CHAPTER II
BACKGROUND RESEARCH AND PREPARATION

Introduction

Prior to the 1977 field season, four archeological surveys had been performed in the proposed Richard B. Russell Dam and Lake Project. One of these was performed by the University of Georgia in 1969 and reported by Hutto (1970). The remaining three were conducted by various personnel of the Institute of Archeology and Anthropology, University of South Carolina. The results of the first survey were published by Hemings (1970). The results of the other two have been summarized in a Proposal and Addendum to the Proposal submitted to Interagency Archeological Services, Atlanta (Hanson n.d. a, n.d. b). In addition to this, the University of Georgia excavated the mound at Beaverdam Creek Mound site (9EB85) in 1971 (Lee 1976).

These surveys, although not systematic in the current sense of that term, did provide preliminary information about certain aspects of the archeological record. These were chronology, landforms, site size, site density, artifact density and site type. These surveys were reviewed in terms of these aspects.

Chronology

There was use of this area from the Early Archaic through the Historic period. Using Table 1 of Hanson (n.d. a) with an admittedly crude cultural-historical typology, the components were distributed as follows:

<table>
<thead>
<tr>
<th>Period</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archaic</td>
<td>83</td>
<td>57.6%</td>
</tr>
<tr>
<td>Woodland</td>
<td>36</td>
<td>25.0%</td>
</tr>
<tr>
<td>Mississippian</td>
<td>12</td>
<td>8.3%</td>
</tr>
<tr>
<td>Historic</td>
<td>13</td>
<td>9.0%</td>
</tr>
</tbody>
</table>

This information, however, could not be generalized. This was due to several factors: 1) The Archaic period can be more finely ordered into 3 phases: Early, Middle and Late. 2) The concrete attributions of ceramic sites into either the Woodland or Mississippian period was naive. The condition of sherds in surface contexts is such in this area that surface treatments erode and temper (except for fiber timber) has little temporal significance. Smith's analysis of ceramics in conjunction with the present survey indicates that the majority of the ceramics are not attributable to specific time periods, but, must instead be classified as "Ceramic Prehistoric" (see Chapter IV). 3) The recording of historic sites was casual (in South Carolina) or not done (Georgia). This non-systematic recording of historic sites should not reflect on those investigators, but it does reflect the lack of codified procedures for historic resource location, identification and evaluation which have
since been implemented. Also complicating the definition of cultural affiliations from these earlier surveys was the assumption that a site without ceramics or diagnostic bifaces was Archaic. Recent surveys in the South Carolina Piedmont by House and Ballenger (1976) and Goodyear, Ackerly and House (n.d.) have categorized these sites as Unidentified Prehistoric. This procedure has been adopted in the present survey.

Landforms

Sites could be expected to be located on all the different types of landforms present in the project area: ridgetops, ridgeslopes, terraces and floodplains and the river proper (i.e., 38AB36, Gregg Shoals Dam and 38AB15 and 38AB16, fish weirs), including the islands (9EB16 and 9EB94, located on McCalla Island). Hanson's (n.d. b) summary of landform distributions indicated a trend from primary use of upland settings during the Archaic to primary use of terrace/floodplain settings during the Mississippian period. This interpretation, however, is hampered by the crudity of the cultural-historical typology mentioned above. More important to the present purpose is the knowledge that cultural resources will be located on various kinds of landforms, even though the previous survey data could be generalized to provide expected proportional distributions for sites on landforms according to cultural-historical period. This implied that the survey techniques employed should minimize bias in the selection of landforms as much as possible. This problem was addressed by implementing a probabilistic design insensitive to landforms as a basis for selecting areas for investigation.

Site Size

The previous surveys also provided information on site size which was determined and recorded differentially on the different sides of the river. Site size information from South Carolina (provided for 62 of the 74 sites on the South Carolina side, see Hanson n.d. a, Table 1) was given in acres, with site sizes varying from 1/2 to 10 acres.

<table>
<thead>
<tr>
<th>Site Sizes</th>
<th>Number of Sites</th>
<th>Percentage of Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 acre</td>
<td>16</td>
<td>21.6%</td>
</tr>
<tr>
<td>2 acres</td>
<td>20</td>
<td>27.0%</td>
</tr>
<tr>
<td>3 acres</td>
<td>11</td>
<td>14.9%</td>
</tr>
<tr>
<td>4 acres</td>
<td>6</td>
<td>8.1%</td>
</tr>
<tr>
<td>5 acres</td>
<td>3</td>
<td>4.1%</td>
</tr>
<tr>
<td>5+ acres</td>
<td>6</td>
<td>8.1%</td>
</tr>
</tbody>
</table>

In Georgia, site size when provided (18 out of 39 sites had no size given), was given in square feet. Hutto (1970) seems to be giving the area collected when providing estimates of site size.
TABLE 20

