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Cultural Resources Survey of the Lee Nuclear Station Utilities Project

Cherokee County,
South Carolina

Final Report

June 2009

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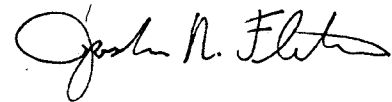
CULTURAL RESOURCES SURVEY OF THE LEE NUCLEAR STATION
UTILITIES PROJECT
CHEROKEE COUNTY, SOUTH CAROLINA

FINAL REPORT

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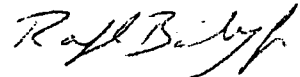


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ABSTRACT

In December 2008 and January 2009, Brockington and Associates, Inc., conducted an intensive cultural resources survey of the Lee Nuclear Station on-site utilities. This survey includes the proposed wastewater line, on-site transmission lines, construction spoils area, and construction rebar laydown area within the Lee Nuclear Station in Cherokee County, South Carolina. These investigations included background research, archaeological survey, and architectural survey. The work was conducted to determine if the undertaking will affect historic properties (i.e., sites, buildings, structures, objects, and districts eligible for or listed on the National Register of Historic Places [NRHP]).

Investigators identified three archaeological sites (38CK138, 38CK139, and 38CK143) and one isolated find (Isolate 1) during the cultural resources survey. We recommend these resources not eligible for the NRHP. No further management consideration of sites 38CK138, 38CK139, and 38CK143 and Isolate 1 is warranted. We also revisited the reported locations of two previously recorded sites (38CK14 and 38CK15) but found no evidence of these sites.

Agha et al. (2007a) recorded 12 previously undocumented historic architectural resources within a one-mile radius of the primary construction area for the Lee Nuclear Station; these resources were determined not eligible for the NRHP. The senior architectural historian also assessed the effects of the proposed wastewater line on the Ninety-Nine Islands Dam (Resource 0042.021). The senior architectural historian recommended that the proposed wastewater line would have no effect on Resource 0042.021. On March 6, 2009, the South Carolina State Historic Preservation Office concurred with this recommendation.

Construction and operation of the two on-site utility corridors, a construction spoils area, and a construction rebar laydown area will not affect any historic properties. Should designs change to include areas outside of these or previous APEs, additional cultural resources survey(s) may be necessary.



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1.0 INTRODUCTION AND METHODS OF INVESTIGATION

1.1 INTRODUCTION

The William S. Lee III Nuclear Station (hereinafter referred to as the Lee Nuclear Station or WLS) site consists of approximately 2,000 acres east of Gaffney in Cherokee County, South Carolina. The tract is bordered to the east by the Broad River and to the south by McKowns Mountain Road. Duke Energy, Carolinas, LLC (Duke Energy), proposes to construct a nuclear power plant on approximately 750 acres of the property.

To date, Duke Energy has completed cultural resources surveys of (1) the primary construction area for the WLS in Cherokee County (Agha et al. 2007a), (2) the location of the permanent meteorological tower (MET Tower 3) (Agha et al. 2007b), and (3) the railroad corridor that will serve the facility (Agha and Bailey 2007). Plans for the facility have progressed, and future operation of the WLS will require two on-site utility corridors, a construction spoils area, and a construction rebar laydown area that are largely outside of the former, previously disturbed Cherokee Nuclear Station construction area and Areas of Potential Effect (APEs) of the previous investigations. An east-west transmission line corridor is proposed across the southern portion of the plant site, and a wastewater line corridor is proposed in the eastern portion of the site. A construction spoils area is proposed in the southern portion of the site. A construction rebar laydown area is proposed in the south-central portion of the site.

The cultural resources survey of these additional areas was conducted in compliance with Section 106 of the National Historic Preservation Act and in partial compliance with the National Environmental Protection Act (NEPA) as required for the Construction and Operation License (COL) to be issued by the Nuclear Regulatory Commission (NRC). The work was conducted to determine if the undertaking will affect historic properties (i.e., sites, buildings, structures, objects, and districts eligible for or listed on the National Register of Historic Places [NRHP]). Compliance will be administered by the regulatory programs of the NRC. Figure 1.1 presents the locations of the proposed wastewater line, on-site transmission lines, construction

spoils area, and construction rebar laydown area within the Lee Nuclear Station on the USGS Blacksburg South quadrangle.

**Figure withheld under Section 304 of the
Archaeological Resources Protection Act (16 U.S.C. 470w-3(a))**

1.2 DEFINING THE APE

The on-site transmission lines will extend across large wooded areas within the WLS property. Additional off-site transmission corridors will extend from the tract as described in Siting and Environmental Report for the William States Lee III Nuclear Station 230 kV and 525 kV Fold-In Lines, Cherokee and Union Counties, SC. Cultural resource surveys for these off-site transmission lines are separate from the survey discussed in this report. The proposed corridor discussed in this report is limited to the WLS property.

The on-site transmission lines will extend along a corridor up to 350 feet wide and elevated on towers 140 to 190 feet above the ground. Because the corridor will be cleared with heavy machinery and we do not know the location of each power pole excavation, the archaeological APE for the transmission lines is the entire length and width of the corridor. This proposed APE is shown in green in Figure 1.1. We recommend that the architectural APE extend an additional 300 feet to either side of the proposed transmission lines. This area has already been surveyed by Agha et al. (2007b); the architectural APE for that project extended one mile beyond the proposal cooling towers and MET Tower 3 locations (see Figure 1.1). Additional architectural survey is not warranted for this undertaking.

The proposed wastewater line will extend from the cooling towers and will discharge along the Ninety-Nine Islands Dam (Resource 0042.01). This resource is eligible for the NRHP. A buried 36-inch high-density polyethylene (HDPE) wastewater pipe will convey cooling tower blowdown to just south of the dam. A 20-by-12-by-8-foot tie-in vault will transfer the wastewater down to a 36-inch discharge pipe that will extend along the reservoir side of the Ninety-Nine Islands Dam submerged five feet below full pond level. The blowdown will be discharged into the reservoir, upstream of the intakes for the Ninety-Nine Islands Hydroelectric Station, using a diffuser. The HDPE pipe will be assembled on shore and floated offshore using divers and a barge and bolted to the concrete of the dam. Accumulated silt behind the dam will be dredged as needed prior to installation of the submerged discharge pipe.

We propose that the archaeological APE for the wastewater line include a 25-foot-wide corridor from the

plant to the tie-in vault near the dam and a 40-by-40-foot area around the proposed tie-in vault. The wastewater line will be underground, with the exception of the tie-in vault; this area is well within the architectural APE for the main plan site survey conducted by Agha et al. (2007b). The senior architectural historian assessed the effects of the proposed wastewater line on the Ninety-Nine Islands Dam (Resource 0042.021); additional architectural survey for this undertaking beyond the Ninety-Nine Islands Dam site is not warranted.

While most of the activities proposed to take place in the construction spoils area and construction rebar laydown area will be above ground, materials or equipment may disturb soils in these areas. Therefore, we included these areas in the archaeological APE. The spoils area is shown in blue in Figure 1.1; the rebar laydown area is shown in tan. Access roads to these areas have been previously surveyed or are in place. We recommend that the architectural APE extend an additional 300 feet to either side of the proposed spoils area and rebar laydown area. This area has already been surveyed by Agha et al. (2007b). Additional architectural survey is not warranted for this undertaking.

1.3 SUMMARY OF THE INVESTIGATIONS

In 1974 Duke completed an archaeological survey of the 2,000-acre tract for the Cherokee Nuclear Station project. Bianchi (1974) recorded 15 sites that are currently in and around the Lee Nuclear Station on-site utilities (see Figure 1.1). Bianchi (1974) recommended three sites (38CK5, 38CK6, and 38CK8) as potentially eligible for the NRHP. Due to the age of the previous study, we consider these sites unassessed. These sites are not near the current APE. The NRC issued a construction permit in 1975, and construction of the project was initiated. Extensive grading, filling, and construction were conducted on 750 acres of the tract until the project was canceled a few years later.

In December 2008 and January 2009, Brockington and Associates, Inc., conducted an intensive cultural resources survey of the Lee Nuclear Station on-site utilities. The cultural resources survey included

background research, archaeological survey, and architectural survey. We identified three archaeological sites (38CK138, 38CK139, and 38CK143) and one isolated find (Isolate 1) during the cultural resources survey. We recommend these resources as not eligible for the NRHP. We also revisited the reported locations of two previously recorded sites (38CK14 and 38CK15) but found no current evidence of these sites.

Agha et al. (2007a) recorded 12 previously undocumented historic architectural resources within a one-mile radius of the primary construction area for the WLS; these resources were determined not eligible for the NRHP. During the current investigations, the senior architectural historian assessed the effects of the proposed wastewater line on the Ninety-Nine Islands Dam (Resource 0042.021). The assessment was summarized in a letter report submitted to the South Carolina State Historic Preservation Office (SHPO) on February 6, 2009 (Appendix B). The senior architectural historian recommended that the proposed wastewater line would have no effect on Resource 0042.021. On March 6, 2009, the SHPO concurred with this recommendation (Appendix B).

