PANAMERICAN REPORT NO. 35153

PANAMERICAN CONSULTANTS, INC.

PHASE I CULTURAL RESOURCES SURVEY OF THE PROPOSED ASTRO TRACT, MISSISSIPPI COUNTY, ARKANSAS

PREPARED FOR:

GREAT RIVER ECONOMIC DEVELOPMENT
4701 MEMORIAL DRIVE
BLYTHEVILLE, ARKANSAS 72316

PREPARED BY:

PANAMERICAN CONSULTANTS, INC.
91 TILLMAN STREET
MEMPHIS, TENNESSEE 38111

DRAFT REPORT
OCTOBER 2015

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Lead Agency:

U.S. Army Corps of Engineers, Memphis District

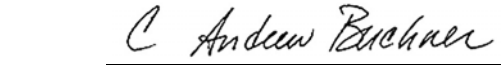
Prepared for:

Great River Economic Development
4701 Memorial Drive
Blytheville, Arkansas 72316

Prepared by:

Andrew Saatkamp, RPA, C. Andrew Buchner, RPA, and Karla Oesch

Panamerican Consultants, Inc.
91 Tillman Street
Memphis, Tennessee 38111
Panamerican Project No. 35153



C. Andrew Buchner, RPA
Principal Investigator

OCTOBER 2015

ABSTRACT

At the request of Great River Economic Development, Panamerican Consultants, Inc. performed a Phase I cultural resources survey of a 660-ac. (267-ha) tract west of the City of Osceola, Arkansas. A standard cultural resources literature and records search was conducted, and it revealed that there is no previously recorded archaeological site or historic property within the study area.

A four-person team surveyed the proposed Astro Site project area on 16–21 August 2015. The survey tract consisted of cultivated fields that had been harvested or otherwise had the vegetation cut down. This resulted in the entire project area having excellent surface visibility. Because of the outstanding surface visibility, pedestrian survey was the means of investigation. Shovel testing was conducted only within site boundaries in an attempt to determine the extent of the scatter.

The survey of the Astro Site project area resulted in the identification of three Historic period sites 3MS937, 3MS938, and 3MS939. All three sites date from the mid-twentieth century and are considered not eligible for listing in the National Register of Historic Places.

As there is no National Register of Historic Places listed, eligible, or potentially significant cultural resource within the project area, no further cultural resource work is recommended.

ACKNOWLEDGEMENTS

Panamerican Consultants, Inc. appreciates the opportunity to have provided Great River Economic Development with our services. Clif Chitwood was our point of contact.

Panamerican Consultants, Inc. personnel who contributed to the project include the following. The Author served as Field Director, and Ben Abney, Hanna Fite, and Phillip Geary functioned as Archaeological Technicians. Laboratory Director Karla Oesch conducted the artifact analysis. Kate Gilow provided administrative support during all phases of the project. Anna Hinnenkamp-Faulk edited the report.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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I. INTRODUCTION

At the request of Great River Economic Development, Panamerican Consultants, Inc. (Panamerican) performed a Phase I cultural resources survey of a 660-ac. (267-ha) tract west of the City of Osceola, Arkansas. The purpose of this study was to identify all known and unrecorded cultural resources present within the tract, and to provide appropriate management recommendations for any such properties identified.

The project was conducted to assist Great River Economic Development in complying with Federal statutes including Section 106 of the National Historic Preservation Act of 1966, as amended; Executive Order 11593, and the Advisory Council's "Protection of Historic Sites (36 CFR Part 800)", effective 17 June 1999, and Arkansas State Historic Preservation Officer (SHPO) guidelines. All field and office work was conducted in accordance with the Standards and Guidelines established in 36 CFR Part 66, Recovery of Scientific, Prehistoric, Historic, and Archaeological Data: Methods, Standards and Reporting Requirements (Federal Register, Volume 42, Number 19-Friday, 18 January 1977), and Appendix B of the Arkansas State Plan: *Guidelines for Archeological Fieldwork and Report Writing in Arkansas* (Revised Version in effect as of 1 January 2010).

PROJECT LOCATION

The proposed Astro Site project area is located west of the City of Osceola, north of Keiser Avenue. Interstate 55 (I-55) forms a large part of the western boundary. The eastern boundary is a field road. State Highway 119 (HY-119) runs through the northern part of the project area, but it is not a boundary. The terrain is level and low-lying, and the elevation is generally about 230 ft. The area was in harvested fields and had excellent surface visibility. The project area is located in portions of Sections 28, 29, 32, and 33 of Township 13 North Range 10 East (T13N R10E), and can be identified on the Keiser, AR-TN 7.5-min quad (Figures 1-01 and 1-02).

OUTLINE OF THE REPORT

The technical report that follows is organized in the following manner (see also *Table of Contents*). The most salient aspects of the local environmental setting area are outlined in Chapter II. The local culture history is reviewed in Chapter III. The results of the literature and records search are presented in Chapter IV. The survey's field methods and results are presented in Chapter V. Artifact analysis methods and analysis are presented in Chapter VI. Chapter VII provides a summary and conclusions. The report concludes with a references cited section and various pertinent appendices.

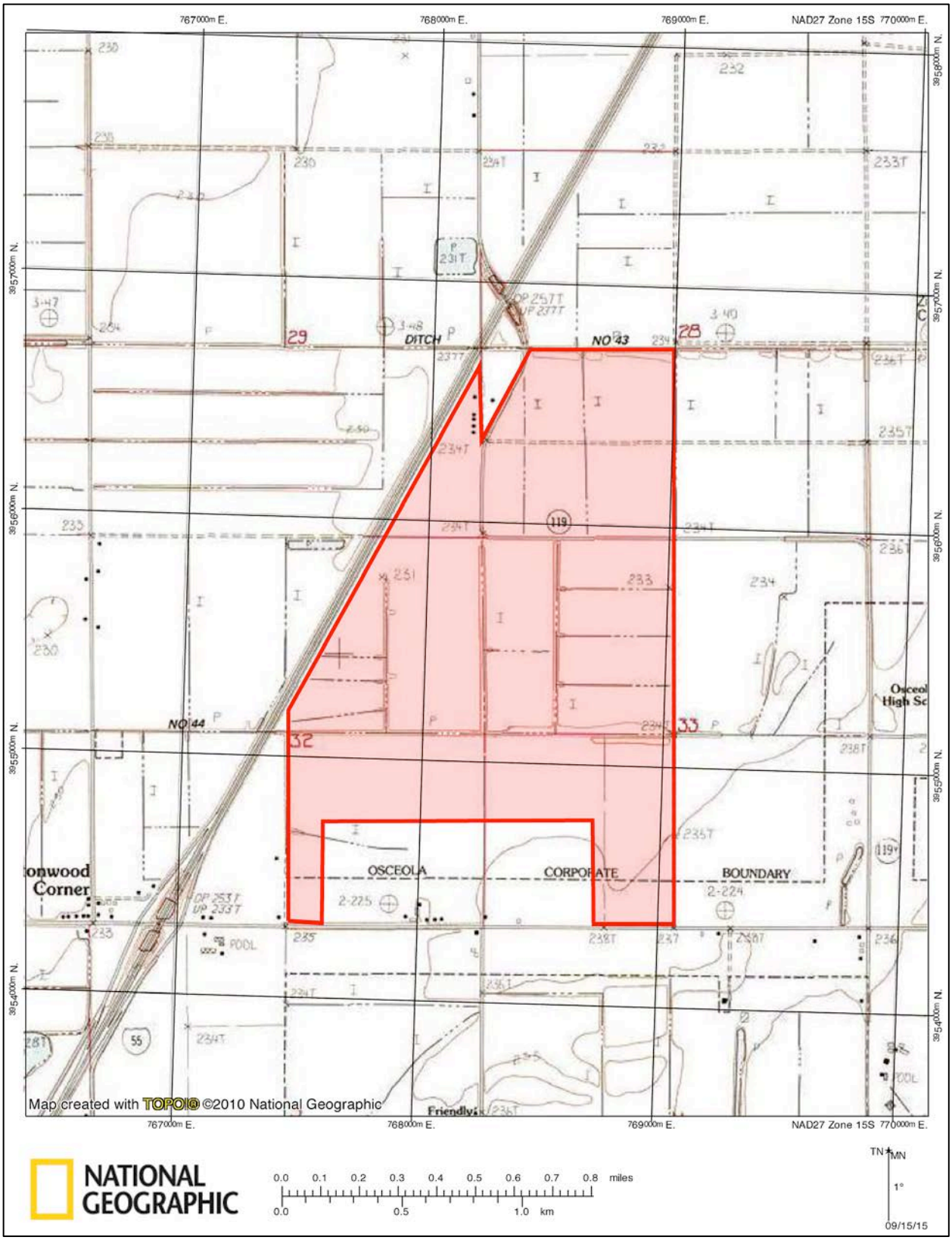

Figure 1-01. Quad map locator for the proposed Astro Site project area (base map: Keiser, AR-TN 7.5-min. quad).

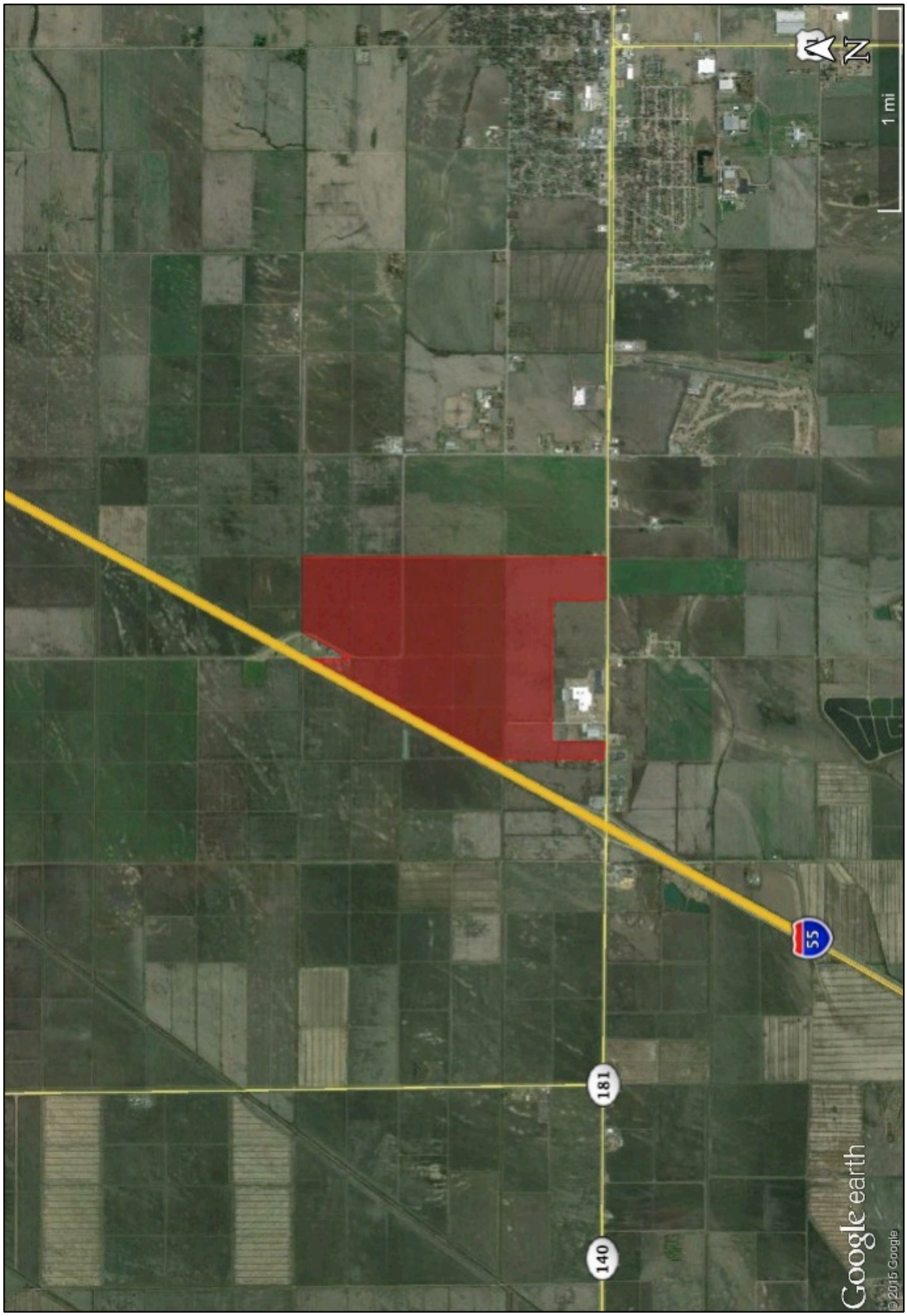

Figure 1-02. Google Earth image of the proposed Astro Site project area.

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II. ENVIRONMENTAL SETTING

PHYSIOGRAPHY

Mississippi County, Arkansas is located in the northern portion of the Lower Mississippi Valley, defined by Saucier (1994:I:22) as "the greater Quaternary valley and deposits of the Mississippi River and its principal tributaries within the limits of the Coastal Plain." The town of Cairo, Illinois lies at the confluence of the Ohio and Mississippi rivers and is commonly regarded as the northern limit of the Lower Mississippi Valley. The Lower Mississippi Valley is subdivided into six major lowlands, or basins, and Mississippi County falls within the St. Francis Basin (Fenneman 1938). However, as Saucier (1994:I:24) cautioned, significant portions of these basins "actually consist of the [Mississippi River] meander belt ridge itself."

Archaeologists consider the St. Francis Basin part of the "Central Mississippi Valley," which is essentially the region between the mouths of the Ohio and Arkansas rivers (McNutt 1996; Morse and Morse 1983:1). The St. Francis Basin is referred to as the eastern lowlands, while the White-L'Anguille River Basin, located to the west of Crowley's Ridge, is considered the western lowlands. The topography of the St. Francis Basin is typical of bottomlands along a major perennial stream, ranging from broad flats to alternating areas of swales and low ridges. Except along a few stream banks, local differences in elevation are minor. The nearest significant upland to the project area is a section of loess bluffs, known as "Chickasaw Bluff No. 1," which is located opposite Craighead Point in Lauderdale County, Tennessee.

Within the St. Francis Basin, the project area is located within the Mississippi River meander belt, which forms the eastern edge of the basin. Woods et al. (2004) classify this area as a Level IV eco-region within the larger Mississippi Alluvial Valley (a Level III region), and refer to it as the "Northern Holocene Meander Belts" (unit 73a). The Northern Holocene Meander Belts cover 2,430 mi.^{2} in Arkansas. The topography is characterized as "Broad, flat to nearly flat floodplain containing the meander belts of the present and past courses of the Mississippi River. Point bars, natural levees, flood control levees, swales, meander scars, oxbow lakes, drainage ditches, and meander low gradient rivers and bayous occur" (Woods et al. 2004).