SIZE OF PREVIOUSLY RECORDED SITES - GEORGIA

<table>
<thead>
<tr>
<th>Site Sizes</th>
<th>Number of sites</th>
<th>Percentage of Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600-5625 sq. ft.</td>
<td>10</td>
<td>25.6%</td>
</tr>
<tr>
<td>10,000 sq. ft.</td>
<td>3</td>
<td>7.7%</td>
</tr>
<tr>
<td>22,000 sq. ft.</td>
<td>3</td>
<td>7.7%</td>
</tr>
<tr>
<td>40,000 sq. ft.</td>
<td>4</td>
<td>10.3%</td>
</tr>
<tr>
<td>90,000 sq. ft.</td>
<td>1</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Vegetation

The concentration on inspection of exposed ground surfaces by earlier investigators (see Hemmings 1970: 12-13), did not give an accurate perception of the vegetation types present on the survey area, although Hemmings (1970: 13) did mention that almost all of the survey area was covered by heavy, dense vegetation types. A written description does not, however, convey the same impact as first-hand experience. All of the earlier surveys were accomplished during the winter and early spring, while the most recent survey was to be conducted during the period of greatest biological activity, the summer. Piedmont survey experience gained by other investigators performing surveys during the growing season had demonstrated that subsurface testing had to be an integral part of any site location survey in this environment (House & Ballenger 1976; Goodyear, Ackerly and House n.d.).

Hemmings (1970: 13) made it clear that archeological sites remained undetected, and there was no documentation in any reports about the areas surveyed, except by default, when sites were located. No mention was made of areas surveyed where no cultural resources were located. Although the project boundaries were different in 1970 than today (below 490' a.s.l. contour in South Carolina [Hemmings 1970: 4]; below the 500' a.s.l. contour in Georgia [Hutto 1970: 1]), if we use as the project size, 26,650 acres (475' floodpool) and the number of sites located, 109, then a density of sites per acre can be computed. This computation results in 1 site per 250 acres or, projected to the project area, 134.6 sites expected. Data collected since then indicated that this figure was a gross underestimation. The Laurens-Anderson survey in the inter-riverine zone east of the Savannah River located 165 sites in a project area, the size of which is 1916 acres (Goodyear, Ackerly and House n.d.). This yields a density estimate of 1 site per 11.6 acres. This density figure, when projected to the Russell Reservoir gives an estimate of 2893.1 sites for the project area. As can be seen, previous surveys in the project area and in a nearby area resulted in vastly different estimates for site density per acre and for site total. We expected site densities and totals somewhere within these ranges; however, as this was to be the first systematic survey of the riverine zone, it was not really possible to estimate the expected number reliably. Informally, figures in the 400 to 500 site range were discussed.
Artifact Density

Information about artifact densities on sites was lacking because criteria were not specified, and it is apparent in some instances that all observed artifacts were not collected. At one site, Hemmings noted "a surface scatter of quartz and argillite flakes" but his artifact inventory lists only one argillite and no quartz flakes (1970: 21). Inspection of his artifact catalogue indicates that 33 artifacts were collected. Given the site size of six acres (1970: 21), an artifact density of 5.5 artifacts per acre is obtained or one artifact per 7920 feet. The significant question implied here is whether or not reliable data are available for planning purposes. For estimates of artifact density, this is clearly not the case.

Site Type

Hemmings (1970: 14) divided his sites into 5 categories. The prehistoric categories lithic, ceramic, and multicomponent, were based on site content. The presence of historic structures or historic artifacts defined historic sites, and sites in the river with fish traps were classified as such. Hutto (1970) did not employ a site typology, but rather categorized sites according to cultural affiliation. Both authors did, however, make functional inferences about some of the sites based on size or content or both. This categorization is informal and combined with the knowledge that survey methods were quite selective for both locating and collecting sites, means that the previously collected data are of little, if any utility for estimating assemblage variability in the project.

Previous Archeological Work Along the Upper Savannah River

The Richard B. Russell Dam and Lake Project is the third reservoir to be built on the upper Savannah River. To the south is Clark Hill Reservoir and to the north is Hartwell Reservoir. In this section, archeological work done in these reservoirs will be reviewed in terms of the utility of the information collected for planning an archeological survey.

Chronology of occupation: During the period in which these surveys were performed (1948 and 1953), the Archaic was divided into two cultural units, the Old Quartz Industry (Caldwell 1954) and the Eastern Archaic Stage (now known as the Late Archaic), which succeeded the Old Quartz Industry.

The Old Quartz Industry was distinguished by the presence of what are now called Morrow Mountain bifaces (Coe 1964). In addition, any scatter of quartz without ceramics or other diagnostics was also placed in this category.
The Eastern Archaic Stage (or Stalling's Island Culture) was marked by Savannah River bifaces (Claflin 1931) and fiber tempered pottery.

As is obvious from this discussion, there was no distinction made about the Early Archaic. This phase was not defined until Coe (1964) conducted excavations at the Doerschuk and Hardaway sites in North Carolina.