Duke Energy identified four small cemeteries on the property during its planning process for the Cherokee Nuclear Station project. These included Moss Cemetery (38CK141), J.H. Stroup Cemetery (38CK19), McKown Family Cemetery, and an unnamed cemetery. Duke Energy subsequently had the location of each cemetery plotted and put on planning maps (see Figure 1.1). These cemeteries were left outside the perimeter fence for the Cherokee project and will remain outside the fence, preserved, and accessible to the public during the current project. Two of the cemeteries are in the vicinity of the proposed wastewater line examined during the current investigations. Investigators revisited the J.H. Stroup Cemetery (38CK19) and the Moss Cemetery (38CK141) and verified that these cemeteries are located outside the APE.

Construction and operation of the two on-site utility corridors, a spoils area, and a rebar laydown area will not affect any historic properties. Should designs change to include areas outside of these or previous APEs, additional cultural resources survey(s) may be necessary.

1.4 METHODS OF INVESTIGATION

The following survey methods were introduced to the SHPO in an e-mail dated October 20, 2008, and subsequently submitted by Brockington and Associates, Inc., to the SHPO as a formal Scope of Work, which was approved by the SHPO on November 12, 2008 (Appendix B). Federally recognized Indian tribes, including the Shawnee, the Catawba, the Seminole Tribe of Florida, and the Eastern Band of the Cherokee Nation were asked to comment on the project; while none commented specifically as to the level of effort, the Eastern Band of the Cherokee Nation requested the opportunity to review the Draft Report. Field investigations were undertaken in December 2008 and January 2009.

The objective of the cultural resources investigations was to assess the potential for development of the proposed projects to affect potential cultural resources within the proposed wastewater line, on-site transmission lines, spoils area, and rebar laydown area within the Lee Nuclear Station. Tasks performed to accomplish this objective include background research, field investigations, laboratory analysis, and the assessment of the NRHP eligibility of identified resources. Methods employed for each of these tasks are described below. Area-specific methods for the archaeological investigations of the proposed wastewater line, transmission lines, spoils area, and rebar laydown area are presented in Section 3.

1.4.1 Background Research

Background research for the project focused on a review of the Bianchi (1974) survey of the Cherokee Station tract, which covers most of the current project. We also reviewed previous cultural resources investigations on file at the South Carolina Institute of Archaeology and Anthropology (SCIAA) and the South Carolina Department of Archives and History (SCDAH), including Cowan and Ferguson's (1997) study of early ironworks of northwest South Carolina, Cable and Michie's (1977) reconnaissance of the Gaffney Bypass, and others.

Reports of previous cultural resources investigations near the project APE also were reviewed. The locations of cultural resources identified during these investigations

were examined to determine if similar settings are present in the project area. The kinds of cultural resources discovered during previous investigations also were noted to provide information concerning the kinds of resources that could be expected in the project tract. Previous cultural resources investigations and recorded cultural resources within and near the project area are discussed at the conclusion of Section 2. The purposes of the archival research were to identify potential Pre- or Post-Contact archaeological sites and buildings and to develop a historical context that would assist in evaluating cultural resources.

1.4.2 Field Investigations

Archaeological Survey. Intensive survey entailed the systematic examination of the project APE following South Carolina Standards and Guidelines for Archaeological Investigations (SCDAH 2005). The survey strategy was approved by the SHPO Staff Archaeologist on November 12, 2008 (Appendix B). Methods employed for the archaeological survey are described below. Methods for the archaeological investigations specific to the proposed wastewater line, on-site transmission lines, spoils area, and rebar laydown area are presented in Section 3, along with the results of the survey of each area.

Investigators systematically inspected the proposed wastewater line, on-site transmission lines, spoils area, and rebar laydown area by the pedestrian traverse of transects placed at 7.5-, 15-, and 30-meter intervals across potentially habitable landforms (areas that are not steep slopes [e.g., ridges, knolls, floodplains]). Investigators traversed two to four transects along the proposed transmission line(s) corridor, depending on the proposed corridor width. Investigators traversed one transect along the wastewater line corridor. Investigators traversed transects placed at 30-meter intervals across the spoils area and the rebar laydown area.

Investigators excavated shovel tests measuring approximately 30 centimeters in diameter at 7.5-, 15-, and 30-meter intervals along each transect. Investigators excavated all shovel tests into sterile subsoil. Often, compact clay subsoil was present at the ground surface. At site 38CK138, investigators excavated one 50-by-50-centimeter test unit in 10-centimeter levels.

Shovel tests were not excavated on steep slopes (areas with slopes greater than 15 percent). Large portions of the APE were not shovel tested because of excessively steep topography. Investigators visually inspected the ground surface, where possible. The steep slopes were investigated by pedestrian traverse for rock shelters and petroglyphs occurring on rock outcrops. The creeks and creekbeds were inspected for defunct liquor stills. Investigators did not excavate shovel tests in areas of wetlands.

Fill from each shovel test was screened through 0.25-inch mesh hardware cloth. Information relating to each shovel test was recorded in field notebooks. This information includes the content (e.g., presence or absence of artifacts) and context (e.g., soil color, texture, stratification) of each test.

An archaeological site is a locale yielding three or more Pre- or Post-Contact artifacts within a 30-meter radius. Locales that produce fewer than three contemporaneous artifacts are identified as isolated finds (SCDAH 2005). Also, obviously redeposited artifacts (even if greater than three in number) are typically defined as an isolated find rather than a site unless there is a compelling reason for doing otherwise. Investigators identified three archaeological sites (38CK138, 38CK139, and 38CK143) and one isolated find (Isolate 1) during the cultural resources survey. Archaeologists defined the boundaries of sites 38CK138, 38CK139, and 38CK143 and Isolate 1 by excavating additional shovel tests at reduced (3.75- and 7.5-meter) intervals around the positive tests until two consecutive shovel tests failed to produce artifacts. The locations of all sites and isolated finds were recorded with a Trimble Pro XR. The GPS receiver was calibrated to the 1927 North American Datum to coordinate with the appropriate USGS 7.5-minute quadrangle. The UTM coordinates obtained from the GPS readings were entered in the ArcView8 software program. These coordinates were plotted on the digital USGS quadrangle for the tract.

Architectural Survey. We recommend that the architectural APE extend an additional 300 feet to either side of the proposed transmission lines. This area has already been surveyed by Agha et al. (2007b); the architectural APE for that project extended one mile beyond the proposal cooling towers and MET Tower 3

locations (see Figure 1.1). Additional architectural survey is not warranted for this undertaking. The wastewater line will be underground, with the exception of the tie-in vault; this area is well within the architectural APE for the main plan site survey conducted by Agha et al. (2007a). The senior architectural historian assessed the effects of the proposed wastewater line on the Ninety-Nine Islands Dam (Resource 0042.021). The assessment was summarized in a letter report submitted to the SHPO on February 6, 2009 (Appendix B). We recommend that the architectural APE extend an additional 300 feet to either side of the proposed spoils area and rebar laydown area. This area has already been surveyed by Agha et al. (2007b). Additional architectural survey is not warranted for this undertaking.

1.4.3 Laboratory Analysis and Curation

All recovered artifacts were transported to Brockington and Associates, Inc.'s Mount Pleasant laboratory facility, where they were cleaned according to their material composition and fragility, sorted, and inventoried. Most artifacts were washed in warm water with a soft-bristled toothbrush. Artifacts that were fragile, have sooting, or were to be used for chemical analyses were not washed but left to air-dry and, if needed, lightly brushed. Each separate archaeological context from within each site (surface collection, shovel test, test unit, scrape) was assigned a specific provenience number. The artifacts from each provenience were separated by artifact type, using published artifact type descriptions from sources pertinent to the project area. Artifact types were assigned a separate catalog number and analyzed, and quantity and weight were recorded. Certain artifacts tend to decompose through time, resulting in the recovery of fragments whose counts exaggerate the original amount present; in this case, artifact weight is a more reliable tool for reconstructing past artifact density. Artifacts that are weighed but not counted include biological (wood, charcoal), floral, and faunal artifacts that have not been modified into a tool (i.e., bone comb or handle); building materials (brick, mortar, tabby, slate, building stone); fire-cracked rock; and cultural rocks. All artifact analysis information was entered into a coded database (Microsoft Access 2000TM).

Pre-Contact artifacts were categorized into typological classifications determined by their

technological and stylistic attributes. Lithics were categorized by raw material and stage of production. Identified categories of lithic flakes include the stage of production (primary, secondary, tertiary, or thinning), portion (whether whole or flake fragments), and cores (Odell 2003).

Post-Contact artifact analysis is primarily based on observable stylistic and technological attributes. Artifacts were identified with the use of published analytical sources commonly used for the specific region. Post-Contact artifacts were identified by material (e.g., ceramic, glass, metal), type (e.g., creamware), color, decoration (e.g., transfer printed, slipped, etched, embossed), form (e.g., bowl, mug), method of manufacture (e.g., molded, wrought), production date range, and intended function (e.g., tableware, personal, clothing). The primary sources used were Noël Hume (1969) and the Charleston Museum's type collection. Additional Post-Contact ceramic sources used to identify stoneware varieties and glazes included Baldwin (1993) and Greer (1999).

All artifacts were bagged in 4-millimeter-thick archivally stable polyethylene bags. Artifact types were bagged separately within each provenience and labeled using acid-free paper labels. Provenience bags were labeled with the site number, provenience number, and provenience information. Proveniences were separated by site and placed into appropriately labeled acid-free boxes. Artifacts were temporarily stored at the Mount Pleasant office of Brockington and Associates, Inc., until they are ready for final curation. Upon the completion and acceptance of the final report, the artifacts and all associated materials (artifact catalog, field notes, photographic materials, and maps) will be transferred to SCIAA for curation.

