1984

Notebook - January-March 1984

South Carolina Institute of Archaeology and Anthropology--University of South Carolina

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A quarterly journal of reports and activities of mutual interest to the individuals and organizations within the framework of the Institute of Archeology and Anthropology at the University of South Carolina and for the information of friends and associates of the Institute.

ROBERT L. STEPHENSON, EDITOR
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The University of South Carolina offers equal opportunity in its employment, admissions, and educational activities, in accordance with Title IX, Section 504 of the Rehabilitation Act of 1973 and other civil rights laws.
ARCHEOLOGICAL FIELD RECONNAISSANCE OF PROPOSED
CITY OF DENMARK WASTE TREATMENT PROJECT

V. Ann Tippitt
INTRODUCTION

The Institute of Archeology and Anthropology at the University of South Carolina, Columbia, contracted with B. P. Barber and Associates for an archeological reconnaissance survey of the proposed Denmark Waste Treatment Facility for the Town of Denmark, South Carolina. Three tracts of land were surveyed in Denmark by V. Ann Tippitt and William Monteith from July 14 to 22, 1983.

This study was designed to inventory and describe the archeological resources identified in areas to be affected by the project, including maps showing their relationship to the project; to describe the examination procedures used, including area studied, and extent of coverage; to assess the significance of the identified resources and their potential for contributing important information about archeological problems in the area, including the identification of those that may potentially merit listing on the National Register of Historic Places; and to recommend mitigation measures, preservation either through avoidance, protection, or a program of data recovery, to lessen any adverse effects of the project. The archeological investigation was conducted in accordance with federal, state, and local statutes and in conformance with the professional standards cited by the Society for American Archaeology and the Society of Professional Archeologists.

Historic Overview

This review is a synthesis of Bamberg County history from the following reference sources: Corkran 1970; Mills 1826; and Salley 1969. During the course of the pedestrian survey, landowners were questioned about the history and ownership of their property. The resulting information was then cross-referenced with published sources.

Indian groups that occupied the land area of Bamberg County at the time of European contact were predominantly Muskoghean speakers: Combahee, Stono, Kusso, and Kiawah. These groups may have been culturally and linguistically linked with their Creek neighbors west and south of Savannah River. Native populations in the county were decimated by protracted and often violent conflict with European settlers during the seventeenth and eighteenth centuries. By the end of the eighteenth century, Indian populations in the area had been displaced westward or were destroyed.

European settlement between the Edisto and Salkehatchie rivers developed, in part, along the Creek trading path which paralleled the Edisto River through Bamberg County. Political boundaries were initially imposed with the establishment of Colleton County in 1682, and thus open to settlement. Settlement in this area prior to the American Revolution was limited by the amount of arable land between swamps and rivers. Early settlers to the area such as the Dowling and Ford families moved along Lemon Creek, the Salkehatchie River, and near Buford's Bridge during the 1750-1760 period.
Bamberg County was created in 1894 from Barnwell County; however, in 1798 Barnwell replaced Winton County which was a part of the Orangeburg District. This district was created from portions of Colleton County in 1768. In 1785 four counties were created from this district: Lewisburg, Orange, Lexington, and Winton. The county is named for a prominent Revolutionary soldier: John Joseph Bamberg of German extraction. This family continued to play a vital role in the economic development of the area well into the nineteenth century.

Railroad expansion into the county in the form of the South Carolina Canal and Railroad Company in 1832 facilitated further economic development and settlement. Population centers arose at railroad sidings: Bamberg and Denmark, as well as at midpoints: Midway. Bamberg arose from a Cypress swamp after the Charleston-Hamberg Railroad bought the land in 1832 for a water tower. This area was chartered as Lowery's Turn Out in 1855. Local produce includes cotton, corn, wheat, rye, peas, and sweet potatoes. Large fruit orchards and pine stand characterize the modern topography.

The Civil War crippled the county economically as well as physically. Recovery did not begin before the mid-1870s and was slow to develop. In contrast, Denmark became an important rail link in the Columbia-Savannah-Augusta system. At the turn of the present century lumber and cotton economies supported large mercantile stores until the 1920s. At that time large infestations of boll weevils decimated the cotton industry. Subsequent to that period economic trends have stressed diversity such as corn, soybeans, hay, cattle, sheep, and fruit orchards. Poultry, dairy, and tobacco farming was introduced in the area beginning in the 1930s and 1940s.

Natural Environment

The reconstruction of the prehistoric environment is a difficult task. Within the relatively short length of human occupation on the North American continent, there have been many changes in the climate and natural environment. Paleoenvironmental interpretation is based on evidence provided by such indices as: vegetation (through pollen profiles and macrofossils), soils, geomorphological processes, and hydrological studies. Most of the paleoenvironmental information applicable to South Carolina comes from the pollen work of Whitehead (1965), Watts (1970), and Delcourt and Delcourt (1981). The vegetation information is arranged by time periods using the general framework, based on climatic periods, constructed by Whitehead (1965) from his work in southeast Virginia and North Carolina: Full Glacial 25,000-15,000 B.P., Late Glacial 15,000-10,000 B.P., and Post Glacial 10,000-present. These data provide a rough picture of the vegetation changes from coastal plain boreal vegetation to a more mesic deciduous forest and then the development of the modern forest vegetation.

All three of the survey areas are located south of the town of Denmark, South Carolina, between Lemon Creek and the Little Salkehatchie River. The project area lies within the Coastal Plain physiographic province. Based on the soil and elevation requirements of the spray irrigation project, the soils and physical environments for the three areas are consistent, areas already cleared by cultivation, high, and well drained.
The soil association that is found in all three of the survey areas is the Marlboro-Faceville Association (Crow et al. 1966). The soils are characterized as nearly level and gently sloping well-drained soils with a clayey subsoil. Approximately 85 percent of this association is under cultivation with hardwood trees predominating the areas along small streams. This association makes up about 21.5 percent of Bamberg County. It is found on broad, or gently sloping plains that have many oval or irregularly shaped depressions. The Marlboro soils make up 35 percent of this association and are common on the plains and slopes along drainages. This soil is well drained. It has a grayish, sandy surface (8-12 inches thick) and a yellowish-brown sandy clay subsoil. Twenty percent of the association is made up of Faceville soils. These soils are well drained with a grayish brown upper layer and a yellowish-red sandy clay subsoil. Minor soils in this association are Grady, Magnolia, Norfolk, Ruston, Orangeburg, Coxville, and McColl.
Figure 1. Survey Area Map
The archeological reconnaissance of the Denmark Waste Treatment Facility involved the pedestrian survey of three tracts of land set aside for this project. The treatment facility will be a spray irrigation system. The major impacts on the landscape and the archeological record will result from the use of heavy equipment, the laying of irrigation pipe, erosion in steep areas, and borrow pits for land leveling. The archeological reconnaissance will be used to evaluate the effect of these impacts on archeological sites recorded and identified in the project area.