Miller (1948) provided no chronological ordering of sites located in the Clark Hill Reservoir. His typology is more "functional" than anything else. The only exceptions to this are the discussions of the Lake Spring site (9CB60-61) and the Rembert Mound group (9EB51). In the description of the Lake Spring site, Miller mentioned that the site contained "a very early occupancy in that the cultural remains belonged to a prepottery horizon which probably ranged in time from the beginning of the Christian Era to about A.D. 500" (1974: 28). The Rembert Mound group is specifically discussed as "essentially a single component site which can be attributed to the Lamar Complex and tentatively dated to 1540-1650 (Miller 1948, 1974: 30). Caldwell ordered the sites in Hartwell Reservoir chronologically. His units were the Old Quartz Industry, Kellogg, Woodstock, Etowah, Cherokee and Unknown. Caldwell did mention that no sites of the Eastern Archaic Stage (today the Late Archaic) were found in Hartwell (1974a: 36).

These previous surveys, because of the chronologies employed, gave no reliable estimate of the proportions of the sites by time period.

Landforms: Detailed data are lacking in the reports for Clark Hill and Hartwell Reservoirs. Miller (1974) said "most of the archaeological remains located were found in the valley bottomlands or on the lower slopes of the flanking hills." For Hartwell, Caldwell (1974a) did, in certain cases, discuss landform distributions by chronological type. Old Quartz sites were located on the uplands overlooking the valleys and streams. For the ceramic sites, one has to read between the lines to get the impression that most of these were located in valley bottoms.

Site Size: No data are available for site size for either Clark Hill or Hartwell Reservoir. On other grounds, it can be surmised that some of the sites were quite large, like the Rembert Mound group (9EB51) based on the size of these mounds as reported by Bartram (Harper 1958: 206).

Vegetation: No mention is made by either Miller (1974) or Caldwell (1974a) of the vegetation in these reservoirs. From the information presented above in the landforms section, it appears that survey efforts were concentrated on cultivated lands, primarily in the river or tributary valleys.

Site densities: According to Miller (1974), the size of the Clark Hill Reservoir is approximately 78,500 acres. He reports that 128 sites were found during the survey, which was preformed by two men for five months. Of these, 70 were to be inundated by the reservoir. Using these figures, an estimate of one site per 1121.4 acres is obtained. Using the Laurens-Anderson site density estimate of one site per 11.6 acres, an inventory
estimate of 6767.2 sites in Clark Hill is obtained. Of course, the true figure probably lies between these figures because there were no coverage estimates given by which to modify the original inventory. Caldwell (1974a) reports that 70 sites were found during a one person survey of unknown duration in the Hartwell Reservoir. Of the 70 sites, 8 are listed as being located outside of the reservoir. Hartwell Reservoir is 55,900 acres (power pool). Using these figures, the site density estimate is one site per 901.6 acres. Using the Laurens-Anderson site density estimate, an inventory estimate of 4819.0 sites is obtained. Again, because no estimate is given of coverage it is not possible to make reasonable estimates about site densities in these areas.

Artifact densities: Estimates of this parameter cannot be obtained from the survey reports of Clark Hill and Hartwell Reservoirs because no estimates of site size are given (see above) and no artifact inventories are provided.

Site Types: Miller (1974) categorized the sites in Clark Hill Reservoir into six types: mound, village, camp, workshop, possible pre-pottery and traces. The discussion of typology (1974: 33) makes clear that content and density were the primary defining characteristics. As noted above, chronological problems inhibit the utility of typology for providing an expected range of assemblage variability.

Caldwell does not have a site typology as such, but in the inventory (1974a: 39-43), under the description column, he lists habitation areas (45), chipping areas (2), traces (3), and other sites listed as probable sites of historic Cherokee towns and Fort Prince George (listed as being outside of reservoir). Also, it should be noted that this inventory contains only 54 sites.

Information from Surveys of Nearby Areas

There have been a number of surveys conducted in recent years in other portions of the South Carolina Piedmont. Of these, only one was available and useful for planning. This was "An Archeological Survey of the Interstate 77 Route in the South Carolina Piedmont" by House and Ballenger (1976). This report was consulted, as was House personally and Albert Goodyear, who had conducted a survey in Laurens and Anderson Counties, South Carolina. Goodyear's results had not been published during the planning phase of the Russell survey, so House and Ballenger (1976) was relied on at that time. The following discussion uses data and observations primarily from this source.

Chronology: The Interstate 77 survey yielded evidence of occupation during the Early Archaic, Middle Archaic, Late Archaic, Mississippian and Historic Periods. In addition, many unidentified prehistoric sites were found.
These results contrasted markedly with the results of the previous surveys in the Richard B. Russell Project area, especially in the representation of Woodland and Mississippian components. Employing Hanson's (n.d. a) cultural-historical typology, 33% of the previously recorded Russell sites fall in the Woodland and Mississippian phases, while only 2.2% of the sites in the Interstate 77 project area fit into these periods. These differences are quite striking; although this is probably to be expected, given that the Interstate 77 project area was a narrow 400' corridor that followed a major watershed divide between the Broad River to the west and the Catawba-Wateree River to the east (1976: xv). What could not be evaluated in light of previous data was the representativeness of the number of Unidentified Prehistoric components recovered. This results from the employment of different criteria of categorization utilized during different surveys, and unspecified collection biases employed in earlier Russell Reservoir surveys.