1.4.4 Assessing NRHP Eligibility

All cultural resources encountered were assessed as to their significance based on the criteria of the NRHP. As per 36 CFR 60.4, there are four broad evaluative criteria for determining the significance of a particular resource and its eligibility for the NRHP. Any resource (building, structure, site, object, or district) may be eligible for the NRHP that:

- [REDACTED]
- A. is associated with events that have made a significant contribution to the broad pattern of history;
 - B. is associated with the lives of persons significant in the past;
 - C. embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, possesses high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction; or
 - D. has yielded, or is likely to yield, information important to history or prehistory.

A resource may be eligible under one or more of these criteria. Criteria A, B, and C are most frequently applied to historic buildings, structures, objects, non-archaeological sites (e.g., battlefields, natural features, designed landscapes, or cemeteries), or districts. The eligibility of archaeological sites is most frequently considered with respect to Criterion D. Also, a general guide of 50 years of age is employed to define "historic" in the NRHP evaluation process. That is, all resources greater than 50 years of age may be considered. However, more recent resources may be considered if they display "exceptional" significance (Sherfy and Luce n.d.).

Following National Register Bulletin: How to Apply the National Register Criteria for Evaluation (Savage and Pope 1998), evaluation of any resource requires a twofold process. First, the resource must be associated with an important historical context. If this association is demonstrated, the integrity of the resource must be evaluated to ensure that it conveys the significance of its context. The applications of both of these steps are discussed in more detail below.

Determining the association of a resource with a historical context involves five steps (Savage and Pope 1998). First, the resource must be associated with a particular facet of local, regional (state), or national history. Secondly, one must determine the significance of the identified historical facet/context with respect to the resource under evaluation. A lack of Native American archaeological sites within a project area would preclude

the use of contexts associated with the Pre-Contact use of a region.

The third step is to demonstrate the ability of a particular resource to illustrate the context. A resource should be a component of the locales and features created or used during the historical period in question. For example, early-nineteenth-century farmhouses, the ruins of African American slave settlements from the 1820s, and/or field systems associated with particular antebellum plantations in the region would illustrate various aspects of the agricultural development of the region prior to the Civil War. Conversely, contemporary churches or road networks may have been used during this time period but do not reflect the agricultural practices suggested by the other kinds of resources.

The fourth step involves determining the specific association of a resource with aspects of the significant historical context. Savage and Pope (1998) define how one should consider a resource under each of the four criteria of significance. Under Criterion A, a property must have existed at the time that a particular event or pattern of events occurred, and activities associated with the event(s) must have occurred at the site. In addition, this association must be of a significant nature, not just a casual occurrence (Savage and Pope 1998). Under Criterion B, the resource must be associated with historically important individuals. Again, this association must relate to the period or events that convey historical significance to the individual, not just that this person was present at this locale (Savage and Pope 1998). Under Criterion C, a resource must possess physical features or traits that reflect a style, type, period, or method of construction; display high artistic value; or represent the work of a master (an individual whose work can be distinguished from others and possesses recognizable greatness) (Savage and Pope 1998). Under Criterion D, a resource must possess sources of information that can address specific important research questions (Savage and Pope 1998). These questions must generate information that is important in reconstructing or interpreting the past (Butler 1987; Townsend et al. 1993). For archaeological sites, recoverable data must be able to address specific research questions.

After a resource is associated with a specific significant historical context, one must determine which

physical features of the resource reflect its significance. One should consider the types of resources that may be associated with the context, how these resources represent the theme, and which aspects of integrity apply to the resource in question (Savage and Pope 1998). As in the antebellum agriculture example given above, a variety of resources may reflect this context (farmhouses, ruins of slave settlements, field systems, etc.). One must demonstrate how these resources reflect the context. The farmhouses represent the residences of the principal landowners who were responsible for implementing the agricultural practices that drove the economy of the South Carolina area during the antebellum period. The slave settlements housed the workers who conducted the vast majority of the daily activities necessary to plant, harvest, process, and market crops.

Once the above steps are completed and the association with a historically significant context is demonstrated, one must consider the aspects of integrity applicable to a resource. Integrity is defined in seven aspects of a resource; one or more may be applicable depending on the nature of the resource under evaluation. These aspects are location, design, setting, materials, workmanship, feeling, and association (36 CFR 60.4; Savage and Pope 1998). If a resource does not possess integrity with respect to these aspects, it cannot adequately reflect or represent its associated historically significant context. Therefore, it cannot be eligible for the NRHP. To be considered eligible under Criteria A and B, a resource must retain its essential physical characteristics that were present during the event(s) with which it is associated. Under Criterion C, a resource must retain enough of its physical characteristics to reflect the style, type, etc., or work of the artisan that it represents. Under Criterion D, a resource must be able to generate data that can address specific research questions that are important in reconstructing or interpreting the past.

2.0 CULTURAL OVERVIEW

The cultural history of North America is generally divided into three eras: Pre-Contact, Contact, and Post-Contact. The Pre-Contact era includes primarily the native groups and cultures that were present for at least 10,000 to 12,000 years prior to the arrival of Europeans. The Contact era is the time of exploration and initial European settlement on the continent. The Post-Contact era is the time after the establishment of European settlements, when Native American populations were in rapid decline. Within these eras, finer temporal and cultural subdivisions are defined to permit discussions of particular events and the lifeways of the peoples who inhabited North America at that time.

2.1 THE PRE-CONTACT ERA

In South Carolina, the Pre-Contact era generally is divided into four principal stages: Paleoindian, Archaic, Woodland, and Mississippian. Specific technologies and strategies for procuring resources define each of these periods, with approximate temporal limits also in place. A brief description of each stage follows. Readers are directed to Goodyear and Hanson (1989) for more detailed discussions of particular aspects of these periods in South Carolina.

2.1.1 *The Paleoindian Stage*

The Paleoindian stage is a time in which small, highly mobile bands made their living through the hunting of now-extinct megafauna (Griffin 1967). Since the distinctive tool kit of the stage (fluted projectile points and a well-developed blade technology) is found in association with the remains of megafauna more commonly in the West and only occasionally in the East (Webb et al. 1984), current interpretations suggest that a more generalized subsistence program was in effect. Ward (1983:64-65) argues:

The seasonal round of resource utilization within a tightly scheduled procurement system cannot be substantiated and neither can the exploitation of late Pleistocene megafauna.

Although it is difficult to tell what was hunted by the shape of the projectile point, the general typological continuity between the Hardaway, Palmer, and Kirk horizons appears to suggest less specialized activity than the exploitation of megafauna.

The material culture of the Paleoindian stage is dominated by fluted or semi-fluted projectile points, most commonly produced on high-quality cryptocrystalline material. Although fluted points are found in surface contexts across the South Carolina Piedmont, the Paleoindian (i.e., Clovis) stage is relatively poorly represented (Goodyear and Hanson 1989).

Artifacts and sites of the Transitional period (10000–7500 BC) are much more common in the region. It should be noted that there is disagreement regarding the placement of the Hardaway and Palmer phases, with the Palmer phase sometimes placed in the Paleoindian stage (e.g., Claggett and Cable 1982; Purrington 1983; Ward 1983). This report follows the interpretations of Ward (1983).

The Hardaway complex includes semi-fluted/side-notched projectile points and a wide variety of formal scrapers (Coe 1964). It is best known from the Hardaway (type) site in Stanly County, North Carolina (Coe 1964), but other excavations also have yielded Hardaway and Hardaway-Dalton material (e.g., Claggett and Cable 1982). The following Palmer phase retains many of the same formal tool types, while the Palmer projectile point is a side-notched variety generally lacking basal thinning or fluting (Coe 1964).

In terms of settlement, there appears to be a dramatic increase in site frequency from Clovis to Hardaway. Hardaway and Palmer sites are present in a wide variety of environmental zones. If O'Steen's (1983) model of Transitional-period settlement in the Georgia Piedmont can be applied to the South Carolina Piedmont, the major sites are expected near large rivers, particularly around areas of shoals or narrows.

2.1.2 The Archaic Stage

The Archaic stage represents the adaptation of southeastern Native Americans to Holocene environments. By 8000 BC, the forests had changed from sub-boreal types common during the Paleoindian stage to more modern types. The Archaic stage is divided into three temporal periods: Early, Middle, and Late. Distinctive projectile point types serve as markers for each of these periods. Hunting and gathering was the predominant subsistence mode throughout the Archaic stage, although incipient use of cultigens probably occurred by the Late Archaic.

Early Archaic (8000–6000 BC). The Early Archaic was a time of response to the end of the glacial climate and the extinction of numerous large animals. Material culture of this period includes Kirk (Coe 1964) and possibly bifurcate base projectile points (Oliver 1985; Ward 1983). During the Kirk phase, there appears to have been an emphasis on white-tail deer and nuts (Ward 1983), and a collector strategy is suggested by regional researchers (Anderson and Hanson 1985; Blanton and Sassaman 1989; Chapman 1975; Claggett and Cable 1982; O'Steen 1983).