GEOMORPHOLOGY

Meander belt systems are dynamic and contain a variety of landforms as a result of shifting channel morphology including natural levees, crevasse splays, distributaries, point bars, and abandoned channels (Saucier 1994:I:98-120, 187-200). Examination of Saucier's (1994:II: Plate 6) geomorphic map reveals that the proposed Astro tract is located on Late Wisconsin Stage valley train Level 1 (Pvl 1) deposits (Figure 2-01). Late Wisconsin Stage valley train Level 1, the lowest valley train level, was deposited after the Mississippi River broke through the Bell City-Oran Gap (Saucier 1994:I:247). Unlike the Late Wisconsin Stage valley train Level 2 (Pvl 2) surface to the west, the Level 1 terrace "contains no Dalton-culture site whatsoever" (Saucier 1994:I:247).

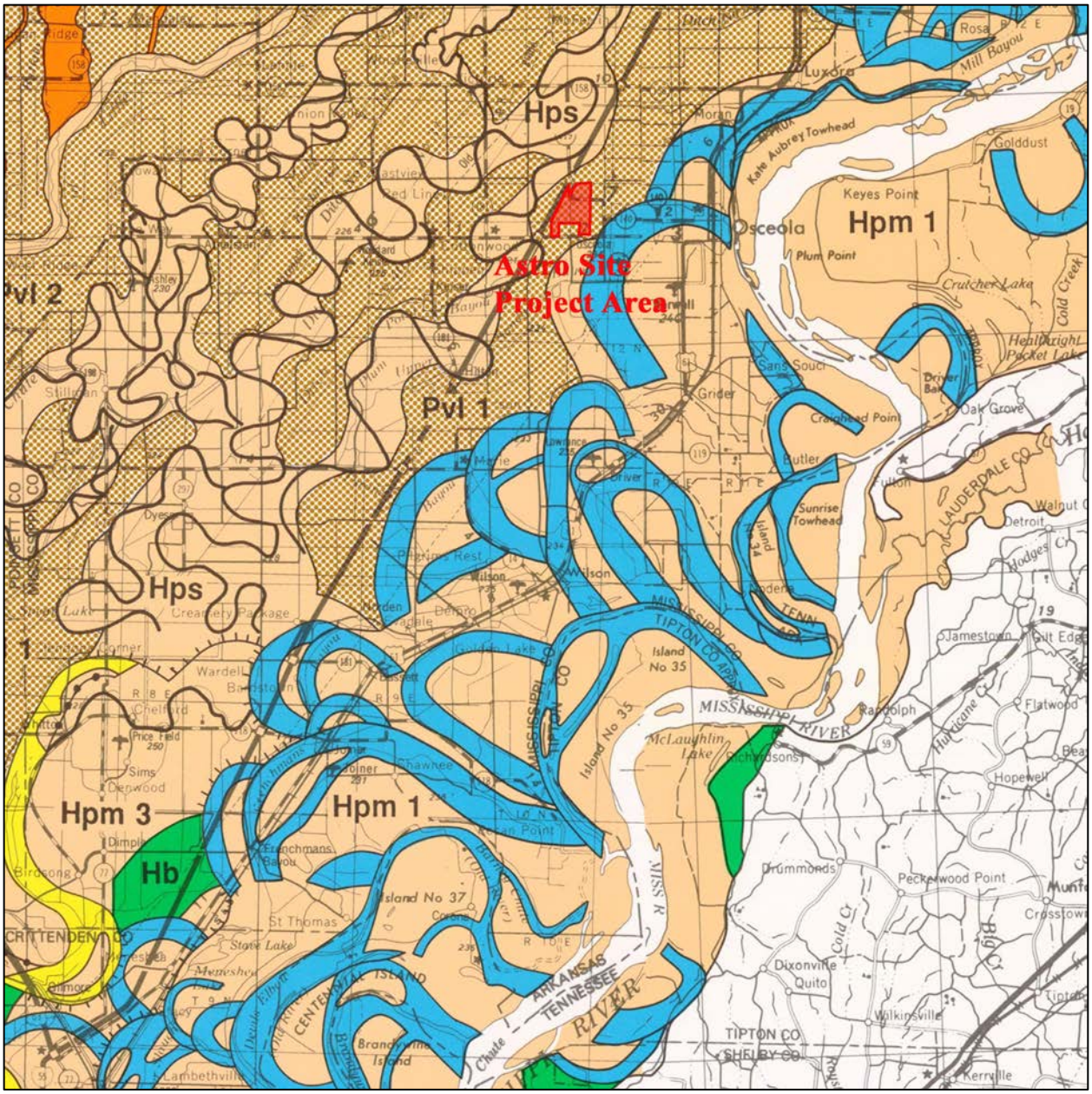

Figure 2-01. Geomorphic map with the project area location added (after Saucier 1994:II:Plate 6).

SOILS

At the county level, the Astro tract occurs within the Tunica-Bowdre-Sharkey soil association (Ferguson and Gray 1971:General Soil Map). The Convent-Morganfield-Crevasse association is described as "moderately well drained and poorly drained soils that are clayey in some part of the subsoil" (Ferguson and Gray 1971:General Soil Map). These soils make up about 18 percent of Mississippi County and occur in a band roughly parallel to the Mississippi River extending from nearly the northern county boundary to the southern. The specific soil type represented at each of the surveyed areas is discussed below.

Three soil types are mapped within the project area: Sharkey-Steel complex (Sm); Steel loamy sand (So); and Tunica silty clay (Tu; Figure 2-02).

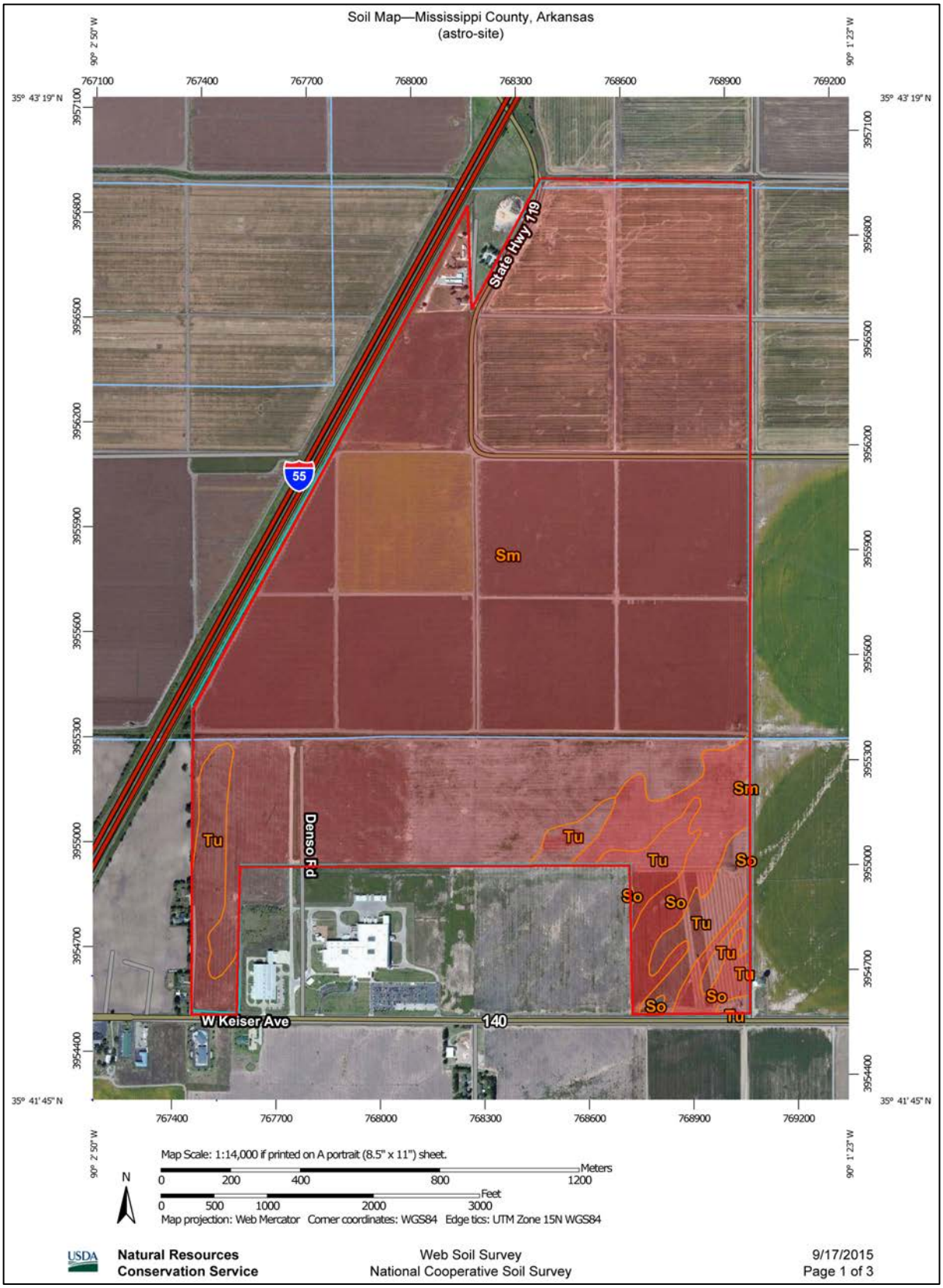

Figure 2-02. Soil map of the proposed Astro Site project area (in red; map obtained from the U.S. Department of Agriculture Web Soil Survey).

Sharkey-Steel complex soils make up, by far, the bulk of the project area. These soils are described as "poorly drained Sharkey soils and moderately well drained Steele soils found mainly in the central and western parts of the county…Some area are subject to frequent flooding" (Ferguson and Gray 1971:19). This is a Capability Unit IIIw-1 soil; if frequently flooded, it is a Capability Unit Vw-1 soil.

Steele loamy sand is described as "moderately well drained soil…Some areas are frequently flooded" (Ferguson and Gray 1971:20). This is a Capability Unit IIw-1 soil; if frequently flooded, it is a Capability Unit Vw-1 soil.

Tunica silty clay is described as "at the higher elevations…formed in moderately thick beds of sediments deposited by slack water and underlain by loamy sediments" (Ferguson and Gray 1971:21). This is a Capability Unit IIw-1 soil; if frequently flooded, it is a Capability Unit Vw-1 soil.

Because soils are indicators of past environments, soil types can be used to predict a given tract's potential for containing archaeological deposits. The Soil Conservation Service's "Capability Unit" classification is a measure of the limitations of each soil type that can restrict its use. These capability units are used by archeologists as indicators of the potential that a given soil type has for containing an archaeological deposit, because soils with few limitations are more likely to yield evidence of human occupation than soils with moderate or severe limitations. From an archaeological standpoint Capability Unit (or Class) are evaluated as followed:

- Capability Unit I soils have few limitations that restrict their use, and are considered to have a high probability of containing archaeological resources.
- Capability Unit II soils have moderate limitations, and are considered to have a moderate probability of containing archaeological resources.
- Capability Unit III and IV soils have severe limitations, and are considered to have a low probability of containing archaeological resources.
- Capability Unit V soils have very severe limitations, and are considered to have little probability of containing archaeological resources.

The majority of the Astro tract is associated with Capability III and V soils, and using soil type as a predictive model, has a low probability of containing archaeological resources. The restricted tracts of Tunica silt clay in the southern portion of the project area have a moderate probability.

NEW MADRID SEISMIC ZONE

The project area is located in the New Madrid Seismic Zone (Saucier 1994:I:Figure 52). Four major fault lines (Reelfoot, Ridgely, Cottonwood Grove, and Crittenden) and one major lineament (Bootheel) comprise this seismic zone. The fault lines and lineaments in this seismic zone are generally oriented northeast-southwest, except for the Reelfoot fault line, which is perpendicular to the others (Saucier 1994:I:Figure 55). Major earthquake events are documented on this fault at 8,100 years before present (YBP), 4,000 YBP, and 200 YBP (Guccione and Van Arsdale 1995).

The New Madrid earthquake devastated the region in the early nineteenth century (see Fuller 1912 for eyewitness accounts). Between 16 December 1811 and 7 February 1812, four magnitude 7+ seismic episodes shook the area. Earthquake features were noted by early archaeologists working along the St. Francis River near the Big Slough Ditch (Thomas 1985

[1894]), and are widespread across the region. Smaller magnitude quakes continue to occur in the New Madrid Seismic Zone.
Geomorphologists and archaeologists have initiated multi-disciplinary research to estimate the interval periods between major episodes associated with the seismic zone. Archaeological evidence from Towosahgy State Archaeological Park led Saucier (1991) to suggest a recurrence interval of 468 years. Lafferty et al. (1997) have studied earthquake destruction at Woodland and Mississippian sites in the New Madrid Seismic Zone and proposed that magnitude 7–8 earthquakes occurred every 200–600 years.

FLORAL COMMUNITIES

The St. Francis Basin was covered by dense virgin forests in the nineteenth century when U.S. settlers began clearing to open the territory for agriculture. General Land Office (GLO) plat maps and field notes document the early to mid-nineteenth-century conditions by Township and Section. The first significant timber cutting took place in tracts along the Mississippi River where antebellum plantations were established. The most extensive drainage projects and timber booms took place after the Civil War and into the 1950s. Today most of the St. Francis Basin is farmland, as a result the natural flora have been replaced by domesticated plants, especially cotton, soybeans, and rice.

Braun (1950) places the forests of the Mississippi Alluvial Plain within the Southeastern Evergreen Forest Region. The vegetation of this region is described as "warm temperate-subtropical" and is composed of a "variety of different forest communities" that are directly related to "diverse environmental conditions" (Braun 1950:282). The swamps of the St. Francis Basin are considered alluvial or bottomland forest, and are subdivided into three ecozones: swamp forests (also known as deep swamps, true swamps, or sloughs); hardwood bottoms (or glade bottoms); and ridge bottoms (or cane ridges; Braun 1950:291). In Lewis' (1974) ecological approach, floodplain environments are classified into ten biotic communities.

The swamp forest ecozone is found in locations were water stands year-round, save for a few droughty periods. The principal trees are bald cypress (*Taxodium distichum*) and water tupelo (*Nyssa aquatica*). Other species such as silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), and water and pumpkin ash (*Fraxinus caroliniana, F. tometosa*) may also occur (Braun 1950:292). In some places stands of water elm (*Planera aquatica*) may form dense thickets. Braun's (1950) swamp forest ecozone is roughly synonymous with Lewis' (1974:25-26) Cypress Deep Swamp.

The hardwood bottoms ecozone is found on land that is subject to frequent overflow. Typically this ecozone is flooded in late winter and spring, and dry during the fall. In the study vicinity hardwood bottoms were historically fairly extensive and probably covered much of the area, in particular the areas that exhibit Class II and Class III soils. Hardwood bottoms are composed of a mosaic of species, including water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), swamp chestnut oak (*Q. michauxii*), overcup oak (*Q. lyrata*), willow oak (*Q. phellos*), elm (*Ulmus* sp.), sassafras (*Sassafras albidum*), hackberry (*Celtics occidentalis*), pawpaw (*Asimina triloba*), and dogwood (*Cornus florida*). These forests are usually dense, the trees are generally large, and the undergrowth is luxuriant.

