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An Archeological Survey of Duke Power's Oconee - Bad Creek 500 KV and Jocassee - Bad Creek 100 KV Transmission Lines, Oconee County, South Carolina

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AN ARCHEOLOGICAL SURVEY OF DUKE POWER'S OCONEE - BAD CREEK 500 KV AND JOCASSEE - BAD CREEK 100 KV TRANSMISSION LINES, OCONEE COUNTY, SOUTH CAROLINA

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Several persons deserve thanks for their contributions to this study. Mr. Robert A. Cloninger and Mr. James E. Chapman of Duke Power Company provided transportation in and around the survey area and were extremely cooperative in every phase of the study. Mr. Eric Neil of the Institute staff assisted in the fieldwork portion of the study. Ms. Susan Jackson edited the manuscript, Mr. Gordon Brown prepared the photographs, Mr. O'Neal Jackson drafted the maps, and Ms. Cindy Mahoney typed the final copy. Dr. Robert L. Stephenson, Director of the Institute of Archeology and Anthropology, provided overall supervision of the survey project.

INTRODUCTION

The proposed Bad Creek Project of Duke Power Company involves the construction of two transmission lines in Oconee County, South Carolina. A 500kv transmission line (Oconee-Bad Creek) will originate at the Oconee Nuclear Station, run parallel with an existing 230kv line for approximately 11 miles, and continue across new ground, around the southern portion of Lake Jocassee (Fig. 1). The right-of-way across new ground will include a 100kv transmission line (Jocassee-Bad Creek) originating at Jocassee Dam and paralleling an existing 230kv line for approximately 2 miles (Fig. 2).

Construction and maintenance of these two transmission lines may have an adverse effect on any historic or archeological sites located within the proposed rights-of-way. Archeological sites in this area may be expected to occur close to the surface of the ground and thus be vulnerable to vegetation clearing activities and tower construction. The limited surface erosion that necessarily accompanies all clearing and construction activities in the Piedmont can also have an adverse effect on archeological sites. The increased access to remote areas provided by transmission line construction in general allows further potential disturbance by movement of heavy equipment, dumping, and vandalism. A typical 500kv tower is shown as Figure 3, and a typical cleared corridor as Figure 4.

The Institute of Archeology and Anthropology was contracted to survey the potential impact area of these two proposed transmission lines. The goals of this survey were to locate all archeological and historic sites within the impact zone, to assess the significance of these, and to prepare a plan for management of any archeological and historical resources located.

Five archeological sites were discovered within or near the impact zone of the two transmission lines. All of these sites are badly disturbed from past activities and of such low artifact density that they possess little, if any, further data significant to studies of the history and prehistory of the area. It is recommended that no further consideration of archeological and historic resources within the transmission line rights-of-way is necessary.

A description of data recovered and methods employed during the survey study is presented to allow evaluation of the adequacy of the study for management decision-making and to allow incorporation of new information into ongoing prehistoric and historic research.