Middle Archaic (6000–3000 BC). This period is divided into the Stanly, Morrow Mountain, and Guilford phases, as defined by Coe (1964). Oliver (1985) views the Stanly projectile point type as technologically transitional between the earlier Kirk points and the Savannah River points of the Late Archaic. The Morrow Mountain and Guilford technologies are seen as possibly intrusive developments (Oliver 1985). Regardless of origin and relationships, all the traditions of the Middle Archaic are marked by a high site frequency and a dramatic increase in the use of locally available lithic resources (Blanton 1983; Claggett and Cable 1982). Ward (1983) observes that an increase in population occurred from the Early to Late Archaic period, and more and more diverse and specialized ecological niches were exploited as adaptive efficiency increased through time. This "forest efficiency" (Caldwell 1958) is thought to have been enhanced by scheduling resource procurement in a tightly structured seasonal round.

Late Archaic (3000–1500 BC). The Late Archaic witnessed still-increasing localization and specialization, augmented by incipient horticulture (Ward 1983). The most prevalent diagnostic tool of the Late Archaic is the broad, square-stemmed Savannah River projectile point (Coe 1964; Oliver 1985). Mack projectile points, with broad blades and contracting stems, also are diagnostic of the Late Archaic period in the study region (Goodyear et al. 1990; Parler and Beth 1984).

Pottery was an important innovation during the Late Archaic. First developed in the Coastal Plain as a fiber-tempered form for direct-heat cooking, pottery later spread to the Piedmont. Thom's Creek sand-tempered wares are the first examples of pottery seen in the Piedmont (Sassaman et al. 1990).

While the Coastal Zone saw a dramatic increase in site size and complexity in the Late Archaic, the Piedmont witnessed a basic continuation of Middle Archaic adaptations. The Late Archaic did begin to see a breakdown in the localization patterns of the Middle Archaic, as both subsistence (including lithic resources) and nonsubsistence (including bannerstones) resources were traded interregionally.

2.1.3 The Woodland Stage

The Woodland stage in the Piedmont is marked by the widespread use of pottery and the use of smaller triangular projectile points, assumed to indicate the presence of the bow and arrow. The change in material culture represents a change in subsistence strategies and approaches to hunting and gathering. The Woodland is divided into three temporal periods (Early, Middle, and Late), marked by distinctive pottery types.

Early Woodland (1500–200 BC). The Early Woodland sequence defined by Coe (1964) has been only minimally revised in the past 39 years and is represented by the Yadkin complex. The early Yadkin complex is characterized by fabric-impressed or cord-marked pottery, decorative modes of apparently northern origin. Later, check stamping (a southern tradition) was added to the decorative modes (Caldwell 1958). Use of Thom's Creek pottery continued during the Early Woodland period (Sassaman et al. 1990). While horticulture was

probably practiced during this period, apparently it was not emphasized. The Early Woodland is interpreted as a time of increased cultural dynamics as populations and ideas moved and spread through the greater Southeast (Trinkley 1990).

Middle Woodland (200 BC–AD 500). During the Middle Woodland period in the upper Piedmont of South Carolina, the Connestee ceramic series is prevalent. Connestee pottery includes brushed, cord-marked, simple-stamped, check-stamped, plain, and fabric-impressed decorations and is produced on a fine to medium sand-tempered body (Keel 1976). Sites apparently became larger, and dense middens, refuse/storage pits, permanent structures, and shellfish debris became more common. Villages of this period seem to be focused on major river floodplains, but the importance of maize horticulture is uncertain. Ward (1983:73) reports:

To summarize, maize agriculture was not important during the Early and Middle Woodland periods in the North Carolina Piedmont. In fact, corn does not appear to have had much importance before A.D. 1000 (Coe 1964:51). Although people were growing corn by Late Woodland times, they were still relying heavily on hunting and gathering.

Late Woodland (AD 500–900). Few cultural changes occurred in the South Carolina Piedmont during the Late Woodland period; people continued to use subsistence strategies similar to those used during the Middle Woodland (Trinkley 1990:22). Although maize agriculture became extremely important in surrounding contemporary Mississippian societies, corn never gained that level of significance in the South Carolina Piedmont during the Late Woodland period (Anderson 1989). Use of Connestee pottery continued during the Late Woodland period (Keel 1976).

2.1.4 The Mississippian Stage

During the Mississippian stage, a number of changes occurred within the region, including a more hierarchical form of social organization, increasing reliance on

agriculture, and the establishment of population centers (villages/towns) with temple mounds (Ferguson 1971, 1975). A number of Mississippian mounds are present on the South Carolina Piedmont. These mound centers are always found on major river drainages, in locations suitable for agriculture (Anderson 1989:114). Agricultural products, especially corn, beans, and squash, are thought to form the economic basis of Mississippian society, although Ferguson (1971) indicates that wild-food procurement probably remained significant. By the end of the Mississippian stage, the Wateree-Catawba River area had become one of the major centers of the Mississippian society, dominated by a large chiefdom from the capitol town of Cofitachequi near the modern town of Camden (Anderson 1989; DePratter and Green 1990).

McDowell and Pisgah ceramic types are found throughout the upper Piedmont during the Mississippian stage (Keel 1976; Moore 2002). The McDowell series is tempered with medium sand, and decorations include burnishing and complicated stamping (Moore 2002). Pisgah ceramics are tempered with fine to medium sand or crushed quartz, and high mica content has been noted in Pisgah sherds. Decorations on Pisgah ceramics include complicated stamping and check stamping; plain Pisgah ceramics also are known (Keel 1976).

2.2 THE CONTACT AND POST-CONTACT ERAS

2.2.1 Early European Explorations

Hernando de Soto and his expedition explored the interior of the Southeast between 1540 and 1542 and visited the province of Cofitachequi (DePratter 1989; Hudson et al. 1984). Scholars have disagreed in the past on the exact location of this province, but it is now generally placed along the Wateree-Catawba River drainage, centered on the Mulberry site (38KE12) near Camden (DePratter 1989). Indian groups of the area were also contacted by the Juan Pardo expeditions during 1566 and 1567 (DePratter et al. 1983).

The borders of the Cherokee and the Catawba were located within the project region. The area around the Broad River was the eastern boundary of the Cherokees and the western boundary of the Catawbans. These two

groups were warring against one another, and this area was a buffer zone. Few Native Americans were living in the area during the seventeenth and eighteenth centuries (Turner and Holt 2004).

Prior to the mid-eighteenth century, the region around Cherokee County was lightly settled by small farmers. The major European presence was related to the deerskin trade with Cherokee groups. The Cherokees would receive coarse woolen cloths, hardware, glass beads, hatchets, hoes, and knives in exchange for furs and skins (Petty 1943:29). The English and Cherokees were allied against the Yamasees and Creeks during the Yamasee War in 1715. The Cherokees continued to side with the English against the French and their allied native groups during wars throughout the eighteenth century (Milling 1940:149). In the mid-eighteenth century, frontier settlements such as Ninety-Six were established along major trading routes between the Coastal Plain cities and the Cherokee Nation.

Ties between the backcountry colonists and the Cherokees began to disintegrate during the middle 1700s due to continued encroachments by early settlers and frontiersmen. Abuses committed by traders and the resulting distrust between the two peoples compounded the problem until tensions escalated to war in 1760. Regular British troops coupled with local militias formed by farmers and frontiersmen repeatedly defeated the Indians and eventually burned all Cherokee towns in South Carolina (Richardson 1980:31). The Indian population was devastated by the war, as were several Middle and Lower Indian towns (Huff 1995). The Cherokee War has been described as a bitter conflict resulting in many innocent Native American and European casualties, "which impoverished South Carolina and staggered the Cherokee Nation" (Milling 1940:306).

2.2.2 *The Colonial Period*

Permanent European settlement in South Carolina began in the 1670s, with outposts at Charles Towne (Charleston) and the Port Royal vicinity. Most of these early settlers came either directly from Europe or England, or from England via a generation or two on the Caribbean island of Barbados. As the colony's prosperity increased and as the Native Americans were defeated by the 1710s and 1720s, more Europeans began streaming

into the backcountry of South Carolina. Some of these settlers traveled up the rivers from the Lowcountry around Beaufort, Charleston, and Georgetown, while a larger number flowed into the backcountry from the north. People with a wide variety of ethnic backgrounds, including Scots-Irish, German, Welsh, and English, traveled down through the Shenandoah Valley of Virginia into the backcountry of North and South Carolina.

Early European exploration into what is now Cherokee County began in 1750, when an expedition of North Carolinians passed through the area. At the same time, settlers from the Saxe-Gotha settlement near Columbia arrived seeking new land; they were followed quickly by Scots-Irish settlers (Moss 1972:1-2). Despite early attempts to establish trade and alliances with the Native Americans, conflicts arose almost immediately.

The new settlers made use of the Native Americans' trading paths to gain access to the new territory. Several of these paths crossed what is now Cherokee County, including the main route that crossed the Broad River south of Buffalo Creek, between the present locations of the Gaston Shoals Hydroelectric Plant and the Ninety-Nine Islands Hydroelectric Plant (Moss 1972:5). The colonial settlers also gained access to the area via the numerous waterways of the region.

Despite the growing population in the backcountry, all important judicial functions were handled in Charleston, the seat of colonial authority. By the 1760s, population growth and limited judicial facilities combined to generate severe lawlessness and discontent in the backcountry. The Regulator Movement was a response to this situation. Most of the leaders of the movement were commercial farmers and slave owners who sought to maintain control of the region in the absence of an official colonial presence. In the process, they called for more local courts and for a vigilante response to the banditry (King 1981:8-10; Klein 1990). In response to the violence in the backcountry, colonial authorities in Charleston agreed to set up a series of judicial districts throughout the area. In 1769 the governor authorized seven districts throughout the colony. The project tract lay within Ninety-Six District, which, when created in 1769, was bordered by Camden District to the east, Orangeburg District to the south, and Cherokee lands to the west.