The ridge bottoms ecozone is found on low rises that are elevated a few meters above the floodplain. Because the water drains off these areas, they support larger numbers of oaks and hickories than the hardwood bottoms ecozone. Braun (1950:295) remarks, "Here are found some of the finest bottomland forests." Sweetgum is the predominant tree, but oaks (including white oak [*Q. alba*]), shagbark hickory (*Carya ovata*), and pecan (*C. illinoensis*) are present in significant numbers. Most of the species of the adjacent, wetter hardwood bottoms are also

found. In the highest, and thus better-drained areas, beech (*Fagus grandifolia*) and magnolia (*Magnolia grandiflora*) can occur.

Some of the ridges in this ecozone were covered in dense stands of giant cane (*Arundinaria gigantea*), an important resource for prehistoric and historic Native Americans. Braun's (1950) ridge bottoms ecozone is roughly synonymous with the sweetgum-elm "Cane Ridge" forest of Lewis (1974:21-24). Cane ridges are noted on some GLO plat maps.

FAUNAL RESOURCES

Faunal resources available to the prehistoric and early historic inhabitants of the project area would have varied considerably due to the local environment being subject to annual overflow. Faunal communities would have been quite varied during dry periods (Lewis 1974:23). Large mammals including black bear (*Ursus americanus*), mountain lion (*Felis concolor*), wolf (*Canis lupus*), and white-tailed deer (*Odocoileus virginianus*), were at one time commonplace in the area according to historic accounts. Smaller mammals including raccoon (*Procyon lotor*), muskrat (*Ondatra zibethicus*), otter (*Lutra canadensis*), mink (*Mustela vison*), gray fox (*Urocyon cineroargenteus*), red fox (*Vulpes vulpes*), eastern fox squirrel (*Sciurus niger*), gray squirrel (*Sciurus carolinensis*), opossum (*Didelphis marsupialis*), eastern cottontail rabbit (*Sylvilagus foridanus*), and striped skunk (*Mephitis mephitis*) were also present. Avian fauna included large species such as wild turkey (*Meleagris gallopavo*), ruffled grouse (*Bonasa umbellus*), and prairie chicken (*Tympanuchus cupido*) and smaller species such as the passenger pigeon (*Ectopistes migratorius*; Lewis 1974:23).

Faunal communities in the swamps bordering the local lakes and sloughs are not as varied as those found in the ridge forest, primarily due to a lower-density undergrowth and seasonal inundation. Large mammals, including white-tailed deer and black bear, might likely have occupied this forest type regardless of inundation. Smaller mammals, such as eastern cottontail and swamp rabbits (*S. palustris*), would have been restricted to dry periods only in their occupation of this forest type. Avian fauna listed as common in the ridge forest would have been restricted to drier periods in seasonal swamps, but migratory waterfowl such as ducks (*Anas* spp.) and Canada geese (*Branta candensis*) would have been abundant during the flood season. Along the margins of swamps, small mammals such as beaver (*Casor canadensis*) and muskrat (*Ondatra zibethicus*) would have occupied permanent lakes, bayous, and swamps (Lewis 1974:23).

The cypress lakes, bayous, and seasonal swamps would have supported a very high seasonal biomass of fishes (Limp and Reidhead 1979; Peterson et al. 1981), as well as reptiles and mollusks. Fish species that may have been exploited for food include gar (*Lepisosteus),* freshwater drum (*Aplodinotus gruniens),* bass/sunfish spp. (*Perciformes),* catfish (*Ictaluridae spp.),* crappie (*Pomoxis sp.),* and buffalofish (*Ictiobus cf. Bubalus*). Among the reptiles, soft-shelled turtle (*Trionyx spinifer)* and pond/river turtle (*Aquatic Emydidae*) were probably favored game species. Various types of mollusks such as spike (*Elliptio dilatata*), ebony shell (*Fusconaia ebena*), pocketbook (*Lampsilis* spp.), and wedge rangia (*Rangia cuneata*) were available from local aquatic environments as well.

CLIMATE

The current climate of Arkansas is classified as humid subtropical. The Mississippi County climate is typical for the Mississippi River Valley, with hot summers, mild winters, and abundant rainfall. During the late spring, summer, and early fall sunlight is quite intense; thus, it keeps the humidity and soil moisture evaporation levels high. Winters in this area are characterized by cool and cloudy weather coupled with frequent rainfall, interspersed with periods of clear and

cold conditions. Warm, rainy periods occur intermittently during the winter months as well (Ferguson and Gray 1971:54).

The average yearly high temperature for Mississippi County is a mild 72°F, with an average yearly minimum of 50° F. Average daily maximum temperatures range from 92°F during July to 49°F during January. Average daily minimum temperatures range from 70°F in July to 31°F in January (Ferguson and Gray 1971:Table 10). The growing season in Mississippi County is long, averaging 220 days. Freezing temperatures usually occur in early to mid-November and continue until mid-March (Ferguson and Gray 1971:54).

Precipitation in Mississippi County averages approximately 48 in. per annum. The wettest month is January, when an average of 5.45 in. of precipitation falls (Ferguson and Gray 1971:Table 10). Frontal systems associated with areas of low pressure provide the area with the majority of its rainfall. During summer months, convection clouds caused by high temperatures and humidity levels provide rainfall frequently during the afternoon hours. Periods of drought are infrequent, and these are seldom severe. Frozen precipitation is minimal, rarely resulting in the accumulation of more than 5 in. (Ferguson and Gray 1971:54).

PALEOENVIRONMENT

Paleoenvironmental conditions were substantially different in the late Pleistocene through the middle Holocene. Important regional sites with Quaternary plant fossil records include the Pemiscot Bayou and Big Lake corings in Mississippi County (Scott and Aasen 1987); the Hood Lake coring in Pointsett County (Delcourt and Delcourt 1989); the Old Field site in Stoddard County, Missouri (King and Allen 1977); and the Nonconnah Creek Mastodon site in Shelby County, Tennessee (Delcourt et al. 1980). Delcourt, Delcourt, and Saucier (1997) synthesized data and mapped vegetation reconstructions for the Central Mississippi Valley for various temporal intervals.

Post-glacial warming began about 10,500 B.C., and a cool-temperate spruce-fir-larch forest gave way to a warm-temperate mixed oak deciduous forest (Morse and Morse 1983:8). By 7,000 B.C. the mixed oak deciduous forest was firmly established in the Central Mississippi Valley, and the Mississippi River had diverted through Thebes Gap and changed from braided to meandering. The period from ca. 7000–3000 B.C. (or possibly 8000–4000 B.C.; see Morse and Morse 1983) was warm and dry and is referred to as the Hypsithermal. Modern floristic regions developed after 3000 B.C. with the return of wetter conditions.

LITHIC RESOURCES

Within Mississippi County, lithic deposits can best be described as sparse, due to the alluvial origin of the surface. However, regional archaeological assemblages do exhibit a wide range in the number and variety of lithic resources. These resources and their possible sources are reviewed below.

The Citronelle gravel beds associated with Crowley's Ridge and the Chickasaw Bluffs offered the closest and most readily available source of lithic resources for the inhabitants of prehistoric Northeast Arkansas. Known prior to 1955 as Lafayette chert (Stallings 1989), these gravels likely originated in the mid-continent Paleozoic craton and Appalachian Mountains region prior to being redeposited via erosion during the late Pliocene or early Pleistocene (Guccione et al. 1990:29). Aboriginal use of this lithic material for tool production is well documented in the eastern Arkansas archaeological literature (House 1975:81-84; Morse and Million 1980:15-26). A cluster of prehistoric extractive (quarry) sites was documented in the Whaley Slough valley on the western escarpment of Crowley's Ridge near Bono during the Cache River archeological project (House 1975). This led House (1975:82) to suggest that similar quarry/extractive sites—

which are clustered in areas where the Citronelle gravels outcrop—are "probably present along the whole length of Crowley's Ridge." Today, Citronelle gravel is used for road surfaces.

Other cryptocrystalline resources that were utilized by the prehistoric population of Northeast Arkansas include, but are not limited to, the following. Burlington chert, which outcrops extensively in the Mississippian limestones of Missouri and Illinois, was favored for tool production during the late Prehistoric period (Morse and Million 1980:15-23). Novaculite, which occurs within the Ouachita Mountains (Haley 1976; Hoffman 1977; Levin 1978), was utilized widely both geographically and temporally (Brockington et al. 1992:79; Morse and Million 1980).

Mill Creek, Cobden, and Kaolin cherts, all available from southern Illinois, were also used to varying extents by prehistoric peoples in northeastern Arkansas. Mill Creek chert occurs in larger cobbles and was preferred for the manufacture of larger tools such as hoes (Cobb 1989), spades, etc. (Lafferty and Hess 1996:19). The manufacture and widespread exchange of large hoe forms exploded in the Early Mississippian period (Cobb 1989:84). A cache of 108 Mill Creek hoes is reported from a Middle Mississippian site near Big Lake (Morse and Morse 1983:255). Morse and Morse (1983:255) note that the presence of large concentrations of hoe chips is a characteristic of middle-late period archaeological sites in northeastern Arkansas. No evidence of the manufacture of such hoes has been found in the region, suggesting that they entered the area as finished trade goods.

Sandstone is another lithic resource available from Crowley's Ridge tertiary deposits. The abundance of this resource may account for the heavy use of it by aboriginal peoples of the eastern lowlands (Brockington et al. 1992:7.9). Sandstone was utilized by the aboriginal inhabitants of the eastern lowlands primarily to make processing tools, including abraders, mortars, and anvils.

Orthoquartzite is also available along Crowley's Ridge, especially along its northern extremity (Morse and Million 1980:15-22). Presumably, orthoquartzite was gathered and used in a similar manner as sandstone.

Hematite, a highly variable mineral, can be gathered within eroded areas along the margins of Crowley's Ridge (Morse and Million 1980:15). This mineral can occur in a grayish black hard form, or a dark red soft form resembling compressed soil. The latter form is known as red ochre and is the most common form of hematite associated with prehistoric cultural manifestations (Vanders and Kerr 1967).
Igneous rock, used principally for axes, mauls, and other heavy tools, was available from two major sources. The Ste. François Mountains in southern-central Missouri readily yield a variety of igneous materials, including rhyolite and coarse-grained granites (Hayworth 1975[1888]:21). Rhyolite was used to manufacture small cutting tools (Childress 1990), while coarse-grained granites were used to manufacture heavy cutting tools (Morse and Morse 1983:5). The presence of abundant primary basalt debitage on Late Mississippian sites near Blytheville has led to the suggestion that Ste. François basalt was monopolized by Nodena phase occupations (Morse and Morse 1983:274). The Ouachita Mountains are also rich in igneous materials, which were traded by aboriginal inhabitants over a large area of the Southeast (Rolingson and Howard 1997). However, the extra-local use of central Arkansas materials dropped to near zero during the late Prehistoric period (Rolingson and Howard 1997:46-47).

The Ozark uplift contains a variety of cryptocrystalline and other stones that were utilized by aboriginal peoples for tools. The light-colored Burlington occurs in extensive Mississippian limestones in Arkansas and Missouri. Primary outcrops occur along the White River near Batesville, and this material was traded widely. A number of other lithic sources would have been available via trade networks or overland foraging expeditions.

III. CULTURAL BACKGROUND

The following chapter provides cultural background information relevant to the project area. A briefing on the historic development of archaeological research in Northeast Arkansas is presented first. An attempt is made to incorporate recent Cultural Resources Management (CRM) projects into this overview. Next, a culture history is presented in a stage-by-stage format.

HISTORY OF INVESTIGATIONS

ANTIQUARIAN INVESTIGATIONS

Archaeological investigations in the Central Mississippi Valley were initially conducted by self-trained, interested individuals and focused on monumental earthworks. The earliest published scholars, such as Caleb Atwater (1820) and Squier and Davis (1848), attributed the earthworks to a non-aboriginal group, the mythic "Mound Builders." H.R. Schoolcraft (1854) was one of the few contemporary scholars who advocated that the mounds were actually Native American constructions.

After the Civil War, antiquarian researchers radiated across the Southeast in a quest for museum specimens and during the late nineteenth century, some of the most intensive investigations took place in Northeast Arkansas. Professor Putnam (1875a, 1875b) of the Peabody Museum, was active in the collection of museum specimens and recording of mounds in the Lower St. Francis Basin of Arkansas and New Madrid County, Missouri.

In 1879, Congress created the Bureau of Ethnology within the Smithsonian Institution and a branch known as the Division of Mound Exploration was established in 1881 specifically to determine "the origins of the mounds" (Thomas 1985 [1894]:21). In Cyrus Thomas's (1985 [1894]) classic *Mound Explorations*, in which the Mound Builder myth is destroyed, mound groups and pottery specimens from Northeast Arkansas are described, including three sites in Mississippi County: Pecan Point; the Jackson (or Wildy) Mounds; and the Sherman Mound (Thomas (1985[1894]:219-223). The Sherman Mound (3MS16) is referred to by locals as the "Indian Signal Mound" (Edrington 1962b:27). Thomas (1985[1894]:223) described the Sherman Mound as exhibiting a "peculiar form" with three terraces (Figure 3-01), and the excavations in the upper terrace produced cane-impressed daub specimens that reveal it was a sub-platform for a structure.

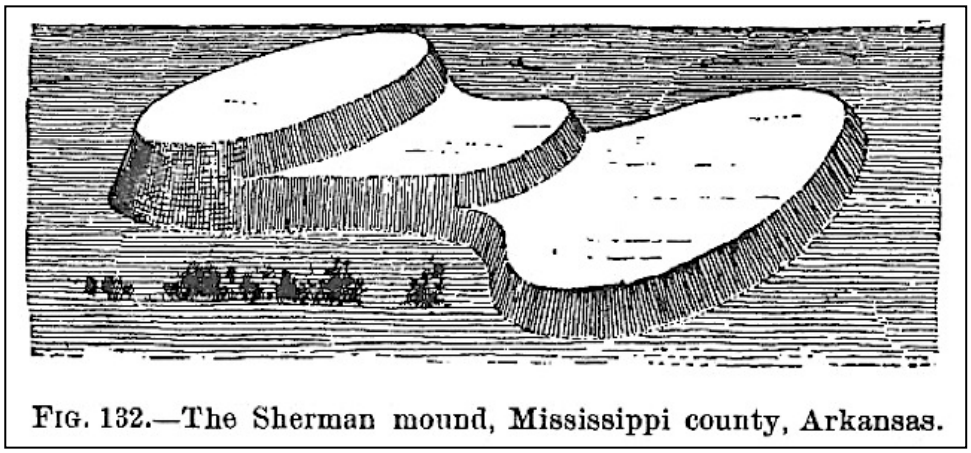

FIG. 132.—The Sherman mound, Mississippi county, Arkansas.

Figure 3-01. The Sherman Mound as illustrated in Thomas (1985[1894]:Fig. 132).

Thomas (1985 [1894]:Figure 130, 131) illustrated various ceramics from Northeast Arkansas including a head pot and a painted bottle from Mississippi County. W.H. Holmes (1884, 1886, 1903) provides the best descriptive analysis of the numerous ceramics recovered by Thomas's field crews. The Arkansas data in the 1894 Thomas volume are based on the 1881–1886 fieldwork of a number of individuals (B. Smith 1985:Table 2), principally Edward Palmer. Details of the 1881–1884 work of Palmer, including formerly unpublished diaries, notes, reports, and illustrations (by a former slave, Henry Lewis), have been compiled and published (Jeter 1990).