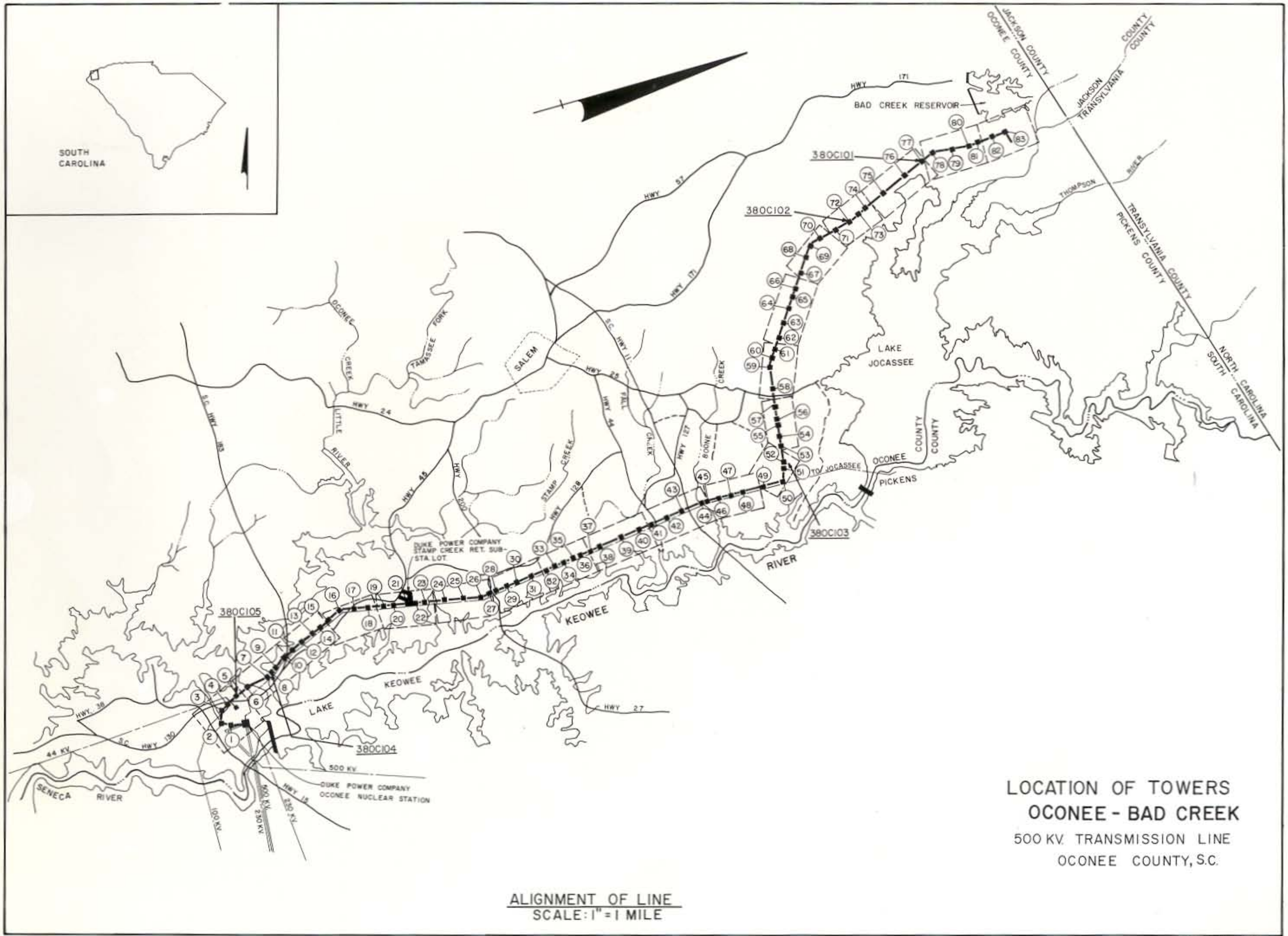

FIGURE 1. Route alignment and tower locations for the Oconee-Bad Creek 500kv transmission line, with archeological site locations indicated.

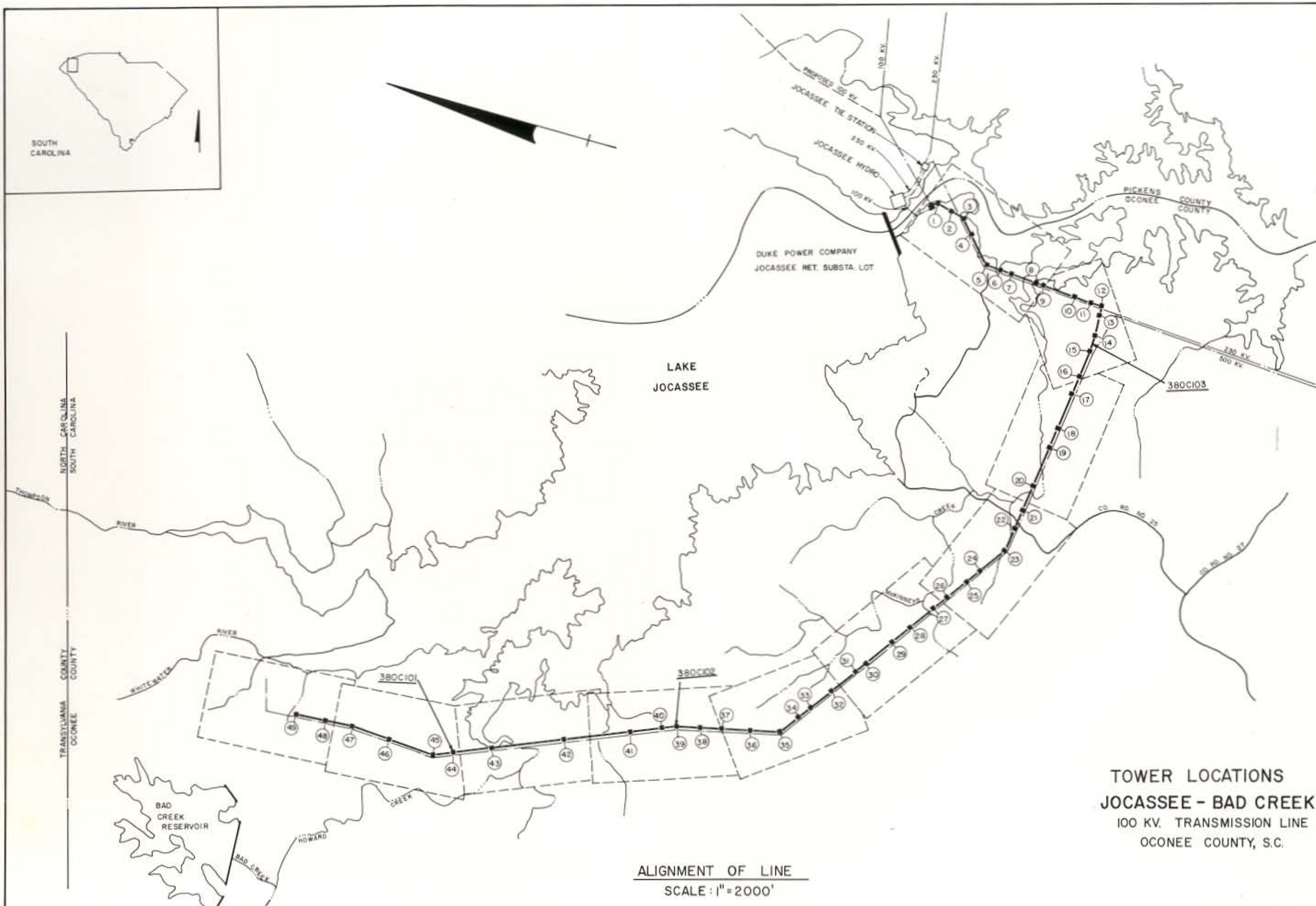

FIGURE 2. Route alignment and tower locations for the 100kv Jocassee-Bad Creek transmission line, with archeological site locations indicated.

FIGURE 3. Typical 500kv Tower existing near Oconee Nuclear Station. Construction of such a tower poses severe destruction of potential archeological sites within its approximately 50-foot square footing area.

FIGURE 4. Existing 230kv Oconee-Jocassee transmission line corridor in lower part of project area. Vegetation clearing and tower construction may have substantial impact on fragile, close-to-the-surface archeological sites. Corridor will be extended to the right to allow construction of parallel 500kv Oconee-Bad Creek Transmission Line.