Relations between the Native Americans and the colonial settlers remained contentious through the 1750s and 1760s, and the South Carolina colony had not yet acquired title to the land. Further attempts to wrest the land from the Cherokees coincided with the American Revolution and with attempts to put down signs of loyalty to the crown in the backcountry. William Henry Drayton, a patriot leader in Charleston, traveled to the backcountry in order to consolidate support for the Revolution; at the time, the backcountry tended to remain loyal to Great Britain. Both the British and the Americans sought to win the support of the Cherokees, but in doing so they ventured more and more into Cherokee territory. In the spring of 1776, the Cherokees began attacking the patriot forces. Leaders in Charleston, in coordination with leaders in North Carolina and Virginia, commenced counterattacks. By the end of the summer of 1776, the Cherokees were ready to admit defeat. In May 1777, the Cherokees ceded the territory that included what is now Greenville County, immediately west of Spartanburg District, in the Treaty of DeWitt's Corner (Huff 1995:20-26).

At the time of the Revolutionary War, the project area was inhabited by small subsistence farmers clustered around the new town of Spartanburg. The war had little impact on the area until after Charleston was captured in 1780. After that time the backcountry became the site of many skirmishes and battles, notably at Cowpens and Kings Mountain, in which the patriots were victorious.

While the Revolutionary War continued, the impetus to settle new lands was low. With the end of the war in 1781 and the ratification of the Treaty of Paris in 1783, however, white settlers became more interested in taking up the new lands. Surveys of the new territory and sales of tracts began in 1784. The population of the former Cherokee territory grew quickly, and the South Carolina General Assembly created Spartanburg District in 1785. The name Spartanburg comes from the Spartan Regiment of the South Carolina Militia, formed in 1776 to fight in the Revolution (South Carolina Writers' Project 1942).

2.2.3 *The Antebellum Period*

The South Carolina backcountry remained a contentious place through the late 1780s and 1790s, as conflicts with

Native Americans lingered. By the late 1780s, settlers were setting up farms throughout Spartanburg District. Although there were several large plantations in the area, most settlers worked on small farms and practiced diversified agriculture, or what several historians have called "safety-first" farming (Ford 1988:72-75; Wright 1978:62-74). Small farmers in particular, who constituted the majority in Spartanburg District, sought to protect themselves from the risk of market fluctuations by producing enough subsistence crops to be largely self-sufficient. The increase in cotton production in the South Carolina upcountry was dramatic in the early nineteenth century; the state's annual output increased from 94,000 pounds in 1793 to 50,000,000 pounds in 1810 (Ford 1985:262-263).

The most distinctive aspect of the area's economic history, however, is the rise of iron production. As Cowan and Ferguson (1997:115) noted, the iron industry in what are now Cherokee, Spartanburg, Union, and York counties began in the 1770s. William Hill created the first substantial iron foundry in 1779 on Allison's Creek in York County (Cowan and Ferguson 1997:117). More substantial plants emerged in the early nineteenth century, particularly along the Broad River near the project area. Jacob Stroup and Edward Fewell built an ironworks on King's Creek, north of the Ninety-Nine Islands Plant, in 1815, with a plant that included a gristmill and sawmill in addition to the iron foundry. After an 1822 flood, Stroup and Fewell sold their plant to a group of New York investors in 1825, and Stroup then built another ironworks on the Broad River at Doolittle Creek. By 1830 his Cherokee Ironworks included 3,500 acres and comprised a furnace and forge, a blacksmith shop, grist and saw mills, and worker and slave quarters (Cowan and Ferguson 1997:120-121).

Stroup's operations gave way to the King's Mountain Iron Company. This was a very large operation covering approximately 9,000 acres on the east side of the Broad River in what is now Cherokee County, and it remained in business until at least 1859 (Cowan and Ferguson 1997:123). Competition quickly arose, however, with the creation of the Nesbitt Iron Manufacturing Company. Chartered in 1835, by the early 1840s the company had four furnaces on the west side of the Broad River between People's Creek and Cherokee Creek, near the

Ninety-Nine Islands section of the river (Cowan and Ferguson 1997:123). The Nesbitt Iron Manufacturing Company was even more extensive than its downriver neighbor, and included a puddling furnace, rolling mill, blacksmith shop, carpentry shop, wheelwright shop, reheating ovens, ore stamper, and the ubiquitous grist, flour, and saw mills. This complex drew power from the Broad River by way of a dam across the river that fed a canal (Cowan and Ferguson 1997:124).

As Spartanburg District increased in population and agricultural productivity, there were calls to improve communications with the Lowcountry to the east and the new state of Tennessee to the west. The new town of Spartanburg was located in the center of Spartanburg District, and roads radiated from the town to all parts of the district and connected the county seat to the surrounding Greenville, Union, and Laurens districts. Robert Mills' 1825 map of Spartanburg District clearly shows this network of roads (Figure 2.1).

In addition, Mills' map shows many mills, devoted either to lumber or grains. Few of these enterprises, however, signaled the formation of towns. The most significant impulse for the creation of towns was travel and resorts. Lowcountry planters often sought to escape their plantations during the hot season. Most left their plantations by early to mid-April and did not return until early December. Many had homes in Charleston, while others maintained summer residences in the mountainous areas of North and South Carolina. In his overview of South Carolina, Robert Mills noted, for example, that Greenville was a summer resort for wealthy families "on account of the salubrity of the climate" (Mills 1972:573; see also Brewster 1947).

The closest resort to the project area was Limestone Springs, created in approximately 1835. A Lowcountry company bought a tract with natural mineral-water springs and a large limestone outcrop. The company built a hotel for visitors and also created a lime kiln. Although the hotel closed in the early 1840s, the community surrounding it continued to grow. The Limestone Springs Female High School was created in 1845, while other manufacturing enterprises soon joined the lime kiln (Moss 1972:103-105, 204).

Gaffney was the only other substantial settlement near the project. Michael Gaffney, an Irish immigrant,

arrived in 1800 at Smith's Ford on the Broad River, where his business partner had already established a trading post. Gaffney soon created another store where the Virginia-Georgia Road crossed the road from Tennessee to Charleston. The location of Gaffney's store, sited to take advantage of the increasing commercial traffic along the region's new roads, became known as Gaffney's Crossroads and served as a tavern and lodging house (Moss 1972:201-202). Its rail connections after the Civil War gave it the clear advantage over the town of Limestone Springs.

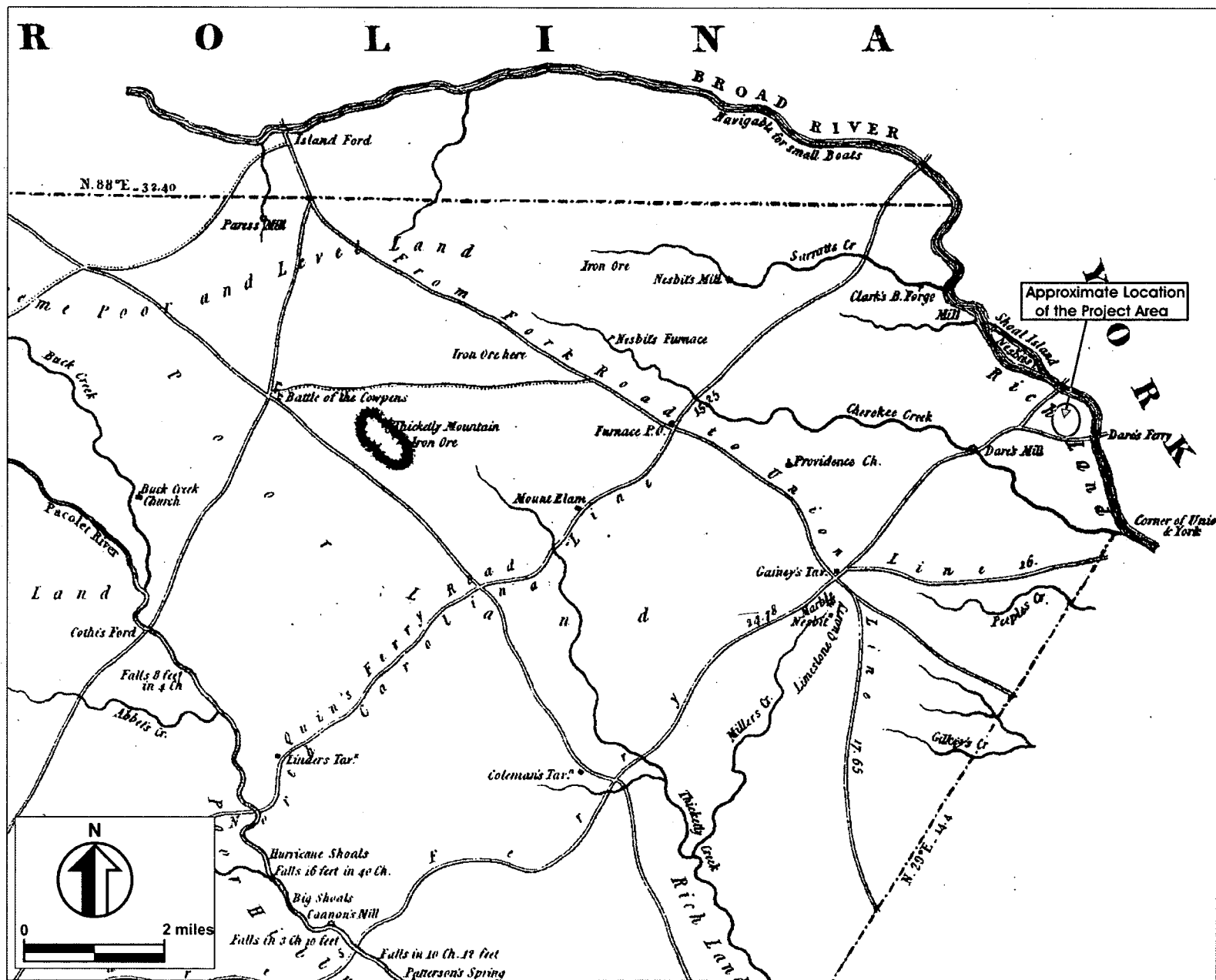


Figure 2.1 A portion of Mills' 1825 map of Spartanburg District showing the project area (Mills 1979).