With the origin of the mounds now both demonstrated and generally recognized to be Native Americans, the predominate archaeological research issue of the late nineteenth and early twentieth centuries shifted to determining the antiquity of the human occupation of America (O'Brien 1996).

EARLY TWENTIETH CENTURY

In the early twentieth century, the pace of archaeological work in the Central Mississippi Valley accelerated. Clarence B. Moore (1908, 1910, 1911, 1916) spent several field seasons in Arkansas excavating large sites in the region along the Mississippi, St. Francis, White, and Black rivers. During his expeditions, Moore (1911:447-476, 1918:574-575) excavated four sites in Mississippi County: Bell (3MS8); Notgrass (3MS15); Pecan Point (3MS78); and Stoffle (or Turnage [3MS17]).

During the period between 1910 and 1930 modern excavation techniques, such as use of a grid and the establishment of stratigraphic control, became popularized. The University of Arkansas Museum, conducted extensive excavations in Northeast Arkansas with a grant from the Carnegie Foundation. Samuel C. Dellinger, the museum curator, selected large St. Francis sites, such as Nodena, Hazel, Vernon Paul, and Togo, for excavation. Much of this work was never published, although a summary was presented in *American Antiquity* (Dellinger and Dickson 1940). Also in the 1930s, the University of Alabama conducted important excavations at the Nodena site (Morse 1989).

On a national level, the marriage of archaeology and anthropology was accomplished during the early twentieth century, and by 1935 seven universities offered Ph.D. programs in anthropology. Professional archaeological organizations began to form during this period and state societies, which had begun as early as the 1880s in some areas, multiplied. Intensive excavations funded by the Works Progress Administration (WPA) did not occur in Northeast Arkansas.

LOWER MISSISSIPPI SURVEY

Beginning in 1939, the Lower Mississippi Survey (LMS), conducted by the Peabody Museum of Archaeology and Ethnology (PMAE at Harvard University), compiled survey data and conducted test excavations at many of the large sites in the region (Phillips et al. 1951). The LMS investigations are a watershed event in the archaeology of the region. S. Williams' (1954) work at Crosno in Southeast Missouri and other Mississippian sites in the area is another of the LMS's contributions. The ceramic typology and initial phase definitions for most of the ceramic period archaeological cultures of this region were made by the LMS (S. Williams 1954; Phillips 1970). The extensive LMS site files are now available online.

1947–1967

During this period various organizations and interested individuals conducted research in Northeast Arkansas and because of this, the University of Arkansas began to grow as a research facility. In the late 1950s, the Gilcrease Institute of American History and Art funded excavations at the Banks Site and the Cherry Valley Mound (Perino 1966, 1967), in order to

provide perspective on some of their collections. Based on late the 1950s work, the avocational archaeologist John Moselage (1962) produced the Lawhorn Site report, which Morse and Morse (1983:28) note is the first "complete descriptive" site report for Northeast Arkansas. In 1961 and 1962, Ford and Redfield performed a site survey of the Lower Mississippi Alluvial Valley that focused on pre-ceramic sites (Redfield 1971). The Ford-Redfield survey was co-sponsored by the National Science Foundation and the American Museum of Natural History. James Ford excavated the Hopewell burial mounds at Helena Crossing for the American Museum of Natural History and obtained some of the first ^{14}C dates in East Arkansas (Ford 1963). In 1960, the Arkansas Archeological Society was formed. The Society began publishing a *Bulletin* that continues today and began a summer dig program that has excavated some sites in Northeast Arkansas (Morse and Morse 1983:29).

On a national level, several significant advances were made as well during this period. Willey and Phillips (1958) published *Method and Theory in American Archaeology* that proposed a basic archaeological unit taxonomy that replaced the Midwestern Taxonomic System. However, historic archaeology is largely neglected in this work. After 1950, radiocarbon dating became established and available to researchers, and the true antiquity of the Archaic and Paleoindian stages became analytically established. The latter portion of this period falls in Willey and Sabloff's (1974) "Explanatory Period," which is characterized by processual analysis, systems theory, use of statistics, and is derived from the neo-evolutionary theory of Leslie White. None of the Smithsonian's River Basin Survey (RBS) projects took place in the lowlands of Northeast Arkansas.

ARKANSAS ARCHEOLOGICAL SURVEY

The Arkansas Archeological Survey (AAS) was created and funded by the state legislature in 1967 (Davis 1982). The campus of Arkansas State University at Jonesboro was selected as the survey station for Northeast Arkansas. Dr. Dan Morse served as the station archaeologist from 1967–1997. Defining the local Northeast Arkansas sequence was one of the first tasks accomplished (Morse 1969). Problem oriented research and salvage projects by the AAS-Northeast Arkansas Station have produced much of the data regarding the archaeology of this area. The station also serves as a regional repository for artifacts.

CULTURAL RESOURCE MANAGEMENT ERA

The scope and intensity of archaeological investigations in Northeast Arkansas—and indeed across the Southeast—increased dramatically with the passage of the Moss-Bennett bill, or the Archaeological Conservation Act, by the U.S. Congress in 1974. Most federally mandated cultural resource management studies are a direct result of this legislation. A number of major CRM studies have taken place in Northeast Arkansas, as have numerous smaller studies. Major contracting agencies and companies in Northeast Arkansas include the USACE, the National Park Service (NPS), the Soil Conservation Service, the Arkansas Highway and Transportation Department (AHTD), and Arkansas Power & Light Company.

CULTURE HISTORY

The following is a summary of the prehistoric and historic cultural sequence of Northeast Arkansas. Each cultural stage is defined by characteristic artifact assemblages and patterns of subsistence and settlement. The prehistoric sequence in the southeastern United States is traditionally divided into four major stages: Paleoindian; Archaic; Woodland; and Mississippian. Synthesis for Northeast Arkansas and the related cultural manifestations of Southeast Missouri include the following (which were drawn upon in the preparation of this summary): Chapman (1975, 1980); Lafferty and Price (1996); McNutt (1996); Morse and Morse (1983, 1996); O'Brien (1994, 1996); and Phillips (1970). Table 3-01 summarizes the culture history.

Table 3-01. Northeast Arkansas Archaeological Sequence†.

Date	Stage	Phase or culture
	Modern	
A.D. 1950		
	Historic	Tenant
A.D. 1874		
	Historic	Reconstruction
A.D. 1865		
	Historic	Civil War
A.D. 1861		
	Historic	Antebellum Statehood
A.D. 1836		
	Historic	Territorial
A.D. 1803		
	Historic Aboriginal; Colonial	Quapaw, Michigamea; French, Spanish
A.D. 1650		
	Protohistoric	Armorel
A.D. 1541		
	Late Mississippian	Nodena, Parkin, Kent, Walls
A.D. 1400		
	late Middle Mississippian	Lawhorn
A.D. 1200		
	early Middle Mississippian	Cherry Valley
A.D. 1050		
	Early Mississippian	Big Lake, Hayti
A.D. 700		
	Baytown	Dunklin, Baytown, Hoecake
A.D. 400		
	Late Marksville	Cow Mound, Keller
A.D. 200		
	Early Marksville	Helena, Turnage (?)
A.D./B.C.		
	Tchula	Pascola, Turkey Ridge (?)
500 B.C.		
	Poverty Point	
1500 B.C.		
	Late Archaic	Frierson
3000 B.C.		
	Middle Archaic	
7000 B.C.		
	Early Archaic	Cache River
8000 B.C.		
	Dalton	L'Anguille
8500 B.C.		
	Paleoindian	Sedgwick, Crowley's Ridge
9300 B.C.		

† This table principally follows the Morse and Morse (1996:Figure 5-5) chronology.

PALEOINDIAN

Paleoindian occupations represent the first well-accepted occurrence of humans in the Western Hemisphere. Paleoindian populations are generally thought of as highly adaptive and mobile hunter-gatherers whose recent ancestors were Upper Paleolithic Siberians who migrated across the present Bering Strait during the Late Pleistocene, when sea levels were ca. 60 m lower.

During the Late Glacial era, when initial human colonization of the Southeast is postulated (ca. 12,000–10,000 YBP), climatic changes followed the receding of the continental ice sheets, and there was a widespread extinction of megafauna. The environment at this time is usually interpreted to have been characterized by a spruce and/or pine-dominated boreal forest (Saucier 1978:42). However, by 1,000 years prior to the fluted point occupations, the environment had changed to deciduous forest (Delcourt et al. 1980).

Recent research on Paleoindian diagnostics (Anderson et al. 1990) indicates that the period may be subdivided into early (ca. 9500–9000 B.C.), middle (ca. 9000–8500 B.C.), and late (ca. 8500–8000 B.C.) stages based on changes in hafted biface morphology. No radiocarbon dates are available to confirm independently the accuracy of the subdivision. The early occurrence of classic Clovis points is followed by points that Morse and Morse (1983) identify as Coldwater and Sedgwick in Eastern Arkansas. Like most other regions of the Southeast, the Paleoindian diagnostics of the area tend to occur as isolated surface finds. In Northeast Arkansas, early and middle Paleoindian sites are centered on Pleistocene terraces and sand dune deposits along major river systems that were within 30 km of locally available chert sources (Gillam 1996).

Aboriginal groups of the period were likely small, mobile bands dependent upon a hunting-and-gathering economy. Although they may have hunted some of the megafauna that became extinct at the end of the Pleistocene, such as mastodon (*Mammut americanum*), bison (*Bison bison antiquus*), and ground sloth (*Megalonyx sp.*), it is likely that the subsistence base was varied and included a number of plant and animal foods. The nearest firm association of a fluted point with a mastodon remain is at the Kimmswick Site near St. Louis (Graham et al. 1981), although a possible association at Island No. 35 should be noted as well (S. Williams 1957).

DALTON

The Dalton period is considered to be transitional between the Paleoindian and Archaic traditions. The key distinguishing feature of material culture is the unfluted, serrated Dalton point, but the Dalton tool kit includes a number of other diagnostic special-function tools and a woodworking adz (Morse and Morse 1983; Morse 1996). Goodyear (1982) suggests that Dalton represents a distinct temporal horizon, dating to 8500–7900 B.C. While technologically similar to Paleoindian, Dalton assemblages suggest an adaptive pattern that is more akin to later Archaic cultures. One of the most important game species from this time forward to the contact era seems to have been the white-tailed deer (Morse and Morse 1983:71). During the Dalton period the Mississippi River meander system was established in the Lower Valley and was working northward, but a braided stream regime still existed here in the St. Francis Basin.

Dalton components are much better represented in Northeast Arkansas than the preceding Early and Middle Paleoindian diagnostics. In the 1960s, the Ford-Redfield survey project identified a heavy concentration of Dalton components in Northeast Arkansas (Redfield 1971; Redfield and Moselage 1970). Important sites include Brand (Goodyear 1974), Sloan (Morse 1997), and Lace (Morse and Morse 1983), with Brand producing evidence for the oldest cemetery in the New World. Other features at Brand were interpreted as living floors and shelter remains. The distribution of sites and site types along the major drainages has also led to the formulation of competing settlement pattern models for band level societies (Morse 1975, 1977; McNutt 1996:191-192; Price and Krakker 1975; Schiffer 1975).

To the north, in the Missouri Bootheel, the Dalton period is characterized by Plano-like lanceolate projectile points (Chapman 1975:125), indicating a continued affiliation with technologies of the Plains region. The Dalton Serrated point may have developed into broad lanceolate Early Archaic forms, such as Graham Cave Fluted, which date to 8000–7000 B.C. (Chapman 1975:126). Dalton lifeways are best known from more extensively investigated sites such as Graham Cave and Arnold Research Cave in Central Missouri, and Modoc Rockshelter in Illinois (Chapman 1975:94, 234-236).

ARCHAIC

The Archaic is usually thought of in terms of three subperiods: Early (ca. 8000–7000 B.C.), Middle (7000–3000 B.C.), and Late (3000–1500 B.C.). Temporal divisions of the Archaic are primarily based on the occurrence of distinctive projectile points. Throughout Archaic times a hunter-gatherer lifeway appears to have continued, and it was focused on essentially the same flora and fauna as represented in the natural environment today. The Archaic is perceived of as a time of regional "settling in," when an efficient utilization of the environment was keyed to highly cyclical, repetitive seasonal activities continued by indigenous groups over thousands of years (Caldwell 1958). Some seasonal movement to exploit econiches was probably required, but Archaic populations, compared to Paleoindian, are generally portrayed as attached to localities, river valleys, or regions. In the Central Mississippi Valley, virtually no Archaic sites have been excavated, and indeed these components appear to have been overlooked by archaeologists more concerned with ceramic period adaptations (S. Williams 1991; McNutt 1996:194).

The Early Archaic period is best understood from rockshelter excavations, such as Modoc (Fowler 1959) and Graham Cave (Chapman 1975), rather than from open habitation sites. McNutt (1996:194) has commented, "we can see several projectile points coming into the Valley from the west and north, probably in conjunction with the prairie expansion and dry econiches during the Hypsithermal." Point forms considered diagnostic for the Early Archaic include Hardin, Hidden Valley Stemmed, Rice Lanceolate, Hardaway-Dalton, San Patrice, St. Charles-Plevna, and a variety of named side notch types (Big Sandy, Graham Cave, Cache River, etc.). For Northeast Arkansas, Morse and Morse (1983) proposed a series of horizon markers that grade from classic Early Archaic Corner-Notched forms (ca. 7500–7000 B.C.) into Middle Archaic Basal Notched forms.

The Middle Archaic period was marked by a shift in subsistence modes. This was possibly due to environmental changes caused by a climatic episode called the Hypsithermal, which is dated 7000–3000 B.C. (McNutt 1996) or 8000–4000 B.C. (Morse and Morse 1983). This change resulted in restricted deciduous forest occurrence, limiting the availability of certain floral and faunal resources. The cultural impact of this warming trend appears to have been most strongly felt from 5500–3500 B.C. Several settlement models regarding human adaptation during the climatic optimum have been posited. Morse and Morse (1983) propose that the western lowlands of northeastern Arkansas were largely abandoned for the uplands (Ozark Plateau and its escarpment). However, in the lower Tennessee/Cumberland region, populations appear to have congregated at a limited number of floodplain locations and produced deep middens (Nance 1987). Higgins (1990) proposed that the drying of the uplands forced people into the floodplain (American Bottom).

The Late Archaic period begins with the end of the Hypsithermal climatic episode (ca. 3000 B.C.) and the establishment of the modern climatic regime. The Mississippi River was now a well-entrenched meander belt type stream, and adapting to this type of environment was critical for human occupation of the eastern lowlands. There is evidence for more sedentary lifeways, and possibly limited horticulture was being employed, as sunflower, squash, and other cultivated native starchy seed annuals appear in the archaeobotanical record at this time in the other areas

of the Southeast. Late Archaic settlement models typically have a seasonal round aspect, and there is evidence that the substantial "winter" villages, typically located on major streams, were actually occupied year round. Both earthen and shell mounds appear in the archaeological record in the Southeast at this time.