The project involves three sections of land totalling 400 hundred acres in Denmark, South Carolina. Area 1 (Figs. 1 and 3) is located between US 321 and Highway 26 and is crossed by a county dirt road. The nearest permanent water source is the Little Salkehatchie River to the south and west of Area 1. Over 80 percent of Area 1 was under cultivation during the reconnaissance survey. Most of the area was planted in soybeans that ranged from 6 inches to almost 2 feet (Fig. 2). The general ground visibility in Area 1 ranged from 60 to 80 percent. Some sections of this area were planted in watermelons, and one small plot in cantelopes. While these areas had the greatest ground coverage, there were large open areas between the rows where visibility was 100 percent.

Figure 2. Cultivated Field in Survey Area 3.

Area 2 (Figs. 1 and 4) is the smallest of the three-survey areas. Part of this area was a cultivated field that had just been planted. Therefore, visibility was 100 percent. The remainder of this area was in
Figure 3. Survey Area 1.
Figure 4. Survey Areas 2 and 3.
pasture. The hay had recently been cut, leaving a short grass pasture for survey. Five transect lines were laid out across the pasture area and shovel tests were dug at regular intervals (Fig. 4). A small frame house (ca. 1940) is still standing on the property. One archeological site was identified in this survey area.

Area 3 is located north of highway 54 and a county dirt road (Fig. 4). The majority of Area 3 was under cultivation at the time of survey. All the fields in this area were planted in soybeans, ranging from 6 inches to 2 feet. The ground visibility ranged from 60 to 80 percent. The nearest permanent water source is Lemon Creek, which flows through the western section of this survey area. In this area Lemon Creek has shallow banks and large wet areas along the edges with very dense vegetation. It is possible that either sections or all of this area will be deleted from the waste-water treatment project.

Survey Methods

One of the goals of this project was to provide sufficient information on the archeological resources of the project area to allow determinations of significance. Since the majority of the area to be surveyed was under cultivation and the ground visibility was good, a pedestrian survey with limited shovel testing was undertaken in all three project areas.

Aerial photographs of the three project areas provided by the project engineer were used to define separate fields within each survey section. Then a preliminary visit to each of these areas was conducted to assess the type of ground cover and the ground visibility of each section. The planting in area 3 had been later than area 1. Therefore, the survey was started in area 1 to enable the survey to be completed before the soybeans became any taller. Within each field in a survey area, an intensive pedestrian survey was conducted. In fields where the cover was more than 25 percent, the two individuals conducting the survey walked alternate rows. However, in fields where the ground cover was 10 to 15 percent, the surveyors walked every third or fourth row. The turn rows and areas along the sides of the field were walked also. In areas where the ground cover was more than 50 percent, shovel testing was carried out. These tests were dug to a depth of 60 cm and all materials were screened through 1/4-inch mesh. Erosional areas, dirt roads, stream cutbanks, and other areas of exposed ground were also inspected.

Although many definitions of an archeological site can be found ranging from one flake to a double handful of artifacts. A site will be defined as the basic analytic unit and will consist of four artifacts found in spatial association with one another. Single artifacts or isolated finds were plotted on area maps and are discussed in the survey results section. While these artifacts do not constitute a definition of a site, the information is still valuable to distributional studies of artifact types or raw material studies. Site size was determined through the use of surface collection information and shovel testing. Shovel testing was also used to determine site depth.
Once a site had been identified, its location, size, depth, and other observations were recorded on U.S. topographic maps and aerial photographs. Then a surface collection was made from the exposed portion of the site. Sites containing standing structures were plotted and photographs taken of the standing structures and surrounding areas.
SURVEY RESULTS

Inspection of the Statewide Archeological Site Inventory at the Institute of Archeology and Anthropology and the National Register of Historic Places was conducted prior to the field phase of the reconnaissance. In addition, a review of the published literature on the natural, historical, and archeological background for the project area and the relevant holdings of the Denmark Public Library was also undertaken. This literature search revealed a previously recorded prehistoric site located on the southwestern edge of the project area, 38BM66. Five prehistoric sites have been recorded within a mile of the project area, and seven additional sites have been recorded within 3 to 6 miles. No historic sites or registered historic properties have been recorded within the project area.

The intensive reconnaissance survey of the three areas within the proposed Denmark Wastewater Treatment Facility resulted in the identification of 18 archeological sites: 10 historic and 8 prehistoric. Seven of the historic sites are mid-nineteenth- to twentieth-century domestic middens, one of which is a late nineteenth-century farmstead with several standing structures, occupied until recently. In addition, two sites are small scatters of domestic debris from early to late nineteenth century. Five of the prehistoric sites are small lithic scatters of unknown temporal association. Two of the prehistoric sites (lithic and ceramic scatters) are Woodland (Deptford and Cape Fear), and one prehistoric site is a lithic scatter containing both Late Archaic and Late Woodland materials. During the reconnaissance survey each one of these sites was thoroughly investigated by means of a controlled survey collection and both surface and subsurface observations were made to determine the size, depth, and condition of each site. This section contains a description of each site, materials recovered, results of the investigation, an evaluation of research potential, and an assessment of the project impact.

38BM69

This site is located in a cultivated field about 300 feet from a county dirt road (Fig. 3). At the time of the survey, this field was planted in soybeans, but the ground visibility was still approximately 80 percent. A scatter of late-nineteenth- to twentieth-century ceramic fragments, bottle glass, and metal fragments covering an area of 100 x 200 feet marked the surface extent of this site. This scatter was located upon a long low rise in the field. Shovel testing revealed no cultural material below the ground surface.