2.2.4 *The Postbellum Period*

The end of the Civil War brought vast changes to South Carolina, particularly to the upcountry. While the impact of emancipation in Spartanburg County was low relative to its impact on Lowcountry counties, other changes were more sweeping. In particular, new ways of doing business came to the fore, which placed a premium on the small but growing inland towns and their merchants. Two interrelated forces in particular spurred growth in towns such as Spartanburg in the late nineteenth century: railroads and textile manufacturing. Neither was completely new after the Civil War, but each drew on its antebellum roots, which were strengthened in the new and relatively open economic and social conditions of the late nineteenth century (Hanchett 1998:19-28).

The region had its first railroad connection in 1859 with the Spartanburg and Union Railroad, which provided access to Columbia and, ultimately, to Charleston. During the Civil War, Union forces attested to the vital nature of the railroads in South Carolina by seeking them out and destroying them. When US General William T. Sherman led troops against Columbia in February 1865, the railroads were a particular object of attention. All of Columbia's rail connections were destroyed, along with many depot and office buildings.

Recovery was swift, however. By the late nineteenth century, Spartanburg was a minor railroad hub for the northern part of South Carolina. Spartanburg was part of the Southern Railway line from Washington to New Orleans, which was opened in 1894; the Southern Railway also connected Spartanburg and Cincinnati by the end of the century (Kovacik and Winberry 1989:120).

There were few towns of any size throughout South Carolina during the early and mid-nineteenth century. By 1850 barely 2.5 percent of the state's population outside of Charleston lived in communities of over 1,000 people; the rest lived scattered throughout the countryside. However, as railroads began to spread through the state in the 1850s, towns emerged as depots and commercial entrepôts.

The town of Gaffney emerged from its antebellum status as a crossroads tavern as a result of the railroads. The Seaboard Air Line railroad created a stop at Gaffney's Crossroads in 1873, prompting members of the Gaffney family to begin selling their land near the railroad.

Tillman Gaines designed and laid out the new town, and Gaffney City was incorporated in 1875 (Moss 1972:208-209). With its traditions as a center of communication and travel combined with the new railroad connections, Gaffney soon became a commercial and manufacturing hub for the immediate region.

Like Gaffney, the town of Blacksburg began as a family settlement in the late eighteenth century. In 1872 the Seaboard Air Line created a depot near this settlement, which was incorporated as Black's Station in 1876. The town had a brief period of prosperity in the late nineteenth century as a center for iron production and shipment. As the iron industry in South Carolina faltered in the late nineteenth century, however, the town of Blacksburg went into decline as well (Moss 1972:272-274).

Cherokee County was created in 1897 from portions of York, Spartanburg, and Union counties. The county has remained a predominantly rural area since its creation in the late nineteenth century. It was, however, in the center of a booming textile region. Next to the arrival of the railroad, perhaps the greatest influence on the development of the area was manufacturing. As early as the 1810s, many investors and entrepreneurs recognized the potential of the Piedmont region for the production of textiles. Mills' map of 1825, for example, shows two "cotton factories" on the Tyger River near the line between Spartanburg and Union districts. Most of these textile factories before the Civil War, however, were scattered and small in scale. Only after the Civil War was there an intense expansion in the manufacturing of textiles throughout the Piedmont area of the South.

The growth of cotton manufacturing was closely tied to other developments in the Piedmont after the Civil War. The emergence of new towns came in part through individuals who were able to take advantage of the new economic order and who saw the intimate connections between the growth of their towns and the growth of their own fortunes. The access that these merchants had to Northern commercial centers through the railroads brought Northern business ideals and methods to the new towns, including an interest in manufacturing. With a combination of new local capital as a result of the new business climate and the migration of capital from Charleston, local and regional wealth prompted

the initial organization of most of the backcountry's new cotton mills.

While the production of cotton increased rapidly throughout the upcountry, the price of cotton fell to new lows. Many small farmers found that they could not make a living and moved with their families to the new towns to work in the mills. Early mill owners, seeking both to provide for their workers and to control them so that they would be a stable, undemanding workforce, generally provided housing to their workers. As a result, mill villages began to spring up on the edges of towns adjacent to the textile mills throughout the region. Many of these mill villages offered schools, stores, churches, and recreational activities for workers and their families.

The wave of the future for the textile industry and all other forms of manufacturing was the use of electric power. By the late nineteenth century, several individuals and companies throughout the state had begun to see the possibilities in applying electric power to the production of textiles. Approval of the use of electricity was not universal, though, as many still feared for their safety in this pioneering era. Enough were convinced of the value of electricity, however, to begin to make substantial investments. The Upstate, which had both the majority of the state's textile plants and the greatest potential waterpower, soon became a focus of activities in developing hydroelectric power for the region's manufacturing enterprises.

Many of the earliest efforts at creating hydroelectric plants were strictly local in scale. Until the use of alternating current became widespread in the late 1890s, electric power could not be effectively sent over long distances. The textile plants using electric power, like those using waterpower, had to be located close to the source of electricity. As alternating current became more widespread, however, textile plants could be located farther from their source of power. Durden (2000:54) notes that the long-distance transmission of electricity allowed textile plants to "be scattered throughout the countryside as the owners might choose." This, he argues, "was one reason why industrialization in the Piedmont Carolinas did not immediately result in the urbanization that had occurred earlier in New England, for example, and even earlier in Britain" (Durden 2000:54).

The obverse of this argument is also true. With the widespread acceptance of long-distance transmission of electric power, the hydroelectric plants need not be close to the ultimate consumers. Earlier hydroelectric plants in South Carolina, such as Columbia Mills and the plant in Anderson, followed the tradition of keeping the power source close to cities and towns. By the early twentieth century, though, when the Gaston Shoals and Ninety-Nine Islands plants were built, they could be located in remote areas, far from established communities, wherever river conditions were most favorable.

2.3 PREVIOUS CULTURAL RESOURCES INVESTIGATIONS WITHIN AND NEAR THE LEE NUCLEAR STATION UTILITIES PROJECT

We examined the state archaeological site files at SCIAA and the NRHP listings at SCDAH for previously recorded archaeological sites, historic properties, and previous investigations within 1.6 kilometers of the Lee Nuclear Station Utilities Project. The purpose of these examinations was to update background research previously undertaken for the cultural resources survey of the proposed Lee Nuclear Station (Agha et al. 2007a), the cultural resources survey of the proposed meteorological tower (MET Tower 3) (Agha et al. 2007b), and the railroad corridor that will serve the facility (Agha and Bailey 2007). No additional cultural resources have been identified since the previous studies.

3.0 RESULTS AND RECOMMENDATIONS

The cultural resources survey of the Lee Nuclear Station on-site utilities was designed to identify and assess all archaeological sites in the archaeological APE and all historic architectural resources in the architectural APE. This chapter presents the results of the archaeological and architectural surveys, followed by the project summary and management recommendations.

3.1 RESULTS OF THE ARCHAEOLOGICAL SURVEY

The following section presents a discussion of the investigations conducted in each survey area (wastewater line, on-site transmission line, construction spoils area, and construction rebar laydown area). Investigators identified three sites (38CK138, 38CK139, and 38CK143) and one isolated find (Isolate 1) during the cultural resources survey of these areas. We also revisited the reported locations of two previously recorded sites (38CK14 and 38CK15). Descriptions of the cultural resources are presented below in the discussion of each survey area.

3.1.1 Wastewater Line Survey Area

Investigators traversed the wastewater line APE and investigated areas with less than 15 percent slope by the excavation of shovel tests at 30-meter intervals. The wastewater line APE included two landforms (Landforms 1 and 2) that were judgmentally investigated with closer-interval shovel tests. All areas with greater than 15 percent slope along the wastewater line APE were visually inspected. Figure 3.1 presents a map of the Lee Nuclear Station on-site utilities showing the wastewater line, on-site transmission line, spoils area, and rebar laydown area and areas within each that were investigated by means of closer-interval shovel tests.

Investigators excavated eight systematic and judgmental shovel tests at 7.5-meter intervals to cover Landform 1. Compact red clay subsoil is present at the ground surface across Landform 1. Investigators revisited the J.H. Stroup Cemetery (38CK19) on Landform 1. The J.H. Stroup Cemetery is located on a high, well-defined ridge that is accessible by dirt road. The cemetery

contains several marked graves and is surrounded by a fence. Investigators field-verified that the proposed wastewater line will be outside the fence surrounding the J.H. Stroup Cemetery. They carefully visually inspected the area of the wastewater line in the area to assess the potential for unmarked graves to be located outside the current, fenced boundary of the site. Investigators verified that the J.H. Stroup Cemetery is located outside the APE. Investigators identified no additional cultural resources on Landform 1.