The Late Archaic is characterized by a substantial increase in the number of sites, cultural elaboration, and wide spread trade. The period opens with Benton culture, but Benton materials and sites are generally restricted to east of the Mississippi; rarely are Benton points found west of the Mississippi. Morse and Morse (1983:118) suggest Big Creek points (3000–2000 B.C.), which predate Burkett (2000–1000 B.C.) and Weems (1000–500 B.C.) points, are characteristic of pre-Poverty Point Late Archaic assemblages. Two regional Late Archaic phases have been defined: the Frierson phase based on information from the Frierson Site in the western lowlands (Morse 1982) and the O'Bryan Ridge phase in Southeast Missouri (S. Williams 1954). Farther north, the Titterington/Sedalia phase is characteristic of the Late Archaic period in the prairie regions of Missouri and Illinois (McNutt 1996:201).

POVERTY POINT

Poverty Point, or Terminal Late Archaic, components are distinguished by the appearance of large mounds, earthworks, clay balls or "Poverty Point Objects," microlithics, lapidary work, raw material trade, and specialized manufacturing sites. The Poverty Point period (1500–500 B.C.) is considered one of three cultural "zeniths" in prehistoric Southeastern studies. In other portions of the Southeast, these components are referred to as Gulf Formational (Walthall 1990 [1980]), and include fiber-tempered ceramics as a diagnostic, but here in Northeast Arkansas, fiber-tempered ceramics have yet to be reported (Morse and Morse 1983:124).

Morse and Morse (1983:130) have noted a "pattern of sites located within the lowlands adjacent to the meander belt" and use the Cairo Lowlands as an example. Midden mounds and gathering camps appear in archaeological record at this time and reflect semi-sedentary populations (Morse and Morse 1983; McNutt 1996).

The clay balls are though to be a substitute for boiling stones and have considerable time depth, apparently extending into the early Middle Woodland and cannot be used as exclusively as Poverty Point component markers. A variety of stemmed projectile points are characteristic of the period, including Burkett-Etley-Gary forms, similar to Ledbetter-Pickwick-Mulberry Creek points, and the Weems-Wade-Dyroff-McIntire forms that lead into the Early Woodland.

WOODLAND

During the Woodland period intensification in horticultural methods, construction of earthworks, elaboration of artistic expression, and burial rituals are all thought to be interrelated to the reorganization of social structure (Griffin 1967). For at least part of the year, a sedentary group was needed to plant, tend, and harvest crops. Sedentism and communal labor efforts promoted territorial circumscription. This period was also characterized by increased variety and use of ceramics. Ceramic types and varieties thus are a primary consideration in interpreting settlement patterns and chronological progression during the Woodland period. Considerable archaeological attention has been focused on these ceramic cultures and a number of phases and phase sequences have been proposed for east Arkansas and southeast Missouri.

Early Woodland components in the Central Mississippi Valley are referred to as Tchula and these are assumed to be roughly contemporary with Tchefuncte in the Lower Valley (Phillips et al. 1951). The grog/clay-tempered ceramics of Tchula components contrast with the sand-tempered wares of the Pascola phase components to the north. The best documented Tchula assemblage in Northeast Arkansas is from the McCarty site (3PO467), the type-site for the Early Woodland McCarty phase (Morse and Morse 1983; Morse 1986). Ceramics include Cormorant

Cord Impressed, Mulberry Creek Cord Marked, Withers Fabric Impressed, Baytown Plain and Tchefuncte Stamped, which were associated with a reel shaped gorget, biconical baked clay objects, and heavy groundstone tools. The Burkett site in Southeast Missouri produced related ceramics (S. Williams 1954:28), but the extensive Middle Woodland occupation makes separation of the Early Woodland material difficult at Burkett. In general the Early Woodland is poorly defined in the eastern lowlands.

The Middle Woodland features elaborate burial ceremonialism and artistic expression, and represents the second major cultural "zenith" in the prehistoric Southeast. In the Ohio Valley the Middle Woodland period is referred to in terms of Hopewell, while in the Lower Mississippi Valley this period is characterized as Marksville. The Helena phase (Phillips 1970:887-889; Toth 1988) is thought to represent to represent the local emergence of Hopewellian-type culture in Northeast Arkansas. Excavations at the Helen Crossing Mounds (3PH11) revealed log tombs with burials and associated artifacts such as cut sheet mica, copper earspools, copper coated panpipes, blade flakes, and Marksville ceramics (Ford 1963). Calibrated radiocarbon date intercepts from four Helena Crossing ^{14}C samples range from ca. 90 B.C.–A.D. 429. Mainfort (1988) has interpreted the mortuary pattern at Helena Crossing as evidence for only a moderately stratified society. The Helena Crossing site is, however, an anomaly, as there is a general scarcity of Hopewell/Marksville traits in east Arkansas. The Mound City Group near West Memphis may be an exception (Morse and Morse 1996:125). Habitation site assemblages consist predominately of Baytown Plain and Mulberry Creek Cord Marked, with lesser frequencies of Withers Fabric Marked and Cormorant Cord Impressed. Zone punctated and dentate stamped ceramics, definitive Hopewell markers, occur only in trace frequencies, if at all, especially in small assemblages. The Morses (1996:126) suggest that identified Middle Woodland components are rare as a result of the population being dispersed in hamlets and small villages, and "masking" by subsequent, more intensive occupations at major sites. The Keller site (3PO159) is the best-reported example of the "minimal residential habitation[s] that" are typical of the Late Marksville in Northeast Arkansas (Morse 1988:74).

The initial Middle Woodland occupations are followed by Dunklin (Barnes) and Baytown phases in the Central Mississippi Valley (Morse and Morse 1983). Terminal Middle Woodland/early Late Woodland occupations in Northeast Arkansas are identified by sand-tempered (Barnes or Kennett) ceramics of the Dunklin phase or clay/grog-tempered ceramics of the Baytown phase (see below). These ceramics have discrete (but slightly overlapping) spatial distributions, and are believed to be contemporary (Morse and Morse 1983:Figure 9.1). Morse and Morse (1983) interprets the distribution as reflective of different social groups, while others, including Phillips (1970) suggest environmental differences (i.e., sandy soils) may account for the paste variability.

The Late Woodland period is poorly understood throughout the Southeast. The elaborate ceremonialism, trade networks, and earthworks construction activities associated with Middle Woodland times become attenuated. There is a general paucity of lithic artifacts during the Late Woodland, which may be related to the introduction of the bow and arrow ca. 700 A.D. (Blitz 1988), which may have reduced "the production of stone points to near zero" (Dunnell and Feathers 1991:26). The bow technology may have led to a dispersal of the regional populations.

In Northeast Arkansas, the dichotomy between sand- and clay/grog-tempered component distributions noted in the waning Middle Woodland becomes fully expressed during the Late Woodland, or the Late Baytown period. (*note bene*: Baytown is a term that has a number of archaeological meanings, primarily: (1) a Late Woodland phase, ca. A.D. 400–700; (2) a ceramic tradition; and (3) a general reference to the Woodland stage). The proximity of these two dichotomous ceramic traditions is interpreted as representing "opposite extremes of the segmentary tribe" (Morse and Morse 1983:192). Baytown components (Phillips 1970) dominate the southern St. Francis Basin, while Dunklin phase components dominate to the northern (Morse and Morse 1983:Figure 9.1). Baytown (and Hoecake; see S. Williams 1954) groups

appear to have been organized into larger, more socially complex settlements than Dunklin phase groups. Excavations at the Brougham Lake site (Klinger et al. 1983) revealed that Late Woodland Baytown populations utilized circular to oval single poled structures, with a mean floor area of 20 m^2.

A "Dunklin phase component underlay" the Big Lake occupation at Zebree (Morse and Morse 1990b). Late Woodland Dunklin phase components are very often associated with Early Mississippian Big Lake components. The Morses (1990) calibrate the three ^{14}C dates associated with the Dunklin phase occupation at Zebree to A.D. 691, 829, and 863 (using a 1974 radiocarbon curve), while we obtained results of A.D. 740, 893, and 971 on the same samples using Stuiver and Pearsons' (1986) more recent radiocarbon curve (i.e., Stuiver and Reimer's [1993] CALIB software program). This represents a shift of nearly a century. Dunklin phase ceramic assemblages are characterized by: sand-tempered Barnes Cord marked and Plain ceramics, with principal vessel forms being large conoidal jar and small food bowls. Minority decorated types include fabric-impressed and check-stamped (Morse and Morse 1990b). Projectiles are crude expended stemmed, side-notched, corner-notched and round-stemmed forms, typically knapped from local Crowley's Ridge chert or quartzite. Limited Dunklin phase structural evidence (a partial circular structure or windbreak) was reported at Zebree, but numerous pits were associated with this component. The Morses (1983:186) suggested that the Dunklin occupation at Zebree was a winter village composed of a "maximum kin aggregate," which was relatively isolated—due to lack of evidence for bow technology, horticulture, and/or exotic chert sources.

MISSISSIPPIAN

Hallmarks of the Mississippian period include population increase, intensive floodplain settlement, greater emphasis on agricultural activity, earthwork construction on celestial alignments, inter-regional exchange of exotic items, shell-tempered ceramics, and possibly bow warfare. These factors and the development of a distinctive elite iconography are associated with the rise of conscripted, complex sociopolitical system, which we know as chiefdoms. A complex mosaic of competing chiefdoms dominated the late prehistoric Southeast political landscape. These chiefdoms were documented by the Spanish explorers at the close of the Mississippian period, which is often considered the "zenith" of native cultural development.

Two Early Mississippian phases are recognized in Northeast Arkansas: Big Lake (Morse and Morse 1983, 1990a) and Hayti, which is largely based on collections from the Kersey site in Pemiscot County (Little River lowlands), Missouri (Marshall 1965). Big Lake components are best understood from excavations at the Zebree site, the type-site for the Big Lake phase, and excavations at the Priestly site (3PO490) near Trumann. Big Lake phase components are characterized by the presence of Varney Red, Mississippi Plain, and Wickliffe Thick ceramics (Morse and Morse 1990a). Jars are the most common vessel form for Varney Red ceramics, followed by saltpans and simple rounded base bowls. Hooded bottles and Kersey clay objects are also part of these assemblages. Most of the Mississippian Plain vessels were large jars with capacities of over 50 ltr. Wickliffe Thick pottery is associated with a specialized funnel. Local contact with Cahokia during the Early Mississippian period is suggested by the recovery of a Ramey Incised jar from the Perry Dixon site (3MS600; Buchner et al. 2003:84). Other artifacts associated with Big Lake phase assemblages include: sherd abraders; pottery discoidals; Sequoyah, Scallorn, and Madison arrow points; Mill Creek hoes; items related to microlith production; *Anculosa* shell beads; fish scale tools; and bone fishhooks and harpoons. Subsistence studies suggest a diverse economy, with corn being only a small portion of the diet. Big Lake structures are rectangular and are small, ranging from 6.6–11.4 m^2 in size (Morse and Morse 1990a:61). While Zebree was fortified, Priestly, a smaller village, was not (Benn 1990:451). Big Lake structures are typically located in distinct midden clusters containing burials and cylindrical pits. At Priestly, a charnel house was identified, and this suggests that

public, communal rituals were a part of daily life in the numerous small Early Mississippian villages (or hamlets) scatters across the eastern lowlands (Benn 1990:452-453).

The Morses (1990a:157) note that during the Middle Mississippian, "Mississippian culture crystallized into what is often called 'mature' Mississippian." This period is marked by settlement diversity, with fortified ceremonial centers, smaller villages, and isolated farmsteads, as well as intensive corn agriculture and the rise of independent chiefdoms. Numerous Middle Mississippian components have been excavated (see Morse and Morse 1983:Figure 11.1).

The transition from Early to Middle Mississippian took place ca. A.D. 1000–1050, when Varney Red Filmed ceramics use declines rapidly. The Mangrum (3CG636; Klinger et al. 1981), Hyneman (3PO53; Morse and Morse 1983), Rose Mound (Morse and Morse 1983), Banks Mound 3 (Perino 1967), and Golightly (Morse and Morse 1983) sites are important sites relating to this transitional period.

The early Middle Mississippian Cherry Valley phase (A.D. 1050–1200) is associated with the western lowlands (Phillips 1970:929-930; Morse and Morse 1983). Sites include small ceremonial centers with mounds covering earth-like lodge structures, small villages, and isolated hamlets. The Cherry Valley phase is associated with the "Beaker Horizon" of Morse and Morse (1990a:157). Sites with ^{14}C dates for this horizon include Cherry Valley (3CS40), Hazel, Banks 3 (Morse and Morse 1990a), and Kochtitzky Ditch (3MS599; Buchner et al. 2003). Other important Beaker sites include the Floodway site (3PO46), the Webb Group (or Bay Mounds, 3CG29), Parkin (3CS29), Turnbow (3CS61), Vernon Paul (3CS25), Ballard (3PO115), and McClellan (3PO32; Morse and Morse 1990a:Table 16). Beyond the distinctive, but rare beakers, diagnostics include: O'Byam Incised, Mound Place Incised, loop handled jars, the appearance of bottles and plates, and a variety of arrow points, including Madison, Scallorn, and Shugtown types.

Later Middle Mississippian occupations (A.D. 1200–1400) are associated with the "Matthews Horizon" (Morse and Morse 1990a:158). During this period the plate vessel form disappears, large strap-handled jars are common, and painted ceramics become more frequent. Trade intensified, not only in exotic items but also in Mill Creek hoes and basalt adzes (Morse and Morse 1983:267). Exchange of Southeastern Ceremonial Complex artifacts, including copper *repoussé* plates, stone images, and shell gorgets with a distinctive iconography, peaks at this time (Brown et al. 1990). Considerable social change took place, with the settlement pattern shifting from a relatively dispersed pattern of farmsteads and villages with a few ceremonial centers to a pattern characterized by large villages with constituent hamlets clustered around major civic-ceremonial centers (Morse and Morse 1983). This realignment and establishment of a settlement hierarchy is associated with the rise of chiefdom level societies. By A.D. 1400 the braided stream surfaces were abandoned and populations nucleated onto meander belt surface.

Excavations at the Moon site (3PO488) near Trumann revealed evidence of a planned, fortified village dating to this period (Benn 1992). This site has a similar layout to the Powers phase Snodgrass Site in Southeast Missouri (Price and Griffin 1979). In the southern St. Francis Basin, late Middle Mississippian components are considered Lawhorn phase. Important excavated sites include Hazel, Shugtown (Morse and Morse 1983), Lawhorn (Moselage 1962) and Kochtitzky Ditch (3MS599; Buchner et al. 2003). While the Middle Mississippian occupation of the Lower St. Francis Basin was significant, the Cairo Lowlands were also intensively occupied at this time, as evidenced by large fortified sites such as Libbourn, Towasahgy, and Crosno (Chapman 1980; Price and Griffin 1979; S. Williams 1954).