Landforms: The topographic setting of the Interstate 77 corridor is quite different than that of the Russell project area. As mentioned above, the I-77 route followed a major watershed divide, while the Russell project area is a riverine zone with abrupt transitions from the upland surfaces to the river or tributary valley. As a result, the topography of the Russell project area is much more "rugged." This means that fewer different kinds of landforms would have been encountered in the I-77 area as opposed to the Russell Project area. The I-77 landform data could not be generalized to the Savannah to provide estimates of relative intensity of use of different landforms because of the very small amount of alluvial landforms, compared to the Savannah and its tributaries in the Russell project area.

Site size: House and Ballenger (1976: 49,88) provide the first discussion about the measurement of site size in the Piedmont. They acknowledge that measurement of this parameter is extremely difficult in heavily vegetated areas. Many of the sites located by them are known only from 1 x 1 meter test pits placed as parts of a sampling program. An examination of Appendix B (1976: 168-171) shows that information on site extent is minimal, but honestly recorded. For those sites, where size estimates are given, some are in linear feet, that is "at least 700"
long" (38FA118). For those sites with areal estimates, the largest provided is "ca. 300' diameter" (38CS92) which is 1.6 acres. The other estimates are much smaller than this.

These data contrast strongly with the site size data available from the previous surveys of the Russell Reservoir area. There it was seen that of sizes of sites recorded in South Carolina, 74.1% were greater than 2 acres in extent (see Table 19).

The estimates of site size in Georgia from Hutto (1970) are more in accord with the I-77 data. From Table 20, it can be seen that of the 21 sites for which estimates are available, 95.1% are one acre or less in extent. This is apparently a reflection of the fact that Hutto recorded area of collection as site extent, although this is not clear.

As can be surmised from this discussion, the I-77 site size estimates were of little utility for developing a body of expectations about site size. This is perhaps the most difficult parameter to determine in a heavily vegetated area and this point will be returned to later.

Vegetation: Another first for the I-77 survey is the explicit discussion of the effects of vegetation on survey methods and results. The influence of vegetative cover on the estimation of site size has been mentioned previously. In this section, the influence of vegetation on sampling strategy as it affected the I-77 survey will be discussed. A stratified random sampling design was employed. The sampling design selected points around which a 650' x 650' quadrat was staked and inspected. From the discussions of the method, it was clear that the locating and marking of quadrats was quite labor intensive and "frequently unproductive of any archeological data, positive (demonstrating the presence of cultural remains) or negative (demonstrating their absence). The method in this light seems rather inefficient" (House and Ballenger 1976: 60).

Also included in the sampling design was the excavation of two 1 x 1 meter test pits per quadrat. The results of this exercise were equivocal. Ten (8.4%) of 119 test pits yielded artifacts. House and Ballenger suggest that artifact density strongly conditions the effectiveness of subsurface sampling (1976: 63).

The conclusion that can be reached when considering the I-77 survey methods is that vegetation and its effect on reducing surface visibility strongly condition the appropriateness of different strategies and the amount of effort necessary to implement them.

Site densities: The explicit sampling design employed during the I-77 survey permits a fairly accurate estimation of site density. This estimate must, however, be qualified by explicit consideration of some of the difficulties mentioned above. Using 19 sites as the number recovered during sampling and .4 square miles (or 256 acres) as the area covered (House and Ballenger 1976: 53), an estimate of one site per 13.5 acres is obtained. House doubled the number of sites to attempt to correct for bias in visibility, so his estimate is, of course, higher. Another estimate is possible based on the number of sites recorded from
the study area, which was 53, and the size of the study area, 4.75 sq. mi or 3041.8 acres. Using these figures an estimate of 1 site per 57.4 acres is obtained. Applying both of these density estimates to the Russell Reservoir project area, we get for the sampling estimate an inventory estimate of 1959.6 sites. Using the study area estimate of 1 per 57.4 acres, an inventory estimate of 464.3 sites for the Russell Reservoir is obtained. Both of these estimates demonstrate that the 109 sites in the inventory were most surely an under-representation of the total number of sites in the reservoir area. Unfortunately, it is impossible to determine which of these estimates is closer to reality.