ENVIRONMENTAL AND ARCHEOLOGICAL BACKGROUND

General Environmental Background

Modern anthropological and archeological research involves consideration of environment as a basic factor in human adaptation over time. The brief description of the environment presented below provides an introduction to basic variables considered important in understanding human settlement and subsistence in the area.

The project area lies within the southernmost portion of the Southern Blue Ridge Province as defined by Fenneman (1938) and within the general cultural-natural Appalachian Summit Area defined by Kroeber (1963:95). The Blue Ridge Province is characterized by high mountains; among them is the highest peak in eastern North America, Mt. Mitchell (6,684 feet). While the project area is within this Blue Ridge Province, it is located very near the southern edge of the province overlapping in part the gradually changing interface with the rolling uplands of the Piedmont Province to the south (Fenneman 1938). Elevations within the project area range from about 800 feet above sea level near Oconee Nuclear Station to about 1800 feet near the proposed Bad Creek Reservoir.

The northern half of the project area is very rugged, with elevations ranging from 1000-1800 feet. In this section the transmission line corridor crosses several small streams originating at higher elevations to the west and running through deep valleys into the Whitewater River (Lake Jocassee) to the east. Figures 5 and 6 present views of this upper section of the project area.

The southern half of the project corridor runs parallel to the Keowee River (Lake Keowee) about one mile to the east; in this area the corridor crosses numerous ridges and valleys containing small creeks and intermittent streams that empty into the Keowee River. This lower section of the project area is considerably less rugged than the upper section, with elevations ranging between 800 and 1000 feet. A view of this lower portion of the project area is shown in Figure 4.

The bedrock of the project area, and Oconee County in general, consists of a complex, folded series of metamorphic and metasedimentary rocks intersected by a number of plutonic intrusions (United States Department of Agriculture 1958: 84). Granitic gneiss and hornblende gneiss are the most commonly occurring rocks in the project area, and they include small pockets of biotite, feldspar, and quartz (United States Department of Agriculture 1958: 84-85).

FIGURE 5. Thick vegetation and rugged terrain of upper portion of project area.

FIGURE 6. Upper portion of project area, showing typical tower location. Whitewater River Valley (Lake Jocassee) shown to east and south. Tower 77 (500kv) is planned for this ridge crest. A single chert flake was found at this location (38OC101).

This locally occurring quartz was used by prehistoric populations for manufacture of stone tools. Other rocks or minerals present in the area do not appear to have been directly utilized by prehistoric populations, although biotite (mica) from the general Blue Ridge area was a trade item during prehistoric times over much of eastern North America, and small quartz crystals were also apparently collected and traded (Willey 1966). Historic period people of European origin utilized native stone, especially granite and gneiss for construction purposes, and there has been limited, financially unsuccessful, mining for gold, talc, soapstone, and other minerals in the Oconee County area (Johnson 1959).

Dominant soils in the project area are those of the Hayesville-Cecil-Halewood association, with pockets of Talladega-Madison soils in excessively drained areas characterized by steep slopes (United States Department of Agriculture 1958). Hayesville-Cecil-Halewood soils are moderately shallow to deep, well-drained soils. They are suitable for agriculture and for oak-hickory forest development (United States Department of Agriculture 1958: 66ff.), and are thus generally supportive of human occupation and exploitation of the area. The well-drained alluvial soils of the Keowee and Whitewater River valleys adjacent to the project area are relatively rich and support high agricultural productivity and a wide variety of wild plants exploitable by prehistoric groups. The Talladega-Madison soils in and near the project area are of poor productivity potential and are located on very steep slopes.

Climate within the project area is generally mild, although there is variation in temperature and rainfall dependent on elevation (United States Department of Agriculture 1958: 83-84). The northern portion of the project area averages 71°F. in July and 39°F. in January, 5-10°F. cooler in summer and winter than the southern portion of the project area. Average annual precipitation for the northern portion of the area is about 80 inches, while in the southern portion it is approximately 55-60 inches. Precipitation is fairly evenly distributed throughout the year; however, December and August receive slightly greater amounts of precipitation than the other months. An average of about three inches of snow falls each year in the southern portion of the project area, with slightly more in the northern portion. Average frost-free growing seasons range from 189 days in the northern part to 203 days in the southern part. In general, the climate is mild and is amenable to relatively high agricultural yield (especially corn) and to relatively large populations of exploitable natural vegetation.

The project area's natural potential vegetation is deciduous forest dominated by oak. The northern portion of the project area can be considered part of Shelford's (1963: 17-50) Northern and Upland Forest Region with a mixed oak-chestnut forest domination. This association grades slowly toward the southern portion of the project area where the potential vegetation would include fewer chestnut and more hickory and pine (Shelford 1963: 19). Chestnut blight in the early 1900's has greatly reduced or eliminated this tree and extensive timbering, primarily during the last 100 years, has acted to decrease hardwoods in favor of pine. Acorns, hickory nuts, and chestnuts were probably exploited heavily by prehistoric human groups of the area. In addition, these nuts were a very important food resource for populations of deer, turkey, bear, and other animals exploited by humans. A great variety of herbaceous plants is present in the area and many were used by prehistoric groups as food and for medicinal purposes (Mooney 1891: 324).

Fauna in the project area include most eastern species of mammals, birds, and reptiles (Shelford 1963: 23). Trout were once abundant in streams and rivers of the area, as were perch, bass, pike, sturgeon, and catfish (Shelford 1963: 23). Probably most important to prehistoric groups were deer, raccoon, beaver, bear, rabbit, fox, squirrel, turkey, and various fish (Keel 1976: 9, 207; Dickens 1976: 202-203). Fur-bearing mammals were important for their hides as well as their food value, and animal bones were frequently fashioned into tools (Dickens 1976: 203).