The Late Mississippian occupations have been intensively studied and are characterized by a number of contemporary phases (Phillips 1970; Morse and Morse 1983:Figure 12.1). Highly nucleated and fortified towns are present in some areas ("St. Francis" type sites; see Phillips et

al. 1951), while other sections of the St. Francis Basin are apparently uninhabited. These depopulated areas are interpreted as "buffer zones" between competing chiefdoms. Much of the Western Lowlands and portions of Missouri were abandoned, resulting in S. Williams' (1990) "Vacant Quarter Hypothesis." In Northeast Arkansas, the Nodena (Morse 1989), Parkin (P. Morse 1981), Walls, Kent (House 1993), and formerly Old Town (see House 1993) phases are recognized principally based on decorated ceramic frequencies. Mainfort's (2003) non-metric, multidimensional scaling analysis of ceramic assemblages from 39 sites "provide[s] little support for the validity" of these cultural-historical units; however, the phases continued to be used for want of a better system. The latter portion (post-1540) of the Late Mississippian period is commonly referred to as the Protohistoric.

PROTOHISTORIC

This period is generally considered to have begun with the first appearance of European peoples in the Southeast. De Soto visited the several chiefdoms within the St. Francis Basin in 1541, including Aquixo (Belle Meade, 3CT30), Casqui (Parkin phase), and Pacaha (Bradley, 3CT7). Two of de Soto's men (Moreno and Silvera) traveled northeast from Pacaha and apparently visited a Nodena phase-Pemiscot Bayou site, Campbell (23PM5; Dye 1993:49). Sites, such as Campbell and Nodena, which were occupied after initial European contact, are considered Armorel phase components (S. Williams 1980). These sites produce low frequencies of European trade goods, such as iron and copper items and glass beads, in association with Late Mississippian artifact types.

HISTORIC ABORIGINAL

Terming seventeenth-century aboriginal occupations as "historic" versus "protohistoric" is a rather arbitrary division, as by this point Native American culture had irretrievably changed from pre-European contact lifeways. Most scholars consider Northeast Arkansas to have been depopulated after the de Soto expedition trek west of the Mississippi (1541–1543) and before Marquette and Joliet's 1673 canoe trip brought them to the Quapaw villages at the mouth of the Arkansas.

The Quapaw phase was proposed by Phillips (1970:943) and updated by Hoffman (1977). These sites are located on the lower Arkansas River. The ceramic assemblages are shell-tempered and appear to have derived from Late Mississippian/Protohistoric culture. Some distinctive ceramic vessel forms such as elaborated painted bottles, teapots, and helmet bowls are considered diagnostic, as are seventeenth-century European trade goods. While Ford (1961) considered his excavations at the Menard Mounds (the Quapaw village of Osotouy) as "conclusive" evidence of the link between the ethnohistorical Quapaw and the archaeological phase, Hoffman (1990:219) has noted there is conflict between Quapaw oral tradition, linguistics, and the ethnological and archaeological data. House and McKelway (1982:SE41) term this problem the "Quapaw Paradox."

In Northeast Arkansas, Marquette's 1673 map reveals a Michigamea village in close proximity to what would become the Missouri/Arkansas line. Morse (1992:61) considers this village to be the Grigsby site (3RA262), located near Pocahontas. This site is located halfway between Kaskaskia and the 1673–1690 location for the Kappa Site and is on the Natchitoches Trace, a major trading path that follows the Ozark escarpment. The Michigamea are thought to have operated as trading middlemen between the Illinois French and the lower Arkansas Quapaw, until in 1686 the establishment of Arkansas Post, near the Quapaw village of Osotouy, provided direct access to trade goods for the Quapaw.

In the late seventeenth century, the Quapaw actively sought an alliance with the French, primarily to obtain firearms, so that they could combat the Chickasaw (who had been armed by British traders operating overland from Charlestown). The importance of firearms to the

Quapaw is illustrated by their inclusion on early eighteenth-century painted buffalo robes given by the tribe to the French king (Horse Capture et al. 1993). During the 1730s and 1740s the Chickasaw were a constant threat to French flatboat traffic on the Mississippi. Bienville organized two unsuccessful campaigns against the Chickasaw and paid the Quapaw for Chickasaw scalps, during this period. In 1749, a Chickasaw raid (led by James Adair, an Englishman) on John Law's old settlement alarmed all of Louisiana, and as a result Arkansas Post was moved up the Arkansas River to *Ecores Rouges* (the Red Bluffs).

In the later eighteenth and early nineteenth centuries, several dislocated Native American groups would briefly inhabit the St. Francis Basin, including the Delaware, Shawnee, Chickasaw, Kickapoo, Piankanchaw, Miami, and Wea (Morse and Morse 1983:325). The Cherokee, fleeing from their role in the Muscle Shoals massacre, began infiltrating the St. Francis Basin in significant numbers in 1794 (Hanson and Moneyhon 1989:17). By 1800 the Cherokee were in competition with the Osage for control of the Ozark Highlands. The disrupted eastern Native American groups were apparently welcomed by the Spanish Colonial government, who desired these Indian contingents along the Mississippi to serve as a buffer to American settlers.

After the Jefferson (or Louisiana) Purchase in 1803, the westward movement of American settlers put pressure on these recently established Native American groups in eastern Arkansas to give up their lands. Northeast Arkansas was ceded to the United States through two agreements negotiated by Pierre Chouteau at Fort Clark in North Dakota (Hanson and Moneyhon 1989:19). The second agreement, signed November 10, 1808, is commonly known as the Osage Treaty, and resulted in 14 million acres (including Northeast Arkansas) changing hands. By the 1840s most Native Americans had been pushed out of the Central Valley, although Goodspeed (1889:452) does note that as late as 1861 various Indians of "different tribes" were still living around Chickasawba.

COLONIAL PERIOD

Northeast Arkansas was part of Louisiana (New France) during most of the Colonial period. In 1756, the French and Indian War (Seven Years' War) broke out partly as a result of French efforts to fortify the Ohio Valley. France was defeated and signed the Treaty of Paris on February 10, 1763, which ended the war. Immediately prior to the formal ending of the war the French ceded Louisiana to the Spanish. The Spanish saw Louisiana as a buffer between the British colonists and Mexico, their prized colony. Louisiana was returned to France in 1800, but many Spanish officials still held local offices in 1803.

The region was undoubtedly involved in the European trade network, as by the late seventeenth century, at least 800 *coureurs de bois* (forest rangers) were hunting in west New France (Arnold 1991:7). Colonial documents suggest that the vast majority of the population was involved in the fur trade. Fort St. Francis was established near the mouth of the St. Francis River in 1766 and Fort Esperanza was established in 1797 across from the fourth Chickasaw bluff (now Memphis, Tennessee). The *El Camino Real* (Kings Road, also known as Natchitoches Trace) from New Madrid to St. Louis was an important road at this time.

Excavations have been conducted at two of Arkansas Post's locations: the mid-eighteenth Desha County location (McClurkan 1971), and ca. 1779–1804 upstream *Ecores Rouges* location (Holder 1957). Holder (1957) identified the remains of the De La Houssaye 1752 fort and the Spanish Fort San Carlos III, built in 1780. Walthall (1991) analyzed the ceramics from Holder's excavations and observed a temporal lag of 26.5 years between the mean ceramic dates and mean historic dates for the site, an indication of the post's isolation.

EARLY NINETEENTH CENTURY

The Colonial period ends with the Jefferson Purchase in 1803. Arkansas was part of the Louisiana District from 1804–1805 and until 1812 was part of the Louisiana Territory. From 1812–1819 Arkansas was part of the Missouri Territory. Northeast Arkansas was rocked by a series of massive earthquakes known as the New Madrid earthquakes in 1811–1812 (Fuller 1912). The town of New Madrid was destroyed and the aftershocks continued for months. After the War of 1812 ended (in 1815) and the British-Creek Confederacy was defeated, immigration increased rapidly.

At the Arkansas Post site (3AR47), Bright's Trading House (1804–1807) and Montgomery's Tavern (1819–1821) were investigated by the NPS (Martin 1977). Two wells and structural remains, including a brick hearth, and posts and trench patterns characteristic of French settlements were reported. An impressive artifact assemblage including tin glazed earthenware, pearlware, creamware, stoneware, dark green bottle fragments, cutlery, various tobacco pipes, glass beads, gunflints and other gun parts, building hardware, clothing items, coins, and other items such as scissors were recovered.

The town of Davidsonville is probably the best-known antebellum archaeological site in Northeast Arkansas (Stewart-Abernathy 1980). This town existed from 1815–1830 on the edge of the Ozark Highlands, near the Natchitoches Trace. Excavations located the brick footings of the courthouse and a brick chimney associated with the post office. Typical early-nineteenth century artifacts were associated with the structural remains, including: blue and green shell edged pearlware; polychrome underglaze pearlware; thin window glass; and wrought and cut nails (Morse and Morse 1983:329).

The GLO began surveying East Arkansas into townships in 1815, and this work continued up to the Civil War. The initial objective was to lie out 2,000,000 ac. for distribution to veterans of the War of 1812 (Hanson and Moneyhon 1989:26). The east/west baseline was set at a point near the mouth of the St. Francis River running due west to the Arkansas River. The Fifth Principal Meridian was used as a north/south line. Land sales based on this Township-Range system began in 1821. Today, the nineteenth-century GLO plat maps and field notes are used by archaeologists to both locate historic features and to reconstruct environmental conditions.

On March 2, 1819, President James Monroe signed a bill creating "Arkansaw Territory," which included present-day Arkansas and Oklahoma (Hanson and Moneyhon 1989:28). During the Territorial period (1819–1836) county formations by the General Assembly further subdivided the landscape. Mississippi County (1833), Crittenden County (1825), Greene County (1833), Lawrence County (1815), and St. Francis (1827) County covered most of the northeastern corner of the state when Arkansas was admitted to the Union on June 15, 1836. Mississippi County was formed on November 1, 1833 from the northern portion of Crittenden County.

Table 3-02. Antebellum population Statistics for Mississippi County, Arkansas.

Census Year	Mississippi Co. Total Population	Mississippi Co. Slave Population	Territory/State Total Population	Territory/State Slave Population
1810	—	—	1,062	—
1820	—	—	14,273	—
1830*	1,272	165	30,388	4,567
1840	1,410	510	97,574	19,935
1850	2,368	865	209,897	47,100
1860	3,895	1,461	435,450	111,115

* Crittenden Co. data provided.

Steamboats provided the most reliable and cheapest transportation during the early to mid-nineteenth century. In 1812, the sternwheeler *Orleans* became the first ship to reach Mississippi County (Goodspeed 1889:451). Osceola developed near Plum Point, a reach that in 1821 was considered one of the "worst places on the Mississippi River" for navigation, due to numerous sandbars and snags (Bragg 1977:57). A number of steamboats sank here, including the *Carolina* (1841) the *Tara Crown*, and the *Telegraph,* while at Nodena bend downstream the *Fanny McBurney*, the *Empress*, the *Vulcan*, the *Henry Clay*, and the *Niagara* all sank between 1863 and 1864.

Steamboats need wood for fuel, and one of the principal occupations of early-nineteenth century settlers along the Mississippi River was selling wood to steamboats (Goodspeed 1889). The clearings these choppers generated became the first settlements and plantation sites. An 1839 river chart reveals the presence of a continuous series of settlements or plantations along the river above and below Osceola.

After ca. 1840 most of the Delta plantations shifted from subsistence farming to commercial agriculture, with a heavy emphasis on cotton production (Holley 1993). This trend was part of the western expansion of the "cotton frontier." Cotton plantations were labor intensive and as a result, the slave population in Mississippi County was relatively high (36 to 37 percent) during the Antebellum period (see Table 3-02). Census data from 1860 revealed that there were 76 slave owners in Mississippi County and the majority of the slave owners (n=43) possessed fewer then ten slaves (Table 3-03). Slave labor contributed greatly to Arkansas's antebellum economy, adding "at least $16 million to the economy each year and making Arkansas the sixth largest cotton producer in the United States by 1860" (Moneyhon 2012).

Table 3-03. Mississippi County slave ownership data for 1860.

Number of Slaves	Owner Frequency
1–4	31
5–9	12
10–14	5
15–19	6
20–29	4
30–39	6
40–49	6
50–69	1
70–99	4
100–199	0
200–299	1
300–499	0
500–999	0
>1,000	0
Total:	*76*

During the antebellum cotton boom period between 1850 and 1860, the amount of improved land in Mississippi County increased 101.9 percent and cotton production increased 173.4 percent (Holley 1993:242). San Souci Plantation, south of Osceola, was established in 1854 during the boom period. Holley (1993:243-244) remarks that "despite a rush of prosperity" the Arkansas Delta plantations were "too young to be a mature plantation society" and the region was still a raw, undeveloped frontier.

CIVIL WAR AND RECONSTRUCTION

Arkansas' position in the Civil War was complex as a result of being a slave border state. Unionist sentiment was highest in northwestern Arkansas, while the southern and eastern counties, where cotton was produced with slave labor, not surprisingly favored secession. In the initial vote for secession during March 1861, delegates from Northeast Arkansas split, with Mississippi and St. Francis counties favoring secession and Crittenden, Poinsett, Craighead, and Greene counties delegates not favoring secession (Hanson and Moneyhon 1989:41). After the war began in April, the convention reconvened and Arkansas voted for secession on May 20, 1861.

No strategically significant military engagements took place in Northeast Arkansas during the Civil War. During late 1861 and 1862 several engagements took place along the Mississippi River as the Federal campaign to seize control of the river drove southward from Cairo. Island No. 10 near New Madrid was the Confederates strongest position on the river north of Osceola, and it was captured by the Union in April 1862 following a siege (Bragg 1977:27; Daniel and Brock 1996). On May 10, 1862 the Confederate Defense Fleet rammed and sank two Union gunboats in the "Battle of Plum Run Bend" near Osceola. However, by June 1862 Federal forces had swept southward, destroyed the Confederate Defense Fleet and captured Memphis. After the Battle of Helena and the surrender of Vicksburg in early July 1863, virtually all Confederate resistance west of the Mississippi collapsed.

Sporadic guerrilla activity and general lawlessness characterized the latter war years in Northeast Arkansas. In August 1863, the gunboat *USS Silver Cloud* shelled Osceola due to reported rebel activity (Bragg 1977:55). A skirmish between a Federal regiment and two Confederate companies took place near Jonesboro in August 1863 (Stuck 1960:81). One of the most controversial battles of the Civil War, the Fort Pillow Massacre, took place on April 12, 1864 across the river from Nodena Plantation (Cimprich and Mainfort 1989; Mainfort 1980; Prouty and Barker 1996:17). During July 1864 Missouri Union cavalry skirmished with Confederate guerilla forces near Osceola.

No significant professional Civil War excavations have been conducted in Mississippi County. Across the Mississippi River, excavations at the Civil War Fort Pillow (40LA52) are documented (Mainfort 1980). The Federal soldiers stationed at Fort Pillow frequently patrolled eastern Arkansas and reportedly "supplied themselves with materials for building barracks, by taking away the houses of Osceola" (Goodspeed 1889:457). Near Piggott, the Chalk Bluff Battlefield has been recorded as Site 3CY222.

In Arkansas, reconstruction lasted from 1865–1874. Far more serious than the loss of life during the war were the effects of occupation. Both sides were responsible for burning crops, buildings, and industrial and manufacturing centers. It took more than twenty years to recover and rebuild from the effects of such destruction, and the scarcity of food and goods during the war had far-reaching, long-term effects on the economic and social fabric of society (Sabo et al. 1990:157).