Prehistoric material from this site includes two plain, sand tempered pottery sherds, and one tertiary chert flake. Historic material includes 55 whiteware sherds, 2 porcelain sherds, 1 Bennington sherd, 10 stoneware sherds, 3 yellowware sherds, 1 fragment of a porcelain figurine, 2 buttons, and 1 emery scythe stone. The following historic glass fragments were recovered: 6 blue glass fragments, 2 gold fragments, 10 mild glass fragments, 16 light blue fragments, 18 aqua fragments, 10 clear glass fragments, 11 brown fragments, 9 light green fragments, 31 manganese fragments, 1 opal fragment, and 18 South Carolina dispensary bottle (Jo-Jo monogrammed flask, 1899-1902) fragments (Fig. 5).
Figure 5. Dispensary bottle fragments (38BM69).
The temporal association of the prehistoric material is unknown. The material recovered was the only prehistoric remains in this large agricultural field. The ground visibility over the entire field was 75 to 80 percent. The historic material dates from the late nineteenth to the early part of the twentieth century. While the shovel tests did not reveal any cultural material below the surface, it may be possible that features and historic materials may be preserved below the plow zone. The materials recovered indicate domestic midden possibly associated with a tenant occupation. There were no artifact concentrations and no evidence of the possible location of structures. This site provides information on the tenant occupation of this area, and direct impact of the project should miss this site.

38BM66

This site was on file with the Statewide Archeological Site Inventory at the Institute of Archeology and Anthropology, Columbia, South Carolina, and recorded by South Carolina Department of Highways and Public Transportation archeologist, Michael Trinkley. Located on a high sandy knoll about 1/4 mile from the Little Salkehatchie River (Figs. 1 and 3), the site is described as a lithic scatter of probable Late Archaic-Woodland origin.

Site 38BM66 was relocated during the field reconnaissance. This knoll and surrounding fields were fallow and covered with moderately dense vegetation. A very sparse lithic scatter was observed in bare spots and erosional areas. Shovel tests were undertaken along the top of the knoll and on the sides. No diagnostic artifacts were recovered from the surface inspection or the shovel tests. Surface visibility was only 25 percent.

Due to previous cultivation and erosion, what remains of this site is a shallow sparse scatter of small lithic debris, holding little research potential. This site is on the edge of the project area within the buffer zone, and will not be impacted by project construction.

38BM68

Within a cultivated field located in a low sandy area near a small intermittent stream in the southwestern section of Area 1 (Fig. 3) is a site consisting of a lithic and ceramic scatter approximately 100 X 60 feet in size. At the time of the survey, this field was planted in soybeans that were 6-10 inches tall and thin or widely spaced. Ground visibility was 80-90 percent.

A controlled 'surface' collection was made in the field and eight shovel tests were dug to determine the depth of the site. Four shovel tests were dug in the wooded area to determine whether or not there was a portion of the site that had not been disturbed by cultivated. Two of the shovel tests in the wooded area produced flakes and small pottery sherds. These materials were confined to the upper 10 cm and did not extend below the plow zone.

The following materials were collected from the site surface: 4 bifacial thinning flakes, 2 primary flakes, 2 secondary flakes, 10 tertiary flakes, 1 biface tip (siltstone), 1 uniface (metavolcanic), 15 plain sand
tempered sherds (Cape Fear), and 9 cord marked sand tempered sherds. Materials recovered from shovel tests include: 2 secondary flakes, 10 tertiary flakes, 1 coastal plain chert chunk, and 6 plain sand tempered sherds (Cape Fear). All of the flake debitage consists of coastal plain chert.

The intermittent stream and its cutbanks were inspected, but no cultural materials were recovered. Based on the shovel tests, stream information, and surface collection, this site appears to be thin and mainly contained within the cultivated part of the field. It may be possible that there are areas of site integrity that were not determined by shovel testing. Site 38BM66 and its location has been discussed with project personnel at B. P. Barber and Associates and there will be no direct impact of the site in this area. The site is within an area that will be used as a buffer zone around the project in Area 1.

38BM70

Located in a cultivated field, this site is a scatter of late nineteenth- to twentieth-century materials (Fig. 3). The site is approximately 300 X 50 feet in size and occupies a low, swale area in the field. The field was planted in soybeans at the time of the survey and the ground visibility was 60 percent.

The historic materials recovered include 5 manganese glass fragments, 1 clear glass fragments, 1 light blue opal decorated glass fragment, 1 yellowware sherd, 2 milk glass sherds, 1 porcelain (handle fragment), 1 blueware sherd, 6 ironstone-whiteware sherds, and 2 stoneware (Albany slip) sherds. Shovel tests in this area did not reveal any cultural materials below the ground surface. The materials represented indicate a domestic midden but there was no evidence of artifact concentrations or structural remains. Since the materials were confined to the lowest portion of this field, it is possible that this represents a dumping area. No prehistoric materials were recovered from this field. However, one chert biface fragment was recovered from the southern portion of the area. Shovel tests and investigation of the adjoining wooded area did not reveal any additional cultural materials.

This site is a thin scatter of historic materials confined to a low area in a cultivated field and does not appear to have valuable research potential. Project construction should have only an indirect impact on this site and no further work is recommended.

38BM71

This site is located along an old fence line (Fig. 3) behind the pecan grove associated with the late nineteenth-century farmstead (38BM82). This ceramic and glass scatter is at the end of a turn row and the materials are distributed over an area 100 X 40 feet. Cultural materials include 3 bricks, 4 ironstone-whiteware sherds, 2 fragments of green glass, 1 aqua glass fragment, and 2 milk glass fragments.

These materials appear to be associated with the occupation of the farmstead and may represent a dumping area or domestic midden associated with a tenant occupation. Other than the three brick, no evidence of
structural remains could be seen. There were no materials below the sur-
face, and disturbance due to cultivation and erosion is extensive. No
further work is recommended.