Artifact density: This estimate is dependent on careful determination of two things: site content and site size. In the discussion on vegetation above, it was noticed that determination of site size was extremely difficult in heavily vegetated areas. Vegetation also strongly influences the manner in which surface collections can be accomplished. Vegetation cover over a "site" area can be continuous or discontinuous. Surface collections are generally feasible only in cleared areas and it is difficult to surface collect large areas. In the 1-77 study area, this is reflected by the inability of investigators to get an accurate determination of site size. They did correct for this, however, by giving the size of the area collected. Use of this information does permit then, an estimate of artifact density. Using the area collected as 300' diameter and 130 artifacts (excluding fire-cracked rocks) collected within this area, results in a density of 1 artifact per 543.7 sq. ft. for site 38FA100 (House and Ballenger 1976: 168, 172). These authors also gave lineal feet as an estimate of site extent in areas where surface material was only visible in a road. For these sites, density per lineal foot can be computed. Using the data for 38FA118, 700' extent and 127 artifacts collected (House and Ballenger 1976: 169, 183), results in a density of 1 artifact per 5.5 lineal feet. For the Russell Reservoir area, using data from Hutto (1970: 25-26), a density of 1 artifact per 137.9 sq. ft. is obtained for site 9EB88. Using data from 9EB82 (Hutto 1970: 19-20), a density of 1 artifact per 5.7 sq. ft. is obtained. This limited exercise indicates that artifact densities are higher in the Russell Reservoir area than in the 1-77 area. The question remains, however, whether this is an archeological fact or a by-product of sampling bias. In this particular instance, a case for sampling bias can be made. 9EB82 and 9EB88 were collected in plowed fields, while the 1-77 data were not. Because of this, artifact densities from the 1-77 study area do not appear to be effective predictors for artifact densities in the Russell Reservoir area.

Site types: House and Ballenger (1976) did not attempt a site typology, but instead characterized all of the prehistoric sites as "lithic scatters" or isolated finds. Because of this, and the fact that the representation of Woodland and Mississippian sites is minimal (2.2% of total components), it was not possible to employ the results from this study in an estimation of site type variability in the Russell Reservoir area.
A review of the limited number of sites that have been excavated along the Upper Savannah (Claflin 1931; Miller 1949; Caldwell 1953, 1954; Kelly and Neitzel 1961; Lee 1976) indicated that this information would be of little utility for developing survey strategies, especially when these data were compared with that available from the previous surveys in the Russell Reservoir.

What was apparent when comparing the contents of the surface collections with data recovered from excavations, was that the surface collections had many fewer types of artifacts than the excavated collections and no faunal remains. This was to be expected; however, the utility of studying the excavated data is that it would allow, post-survey, identification of rare items. Claflin's (1931) and Miller's (1949) reports discuss excavations of extensive shell middens at two locations along the lower reaches of the Upper Savannah River. The previous surveys of Russell Reservoir indicated that sites of this type were not present. It was also apparent that sites like the Rembert Mound group (Caldwell 1953) and the Chauga Mound (Kelly and Neitzel 1961) were not present. Although it was possible that sites associated with these two might be present within the Russell Reservoir, this could not be determined with certainty. Caldwell's (1954) discussion of the Old Quartz Industry at the Lake Spring site (9CB61) demonstrated the stratigraphic relationship of this industry (Middle Archaic) and the Stalling's Island (Late Archaic).

In summary, data from excavated sites in the Upper Savannah River were of little use in designing survey methods.

Work by Coe (1964) and Chapman (1977) in North Carolina and Tennessee, respectively, conclusively demonstrates that buried Archaic sites are present in the Southeast. This information was of limited utility for planning purposes because of geological and geomorphological differences between their study areas and the Russell Reservoir area. Of use in these studies were the observations on the relationships between channel constriction and alluviation. Alluviation occurs downstream of constrictions after widening results in reduced water velocity, causing deposition of suspended sediments. Inspection of maps of the Russell Reservoir indicated that a number of shoals (channel constrictions) and associated alluvial landforms were present. We were therefore confident that buried sites would be present.

**Historic Sites**

Review of the data from previous surveys in the Russell Reservoir and the surveys of Clark Hill and Hartwell Reservoirs indicated that minimal attention had been devoted to locating Historic period sites. For this reason, no detailed review of these data in terms of their utility will be presented. A review of local and regional histories (Vandiver 1928; Wallace 1934a, 1934b; M'Call 1909; Ramsay 1785; Mills 1826, 1965) indicates substantial, and at times, thriving, occupations of the Upper Savannah region from ca. 1750 to the present. In light of this, the few historic sites that had been recorded (all in South Carolina), could
hardly be considered adequate for planning purposes because the observations above on site size, vegetation, artifact densities, etc., also hold true when evaluating historic site data.

A review of the I-77 data (House and Ballenger 1976) indicates that historic sites were systematically recorded when encountered. Their results indicate occupation from the late eighteenth century to the present. This was expected independent of the recovery of archeological remains. Information more important for planning purposes is absent or inadequate (artifact densities, chronology, site size and landforms). The historic sites are described as "home places" or "scatter of historic artifacts" (1976: 136), but no description is given of the artifacts recovered or the methods of assigning chronology. This report, quite valuable for prehistoric sites, was of almost no utility for planning a survey of historic sites in the Russell Reservoir area.

Conclusions

In light of the above discussions of local, regional and areal data, the following generalization for developing site survey and evaluation techniques for the 1977 field season can be made.