This general picture of the environment of the project area indicates resources and constraints present today and in the recorded past before encroachment of European colonization. Climatic change over the last 25,000 years has been shown to have occurred, and to have produced significant variation in this environmental picture (Watts 1971; Whitehead 1973; Carbone 1974). Following, in general, Olafson (1971) and Bryson, Baerreis, and Wendland (1970), four major climatic episodes can be defined for the southeast covering the last 25,000 years. These are (1) the full-glacial from 23,000 to 13,000 B.C., (2) the late-glacial from 13,000 to 8,000 B.C., (3) the post-glacial from 8,000 to 3,000 B.C., and (4) the recent period from 3,000 B.C. to the present.

During the full-glacial period temperatures were much lower than today, especially in winter, with relatively less annual precipitation. Vegetation in the project area was probably boreal, with spruce, pine, and fir species dominant. Faunal biomass was probably considerably lower than today. Small, isolated glaciers may have been present at high elevations in the general Blue Ridge area.

The late-glacial episode shows evidence for a shift from a boreal forest type to a general northern hardwood type. Oak, chestnut, and hickory were dominant by the end of the period.

From about 8,000 to 3,000 B.C. oak-hickory and oak-chestnut forests reached their maximum development. Higher temperature and lower precipitation than today are hypothesized to generally characterize this period, but data from the Southeast in particular, are lacking. Present-day faunal communities probably became dominant early in this episode.

The recent climatic episode is hypothesized to be characterized by a general increase in precipitation and decrease in temperature. Within the upper Piedmont and lower Southern Blue Ridge areas, however, there was probably little change in vegetation patterns except for possible replacement of chestnut by hickory in the upper Piedmont. There may have been some shrinkage in deciduous forest areas or in productivity, as has been hypothesized for the Coastal Plain and lower Piedmont of the Southeast.

Archeological Background

Earliest evidence of human occupation of the Appalachian Summit area indicates that man was present at least by 10,000 B.C. (Williams and Stoltman 1965: 669-683; Holden 1966: 81; Keel 1976: 17). The environment of the project area at that time would have been boreal, with a much lower biomass available for human exploitation than today. Indications are that the general Summit area was very sparsely occupied during this time. Artifacts dating to the post-glacial episode are somewhat more numerous in the Appalachian Summit (Keel 1976: 17), but indicate very limited use of the area until perhaps 4-5,000 B.C. when numerous small campsites began to be established (Holden 1966). Although detailed data are lacking, Keel (1976) and Dickens (1976) suggest for the Appalachian Summit area the beginnings, at about 1,000 B.C., of a shift toward a more sedentary, riverine subsistence-settlement system.

This expansion after 5,000 B.C. of human occupation over the general Summit area is correlated in time with the expansion of the deciduous forest. It may be hypothesized that prehistoric groups moved into the area at that time and developed a subsistence-settlement system efficient for exploitation of the floral and faunal resources of the newly developed oak-hickory-chestnut forest. A slight change in the environment after 3,000 B.C. may have decreased forest productivity and this, in conjunction with increased population and increasing reliance on agriculture, led to a shift toward riverine settlement concentration.

The detailed development and testing of hypotheses related to these generalized patterns depend on future problem-oriented research in the region. Presentation of such generalized hypotheses, however, allows the development of preliminary criteria of site significance and the formulation of a basic fieldwork and analytical plan.

A general cultural-historical sequence has been formulated for the prehistoric eastern United States (Griffin 1952; Willey 1966). This general sequence has been refined and developed in more detail for the Southeastern Piedmont and Appalachian Summit areas by Coe (1964), Wauchope (1966), Keel (1976), and Dickens (1976). Table 1, following Keel (1976: 16-19) and Dickens (1976: 9-15), presents this basic sequence as it might be expected to occur within the project area along with brief descriptions of general characteristics.

Unpublished research by John Combes (notes on file, Institute of Archeology and Anthropology) in the Keowee, Whitewater, and Toxaway River valleys adjacent to the project area identified Early Archaic period and later components corresponding to the basic sequence presented in Table 1. Most of the sites found and studied by Combes are of the Mississippian period and represent relatively stable villages that were economically dependent, at least in part, on maize agriculture. Information available on these sites provides little data useful in formulating a pattern of upland exploitation by human groups during this period. At the Warren Wilson site in Buncombe County, North Carolina, Mississippian period features contained, in addition to cultigens, evidence of wild plant products such as hickory nuts, acorns,

TABLE 1

ARCHEOLOGICAL SEQUENCE EXPECTED IN THE PROJECT AREA*

Date	Period	Phase	Characteristics
A.D. 1,900		19th Century	Replacement by European-American homesteads and farms.
A.D. 1,820	Euro-American Protohistoric	(Late) Qualla	Europeanization of native technology, economy, and settlement patterns.
A.D. 1,650	Mississippian	(Early) Qualla	Distinctive stone tools; distinctive pottery; sedentary villages; platform mounds; maize bean, squash agriculture with hunting and gathering.
A.D. 1,450		Pisgah	
A.D. 1,000		Connestee	Distinctive projectile points; ground stone tools; soapstone vessels; distinctive ceramics; sedentism more evident; hunting, gathering, and some horticulture.
A.D. 300	Woodland	Pigeon	
200 B.C.		Swannanoa	
800 B.C.		Otarre Savannah River	Distinctive projectile points; ground stone tools; soapstone vessels; hunting and gathering.
2,000 B.C.	Archaic	Guilford Morrow Mountain	Distinctive projectile points; hunting and gathering; large increase in number of sites.
6,000 B.C.		Stanly Kirk Palmer Hardaway	Distinctive projectile points; hunting and gathering.
10,000 B.C.	Paleo-Indian	Clovis	Fluted projectile points; nomadic hunting (possibly of now-extinct animals) and gathering of wild plants.