3BBM72

Located in a cultivated field, this site is a brick-lined well with
historic ceramics and glass scatter around it and appears to be associated
with the late nineteenth-century farmstead. This site is located in survey
area 1 (Fig. 3).

The glass historic materials recovered include 3 green bottle frag-
ments, 1 blue glass fragment, 1 turquoise glass fragment of a molded deco-
rated bowl, 7 clear glass fragments, 2 aqua glass fragments, 1 light green
bottle neck, 3 brown bottle necks, and 10 manganese glass fragments (bottle
neck, body, base, and section of stemmed glass). The remaining materials
recovered include 2 fragments of porcelain plate, 23 ironstone-whiteware
sherd, and 1 nail.

This well is still open although it is overgrown with small shrubs and
a small tree. It appears to be in reasonable condition and still contains
water. Although the area surrounding the well has been disturbed by culti-
vation, this site should be avoided and protected from direct impact of the
project construction.

3BBM73

This prehistoric site is located in survey area 1 (Fig. 3). This
field was planted in soybeans at the time of the survey and ground visibil-
ity varied from 60 to 80 percent. Cultural material was sparse and thinly
scattered over a large area approximately 400 x 150 feet. The lithic
debris occurred along a long ridge running east-west and extended down the
northern side of this ridge to a low area along the tree line.

The prehistoric lithic debris recovered include 2 chunks, 1 primary
flake, 3 secondary flakes, 3 tertiary flakes, 3 biface thinning flakes, 1
utilized flake, and 1 end scraper fragment. One small sand tempered pot-
tery sherd was recovered. Three bifaces were also recovered (Fig. 6) from
this site representing a Late Archaic-Woodland occupation: 1 stemmed point
(Savannah River) make of argillite, 1 triangular biface of Coastal Plain
chert (Woodland), and 1 tip of a biface made of quartz (undiagnostic). The
shovel tests in this area did not reveal any cultural material below the
surface. Due to cultivation and erosion, the site is shallow and scat-
tered. The wooded area adjoining this field was also investigated. The
ground cover was very dense and the shovel tests did not yield any cultural
material. This site appears to have low research potential but should be
avoided during the project construction.

3BBM74

This site is located in survey area 1 in an agricultural field planted
in soybeans at the time of the survey (Fig. 3). The ground visibility was
70 percent. The soils of this site are classified as Norfolk sandy loam
with 2-6 percent slopes.
The prehistoric cultural materials recovered include 2 chunks, 6 secondary flakes, 17 tertiary flakes, 11 biface thinning flakes, 1 medial biface fragment, and 1 basal biface fragment. Of the debitage recovered, one flake was quartz and the remaining flakes and biface fragments were made of Coastal Plain chert. No diagnostic artifacts were recovered and the temporal association is unknown.

Shovel tests in this area and the adjoining wooded area did not reveal any cultural material below the ground surface. Due to cultivation and erosion, this site appears as a thin scatter of lithic debris. Although there is a break in the distribution of materials between sites 3BBM73 and 3BBM74, it is possible that these are two loci within a single site. Although the research potential of this site appears to be low, it should be avoided during project construction.

3BBM75

This prehistoric site is located on top of a small, sandy hill of the Faceville soil classification (Fig. 3). This area is under cultivation and was planted in soybeans at the time of the survey. The ground visibility was 80 percent on the top of the hill and 60 to 70 percent on the southern slopes.

The prehistoric cultural materials includes 1 random core, 2 chunks, 1 secondary flake, 16 tertiary flakes, 11 biface thinning flakes, 1 biface
tip, and 1 biface base. One contracting stem biface was recovered from a steep slope on the southwestern corner of the site (Fig. 7). All the lithic debitage is Coastal Plain chert. Although there were more flakes in the northern edge of the site, there were no concentrations of artifacts.

Shovel testing in the site and in the adjoining wooded area did not produce any cultural material below the surface. The site appears to be confined to the top of this small hill. Due to cultivation and erosion this site lacks integrity and, other than the controlled surface collection already made, it has little research potential.

**38BM76**

This site is located in the southwestern corner of survey area 2. The northwestern and the southwestern corners of this area were in cultivation (Fig. 4). The remainder of the area was in short grass pasture. Located in a low area near an intermittent stream, site 38BM76 is a ceramic and lithic scatter 200 X 100 feet in size. After the site was identified in the cultivated area, the surrounding pasture and wooded areas were explored to determine the size and depth of the site. No cultural materials were located in the pasture area. The shovel tests in the wooded area, however, produced artifacts to a depth of 20 cm below the ground surface.

The prehistoric materials recovered include 1 chunk, 1 secondary flake, 6 tertiary flakes and 3 linear check stamped pottery sherds. The shovel tests in the wooded area produced 5 flakes and 2 pottery sherds.

From the ground inspection and the shovel tests, it appears that the majority of this site is outside the project boundaries. In general cultural materials were increasing in number near the southern boundary of the project. In discussions with engineering personnel at B. P. Barber and Associates, it was indicated that this site would not be impacted by the project construction. If this should change, however, this site should be protected from direct impact by the project.

**38BM77**

This site is confined to the top of a small rise in this cultivated field. The soil association for this area is the Marlboro-Faceville. The ground visibility was 70 percent.

Prehistoric cultural material recovered includes 3 large chunks of chert, 3 primary flakes, and 1 secondary flake. Shovel tests in this area did not yield any material below the ground surface.

Due to cultivation and erosion, this site has little integrity and the impact of the project will be small.

**38BM78**

This site is located in survey area 3 along a small intermittent stream. This site is in a cultivated field and the visibility was 80 percent. The historical material recovered includes 3 stoneware sherds and 5
Figure 7. Chert core and bifaces (Site 38BM75).
ironstone-whiteware sherds. This site has little integrity and the impact of the project would be low.

38BM79

Located in survey area 3, this site has both historic and prehistoric materials on the ground surface (Fig. 4). The field is in cultivation and the ground visibility was 70 to 80 percent. The size of the site is 200 X 100 feet.

The prehistoric material recovered is 1 large core from Coastal Plain chert. The historic material include 1 clear glass bottle neck, 1 brown bottle neck, 5 ironstone-whiteware sherds, 1 yellow ware bowl base fragment, 1 annular ware sherd, and 1 transfer printed whiteware sherd.