Chronology: Sites from the Early, Middle and Late Archaic and Woodland and Mississippian cultural periods are present in the Russell Reservoir. Observational and methodological biases, however, preclude any attempt at estimating relative proportions of sites of different periods. Information on historic sites useful for planning was lacking on the local, regional and areal levels, although review of local and regional histories did indicate that substantial occupation of the study area occurred.

Landforms: Sites were known to occur on a variety of landforms. Observation of this locational variable, however, was inconsistent or not compatible for generalization to the Russell reservoir. Because of this, there were no bases for estimating the relative frequency of sites on landforms.

Site size: On the basis of previous surveys of the Russell Reservoir, it was known that sites could be as large as 10 acres. A discrepancy was noted, however, in site size estimates between South Carolina and Georgia. Site size data were lacking from Clark Hill Reservoir and Hartwell Reservoir and a review of the I-77 data (House and Ballenger 1976) indicated that this parameter was based on area actually collected or not estimated. No basis for estimating the frequency distribution of site size in the Russell Reservoir area existed.

Vegetation: Brief comments about vegetation are made by Hemmings (1970) and Hutto (1970), but the only discussion of vegetation as it might affect survey design and implementation was by House and Ballenger (1976). Here it was noted that vegetation strongly affects various aspects of site survey and collection.
Site density: Review of this information indicated that little basis existed for estimating site density in the Russell Reservoir area. When Reservoirs, were compared with surveys performed more recently (House and Ballenger 1976; Goodyear, Ackerly and House n.d.), it was apparent that these earlier surveys had not located all of the sites in these reservoirs. Using the Laurens-Anderson density estimate of 1 site per 11.6 acres, it was obvious that only a small fraction of sites had been located. Quadrupling the Laurens-Anderson estimate to 1 site per 45 acres would still project an inventory of 592 sites, which is substantially more than the 109 sites already discovered in the Russell Reservoir. It was felt that because coverage information was non-existent for the surveys on the Savannah River and the project area has had different boundaries, there was not a secure enough foundation for making an estimate of site density. Informally, an inventory estimate of 400-500 sites was discussed by project members prior to initiating fieldwork.

Artifact density: Collection procedures, differences in recording site size or extent and lack of reporting of artifacts recovered prevented obtaining reliable estimates of artifact densities for different types of sites or for sites arranged in a cultural-historical framework. Artifact densities could be estimated, but only for a limited number of sites. These density estimates seemed to be dependent on ground surface visibility.

Site types: The criteria for developing site typologies and the kinds of typologies employed were not uniform in the data reviewed. This, of course, would be expected, given that these surveys were conducted over a 28 year period between 1948 and 1976. Survey data reviewed did indicate a range of site types were present. Whether this range of variability actually encompassed the variety of site types present could not be determined. This also precluded any estimates of the relative proportions of different types of sites.

Evaluation of Potential Domains of Significance

Review of the data from the previous surveys of the Russell reservoir in terms of anticipating the significance of those resources and resources to be located during the 1977 field season was considered to be premature. On strictly procedural grounds, none of the known sites have been documented to the level required by Appendix A, 36 CFR 63: Draft. This level of documentation is, of course minimally necessary for determining the eligibility of a resource for nomination to the National Register of Historic Places. Eligibility in this instance is synonymous with significance.

From a different perspective, however, it was apparent, when reviewing the data that a wide range of significant properties was probably present. This is especially true when the criteria for evaluation for possible inclusion in the National Register of Historic Places (36 CFR 60.6) were considered. Criterion (d), "that have yielded, or may be likely to yield information important in prehistory or history," could be broadly applied to any of these resources because this area can be realistically described as unknown archeologically.
The question at this juncture is one of strategy. Does one adopt a liberal interpretation of eligibility (significance) in terms of 36 CFR 60.6 (d) and develop what is, in effect, a "shopping list" of potential domains of significance? As was noted above, resources present indicated that the area had been occupied for over 10,000 years, and regardless of criteria employed a range of site types was present. Given that the project area is located in the eastern United States, and more specifically, within the Southeast, as these are viewed archeologically, it is easy to see that an incredible number of potential domains of significance could be identified. Where would one begin this catalogue of potential domains of significance? The point of this is that the data available to us could not realistically exclude any potential domains of significance.

It might be possible, in light of these considerations, to develop strategies that will permit, with some reliability, the exclusion of some portion of these potential domains. How might one go about developing methods for excluding certain domains of significance? The comments offered here refer strictly to what has been called "scientific" significance (Schiffer and Gummerman 1977: 241; Schiffer and House 1977: 249). Research potential is presumably demonstrated when the presence or absence of certain kinds of data is determined. For example, if the procurement and distribution of nonlocal raw materials is of interest, then sites which have artifacts indicative of the use of nonlocal raw materials can be considered likely to yield information important to prehistory or history.