Investigators revisited the Moss Cemetery (38CK141), located to the east of Landform 2. The Moss Cemetery is located well outside the APE.

The landform measures approximately 40 meters north-south by 30 meters east-west. A stand of young (approximately 10- to 15-year-old) cedar trees covers the landform. A paved road is located approximately 15 meters to the west of the site. The roadcut bisected the landform and likely impacted a portion of the site. An underground

**Figure withheld under Section 304 of the
Archaeological Resources Protection Act (16 U.S.C. 470w-3(a))**

**Figure withheld under Section 304 of the
Archaeological Resources Protection Act (16 U.S.C. 470w-3(a))**

[REDACTED]

gas pipeline runs between the site and the road. Figure 3.2 presents a plan and view of 38CK138.

Investigators excavated 24, 30-by-30-centimeter (cm) shovel tests at 3.75- and 7.5-meter intervals within and around 38CK138; four (17 percent) of these shovel tests produced artifacts. Artifacts were recovered from the four positive shovel tests at 0–50 cm below surface (bs), though the majority of the positive shovel tests produced artifacts at 0–35 cm bs. Investigators also excavated one 50-by-50-cm test unit in the southern portion of the site in 10-cm levels in order to better understand the soil stratigraphy and artifact deposition at the site. Artifacts were recovered from Level 1 (0–10 cm bs) and Level 3 (20–30 cm bs) of the 50-by-50-cm test unit. Soils at the site consist of a tan-brown sandy micaceous clay at 0–30 cm bs, over a reddish-brown sandy clay at 30–50 cm bs, underlain by a compact red clay subsoil at 50–60+ cm bs. Artifacts were recovered at 0–50 cm bs.

Investigators recovered a total of 35 artifacts from 38CK138, including 26 artifacts from the shovel tests and nine artifacts from the 50-by-50-cm test unit. [REDACTED]

[REDACTED]

Table 3.1 presents a summary of the artifacts recovered from 38CK138. For a complete artifact inventory, see Appendix A.

Investigators recovered a total of nine artifacts from the 50-by-50-cm test unit. [REDACTED]

[REDACTED]

Investigators recovered no artifacts from Level 4 (30–40 cm bs) or Level 5 (40–50 cm bs).

[REDACTED]

[REDACTED]

The Post-Contact artifacts likely were deposited during a dumping episode in the late nineteenth century.

We assessed the NRHP eligibility of site 38CK138 with respect to Criterion D, its ability to add significantly to our understanding of the history of the region. The artifacts do not occur in concentrations sufficient to interpret activities that occurred at the site. None of the Pre-Contact artifacts are diagnostic. The potential for intact subsurface features to be present at the site is low. Additional investigation of 38CK138 is not likely to generate information beyond the period of use (unknown Pre-Contact; nineteenth century) and the presumed function (small Pre-Contact camp for lithic reduction activities and Post-Contact dumpsite) presented above. The site cannot generate additional important information concerning the past settlement patterns or land-use practices in Cherokee County. Therefore, we recommend site 38CK138 not eligible for the NRHP. Site 38CK138 warrants no further management consideration.



Figure 3.3 View of transmission line Landform 2, facing west.



Figure 3.4 View of transmission line Landform 6, facing northeast.

We assessed the NRHP eligibility of site 38CK139 with respect to Criterion D, its ability to add significantly to our understanding of the history of the region. Timbering and agricultural activities have severely damaged the integrity of the site. The site area is severely eroded; all artifacts were recovered from the ground surface. The potential for intact subsurface features to be present at the site is very low. The integrity of the materials, their location, and their associations are compromised. Additional investigation of 38CK139 is unlikely to generate information beyond the period of use (late nineteenth century) and the presumed function (possible homesite or dumpsite). The site cannot generate additional important information concerning past settlement patterns or land-use practices in Cherokee County. Therefore, we recommend 38CK139 not eligible for the NRHP. Site 38CK139 warrants no further management consideration.

**Figure withheld under Section 304 of the
Archaeological Resources Protection Act (16 U.S.C. 470w-3(a))**

3.1.3 Construction Spoils Area

Investigators excavated shovel tests at 15- and 30-meter intervals across the spoils area APE (see Figure 3.1). Shovel test transects were based off of the gravel road that runs along the southern edge of the spoils area. All areas with greater than 15 percent slope within the spoils area APE were visually inspected.

The eastern portion of the spoils area includes a ridgetop that is bisected by a gravel road. The area is wooded in young pines and young and mature hardwoods, with an understory of knee-high grass/weeds. Parts of the landform appear to have been altered/improved, with deposits of gravel brought in to possibly control erosion. Investigators excavated 48 shovel tests at 30-meter intervals across the landform. Soils generally consisted of a thin layer of red clayey sand over compact red clay subsoil. The steep slope to the northwest of the landform was inspected for rock shelters and stills. Investigators identified site 38CK143 on the landform just south of the eastern portion of the spoils area; site 38CK143 is described below. A second small ridgetop in the western portion of the spoils area is wooded in small patches of young pines with an understory of knee-high grass/weeds. Investigators excavated nine shovel tests at 30-meter intervals across the landform in the western portion of the spoils area. Soils consisted of a thin layer of red clayey sand underlain by compact red clay subsoil. Investigators identified Isolate 1 on the landform; Isolate 1 is described below.

Investigators revisited the reported location of site 38CK14. Site 38CK14 was recorded by Bianchi (1974) during his survey of the former Cherokee nuclear site (see Figure 1.1). Bianchi (1974:9) reported that the site, located

Bianchi (1974:9) concluded that “no recommendations are made at present for further investigation of this site.” This site is considered to be unassessed. Investigators excavated shovel tests at 15-meter intervals across the reported location of 38CK14 and also carefully inspected the ground surface. We were unable to locate 38CK14. Thirty-five years of erosion may have obliterated all evidence of this site. It is also possible that Bianchi (1974) collected all of the artifacts from this site.

[REDACTED]

[REDACTED]

Investigators excavated 19 shovel tests at 7.5- and 15-meter intervals within and around 38CK143; two (11 percent) of these shovel tests produced artifacts. Artifacts were recovered from the two positive shovel tests at 0–20 cm bs. Investigators also noted two surface scatters of domestic refuse containing ceramic and glass fragments; investigators collected artifacts from the ground surface at the location of a negative shovel test in the northeast corner of the site (Prov. 4.0). Soils at the site consist of a red clayey sand at 0–20 cm bs over a compact red clay subsoil at 20–40+ cm bs.

[REDACTED]

[REDACTED]

We assessed the NRHP eligibility of site 38CK143 with respect to Criterion D, its ability to add significantly to our understanding of the history of the region. The artifacts do not occur in concentrations sufficient to interpret activities that occurred at the site. None of the Pre-Contact artifacts are diagnostic. The potential for intact subsurface features to be present at the site is low. Additional investigation of 38CK143 is not likely to generate information beyond the period of use (late nineteenth to twentieth century) and the presumed function (homesite) presented above. The site cannot generate additional important information concerning the past settlement patterns or land-use practices in Cherokee County. Therefore, we recommend site 38CK143 not eligible for the NRHP. Site 38CK143 warrants no further management consideration.

Isolated Find. Investigators identified one isolated find (Isolate 1) to the north of a gravel road on the landform in the western end of the spoils area (see Figures 1.1 and 3.1). A total of two artifacts were recovered from two initial shovel tests spaced 30 meters apart. Investigators excavated 14 shovel tests at 7.5-meter intervals between and around each of the two initial finds in an attempt to recover additional artifacts and define the artifact cluster. Isolate 1 consists of two aqua window glass fragments. Due to the low frequency of material at this locale and the lack of cultural features, we recommend Isolate 1 not eligible for the NRHP. Further management consideration Isolate 1 is not warranted.

**Figure withheld under Section 304 of the
Archaeological Resources Protection Act (16 U.S.C. 470w-3(a))**

[illegible]

3.1.4 Construction Rebar Laydown Area

Investigators excavated shovel tests at 15- and 30-meter intervals across the rebar laydown area APE (see Figure 3.1). All areas with greater than 15 percent slope within the rebar laydown area APE were visually inspected.

The majority of the rebar laydown area is wooded in mixed pines and hardwoods with an understory of knee-high grass/weeds. A large portion of the landform is covered in gravel. The gravel may have been brought to the area to control erosion. A transmission line corridor crosses the landform. A modern shed is located on the landform. Figure 3.7 presents a view of the rebar laydown area. Investigators excavated 40 shovel tests at 15- and 30-meter intervals across the landform. Soils generally consisted of a thin layer of red clayey sand over compact red clay subsoil. Investigators identified no cultural resources within the rebar laydown area.

Investigators revisited the reported location of site 38CK15. Site 38CK15 was recorded by Bianchi (1974) during his survey of the former Cherokee Nuclear Site (see Figure 1.1). Bianchi (1974:9) reported that the site, located [REDACTED]

[REDACTED] Bianchi (1974:9) concluded that “no recommendations are made at present for further investigation of this site.” This site is considered to be unassessed. Investigators excavated shovel tests at 15-meter intervals across the reported location of 38CK15 and also carefully inspected the ground surface. We were unable to locate 38CK15. Thirty-five years of erosion may have obliterated all evidence of this site. It is also possible that Bianchi (1974) collected all of the artifacts from this site.