Shovel tests did not reveal any cultural material below the ground surface. These materials represent the late nineteenth- early twentieth-century occupation of this area, but this site provides little research potential.

38BM80

This site is located in survey area 3 (Fig. 4) in a cultivated field. The field was planted in soybeans at the time of the survey. Ground visibility was 60 percent. The size of the site is 100 X 60 feet.

The historic materials recovered include 1 manganese bottle base, 3 clear bottle fragments, 1 blue glass fragment, 1 aqua glass fragment, 1 milk glass jar base, 2 ironstone-whiteware sherds, and 1 creamware (annular) sherd.

These materials are concentrated about a large old tree and possibly represent a domestic midden associated with a tenant house located near the dirt road. There was no evidence of structural remains. The research potential of this site is low and the project impact will be low.

38BM81

This site is located in survey area 3 on a small knoll in a cultivated field. At the time of the survey the field was planted in soybeans. The cover was low and the ground visibility was 80 percent. The site is 100 X 50 feet.

The cultural material recovered includes 1 chunk and 4 flakes. All the material recovered is Coastal Plain chert.

These are the only prehistoric remains recovered in a very large section of cultivated land. The site has little research potential and impact of the project will be small.

38BM82

Located in survey area 1 (Fig. 3), this site is a nineteenth-century farmstead consisting of several standing structures. The house (Figs. 8
and 9) and two log barns (Fig. 10) date from the latter part of the nineteenth century. The farmstead also has several other standing structures of recent construction. Sitting on top of a small knoll, the house is bounded by a pecan grove (Fig. 11), farm outbuildings, and agricultural fields.

During the survey, Sinclair Guess, the most recent owner of the property, was interviewed. According to Mr. Guess, the house was constructed between 1877 and 1890. When he bought the property he was not able to find any records that indicated the exact date of construction. It is possible that the house replaced an earlier log cabin, according to Mr. Guess. He said that the house had three wells. The area surrounding the house was overgrown with tall weeds and it was not possible to inspect the ground surface. Several shovel tests were dug in the area around and behind the house. Glass and ceramic fragments dating from the late nineteenth century through the twentieth century were found. No earlier materials were recovered from the shovel tests. When asked about tenant farmers on the land, Mr. Guess said that after the turn of the century there were eight or nine on the land surrounding the house.

This farmstead is an example of the rebuilding in the Denmark area following the Civil War. While probably not eligible for the National Register of Historic Places, this farmstead and the associated tenant occupations do provide information on the land use and settlement in this area following the Civil War. The house is fairly sound and Mr. Guess said that he wanted to move the house to another location. It is not known whether he still plans to move the house or not.

38BN83

This site is a light scatter of historic materials in a cultivated field. At the time of the survey the field was planted in watermelons and the ground visibility was 60 percent. Due to the nature of the ground cover and the sparse artifact distribution, the determination of the site size was difficult. The artifacts were recovered from an area approximately 100 X 50 feet.

The historic materials recovered include 1 handle of stoneware, 1 feldspathic stoneware fragment (ginger beer bottle), 1 mocha body sherd, 1 polychrome pearlware base sherd, 1 blue edge pearlware rim sherd, 3 annular ware sherds, and 1 blue glass fragment. These materials indicate an occupation dating from the early to mid-nineteenth century. The materials recovered are domestic midden debris. There was no evidence of structural remains.

Although this scatter does provide evidence of an early historic occupation in this area, the site does not appear to have a high research value. The impact of the project should be low.

38BN84

This site is located in an agricultural field near the farm building associated with the nineteenth-century farmstead. The field was planted in
Figure 8. Farmstead House (Site 38EM82)

Figure 9. Farmstead House (Site 38EM82)
Figure 10. Log Barn (Site 38BM82)

Figure 11. Pecan Grove (Site 38BM82)
soybeans at the time of the survey and the ground visibility was 60 percent.

The historic cultural materials recovered include 1 English gun flint, 2 annular creamware sherds, 1 stoneware sherd, 2 pearlware sherds, and 1 aqua glass bottle neck (Fig. 12). The historic materials indicate a domestic midden dating from the early to the mid-nineteenth century.

Although this scatter does provide evidence of an early historic occupation of this area, the site does not appear to have a high research value. The impact of the project should be low.
Figure 12. a) Salt glazed sherd, b) English gun flint, c) bottle neck, d) Blue edge pearlware and transfer printed pearlware.
SUMMARY

The archeological reconnaissance of the proposed Denmark Waste Treatment Facility was designed to identify archeological resources in the three project areas and to provide information to be used in the evaluation of these resources and the assessment of the project construction of those resources.

The archeological survey resulted in the identification of 18 archeological sites: 10 historic and 8 prehistoric. Seven of the historic sites are mid-nineteenth- to twentieth-century domestic middens, one of which is a late nineteenth-century farmstead with several standing structures and occupied until recently; in addition, two sites are small scatters of domestic debris from the early to late nineteenth century. Five of the prehistoric sites are small lithic scatters of unknown temporal association. Two of the historic sites (lithic and ceramic scatters) are Woodland (Deptford and Cape Fear), and one prehistoric site is a lithic scatter containing both Late Archaic and Late Woodland materials.

During the reconnaissance survey each one of these sites was thoroughly investigated by means of a controlled surface collection and both surface and subsurface observations were made to determine size, depth, and condition of each site. A description of each site, materials recovered, results of the investigation, an evaluation of research potential, and an assessment of the project impact has been provided. These results are summarized in Table 1.

At the completion of the field reconnaissance survey a meeting was held with project engineers, Mike Burkhold and Keith McCloud. At this time, aerial photographs of the project areas with locations of all the archeological sites were reviewed.

Each one of the sites listed as having moderate project impact was discussed individually. The two prehistoric sites that had materials preserved below the surface (38BM68 and 38BM76) will be in the buffer zone of the project and will not be subject to project construction. The laying of irrigation pipes to avoid direct impact on sites 38BM73, 38BM74, and 38BM75 was also discussed.