Due to lawlessness, some areas remained under martial law for several years after the end of the war. This era was bitterly remembered by the local disenfranchised white society as the time of "carpet bag rule." Organized underground movements with the aims of both "recover[ing] for the whites the control government and society and to destroy the influence of carpetbaggers and Northern opportunists among the Negros," began after 1867 (Folmsbee et al. 1969:360). The best known of these groups is the Ku Klux Klan, which was active in Northeast Arkansas by 1868 (Stuck 1960). Black secret societies also formed during reconstruction.

A race riot took place in Osceola in 1872 that is known as the Blackhawk War (Goodspeed 1889:458). In 1874, the "Brooks-Baxter War" between rival claimants to the governorship

ended when President Grant intervened and ordered the Brooks forces to disperse (Herndon 1922). In 1874, Arkansas adopted a new constitution that restored franchise to all whites and guaranteed full civil rights for blacks, as a result the state was readmitted to the Union.

LAND RECLAMATION EFFORTS

The development of the lowlands of eastern Arkansas was closely linked with efforts at reclamation that improved lands that frequently overflowed. One of the first significant actions in reclamation was Congress's passage of the Swamp Act of 1850. The first Arkansas Swamp Land Secretary was appointed in 1858. Prior to this, levee and drainage ditch construction had been unorganized and conducted on an individual basis. After the Civil War improvements higher up on the Mississippi lead to increased flood heights in the 1870s and 1880s (Burke et al. 1945). Partly as a result, the Mississippi River Commission was created in 1879. In 1881, the first $1,000,000 appropriation was made for levee construction along the Mississippi River (Clay 1986:17). After 1865 and into the 1890s thousands of Irish immigrants participated in manual levee construction.

Much of the St. Francis Basin was sold under this act at prices ranging from $0.50–$1.25 per acre (Harrison and Kollmorgen 1947). Unfortunately, early efforts to use swampland revenues by inexperienced local levee and drainage district boards were un-coordinated and largely futile.

In 1893, the St. Francis Levee District was created and construction began on the U.S. levee system along the Mississippi River. In 1908, the Little River Drainage District was formed in Southeast Missouri. This district channeled floodwater into Big Lake and thus increased overflow in the unprotected and unorganized portions of Northeast Arkansas. Between 1910 and 1920 numerous local drainage districts were formed in Missouri and Arkansas, and the U.S. government finally realized the need for a consistent and coordinated flood control policy. The Ransdell-Humphreys Flood Control Act of 1917 provided $45,000,000 for such organized flood prevention and control.

As a part of the comprehensive drainage plan, floodways were proposed to contain the St. Francis River and the Right Hand Chute and Left Hand Chute of the Little River. Construction of the levees, drainage ditches, and other control structures began in the early 1920s. The comprehensive drainage plan permitted the economic growth and exploitation of the western portions of Mississippi County.

Local flood control was favored by some, including the R.E.L. Wilson, a millionaire lumberman, the largest landowner, and the major developer of late nineteenth- and early twentieth-century Mississippi County (Snowden 1986). However, many other landowners were against the mortgages and bond sales that were necessary to fund the district constructions. The *Osceola Semi-Weekly Press* reported a story on the drainage debate as follows:

> SEES POLITICS IN DRAINAGE FIGHT Osceola, July 14, 1908.—Politics… plays a prominent part in the bitter fight which has resulted from an attempt to organize two big drainage districts in Mississippi county, and which almost culminated in a riot when the petitions for the formation of the districts came up before the county court about 10 days ago… About 300 property owners, objecting to the proposed assessments… proceeded… to take possession of the county court… made threats against Judge Rozzell… The leader of the fight on the drainage districts is Sheriff John A. Lovewell, who for years has been regarded as the political dictator of Mississippi county… J.T. Coston attorney for the county judge, is the leader of the drainage advocates [Osceola Semi-Weekly Press 1908].

R.E.L. Wilson eventually "sold the people on the idea of organizing drainage districts" under the Drainage District Act (Snowden 1986:134). Ditching by the districts began in earnest during the second decade of the twentieth century. The drainage of the swamplands caused a land boom in 1919 (Dew 1968:31).

TENANT PERIOD

The period from 1870–1950 is known as the Tenant period (Stewart-Abernathy and Watkins 1982), and is named for the sharecropping or tenant farm labor system that was a significant characteristic of Southern U.S. agriculture after the Civil War. This decentralization of the former plantation system developed during Reconstruction as a means of stabilizing labor relations between former slaves and landowners. Prunty (1955) has interpreted tenancy as a postbellum modification of the plantation system. Arkansas's farm tenancy percentage peaked in 1930 at 63.0 percent, and was higher than the Southern average (Holley 2000:27). In Mississippi County the tenancy percent during 1930 was even higher: 90.3 percent (Holley 1993:Table 7). This reveals that sharecroppers worked nearly all the farms in the county.

Table 3-04. Tenant period population statistics for Mississippi County, Arkansas.

Census Year	Total Population	African-American Population
1880	3,633	971
1890	7,332	2,654
1900	11,635	5,900
1910	30,468	13,472
1920	47,320	19,907
1930	69,289	26,145
1940	80,217	25,069
1950	82,375	22,096
1960	70,174	20,712

The importance of the Tenant Farm period in the archaeological record is that it represents the maximum occupation of the study area. At that time there were numerous scattered farmsteads and a complex secondary road network linking them. The dispersed settlement pattern of the Tenant period contrasts sharply with the clustered settlement pattern prior to 1865 (Orser and Nekola 1985:68). The tenant settlement pattern can be observed on early twentieth-century maps, as well as 1930s and 1940s aerial photographs, with alignments along roads and bayous at regular spacing. Sites dating to this period are numerous, and the issue of these sites' National Register of Historic Places (NRHP) significance status has generated some commentary (Wilson 1990).

The Tenant Farm Activity period is defined as:

> …the phase within the history of commercial agriculture in which the rural landscapes dominated by mono-culture are composed of small farms of minimal size operated by white and black renter or sharecropper families. These small farms are tied to the plantation complex and represent a decentralized stage in this development. In this stage the use of capital for the production of a base crop is routed through an extra step consisting of the several families who are responsible for raising the crop. While the direction of capital use and power obviously flows from top to bottom in this stage, the extent to which the tenant family, in fact, exercises control over various of their affairs is problematical, with archaeological implications ranging from source of supply for table ceramics and architectural environment to responsibility for social and physical community patterning and maintenance of ethnic identity [Stewart-Abernathy and Watkins 1982:HA16-HA17].

Stewart-Abernathy and Watkins (1982:HA18) estimate that there are 30,000 to 50,000 tenant house sites in eastern Arkansas. Stewart-Abernathy (1999:240) also notes that "intriguing" investigations at a number of African American and multi-component tenant and owner-occupied farmsteads have been conducted in eastern Arkansas by contract archaeologists (Buchner 1992; Buchner and Childress 1991; Buchner and Weaver 1990; Childress 1990; Weaver et al. 1996). Nearly all of this work was CRM investigations funded by the USACE, Memphis District. Examination of East Arkansas Delta Tenant period archaeological site data lead Buchner (1992) to propose a distinctive "Tenant Period Artifact Pattern" (when assemblages are analyzed using South's [1977] functional groups). While some deviations can be observed in the frequency patterns identified based on surface collected assemblages versus excavated assemblages, in general the pattern is one where Kitchen Group artifacts dominate. Excavated assemblages tend to produce more nails, thus the proportional representation of the Architecture group increases at the expense of the Kitchen Group.

In Tenant period assemblages, the ceramics are typically cheaper types, often from mismatched sets, and many of these types can be identified following Price (1979). Mean ceramic dates are often not calculated for these sites due to the long span of whiteware production, as well as problems relating to temporal lag. Garrow et al. (1989:60) note that "South's (1977) mean ceramic date (MCD) formula tends to break down after ca. 1860…the primary reason is that neither manufacturing or popularity date ranges have been firmly established for the post-1860 period." Only trace frequencies of other artifact groups are found (Arms, Clothing, Personal, Furniture, Tobacco), and in small assemblages these minority group types are often not represented.

The cultural deposits at Tenant period sites are typically near surface, often restricted wholly to plowzone contexts, as a result of the buildings being frame structures elevated on brick, concrete, or cypress stump piers. If a house did not have a substantial chimney, it was more likely to be swept away during a flood (Buchner 1992). Occasionally tenant sites are multi-component, (i.e., co-occur with prehistoric material); this is largely dependent on the natural setting of the site. Many Tenant period sites are located on silty clay backswamp soils that were not suitable for human habitation until after drainage improvements were made.

The end of farm tenancy had its origins in Depression economics and "New Deal" politics of the early 1930s. In the spring of 1933, President Roosevelt's New Deal measures, including the repeal of Prohibition and the Agricultural Adjustment Act (AAA) were voted in (Biles 1986:70). At this time the effects of the Depression and surpluses had driven cotton prices down to 5¢ per pound and the Delta economy, which was so dependent on cotton, was greatly affected. In an effort to counter cotton prices, the AAA initiated federally sponsored cotton reduction programs. By 1934, over 40 percent of cotton acreage normally under cultivation was taken out of production (Biles 1986:71). While cotton prices rose (as expected), the removal of thousands of acres of cotton land from cultivation unfortunately resulted in an "unforeseen" development. It put thousands of Delta sharecroppers out of work, and subsequently many migrated to the "ramshackle slums of Memphis" (Biles 1986:72).

RAILROAD PERIOD

During the Railroad period (1855–1950) communication and transportation became dominated by the railroads. This period is "foremost characterized by a drastic reorganization of [a] non-farming settlement pattern keyed to extremely narrow corridors…" (Stewart-Abernathy and Watkins 1982:HA18-19). From an archaeological viewpoint the Railroad period is summarized as:

> … aside from the increased presence of consumer goods and increased general information level, the Railroad period is reflected by scores of nucleated settlements whose end or beginning date

> correspond to the coming of the railroad, and by some of the greatest landscape modifications made by people. These modifications take the form of embankments, cuttings, bridges, and support complexes, and exist on an intensive and extensive scale matched only by the construction after 1950 of highways and levees [Stewart-Abernathy and Watkins 1982:HA18-19].

The first railroad in Arkansas was the Memphis & Little Rock (M&LR), charted in 1853. By 1858 the track was complete from Hopefield (opposite Memphis) to the St. Francis River (Woolfolk 1967). By 1862 the western end of the M&LR line was in place from Little Rock to DeValls Bluff on the White River (Hanson and Moneyhon 1989:49). It was not until after the Civil War that the two sections were joined, under the supervision of former C.S.A. Gen. Nathan B. Forrest. The first permanent bridge constructed over the Lower White River was at DeValls Bluff. With the completion of this bridge in 1871, the M&LR Railroad was open as a continuous line from Hopefield to Little Rock (Moneyhon 1993:212).

Another important early railroad in northeastern Arkansas was the Cairo & Fulton (C&F). By 1874 the C&F, an extension of the St. Louis, Iron Mountain & Southern Railroad, had completed a line from Northeast Arkansas (Clay County) to Little Rock and southwest to Fulton on the Red River; trains were running from St. Louis to Texarkana (Hanson and Moneyhon 1989:49). The northeastern section of this line (Corning-Walnut Ridge-Hoxie-Jacksonport) roughly parallels the escarpment of the Ozark Plateau and is still used by National Railroad Passenger Corporation's (Amtrak's) *Texas Eagle* today. Hanson and Moneyhon (1989:49) note that by the close of the 1870s railroads had built 822 mi. of track in Arkansas.

The 1880s railroad construction in Northeast Arkansas was a watershed event. The two most significant lines built in Northeast Arkansas were the St. Louis & Southwestern and the St. Louis & San Francisco (Hanson and Moneyhon 1989:49). In 1882, Jonesboro and Clarendon were linked by the Texas & St. Louis Railroad (H.L. Williams 1930:332). In 1885, this line was reorganized as the St. Louis, Arkansas & Texas and in 1891, it became the St. Louis & Southwestern, or "Cotton Belt." The St. Louis & San Francisco—SLSF or "Frisco"—ran northwest from Memphis, through Crittenden, Poinsett, Craighead and Lawrence counties. It was not until 1897 that the first railroad bridge over the Mississippi River at Memphis, the Frisco Bridge, was opened. By the turn of the century 3,167 mi. of railroad had been laid in Arkansas (Hanson and Moneyhon 1989:49).

The first railroad to reach Osceola was the Deckerville, Osceola, & Northern Railroad (D, O&N), which opened their depot at Osceola on 13 July 1899 (Edrington 1962b:38). The D, O&N was incorporated in September 1897, and was sold to the Kansas City, Fort Scott & Memphis Railroad (KC, FS&M) in October 1901. By 1916, the KC, FS&M was 100 percent controlled by the SLSF Railroad.

One aspect of early railroad development (ca. 1876–1914) was the presence of numerous short line railroads (Hanson and Moneyhon 1989:50). These lines developed out of local interests and played an important role in developing the state. In Northeast Arkansas, the most historically significant short line railroad was the Jonesboro, Lake City and Eastern Railroad (J, LC&E).

During the 1880s railroad boom in Northeast Arkansas, the sunklands had essentially been bypassed (Dew 1968). The major lines skirted the southern and western boundaries of the sunklands, with stations at Paragould, Jonesboro, and Marked Tree. The J, LC&E was chartered April 7, 1897 (Poor's 1912:1080) by a group of Jonesboro businessmen intent on developing the sunklands. Initially, the J, LC&E ended at Lake City 12 mi. east of Jonesboro, but by 1899 the St. Francis River had been bridged there, thus opening Buffalo Island for development (Dew 1968). In 1902, the next big obstacle, Big Lake, had been bridged and Blytheville was reached. Communities that grew along the J, LC&E include Lake City, Black Oak, Monette, Leachville, Manila, and Dell. In 1905, the J, LC&E consolidated with another local short line railroad, the

Chickasawha Railroad. In 1905, the J, LC&E constructed a line southeast to Luxora and Osceola (Hull 1997:386).

The J, LC&E served as both a passenger and freight line, as 34.0 percent and 54.2 percent of its 1911 earnings of $185,252 were derived from these sources, respectively (Poor's 1912:1080). Its 1911 rolling stock included nine locomotives, three passenger cars, two combination cars, one baggage car, 118 freight cars (33 box; 85 flat), and five service cars. In the same year it operated 86.0 mi. of track and 12.0 mi. of siding. Poor's (1912) lists the following routes for it in 1911:

- Jonesboro to Barfield, Ark., 66.0 mi.
- Osceola Junction to Osceola, 18.0 mi.
- Midway to Luxora, Ark. 1.5 mi.
- Midway to Moore's Landing, 0.5 mi.