There is more to significance than the measurement or observation of site contents or other attributes of interest. It is equally important to assess the integrity of a resource. Although the importance of this criterion is explicitly acknowledged by a number of authors (King 1977; Schiffer and Gummerman 1977; McMillan, et al. 1977; Glassow 1977), very little concern is evidenced for the observation and measurement of this significance criterion, except by Glassow, and his discussion of this will be deferred for the moment. McMillan, et al. suggest that "the Register criteria would seem to be directed largely at the role of integrity in contributing to the significance of a site in terms of its public appreciation potential" (1977: 33). To be sure, McMillan, et al. (1977) do discuss the relationship between integrity and research potential, but no concern is evidenced for the determination of integrity. Although integrity might be thought of as a static concept, it is clear that it is not. King (1977: 97-98) discusses integrity and suggests that its appropriateness varies with the unit of analysis. One exception to this general picture of neglect is Glassow (1977). He employed integrity as one of five properties of an archeological resource that should be monitored when decisions regarding preservation of sites is made. Unfortunately, his discussion does not contain any indication of how this was measured. More attention should be paid to the measurement of this variable in order to understand how variability in integrity through a range of potentially significant sites might affect the analytical utility of data appropriate to the research values these sites might possess. It is obvious that plowing, pot hunting and erosion of sites will affect the research values of the data remaining on these sites. Intrasite activity analysis would be seriously hampered by any activity or process that affects the content and distribution of artifacts within a site. This is not to say that such a site would not have any research values, only that, in this instance, certain
research domains have to be excluded when considering their significance. Knowledge of varying levels of integrity is also necessary for designing data recovery strategies. Three-dimensional piece plotting in plowed fields may be expecting too much.

Field studies must be conducted with observational methodologies that monitor not only research values but also the "integrity of location, design, settings, materials, workmanship, feeling, and association" (36 CFR 60.6).

It was with these considerations in mind that we decided to defer discussion of significance until we had some ideas about what might be realistic goals given systematically collected data on both the content and the integrity of the resources in the project area. Project personnel were broadly familiar with the variety of research domains that would ultimately be represented in the inventory of sites. It was judged most appropriate, however, to concentrate efforts on the development of strategies that might allow an assessment of the representativeness of a site or sites, and measures of integrity of those sites in terms of how this would condition research potential and appropriate data recovery procedures.

Background information did indicate that during the Historic period, land clearing and intensive upland cotton agriculture caused severe erosion of the uplands and modifications of the drainage patterns. As a result, vast tracts of the southern Piedmont have been eroded down to the subsoil (Trimble 1974; see also Most, Brooks, Chapter I). This is a generalized picture, however, because areas do exist where some or all of the A horizon still remains. What would be important here is not that the eroded site is less significant because it is more disturbed, but that the research potential of this resource has been modified, and it was necessary to know the extent of the modification.

Research Design

In view of the above consideration, it was decided that the field study should concentrate on the development of a systematic characterization of the archeological and historic resources within the project area. It was known on the basis of available data, that a variety of research and cultural values was present, but shortcomings in the collection of those data prevented any concrete delimitation of possible research domains. Because many interesting research domains require observations beyond the single site level (settlement patterns, lithic resource procurement patterns to name but two), it was thought that long term research interests would best be served by the design and implementation of strategies that did not presuppose the relative importance of certain kinds of observations as these observations might relate specific research values. What was faced here was the research design paradox: research designs improve "research efficiency by providing criteria for determining the relevancy of data..." (Goodyear, Raab and Klinger 1978: 161). At least implicit here is that research designs exclude some observations. The paradox
results when another responsibility—our responsibility to the scholars and public of the future—is considered. Lipe (1974) and Glassow (1977) have discussed this with regard to the preservation of archeological and historical resources. Lipe (1974) has suggested that this responsibility can best be met by establishing archeological preserves which contain representative samples of archeological and historic sites (Lipe 1974: 226-229). Lipe makes a critical distinction between significance and representativeness as criteria used to determine what is preserved. Glassow (1977: 414) noted that representativeness needs to be defined. He suggests criteria that relate to properties of archeological resources should be preserved. He selects five properties: variety, quantity, clarity, integrity and environmental context.

While these discussions refer to strategies of preservation, the general intent of these arguments, that is, our responsibility to the future, can be generalized to the present context. Most of the resources known and those expected to be located would be subject to inundation. The question as to whether or not inundation means destruction or preservation will be left open. What is important for present purposes is that inundation of these resources removes them from the preview of contemporary scholars. To the extent that these resources are impacted adversely removes them from the preview of future scholars.

Lipe (1974: 234-236) addresses this point directly. The conduct of research in situations where destruction and/or modification of the resource base is anticipated must explicitly consider the research needs of other scientists, both now and in the future. As he says, "the salvage archeologist is also working for the whole profession" (1974: 234).

Faced with these concerns, the need of a research design to structure observation and increase research efficiency, and the responsibility to the scholars and the public of the future, it was imperative that a plan of study be devised to address both needs. It would be necessary to monitor observations important to contemporary and future (those which cannot be anticipated) research values, Glassow's suggestions were chosen as a guiding strategy.

