

Arrangement for permanent curation of artifacts and other data should be made during Stage 3. This should be done in order to preserve the data for future study by others interested in related problems in history and prehistory.

Dissemination of the results of the mitigation study should be provided by the publication of the final report as well as any preliminary reports that might be available. Submission of article-length reports of different aspects of the mitigation study should be made to professional journals. Papers concerning the results of the overall study or parts of it, should be presented at professional meetings and at least one symposium presenting study data and results should be organized.

Although individual archeologists and advanced assistants will be responsible for providing different aspects of the final report, the overall responsibility will be that of the supervising archeologist. He will be in charge of maintaining coordination and quality during Stage 3 study and will be responsible for overall direction of the research effort. The supervising archeologist should also be responsible for submitting progress reports to the Corps of Engineers at intervals of one or two months.
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