* After Keel 1976 and Dickens 1976.

walnuts, and butternuts (Dickens 1976: 204). The relative amount of these wild plant products indicates their importance to the diet; it is probable that generally similar populations in the Keowee, Whitewater, and Toxaway River valleys to the south were also dependent in part on such foods. These wild plant products, along with deer, turkey, and small mammals, were probably gathered in upland areas, indicating exploitation of that zone, as well as the potential for finding evidence of small hunting and gathering camps dating to the Mississippian period within the project area.

Extensive gathering of wild plant products in upland zones probably also occurred during the Woodland and Archaic periods (Caldwell 1958; Sears 1964; Willey 1966; House and Ballenger 1976). Data indicating subsistence practices by groups near the project area were recovered at the Wild Cherry site (38PN22) in the Keowee River Valley (notes on file, Institute of Archeology and Anthropology). At 38PN22, a probable Late Woodland campsite, several hearths and storage pits were found. One of the storage pits contained more than 60 pounds of charred acorns, indicating extensive gathering of these by the group occupying the site. Temporary camps or extractive stations in the uplands might thus be expected to be a part of a Late Woodland settlement pattern. Evidence of such camps may or may not be recoverable archeologically, depending primarily on whether or not stone tools or pottery were manufactured, modified, or used there. Holden (1966) reports evidence in Transylvania County, North Carolina, just to the north of the project area, small scatters of stone and pottery artifacts in upland areas, which may represent such temporary camps during the Archaic and Woodland periods. Clearly, the possibility of discovering such sites exists in the project area.

Sites other than such small, temporarily occupied camps might also be predicted for the project area. Brooks (n.d.) hypothesized the establishment of seasonal base camps in the Piedmont inter-riverine upland zone during the Middle Archaic period. Such base camps would in turn involve a network of more temporary extractive stations and be designed to exploit deer, as well as acorns, hickory nuts, and other wild plant products as these become available in the upland during the fall and early winter. Brooks (n.d.) also postulates a general movement back to the riverine zone to exploit fish, migratory waterfowl, and floodplain plant resources available from late winter through the spring and summer to early fall. If this general hypothesis for settlement-subsistence organization during Middle Archaic times is correct, we would expect somewhat larger, archeologically recoverable sites in the uplands dating to the Middle Archaic period.

Prehistoric archeological sites not related to subsistence or habitation activities might also occur within the project area. Little is known of burial practices of prehistoric groups present in the general area. While indications are that, within the Appalachian Summit region, burial during the Mississippian period was in and near stable, riverine villages (Keel 1976: 213-232; Dickens 1976: 131-132), Woodland and Archaic burial practices are unknown. General sources for eastern North America and the Southeast (Willey 1966; Sears 1964) indicate a wide variety of burial practices over space and time. It is possible that during the Woodland period, small burial mounds similar to those found in the Midwest, and especially well-documented for Illinois (Willey 1966), were placed in upland areas near riverine villages.

The character of Historic period, European-American archeological sites that might be predicted for the project area is not well known. First settlement began in 1761 with the establishment of Fort Prince George in the Keowee River Valley adjacent to the project area (Oliphant 1964). Several wars with the Cherokee were fought in the late 1700's using Fort Prince George as a base, although its primary function was that of a trade outpost to protect British-American interests among the Cherokee. In the early to mid 1800's small settlements were established in the area and were probably restricted to the river valleys. The uplands of northern Oconee County have never been extensively farmed, but commercial timbering in the area began in the late 1800's. Historic sites that might occur in the project area include early settler cabins and stills, as well as specialized, temporary camps or activity centers associated with timbering.

Any well preserved archeological sites discovered in the project area could add significantly to our understanding of prehistoric and historic occupation and use of the region. Data regarding site size and function are at this time most critical. Especially important would be data that would allow placement of the site's use in specific seasons of the year. Such data is essential to understanding the settlement system utilized by past populations. Site function is best inferred, at this time, by an analysis of the frequency of different types of artifacts; such frequencies are most reliable when a large sample of artifacts can be collected. Also important in inferring site function are estimates of site size and the patterns of artifact dispersion within the site. Data regarding seasonality of a site are very rare. Such data would include the presence or absence of different plant and animal remains; these are usually preserved only in a charred state within a hearth or other fired area. Of critical importance then would be discovery of hearths or other fired features. Such features may also produce material datable by radiocarbon analysis, and thus assume even greater importance.

Sites containing artifacts diagnostic of specific cultural-historical time periods because of their style of manufacture could also be very significant, in terms of both confirming the general cultural-historical sequence for the region and dating specific types of sites (and perhaps, thus, specific settlement-subsistence patterns) to certain time periods. In addition to cultural-historical and settlement-subsistence data, artifacts providing evidence of the existence and nature of inter-regional trade networks would be significant. Patterns of occurrence of exotic materials would be important in formulating specific hypotheses about inter-regional trade.

The recognition of these data classes as potentially providing significant information aided in the formulation of a plan for the survey fieldwork. This plan is discussed in the section to follow.

SURVEY METHODS

Before fieldwork began, several inventories were checked to determine the existence within the project area of recorded archeological and historical sites. No sites in the impact area are currently listed on, or as being eligible for, the National Register of Historic Places, and no sites are recorded for the area in the files of the Institute of Archeology and Anthropology. Early maps of the region (Cummings 1962; Mills 1965) show no historic features within the project area.

Field methods utilized in the survey include inspection of the ground surface for artifacts and other evidence of human occupation and excavation of small (ca. 25 cm square) shovel tests in areas where vegetation obscured the ground surface or where buried materials might occur. Because so little is known of the nature of or expected frequency of sites that might occur in the project area, it was decided to sample the corridor, to evaluate the results, and to recommend further survey if additional significant sites can be predicted for the unexamined portions of the project area. The sample selected for inspection included all areas of tower construction along both transmission line corridors, except for the already-disturbed portion of the 100kv line south of Jocassee Dam.