The major impacts of this project on the archeological resources will result from the use of heavy equipment, laying of irrigation pipe, and erosion in steep areas. In addition to avoiding the sites discussed above, it would be beneficial to avoid the parking of heavy equipment or construction supplies on any of the archeological sites.

If any of these areas are to be used as borrow sources, the Institute of Archeology and Anthropology should be notified. No survey technique is capable of identifying all archeological resources in an area. Therefore, any archeological (historic and prehistoric) remains, concentrations, or structures revealed or uncovered during project construction should be reported to the Institute of Archeology and Anthropology and the State Archeologist immediately. Any changes involving the project design or construction should also be reported to this office also.
<table>
<thead>
<tr>
<th>Site Number</th>
<th>Survey Area</th>
<th>Temporal Association</th>
<th>Depth Below Surface</th>
<th>Impact of Project Construction</th>
</tr>
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<tr>
<td>38BM66</td>
<td>Area 1</td>
<td>Late Archaic/Woodland</td>
<td>none</td>
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</tr>
<tr>
<td>38BM68</td>
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<td>38BM69</td>
<td>Area 1</td>
<td>Late 19/Early 20th c</td>
<td>none</td>
<td>low</td>
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<td>low</td>
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</table>
APPENDIX A

Lithic Artifacts

The objective of the lithic debitage and artifact analysis was to produce assemblage characterizations. The three variables of major importance in the debitage analysis are: raw material, stage of reduction, and size. The debitage from each excavation level was sorted by raw material, then by size, and finally by reduction stage. The count was recorded for each category. The raw material classes and the reduction stage groups have already been described and defined. There were 11 size groups ranging from .5 cm" to greater than 5.0 cm".

Lithic Artifact Categories

Many of the categories used in the description of the lithic assemblages follow those used by previous researchers in the South Carolina/Georgia Piedmont (House and Ballenger 1976; House and Wogaman 1978; Taylor and Smith 1978; Goodyear, House, and Ackerly 1979). As others have recognized, the division of a continuous reduction process, such as biface manufacture, into separate categories introduces a certain amount of error. One of the goals of this kind of artifact typology is to isolate significant technological and cultural attributes. The categories were chosen for this analysis as possible indicators—direct or indirect—of the goal of the manufacturing processes or the production processes. In the absence of well controlled, systematic replication studies of the predominant raw material—quartz—determination of reduction stage, extent of retouch flake scars, and modification of edges by use are often tenuous. Several of the artifact categories reflect the difficulty in determining stage of reduction and use wear on quartz.

As with any attribute recording system, the very attempt to measure certain attributes produces new information and in the end the categories do not reflect what is then known concerning the data set. Ideally this produces new information for the formulation of designs for further analysis. In the Piedmont, refinement of the analysis of quartz debitage and artifacts cannot proceed until further work has been done to measure the relationship between grain size and texture of quartz and its responsiveness to conchoidal fracturing. Experimental replicative studies are needed to develop means of detecting use wear and retouch and to measure change in debitage structure during reduction processes.

Cores

Two types of cores for flake and biface production are recognized: random cores and bipolar cores.
Random Cores

These cores are nodules or chunks of raw material exhibiting more than one negative bulb of percussion. Flake scars indicate apparently random removal of flakes for production of flake tools or the initial stages of biface production.

Bipolar Cores

Chunks of raw material, nodules, or quartz crystals were used for the systematic removal of flakes using the bipolar technique. Battering and crushing are present on both ends and sometimes on the sides of the cores or quartz crystals.

Chunks

Representing unused raw materials, these large to medium sized pieces of the raw materials used in tool production exhibit no negative bulbs of percussion of flake scars.

Flakes

The reduction process of lithic tool manufacture produces several types of debris. Flakes are the pieces of debitage that have striking platforms, bulbs of percussion, and dorsal flake scars.

Primary Flakes

These are usually large, broad flakes detached during the initial reduction stage. Cortex is present on the dorsal surface and the platform.

Secondary Flakes

These are flakes removed in the early stages of reduction. Cortex is present on the dorsal surface but not on the platform.

Tertiary Flakes

These flakes are produced during the thinning or shaping of tools and bifaces. Tertiary flakes are usually thin, exhibit no cortex on the dorsal surface, and have the scars of previous flake removal on the dorsal surface.

Bifacial Thinning Flakes

Bifacial thinning flakes are removed during the thinning or resharpening of bifaces (Fig. 13). These flakes are "relatively flat, have broad shallow flake scars (from detachment of previous thinning flakes) on the dorsal face, and tend to exhibit 'feathering out' of lateral margins" (House and Ballenger 1976: 89). The proximal end of the flake often
Figure 13. Relationship of Biface Thinning Flakes to Parent Biface.
retains the edge of the biface, and if retained, the platform has a low angle with crushing or grinding.

**Bipolar Flakes**

These flakes retain characteristics that indicate removal from a core, quartz crystal, or nodule using a bipolar technique. Bipolar flakes exhibit crushing or battering in both the distal and proximal ends. The ventral face is usually sheared and primary and secondary bulbs are removed. Bipolar flakes may be difficult to recognize because secondary bulbs of percussion are not always formed, and distal ends may shatter or hinge-fracture (Chapman 1979: 31).

**Other flakes**

Flakes were classified as primary, secondary, or tertiary when this determination was possible. Most of the raw materials used in tool manufacture do have cortical surfaces but the identification of this cortex is difficult. This category is used for flakes that are usually flat, and have bulbs of percussion and dorsal flake scars, but do not have cortical surfaces that make a determination of position in the reduction sequence possible.

**Shatter**

These pieces ofdebitage are blocky, angular fragments of flaking debris that do not have bulbs of percussion, striking platforms, or dorsal flake scars.

**Bifaces**

This category of chipped stone artifacts with two faces, created by removal of flakes from both sides of a flake or core, is divided into three groups: hafted bifaces, performs, and other bifaces.