Figure 3.7 View of the rebar laydown area, facing northwest.

3.2 RESULTS OF THE ARCHITECTURAL SURVEY

Agha et al. (2007a) recorded 12 previously undocumented historic architectural resources within a one-mile radius of the primary construction area for the WLS; these resources were determined not eligible for the NRHP. During the current investigations, the senior architectural historian also assessed the effects of the proposed wastewater line on the Ninety-Nine Islands Dam (Resource 0042.021). The assessment was summarized in a letter report submitted to the SHPO on February 6, 2009 (Appendix B). The senior architectural historian recommended that the proposed wastewater line would have no effect on Resource 0042.021. On March 6, 2009, the SHPO concurred with this recommendation (Appendix B).

the WLS; these resources were determined not eligible for the NRHP. The senior architectural historian also assessed the effects of the proposed wastewater line on the Ninety-Nine Islands Dam (Resource 0042.021). The senior architectural historian recommended that the proposed wastewater line would have no effect on Resource 0042.021. On March 6, 2009, the SHPO concurred with this recommendation.

Construction and operation of the two on-site utility corridors, a spoils area, and a rebar laydown area will not affect any historic properties. Should designs change to include areas outside of these or previous APEs, additional cultural resources survey(s) may be necessary.

3.3 SUMMARY AND MANAGEMENT RECOMMENDATIONS

In December 2008 and January 2009, Brockington and Associates, Inc., conducted an intensive cultural resources survey of the Lee Nuclear Station on-site utilities in Cherokee County, South Carolina. This project includes the proposed wastewater line, on-site transmission lines, construction spoils area, and rebar laydown area within the Lee Nuclear Station. These investigations included background research, archaeological survey, and architectural survey. The work was conducted to determine if the undertaking will affect historic properties (i.e., sites, buildings, structures, objects, and districts eligible for or listed on the NRHP).

Investigators identified three archaeological sites (38CK138, 38CK139, and 38CK143) and one isolated find (Isolate 1) during the cultural resources survey. We recommend these resources not eligible for the NRHP. No further management consideration of sites 38CK138, 38CK139, and 38CK143 and Isolate 1 is warranted. We also revisited the reported locations of two previously recorded sites (38CK14 and 38CK15) but found no evidence of these sites.

Agha et al. (2007a) recorded 12 previously undocumented historic architectural resources within a one-mile radius of the primary construction area for

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APPENDIX A: ARTIFACT INVENTORY

[REDACTED]

APPENDIX B: SHPO CORRESPONDENCE AND LETTER REPORT



November 12, 2008

Mr. Ralph Bailey
498 Wando Park Boulevard, Suite 700
Mt. Pleasant, South Carolina 29464

Re: Scope of Work for the Cultural Resources Survey of Proposed Utility
Corridors, Lee Nuclear Station.
SHPO Project No. 08-CC0116

Dear Mr. Bailey:

Thank you for the e-mail that we received on Oct 20, 2008, regarding the above-referenced project. We also received the proposed Scope of Work for a Cultural Resources Survey as supporting documentation for this undertaking. The State Historic Preservation Office is providing comments to the Nuclear Regulatory Commission and Duke Power pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800.

Based on the information provided and a description of the proposed Area of Potential Effect (APE), our office would agree that the proposed scope of work represents a "reasonable and good faith" effort to identify properties listed in or eligible for listing in the National Register of Historic Places.

If you have any questions, please contact me at (803) 896-6181 or ccantley@scdah.state.sc.us.

Sincerely,

Chuck Cantley, MA, RPA
Staff Archaeologist/GIS Coordinator
State Historic Preservation Office

6 February 2009

Chuck Cantley
South Carolina Department of Archives and History
8301 Parklane Road
Columbia, South Carolina 29223

RE: Assessment of the Proposed Wastewater Line, Lee Nuclear Station, Cherokee County, South Carolina

Dear Chuck:

As part of the construction of the Lee Nuclear Station, Duke Energy, Carolinas is proposing to build a wastewater line that will extend from the location of the nuclear plant and will discharge along the Ninety-Nine Islands Dam (Resource 0042.01). As part of the Scope of Work we presented to the South Carolina Department of Archives and History for the larger project, we recommended an assessment of the effects of the new wastewater line that will be constructed along the back of the Ninety-Nine Islands Dam (Resource 0042.01). Figure 1 shows the existing dam (left) and proposed discharge facility (right). While this assessment will be formally presented in Brockington's Cultural Resources Report for the project, we wanted to present this information to the South Carolina State Historic Preservation Office (SHPO) early in the process for comment to ensure that we have performed a satisfactory level of effort for the assessment, and if more work is required we can do that before submitting of the report for review. We are requesting that you please review the information below, and provide us any comments on our methodology or assumptions for the assessment of effect for the proposed wastewater line.

In review, Brockington conducted an intensive architectural survey of the Gaston Shoals and Ninety-Nine Islands hydroelectric plants in Cherokee County, South Carolina, in August 2000, and the SHPO determined the site to be eligible for the National Register of Historic Places (NRHP) (Harvey 2001). Because the Ninety-Nine Islands Dam is NRHP eligible, Brockington assessed the effects of the proposed wastewater facility on the resource.

Part of the current proposed undertaking includes the construction of a 36-inch high-density polyethylene (HDPE) wastewater pipe running across the property that will terminate approximately 100 feet south of the dam (see Figure 1). This area was surveyed as a separate part of this cultural resources survey. A 20-by-12-by-8-foot tie-in vault will transfer the wastewater down to a 36-inch HDPE underwater discharge pipe that will be submerged five feet below full pond level and extend along the upriver (west) side of the dam. The pipe will be fastened to the concrete of the existing dam. Figure 2 presents proposed drawings showing how the discharge pipe will be attached to the dam. The construction of the pipeline will occur on the submerged side of the dam and will not affect its integrity. The accumulated silt behind the dam will be dredged as needed prior to installation of the submerged discharge pipe. Figure 1 (right map) shows a temporary cofferdam near the new pipeline. The construction of this dam was planned

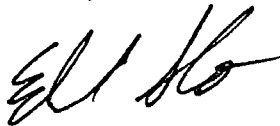
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as a temporary structure to aid in the laying of the pipe in the water; however, the cofferdam will likely not be necessary. Duke Energy is considering the use of divers and a barge to construct the underwater pipeline. If the cofferdam is used, it is only temporary and will be removed after the pipe is installed. The construction of the cofferdam will not affect Resource 0042.

The pipe will be located under the full pond level, and therefore it will not be visible during normal use. Figure 3 provides a current view of the dam showing the back of the dam at full pond level. Because the proposed pipe will not be visible, we recommend that the construction of the discharge pipe will not have an effect on the Ninety-Nine Islands Dam's integrity of location, design, setting, materials, workmanship, feeling, or association. The Ninety-Nine Islands Hydro-electric Station license requirements stipulate that the water level cannot be more than one foot below full pond, except for conducting maintenance on the dam. It is possible that during maintenance periods the pipe will be visible, but only temporarily.

Again, this information will be formally submitted as part of a larger cultural resources report. If you have any questions, please contact me, and I will assist you in any manner I can. Again, thank you for your comments on this small part of the project.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ed Salo', written in a cursive style.

Edward Salo
Project Manager



Reference Cited

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2001 *An Intensive Architectural Survey of the Gaston Shoals Plant and Ninety-Nine Islands Plant, Cherokee County, South Carolina*. Prepared for Duke Power Company. Brockington and Associates, Inc., Mt. Pleasant, South Carolina.

Figure 1. Plan of the wastewater discharge at Ninety Nine Islands Dam.

Figure 2. Detail plan showing the attachment of the discharge pipe to the dam.

Figure 3. View of the reservoir side of Ninety Nine Islands Dam.

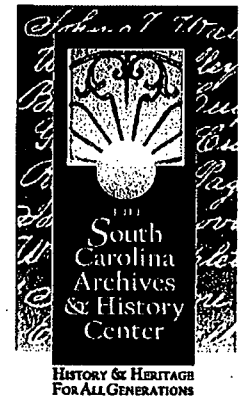
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Archaeological Resources Protection Act (16 U.S.C. 470w-3(a))**

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Archaeological Resources Protection Act (16 U.S.C. 470w-3(a))**



Figure 3. View of the reservoir side of Ninety-Nine Islands Dam.

March 6, 2009



Edward Salo
Brockington Consulting
498 Wando Park Boulevard, Suite 700
Mt. Pleasant, South Carolina 29464

Re: Lee Nuclear Station Proposed Wastewater Line, Cherokee County, SC
SHPO #: 09CW0091

Dear Mr Salo:

Thank you for your letter of February 6, which we received on February 9, regarding the above referenced project. We also received specifications and photos as supporting documentation for this undertaking. The State Historic Preservation Office is providing comments to Federal Energy Regulatory Commission pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800.

Based on the description of the Area of Potential Effect (APE) and the identification of historic properties within the APE, our office concurs with the assessment that no properties listed in or eligible for listing in the National Register of Historic Places will be affected by this project.

If you have any questions, please contact me at (803) 896-6169 or cwilson@scdah.state.sc.us.

Sincerely,

Caroline Dover Wilson
Review and Compliance Coordinator
State Historic Preservation Office