In the northern portion of the project area, between the Bad Creek terminus of the proposed lines and their junction with the existing 230kv Oconee-Jocassee line, tower construction will provide the major potential impact. A substantial portion of the proposed corridor will not be cleared of vegetation nor will it incur any other form of land disturbance. Tower construction areas within this portion of the project area therefore provides a high percentage sample of the actual impact zone.

The southern portion of the project area, paralleling the existing 230kv Oconee-Jocassee line, will require more extensive vegetation clearing along its length. Inspection of tower areas in this portion provides a lower percentage sample of the impact zone.

Tower areas have certain advantages as sampling units. They are frequent, regular in size and spacing along the corridor, and each had already been staked on the ground and recorded on detailed project maps before the survey began. The only disadvantage in using tower areas as sampling units is that they are not fully representative of the topography of the project area. Tower areas occur more frequently on crests, ridge tops and other high areas than in valleys and low areas. This was not felt to be a great disadvantage to the survey, however, for three reasons. First, this ridge top bias is also present for actual areas of impact, particularly in the northern portion of the project area. Second, Piedmont archeological sites appear to be strongly biased toward ridge tops and other high areas (House and Ballenger 1977: 103). Third, much more than just the tower areas were actually observed during the survey. Travelling to and from each tower location allowed inspection of much greater area, especially in the lower portion of the project area.

Of the 83 tower locations in the 500kv line, four near the Oconee Nuclear Station were disturbed by plant construction in that area so as to preclude the possibility of sites occurring. These were not checked. Three others along the corridor were not checked because access to them was too difficult.

Eleven of the 49 towers planned for the 100kv transmission line were disturbed by previous construction, and further impact was not considered to be substantial. These tower areas were excluded from the sample. Of the remaining 38 towers, 2 were not checked because of access difficulties, leaving 36 tower areas in the sample. Tables 2 and 3 present summaries of the survey results for all tower areas in the 500kv and 100kv lines.

For each proposed tower a 50 foot square area was closely inspected. In many of the areas the combined effects of past timbering and erosion created a surface that could be quickly examined for artifacts. In other areas trees, bushes, and leaf litter obscured the ground surface, necessitating the use of small (25 cm square) shovel tests. These were excavated to approximately 50 cm below the surface, and the soil removed was carefully examined by hand for artifacts and other evidence of human occupation.

Only five archeological sites were located within the project area. All of these were found in eroded areas where artifacts were observed on the ground surface in very low density scatters. The small-scale shovel testing employed in the survey would probably not have been sufficient to locate any of these low-density artifact scatters had they been buried or obscured by vegetation, and, thus, it may be that other such sites exist within the project area and were undetected. Shovel testing as performed, however, in combination with surface inspection, was sufficient to locate any large, high-density sites within the sampled units. None of these large or high-density sites were found.

Artifacts recovered during the survey were cleaned, sorted and cataloged in the laboratory at the Institute of Archeology and Anthropology. They will be permanently curated there for future reference or study, along with all notes, photographs, and other data pertaining to the survey.

TABLE 2

SUMMARY DATA FOR TOWER UNITS, 100kv LINE

Tower #	Station Number	Finding
1	1 + 00.0	Disturbed, not checked
2	7 + 40.0	Disturbed, not checked
3	12 + 44.2	Disturbed, not checked
4	19 + 00.0	Disturbed, not checked
5	31 + 50.5	Disturbed, not checked
6	36 + 85.0	Disturbed, not checked
7	40 + 60.0	Disturbed, not checked
8	51 + 50.0	Disturbed, not checked
9	54 + 50.0	Disturbed, not checked
10	67 + 00.0	Disturbed, not checked
11	74 + 00.0	Disturbed, not checked
12	78 + 12.1	Inspected, no material observed
13	81 + 60.0	Inspected, no material observed
14	89 + 00.0	380C103 nearby
15	92 + 99.1 (L.A.)	Inspected, no material observed
16	103 + 50.0	Inspected, no material observed
17	110 + 50.0	Inspected, no material observed
18	124 + 00.0	Inspected, no material observed
19	132 + 00.0	Inspected, no material observed
20	147 + 40.0	Inspected, no material observed
21	157 + 80.0	Inspected, no material observed
22	164 + 75.0	Inspected, no material observed

Summary Data For Tower Unit, 100kv Line

Tower #	Station Number	Finding
23	174 + 06.3	Not checked, access difficult
24	186 + 50.0	Inspected, no material observed
25	192 + 80.0	Not checked, access difficult
26	202 + 00.0	Inspected, no material observed
27	209 + 00.0	Inspected, no material observed
28	220 + 00.0	Inspected, no material observed
29	229 + 00.0	Inspected, no material observed
30	240 + 00.0	Inspected, no material observed
31	246 + 00.0	Inspected, no material observed
32	257 + 25.0	Inspected, no material observed
33	266 + 65.0	Inspected, no material observed
34	273 + 20.0	Inspected, no material observed
35	282 + 95.9	Inspected, no material observed
36	294 + 55.0	Inspected, no material observed
37	305 + 10.0	Inspected, no material observed
38	313 + 25.0	380C102 nearby
39	322 + 35.3	Inspected, no material observed
40	328 + 65.0	Inspected, no material observed
41	340 + 25.0	Inspected, no material observed
42	366 + 00.0	Inspected, no material observed
43	393 + 00.0	Inspected, no material observed
44	408 + 00.0	380C101 in tower area
45	415 + 23.0	Inspected, no material observed

Summary Data For Tower Unit, 100kv Line

Tower #	Station Number	Finding
46	432 + 50.0	Inspected, no material observed
47	447 + 69.7	Inspected, no material observed
48	457 + 75.0	Inspected, no material observed
49	469 + 25.0	Inspected, no material observed