**Hafted Bifaces**

Characterized by overall longitudinal symmetry, consistent thickness, and thin, well formed edges, these bifaces have been modified by bifacial retouch to produce a pointed distal end and a proximal element (stemmed or notched) that is suitable for hafting. Recent studies in the Piedmont (House and Wogaman 1979; Taylor and Smith 1978; Goodyear 1979) have used the term to avoid any functional associations that may accompany the term "projectile points." Based on analyses of edge damage and resharpening, it appears that many of these tools functioned as hafted knives (Goodyear, House, and Ackerly 1979).

**Preform**

These bifaces are not well thinned and do not have well shaped, retouched lateral margins. Representing unfinished hafted bifaces, some of these preforms may be associated with hafted biface categories. Some of
these bifaces represent either biface blanks that were discarded during manufacture or preforms broken in the final stages of manufacture.

Other Bifaces

Irregular in outline and of varying thickness, the bifaces included in this general category may represent artifacts that broke during manufacture or bifaces that were discarded. Many of the specimen in this group are small and cannot be identified beyond the category "biface fragment."

Flake Tools

These flakes have been modified along the lateral or distal margins. Flake tools are divided into two categories: use-modified flake tools and retouched flake tools. The use-modified flakes exhibit small flake scars and nibbling in limited areas, whereas retouched flakes have longer, more regular flake scars, a higher edge angle, and a larger and more systematically arranged areas of retouch.

Hammerstones

Hammerstones are small to medium-sized river cobbles with distinct areas of battering on corners or rounded ends. All specimens recovered are quartz river cobbles.

Cobble Tool

These cobbles have areas of pecking or battering on a face or flat side. Most of these cobble tools are quartz river cobbles. The pecked areas were probably produced by using the cobble as an anvil for either nut cracking or bipolar flaking.

Raw Material Characterization

The work of several researchers in the South Carolina Piedmont has resulted in the recognition of some patterns of raw material use. The predominant use of certain raw materials has become associated with different cultural-historical periods (Kelly 1972, 1979; House and Ballenger 1976: 126-127; House and Wogaman 1978: 52; Goodyear, House, and Ackerly 1979; James L. Michie, personal communication). Data on lithic resource utilization and procurement are necessary to testing hypotheses concerning technological change, inter-regional exchange, settlement patterning, and mobility.

The identification of raw materials was based on previous thin section and geological analyses conducted by House and Ballenger (1976), House and
Wogaman (1978), and Novick (1978), type collections available at the Institute of Archeology and Anthropology, and consultation with Keith Derting and Tommy Charles. Derting and Charles are refining and expanding the type collection, and compiling information on prehistoric quarries and raw material distributions in South Carolina.

Quartz

Two types of quartz were recognized: vein quartz and crystal quartz.

Vein Quartz

This raw material is abundant throughout the Piedmont in Georgia and South Carolina and the majority of the artifacts from this area are made of this milky, white quartz. Harder and more resistant to weathering, it is usually seen as residual chunks in the soil matrix (House and Ballenger 1976). This quartz is formed in veins of varying thickness. Unweathered quartz can be seen in outcrops throughout the project area (Taylor and Smith 1978).

Vein quartz is usually milky white or slightly translucent, but other colors such as rose, grey, and yellowish-brown are seen. The white quartz often referred to as "cold cream jar" or "milk glass" was formed in an environment of numerous water bubbles in hydrothermal veins (Blatt et al. 1972: 276-277). The yellowish-brown quartz often has a darker cortex or weathered exterior and may result from being immersed in water. According to Blatt, the greyish quartz is produced by radiation-generated-crystal defects (Blatt et al. 1972: 277).

The vast majority of the quartz artifacts are made of milky white quartz from outcrops rather than the residual quartz in the soil matrix. Taylor and Smith (1978: 231) characterize the residual quartz as having "brown or gray matrix which interferes greatly with conchoidal fracturing." The by-products of artifact production on milky white quartz are recognizable, and standard observations (striking platform, bulbs of percussion, and flake scars) can be made. The grain structure of the residual quartz "inhibits recognition of those characteristics, making the identification of retouched flakes or retouch scars extremely difficult" (Taylor and Smith 1978: 231).

Crystal Quartz

While not as abundant as vein quartz, individual and clusters of quartz crystals are found throughout the area. Most of these crystals are transparent and have a very fine glassy texture. Taylor and Smith reported finding only a few finished tools during their survey. Crystal quartz tools, cores, and debitage were recovered from two major occupation zones in the Gregg Shoals excavation. The glassy structure of the quartz crystal aids in the recognition of bulbs of percussion, flake scars, striking platforms and retouch areas, allowing for a more detailed description of the reduction process.
Argillite

One of the major constituents of the Carolina Slate Belt is argillite (Overstreet and Bell 1965). Argillite is light grayish-green, soft or chalky and laminated (Novick 1978: 431). It is formed from "siltstone, claystone, or shale, that had undergone a somewhat higher degree of induration than is present in those rocks" (American Geological Institute 1962: 23). The raw material recognized as argillite is probably the "slate" described by Kelly (1972: 32) and others.

Chert

Chert is defined as a "compact, siliceous rock formed of chalcedonic or opaline silica, one or both, and of organic or precipitated origin (American Geological Institute 1962: 82). Novick (1978: 432) notes that in addition to organic sources of chert, cherts of inorganic origin should be of special interest in South Carolina because of the volcanic origin of the Carolina Slate Belt. It is probable that carbonate-rich sediments containing chert are present in the Piedmont. House and Ballenger (1976: 127) refer to an opaque light to dark gray chert from Site 38PA118. This chert contains tiny crystal-filled seams and may have originated in these deposits. Although there are no known outcrops of chert in the project area, two types of chert with known sources outside the area have been identified: Coastal Plain chert and Ridge and Valley chert. Specimens that could not be identified or were too small to be identified were assigned to the category of "other" chert.

Coastal Plain Chert

The several chert identified as Coastal Plain chert are part of the Oligocene Flint River Formation which extends from northern Florida and southern Alabama to western South Carolina (Taylor and Smith 1978: 232). This formation is exposed at several points along the Savannah River. Several prehistoric quarries are known in Allendale County in South Carolina and Georgia. The Rice site (38AL14) in South Carolina and the Theriault site (9BK2) in Georgia are good examples of Coastal Plain chert quarries close to the Gregg Shoals site.