In accordance with this, the field study was designed to monitor at the site level, measures of content (artifacts, features) and integrity (evidence of disturbance). The second component of the field study was the implementation of a sampling strategy that would result in the location of a representative sample of the variability in site types present in the survey area.

The methods, techniques, and observational categories used in collecting and recording sites and the sampling designs employed, will be fully discussed in the chapter on methods which follows.
Kinds of Sites Expected and Their Appearance

It was quite clear from the previous surveys of the Russell Reservoir area (Hemmings 1970; Hutto 1970; Hanson n.d. a, n.d. b) and other surveys in the Carolina Piedmont (House and Ballenger 1976; Goodyear, personal communications) that the majority of the sites that would be encountered would be scatters of artifacts on land surfaces. Two mounds were present in the project area, 9EB85 and 9EB86, and because coverage was biased to open ground, it was not clear if additional mounds would be present, but they could be anticipated. Also known to occur, and therefore expected, were standing historic structures used for domestic, commercial or industrial purposes. In the river, rock alignments, presumably fish weirs (Hemmings 1970: 48-50), were known to occur, although there was no basis to know whether or not additional, undiscovered rock alignments might be present.

From a discovery standpoint, the most salient characteristic of artifact scatters is their unobtrusiveness (cf. Schiffer, et al. n.d.). For the mound sites, descriptions of them indicated that in heavily vegetated settings, these would probably not be obtrusive or obvious. Standing structures or parts of structures would presumably be obstructive, but again the vegetation factor (House and Ballenger 1976: 60) made it impossible to suggest how close an observer would have to be in order for a standing structure or feature (like a chimney) to be obstructive. The obtrusiveness of rock alignments in the river would be dependent on the level of water because this fluctuated greatly due to water releases from Hartwell Lake upstream.

Artifact scatters were the predominant type of resource to be expected, and because these were unobtrusive, a discovery technique permitting close, on-the-ground inspection was necessary. Pedestrian survey best serves this purpose and was the strategy adopted. It could also be anticipated that visibility of site surfaces because of vegetation would be minimal. To correct for this, sub-surface testing and ground clearing would have to be necessary components of the pedestrian survey. The discovery of more obstructive sites would also be possible with this technique.

Buried sites could also be expected within the project area based on the work of Miller (1949) and Caldwell (1953, 1954a) in the Clark Hill reservoir, and Coe (1964) on Yadkin and Roanoke Rivers in North Carolina. It should be noted that these geological settings are somewhere different than that of the Russell Reservoir area and that conditions for extensive alluviation may be better in those settings than in the survey area. This, of course, is a research problem that needs to be resolved by detailed geomorphological studies of the riverine zone. In any event buried sites were anticipated (Hanson n.d. a: 13). Chapman (1977: 2) has developed a model for the location of buried sites. This model suggests that the most likely places for these sites would be: 1) downstream of constrictions in the river channel, 2) upstream from constrictions where water backs up causing sediment deposition, 3) lower ends of islands, based on empirical evidence and, 4) the inside of river
bends where deposition occurs during meander formation. During the field study, through topographic map inspection and on-the-ground reconnaissance, the goal was to locate areas meeting one of these four criteria. Testing of these settings would be accomplished through the use of heavy equipment.

Possible Sources of Error or Bias

A possible source of error may exist because none of the personnel who performed the pedestrian survey met the qualifications for an historic archeologist as presented in 36 CFR 66, Appendix C.1(b). We attempted to correct this shortcoming in two ways: 1) survey personnel were instructed to observe all types of artifacts of the Historic period, which would be, on the basis of available information, ceramic and glass sherds. No attempt was made in the field to type or "date" these artifacts. Identification of artifacts at the Institute of Archeology and Anthropology was made under the direct supervision of specialists qualified to make such identifications. 2) The inclusion of Mr. Stanley A. South of the Institute of Archeology and Anthropology, University of South Carolina on the field study team as a consultant for the Historic sites research. Mr. South has had over twenty-five years experience in both prehistoric and historic site investigations in the Southeast (See Appendix I).

Another possible source of error may be the lack of a person qualified to observe and evaluate architectural properties in the project area as this specialty is defined in 36 CFR 66, Appendix C.1(c). Background information, including field inspection by current field study team members prior to the initiation of field work, indicated that few standing structures were present in the project area. To save the expense of identifying and employing a qualified architectural historian for what might possibly be just a few standing structures, extensive photographic documentation was made of all architectural features (Appendix G). This included free-standing chimneys and foundations. Because this project was likely to result in further data recovery operations prior to inundation, it was felt that the best strategy was to transmit this information to Interagency Archeological Services-Atlanta as part of this report. Personnel there could evaluate this documentation and, if necessary, identify a qualified architectural historian to assess the potential significance of these architectural features. In addition, field study team members engaged in research on comparative architectural history (see Brooks, this volume).