TABLE 3

SUMMARY DATA FOR TOWER UNITS, 500kv LINE

Tower #	Station Number	Finding
1	7 + 05.5	Disturbed, not checked
2	17 + 29.0	Disturbed, not checked
3	29 + 53.5	Inspected, no material observed
4	36 + 00.0	Disturbed, not checked
5	48 + 50.0	380C105 in tower area
6	58 + 87.1	Inspected, no material observed
7	71 + 17.3	Disturbed, not checked
8	84 + 17.3	380C104 in tower area
9	91 + 40.0	Inspected, no material observed
10	100 + 71.4	Inspected, no material observed
11	113 + 50.0	Inspected, no material observed
12	128 + 90.0	Inspected, no material observed
13	136 + 20.0	Inspected, no material observed
14	146 + 15.0	Inspected, no material observed
15	159 + 00.0	Inspected, no material observed
16	173 + 16.9	Inspected, no material observed
17	183 + 20.0	Inspected, no material observed
18	194 + 65.0	Inspected, no material observed
19	208 + 40.0	Inspected, no material observed
20	216 + 80.0	Inspected, no material observed
21	230 + 20.0	Inspected, no material observed
22	240 + 40.0	Inspected, no material observed
23	249 + 90.0	Inspected, no material observed
24	267 + 50.0	Inspected, no material observed

Summary Data For Tower Units, 500kv Line

Tower #	Station Number	Finding
25	273 + 00.0	Inspected, no material observed
26	287 + 01.2	Inspected, no material observed
27	294 + 50.0	Inspected, no material observed
28	307 + 50.0	Inspected, no material observed
29	315 + 50.0	Inspected, no material observed
30	326 + 50.0	Inspected, no material observed
31	340 + 90.0	Inspected, no material observed
32	350 + 50.0	Inspected, no material observed
33	359 + 50.0	Inspected, no material observed
34	368 + 50.0	Inspected, no material observed
35	387 + 30.0	Inspected, no material observed
36	394 + 20.0	Inspected, no material observed
37	406 + 00.0	Inspected, no material observed
38	414 + 60.0	Inspected, no material observed
39	431 + 25.0	Inspected, no material observed
40	449 + 50.0	Inspected, no material observed
41	459 + 90.0	Inspected, no material observed
42	473 + 30.0	Inspected, no material observed
43	486 + 80.0	Inspected, no material observed
44	500 + 86.9	Inspected, no material observed
45	502 + 75.0	Inspected, no material observed
46	519 + 80.0	Not checked, access difficult
47	532 + 90.0	Inspected, no material observed

Summary Data For Tower Units, 500kv Line

Tower #	Station Number	Finding
48	546 + 00.0	Inspected, no material observed
49	562 + 80.0	Inspected, no material observed
50	573 + 63.6	Inspected, no material observed
51	585 + 50.0	380C103 nearby
52	589 + 59.6	Inspected, no material observed
53	602 + 10.0	Inspected, no material observed
54	609 + 70.0	Inspected, no material observed
55	625 + 75.0	Inspected, no material observed
56	633 + 70.0	Inspected, no material observed
57	649 + 00.0	Inspected, no material observed
58	661 + 30.0	Inspected, no material observed
59	670 + 41.6	Not checked, access difficult
60	684 + 50.0	Inspected, no material observed
61	691 + 70.0	Inspected, no material observed
62	704 + 10.0	Not checked, access difficult
63	717 + 15.0	Inspected, no material observed
64	727 + 00.0	Inspected, no material observed
65	736 + 40.0	Inspected, no material observed
66	742 + 15.0	Inspected, no material observed
67	754 + 60.0	Inspected, no material observed
68	770 + 10.0	Inspected, no material observed
69	780 + 49.5	Inspected, no material observed
70	793 + 75.0	Inspected, no material observed
71	807 + 50.0	Inspected, no material observed
72	819 + 86.7	380C102 nearby

Summary Data For Tower Units, 500kv Line

Tower #	Station Number	Finding
73	831 + 00.0	Inspected, no material observed
74	838 + 20.0	Inspected, no material observed
75	863 + 00.0	Inspected, no material observed
76	887 + 70.0	Inspected, no material observed
77	906 + 50.0	380C101 in tower area
78	912 + 93.3	Inspected, no material observed
79	929 + 75.0	Inspected, no material observed
80	945 + 27.6	Inspected, no material observed
81	955 + 00.0	Inspected, no material observed
82	965 + 80.0	Inspected, no material observed
83	978 + 47.0	Inspected, no material observed

SITE DESCRIPTIONS

Five sites were discovered during the Bad Creek transmission lines survey. All five are low-density scatters of artifacts in disturbed and eroded ridge top areas. Three of the sites are within the project impact zone and were found during inspection of the tower area sampling units. The other two sites are outside of the impact zone and were found while travelling from one sampling unit to another.

380C101. One chert flake was recovered from the extremely weathered ridge top surface at tower number 77 (station 906 + 50) along the 500 kv line. Intensive inspection of a large (30m square) area and excavation of five 25cm square shovel tests produced no artifacts other than several possible quartz flakes. Disturbance by timbering within the last ten years and subsequent heavy erosion may have carried away other materials if they were once present.

The chert flake found is light tan in color and was probably brought to the area from the South Carolina-Georgia Coastal Plain. Similar material is common in outcrops in Allendale County, South Carolina and Burke County, Georgia. Such material is rarely found in the South Carolina Piedmont, although when found, it is most commonly associated with Early Archaic (and earlier) materials (House and Ballenger 1976: 127).

The chert flake recovered is small and probably resulted from the thinning of a bifacial tool. It is possible that such a bifacial tool was resharpened at the site during a very brief stopover there by an individual or group. The site could possibly have functioned as an observation post or as a temporary center for hunting or plant gathering activities. The disturbed nature of the site and the lack of any other artifacts prevent further speculation as to site function or period of use and indicate little potential for further study. No further work is recommended at 380C101.