Coastal Plain chert from the Allendale quarries varies from a mottled light gray-white to buff, yellow, or brown. The cortex is chalky and fossiliferous and small fossils are also present within the nodules (House and Wogaman 1978: 550). The effects of heat treatment on Coastal Plain chert were assessed by David Anderson (1977) in a series of systematic experiments using samples of chert from 56 sites. Anderson found that as a result of thermal alteration, the flaking qualities of the chert were greatly enhanced. This improvement in the knapping quality of the chert may be due to the effect of the heat on the fossiliferous inclusions (Taylor and Smith 1978: 233). As a result of the thermal alteration, the chert may change color to include red, pink, dark brown, green, and blue tints (House and Wogaman 1978: 55). Anderson's (1977) experiments showed this color change to be variable.
Ridge and Valley Chert

This chert varies from light translucent gray to lustrous black. Cherts of similar structure and color are known from the Ridge and Valley physiographic province that runs along the Appalachian Mountains from northwestern Georgia and runs northeasterly through Tennessee to Pennsylvania (Taylor and Smith 1978: 233). According to Faulkner and McCullough (1973: 52-53), the Duck River, Fort Payne, and Cannon Limestone formations have weathered, and chert is available in small nodules in outcrops, streams, or alluvial deposits.

In intensive work along the Little Tennessee River and the lower part of the Tellico River, Chapman and Kimball have begun to identify and classify the various cherts of the Ordovician Knox Group (Chapman 1979: 5). These cherts are fine grained, ranging from light gray to black. While thermal alteration appears to have improved the chipping quality of the Coastal Plain chert, experiments by Barbara Purdy suggest that thermal alteration of Knox chert did not improve its workability (Chapman 1979: 98-99). However, further analysis of the lithic assemblages from the Howard and Calloway sites suggests thermal alteration of artifacts (Chapman 1979: 6).

Rhyolite

Formed from volcanic molten material or magma, rhyolite is also one of the common rocks of the Carolina Slate Belt (Butler and Ragland 1969: 701). Flow banded, porphyritic, and plain rhyolite are identified.

Flow Banded Rhyolite

This material is characterized by bands of varying thickness. These bands vary from buff and gray to green in color (Novick 1978: 427). Most of the bands are only a few millimeters thick and were formed by the flow or molten rhyolite. The bands are straight or undulating and become more visible as the material weathers (Novick 1978: 427).

Porphyritic Rhyolite

Dark to light gray, this rhyolite contains numerous phenocrysts. These phenocrysts are mineral crystals of quartz, feldspar, and plagioclase (Novick 1978: 427). Porphyritic rhyolite weathers to a light buff or gray.

Plain Rhyolite

Lacking distinct flow bands and phenocrysts, this rhyolite is dark green or black when freshly broken. Weathering produces a chalky texture and a light gray or buff color (Novick 1978: 428).

Tuff

Two types of tuff are recognized.
Felsic Tuff

This tuff is formed from the ash of volcanic activity. The fine grained texture contains phenocrysts of quartz, feldspar, and plagioclase. Tuff also weathers to a buff or tan color. Novick (1978: 428) notes that the phenocrysts and air spaces formed as the ash drops may decrease the knapping quality of this material.

Welded Tuff

This very fine grained green material resembles chert, although, as Novick (1978: 428) points out, the flake scars are not so distinct. Unlike felsic tuff, welded vitric tuffs are formed by the compaction of forming magma, often containing extremely fine lines of quartz (Novick 1978: 428).

Other Igneous

A few of the specimens could not be specifically identified beyond being igneous in origin.

Other Metamorphic

This category was used for specimens that could not be specifically identified but were metamorphic or metavolcanic.

Unidentified Raw Material

Any of the raw material that could not be assigned to any of the defined categories was included in "unidentified." Only a few specimens fall into this group.
The historic ceramics recovered during the survey comprise five basic types: ironstone-whiteware, pearlware, stoneware, earthenware, and porcelain. According to South (1977: 12), plain pearlware dates from 1780 to 1830. The plain pearlware is characterized by a blue tinted glaze (Noel Hume 1969). The other pearlware ceramics recovered were blue edged shell, annular ware, and transfer printed. The blue edged shell ware ranges from 1780 to 1830 (South 1977). The annular wares date from 1790 to 1820 (South 1977: 212) and bands of color were used to fill in the areas along the rim or edge. Although there was a wide variety of transfer printed styles, Noel Hume lists the "willow" style as one of the most popular from 1795 to 1840 (Noel Hume 1969: 131). The most common historic ceramic type recovered during the survey was ironstone-whiteware. Described by Noel Hume (1969: 130-131), plain ironstone-whiteware was common from 1860 through 1900.

Stoneware from the survey area can be divided into salt glazed and alkaline glazed. Most of the stoneware was used for jars, crocks, and other utilitarian storage containers. However, several sherds of alkaline glazed stonewares were recovered from several sites. The few pieces of porcelain recovered during the survey are of the hard paste type, translucent with a hard vitrified glaze.

The late nineteenth-early twentieth-century sites produced a large number of glass fragments. These fragments were sorted into color groupings first, and then sorted by vessel categories such as body, rim, neck, or base. The color groupings used are brown, blue, green, aqua, milk glass, manganese, opal, and clear. Notes were made when possible to determine the vessel form: bottle, stemmed glass, jar, lip, stopper, and other.

Color categories have often been used in analysis of historic glass because glass made at different time by different processes takes on certain color characteristics and provides a rough temporal determination. For example, manganese was added to during a period between 1880 and 1890. The glass produced was clear but as glass is exposed to sunlight over time it turns to a light purple. Manganese glass was not manufactured after about 1918. Beer, bitters, and some medicine were sold in brown bottles. Aqua-colored glass was obtained by adding iron to the glass flux and was used throughout the nineteenth century (Fletcher 1976). Many of the aqua glass fragments recovered during the survey are portions of mason jars and glass mason lids. These were patented in 1858 (Fletcher 1976). White, opaque milk glass was produced after 1870 and according to Fletcher was later used as tops for mason jars. By 1918 selenium was being added to glass, producing a clear glass (Fletcher 1976).
American Geological Institute

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