380C102. One quartz biface was found on the surface of a logging road between towers 38 (100kv) and 72 (500kv); the road at 380C102 is cut into a northfacing, wooded slope of about 30°. Naturally occurring quartz chunks in the area near the biface find make identification of the several possible flakes recovered very tentative. Three 25cm square test excavations nearby failed to yield other artifacts. The site may have served as a temporary center for hunting or gathering activities in the uplands. The disturbed state of the site, the dearth of material, and the limited nature of further impact by transmission line construction all recommend no further work at 380C102.

380C103. One quartz biface fragment and four probable quartz flakes were recovered from the surface of a dirt road near towers 14 (100kv) and 51 (500kv), along with one 20th century green ironstone ceramic sherd. 380C103 is outside of the project area. The site is on a relatively broad, flat ridge crest running generally east-west and overlooking the Keowee River valley (Lake Keowee) about one mile to the east. The site may have been a temporary center for hunting or gathering activities, but the lack of material makes this speculative. The 20th century ceramic sherd probably represents recent deposition along a frequently travelled road.

Although a wide surface search was carried out in and near the site, and test excavations were made within the project area nearby, no additional material was observed. No further work is recommended.

380C104. This site produced the largest artifact inventory of any in the survey. Three quartz bifaces and 20 quartz flakes (13 of which are biface thinning flakes) were recovered from the surface of an eroded, gently sloping to flat ridge nose between the Keowee and Little River valleys. These valleys are today connected by Lake Keowee, which has inundated the former short tributary streams that had their headwaters below and to the south of 380C104. Artifacts were scattered with low density over a wide area of approximate 30 meter radius within the existing 230kv Oconee-Jocassee Transmission Line corridor, near tower 8 of the proposed 500kv line.

380C104 is similar in topographic location, in artifact types, and in artifact density to Middle Archaic period sites common to the South Carolina Piedmont (House and Ballenger 1976; Goodyear 1977). Although the site area was collected widely and intensively, and observation conditions were good, no chert or slate materials indicative of earlier and later periods were recovered. However, such a temporal assignment must be tentative as no diagnostic materials were found at 380C104. The site may have possibly functioned as a temporary camp providing a center for hunting or gathering activities. Evidence is lacking for more detailed interpretation.

The site was cleared of vegetation when the existing 230kv Oconee-Jocassee Transmission line was constructed and now consists of exposed red-orange clay substrate with short grass covering portions of the area. Construction of tower 8 of the proposed 500kv line will impact about a 50-foot square area on the western edge of the artifact scatter. Several 25cm square test excavations in this area yielded no further scatter. Several 25cm square test excavations in this area yielded no further materials and indicate little potential impact by construction. All artifacts observed were collected, and no further work is recommended for 380C104.

380C105. This site occurs on a broad, gently sloping ridge nose facing 380C104 to the north across a small valley. The site area is extremely disturbed and eroded. There is, in addition, evidence of fill material in several areas near the site. The general site area had been the staging area for construction of the Oconee Nuclear Station several hundred meters to the southeast and across South Carolina Highway 183. Most of the ridge area is today covered by grass, with young pines present on the upper, southern portion.

Artifacts were located on the eroded surface of an area within the project corridor just south of tower 5 of the 500kv line. Natural quartz chunks were concentrated in several eroded areas of a 50 meter square area, and 14 apparent flakes of quartz were recovered among these. No definite artifacts were located, however, and the flakes recovered may represent only natural fracturing of quartz occurring at the site. A 100 meter square area was intensively examined for surface artifacts and five 25cm square shovel tests were excavated in grassed areas. No additional material was located. Because of the lack of material and the highly disturbed state of the site area, no further work is recommended for 38OC105.

SUMMARY AND RECOMMENDATIONS

Five low density lithic scatter sites were discovered during the Bad Creek-Oconee Transmission Lines survey. None of these sites is recommended for further work. All produced little material, none of which was temporally or functionally diagnostic. All five sites have been previously disturbed and contain very little potential for providing further information.

Observation methods used during the survey included both intensive examination of the ground surface and excavation of small test pits. Sampling units were dispersed so as to provide inspection of all types of project area topographical features while being biased to a slight degree toward areas of high archeological potential and greater construction related disturbance. It is felt that these methods were effective, and that sites located are representative of sites that may possibly exist undiscovered within the project area.

The survey results indicate the difficulty of testing subsistence-settlement models hypothesizing upland exploitation during certain seasons of animal and plant resources by prehistoric groups. Although the five sites located may certainly represent temporary centers for such upland exploitation, meager artifact and feature remains at the sites do not allow detailed testing. Confirmation of such subsistence-settlement models in this area may rest ultimately on very extensive survey and distributional studies. Preserved features or large numbers of distinctive artifacts at upland sites in this area of the Piedmont seems unlikely at this stage.

No evidence of burial mounds or other nonsubsistence related sites was recovered during this survey. Such sites may exist, however, in the general upland zone outside of the project area. Such sites might be expected to occur infrequently and would have low probability of being discovered by an upland transect such as provided by the transmission line corridors.

The occurrence of a single flake of Coastal Plain chert at 38OC101 indicates long-range trade or procurement expeditions by local groups. It is unfortunate that no temporally diagnostic materials were recovered from this site, which might, in combination with distributional data from other sites in the region, lead to more detailed observations concerning trade networks.

In summary, the Oconee-Bad Creek survey indicated limited occupation or use of the general area by prehistoric groups, although little substantive data concerning this occupation was accumulated. Although five archeological sites were located in or near the project area, none was assessed as of enough significance or potential to recommend further work in the project area.

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