The J, LC&E began experiencing financial difficulties during the panic of 1907 (Dew 1968). By 1913 most of the easily accessible timber along the J, LC&E had been felled and the railroad reported a loss. However, drainage district improvements lead to a land boom in 1919, and the J, LC&E profited from selling cutover lands to farmers. In 1920, cotton prices crashed and the railroad again fell on hard times. By the 1930s cutbacks in service had begun, in part, due to competition from automobiles. The use of railroads in Northeast Arkansas and nationally declined significantly after World War II. The J, LC&E ceased operation on 1 January 1950 (Hull 1997:386).

THE GREAT FLOODS OF 1927 AND 1937

The Flood of 1927 had its origins in August 1926, when heavy rainfall in the central U.S. caused most of the upper Mississippi tributaries to overflow. In late 1926 the U.S. Weather Service noted that "the average reading through the last three months of 1926 on every single river gauge reading on each of the three greatest rivers of North America, the Ohio, the Missouri, and the Mississippi itself…was the highest ever known" (Barry 1998:175).

On New Year's Day 1927, the Mississippi River reached flood stage at Cairo, Illinois, the earliest for any year on record. Violent winter and spring storms contributed to the worsening conditions and by late March four separate flood crests had passed Cairo (Barry 1998:185). By April, there were already 35,000 refugees and Memphis's *Commercial Appeal* (1927) reported, "The outlook was gloomy now." On Saturday, 16 April a 1,200-ft. section of the levee at Dorena, Missouri (30 mi. below Cairo) crumbled and its collapse "sent a chill all the way down the Mississippi to New Orleans," since this was the first Federal levee to fail (Barry 1998:194). By the end of April the "Cairo to Memphis sector was lost" and floodwaters continued their devastation at all points downstream (Barry 1998:282).

In June, just as flooded areas of Missouri and Arkansas began emerging from the water—and farmers began planting—another flood crest moved through Cairo (Barry 1998:285). As of that late July, 1,500,000 ac. remained underwater. It was not until August 1927, four months after the first break of the mainline levee on the Mississippi River at Dorena, that all the water receded.

The Red Cross established 154 refugee camps in seven states and over 325,000 people, mostly African-Americans, lived in squalid conditions there for four months. An additional 311,000 people, mostly white, outside these camps were fed and clothed by the Red Cross during the same period. The U.S. Weather Bureau reported 313 deaths from the flood, and put direct losses at $355,147,000 and indirect losses at $1,000,000,000.

The legacy of the Great Flood of 1927 was felt not only in mud-caked settlements along the Mississippi River and it tributaries, but also in Washington, D.C. and in the nation's black community. In *Rising Tide: The Great Mississippi River Flood of 1927 and How It Changed America,* Barry (1998) addresses not only the physical impacts of the flood, but also the less tangible socio-political developments in its aftermath. Legacies of the flood include shifting "perceptions of the role and responsibility of the federal government—calling for greater expansion—and shatter[ing] the myth of a quasi-feudal bond between Delta blacks and the southern aristocracy…it accelerated the great migration of blacks north. And it altered both southern and northern politics" (Barry 1998:422). Herbert Hoover, who served as relief coordinator and was widely held as a hero for his efforts, was elected President in the aftermath of the flood, and Huey Long was elected Governor of Louisiana.

The Great Flood of 1927 lead to the "Jadwin Plan," a flood control plan developed by the USACE and presented to Congress by Edgar Jadwin. The Jadwin Plan "embodied the chief principle articulated by Ellet, that the river cannot be contained within levees" and scrapped the previous 'levee only' policy by providing designated floodways as a means for the river to spread out over some lands (Barry 1998:423). President Coolidge signed the bill on 15 May 1928. Illinois Congressman Frank Reid stated, "The bill changes the policy of the federal government which has existed for 150 years. It is perhaps the greatest engineering feat the world has ever known…It is the greatest piece of legislation ever enacted by Congress" (Barry 1998:406).

A stalled cold front resulted in extremely heavy rains in early 1937, and by 24 January, a date known as "Black Sunday," the entire Ohio River from Cairo up to Portsmith was at or above flood stage (American Red Cross 1938:14). All previous flood stage records between Hickman, Kentucky and Helena, Arkansas would shortly be broken. At Osceola, where the flood stage is 28 ft., a record stage of 50.90 ft. was documented on 7 February 1937.

In an attempt to save Cairo and relieve anticipated pressure on the Lower Mississippi Valley levees, the order to activate the New Madrid Floodway was sent by radio from Col. Eugene Reybold in Memphis to W.A. Steele in Cairo on 24 January. Prior to blasting the levee, on 21 January, the USACE issued a warning giving all the New Madrid Floodway residents 48 hours to evacuate. A team of engineers attempted to place explosives in the levee on 24 January, but failed to complete the job because the ground was frozen solid. The following day, 25 January 1937, engineers successfully dynamited the "fuseplug" levee near Birds Point.

While the activation of the New Madrid Floodway saved Cairo, the 1937 flood brought vast devastation Mississippi County (Strange 2012). Hundreds of people lost their homes and belongings, and the cotton crops were decimated. Thousands of refugees poured into Osceola, where Red Cross shelters were set up to receive and treat victims before their removal to Memphis.

WORLD WAR II

The immediate and long-term influences that World War II (WWII; 1941–1945) had within the U.S. falls under what cultural resource managers term "Home Front Heritage" (Kelly 2004:40). Arkansas' Home Front Heritage facilities include military training grounds, airfields, manufacturing, and Prisoner-of-War (POW) internment compounds (Hope 2008). Mississippi County's Home Front Heritage facilities include the Blytheville Army Air Base (later Eaker Air Force Base), and six branch POW camps that were located at Bassett, Blytheville, Keiser, Luxora, Osceola, and Victoria. Thousands of POWs from these camps were employed as contract labor during the war, and they are credited with saving the state's rice and cotton crops (Pritchett and Shea 1978). The POW camp at Osceola is recorded as archaeological Site 3MS920.

MODERN ERA

Holley (2000:183) considers the period from 1950–1970 in the Mississippi River Delta the "most dramatic period of change—a period in which the region was buffeted by forces that has been building intensity for a generation." In his view, the two major forces, mechanization and migration, played complementary roles. This era is associated with the "Great Migration," when over 2,500,000 Southern blacks moved from the Lower Mississippi River Delta area north to urban centers seeking industrial employment and relief from discrimination (Holley 2000:148; Katznelson 1973). This trend can be seen locally; as during the period from 1930–1960 the African-American population of Mississippi County declined 20 percent.

Farm mechanization began with the widespread introduction of tractors during the 1930s, and accelerated with mechanical cotton picker sales during the 1950s (Holley 2000:115). With the switch to mechanized agriculture, the need for farm labor decreased even further. As a result, many small communities disappeared, and numerous former tenant house locations were then plowed under. Farm mechanization also contributed to an increase in the average farm size during this era.

Crop patterns shifted during the modern times. While cotton retains its historical prominence, new crops—especially soybeans and rice—became significant during the 1960s. With the rise of rice agriculture, land leveling became common and many archaeological sites were destroyed during the late twentieth century as a result of this agricultural practice.

IV. LITERATURE AND RECORDS SEARCH

ARKANSAS ARCHEOLOGICAL SURVEY SITE FILES

An on-line review of Automated Management of Archeological Site Data in Arkansas (AMASDA) files was conducted for this project. A standard site files check was performed, and prior archaeological work in and within a 2-km radius of the study area was researched.

Importantly, the site files research reveals that there is no previously recorded archaeological site located within the Area of Potential Effects (APE). Within a 2-km radius of the proposed Astro Site Project area there are 11 previously recorded archaeological sites (Table 4-01). Most of these sites are Tenant period scatters that are likely the remains of houses.

Table 4-01. Previously recorded archaeological sites within 2 km of the study area.

Site	Description	Date	NRHP Status
3MS410	Twentieth-century house site	10/16/1983	not eligible
3MS411	Twentieth-century house site	10/16/1983	not eligible
3MS426	Twentieth-century house site	10/25/1983	not eligible
3MS427	late nineteenth- to mid-twentieth-century house site	10/25/1983	not eligible
3MS435	Archaic lithic scatter	10/25/1983	not eligible
3MS460	Twentieth-century house site	11/04/1984	not eligible
3MS461	Twentieth-century house site	11/04/1984	not eligible
3MS462	Twentieth-century house site	11/04/1984	not eligible
3MS564	Mississippian camp	11/06/1991	Undetermined
3MS727	Twentieth-century house site	02/07/2007	not eligible
3MS921	early to middle Woodland camp	10/23/2012	Undetermined

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Review of AMASDA files revealed that there have been two previous archaeological investigations within the 2 km search radius.

In 1998, the Arkansas State Highway and Transportation Department (AHTD) conducted investigations to repair portions of I-55 near the Osceola exit. No cultural resource was identified during the investigations (Arkansas State Highway and Transportation Department 1998).

Another report appears in the AMASDA files, but only as a bibliographic listing. Archeological Assessments conducted this survey for Arkansas Power and Light in 1986 (AMASDA #1447).

In addition to the above reports, there have been at least two other surveys conducted within 2 km of the project area that do not appear in the AMASDA files.

During 1983–1984, Mid-Continental Research Associates conducted a sample survey within the Tyronza Watershed for the Soil Conservation Service (Lafferty et al. 1984). This resulted in the identification of a significant number of sites, all of which are located on drainage ditches or natural waterways.

In 2014, Panamerican performed a Phase I cultural resources survey of two segments of a proposed 10-in. natural gas pipeline totaling 17.5 km in length. The survey resulted in the

identification of six newly recorded archaeological sites (3MS928–3MS933) within the APE and two standing structures (Structures 1 and 2 [MSØ111 and MSØ111A]) that are part of a ca. 1941 dilapidated farmstead complex. The six sites were late nineteenth- to twentieth-century historic plowzone deposits associated with razed structures. All the sites were recommended as not eligible for listing in the NRHP.

National Register of Historic Places Listings

As of this writing, there are 35 NRHP listed properties in Mississippi County, Arkansas, including two National Landmarks (National Register of Historic Places 2015). Both of the National Landmarks are Mississippian period archaeological sites: Nodena and Eaker. Two other archaeological sites in Mississippi County are individually listed: Zebree (3MS20) and the Chickasawba Mound (3MS55).

Importantly, there is no NRHP listed property within the project area.

Cartographic Review

1847 General Land Office Plat Map

The earliest detailed map of the study area is the 1847 GLO plat map for T13N R10E (Figure 4-01). This maps shows no cultural feature within the study area, although several fields are shown off to the east, closer to the river. Also, there is no natural feature depicted within the study area, although, again, there are several shown in various areas of the township.

1939 Evadale 15-minute Quadrangle

The 1939 Evadale, AR-TN 15-min. quad shows that the local road network was developed much as today (Figure 4-02). The roads on the eastern and western boundaries are in place and there are structures along them. Drainage Ditches 44 is shown bisecting the tract. The northern and western portions of the project area were wooded in 1939, and the area to south and east was cleared farmland. Importantly, several structures are shown within the tract in the cleared area.

1956 Evadale 15-minute Quadrangle

The 1956 Evadale, AR-TN 15-min. reveals that a dendritic system of drainage ditches was excavated within the tract after 1939 (Figure 4-03). This drained the formerly wooded areas observed on the 1939 quad, and as a result the entire tract was cleared by 1956. Importantly, structures interpreted as tenant houses can be seen in the southeastern and northwestern portions of the tract. The 1956 quad was used to predict historic site locations during the fieldwork.

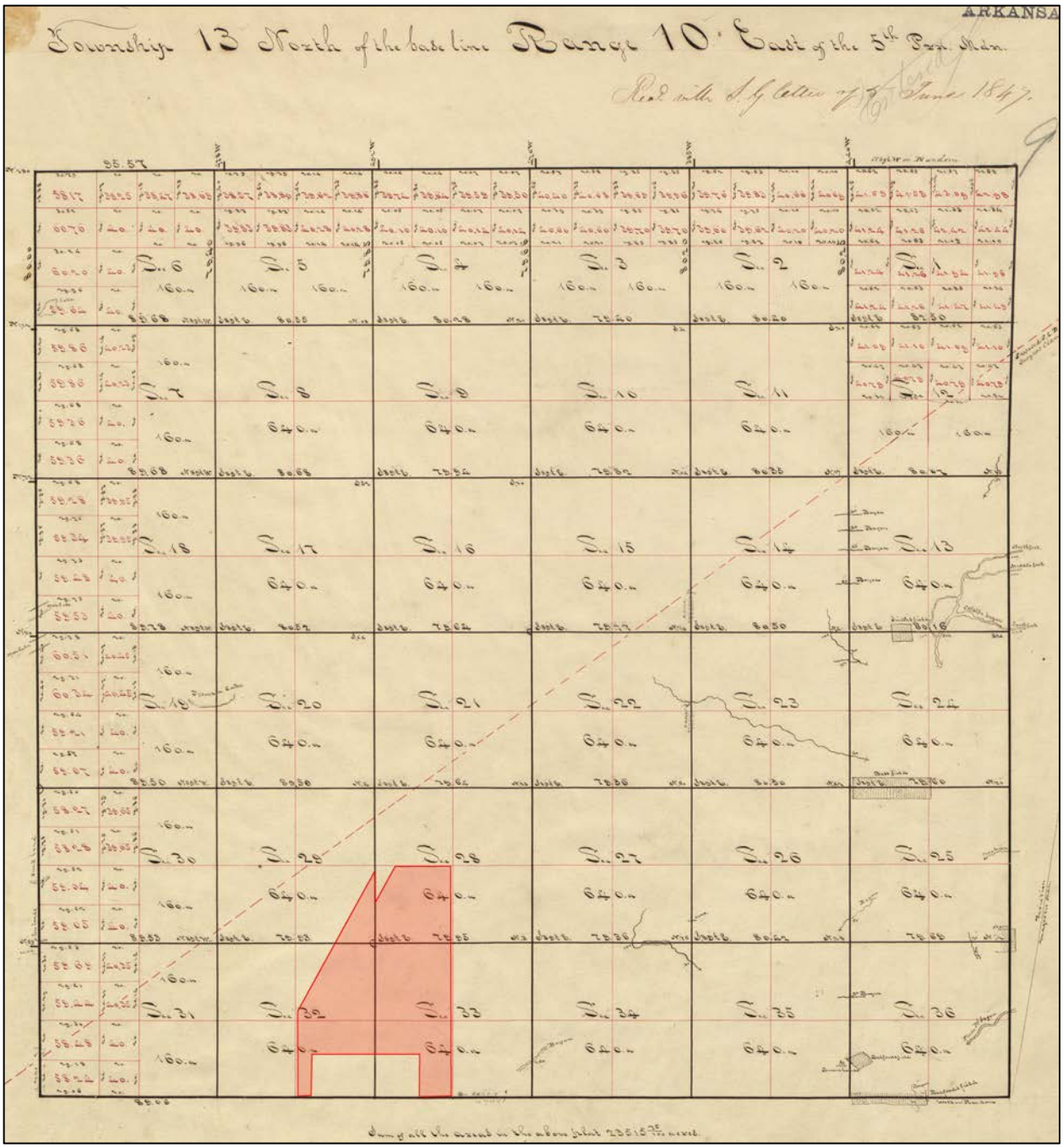

Figure 4-01. The 1847 GLO plat map for T13N R10E with the Astro Site project area (in red).

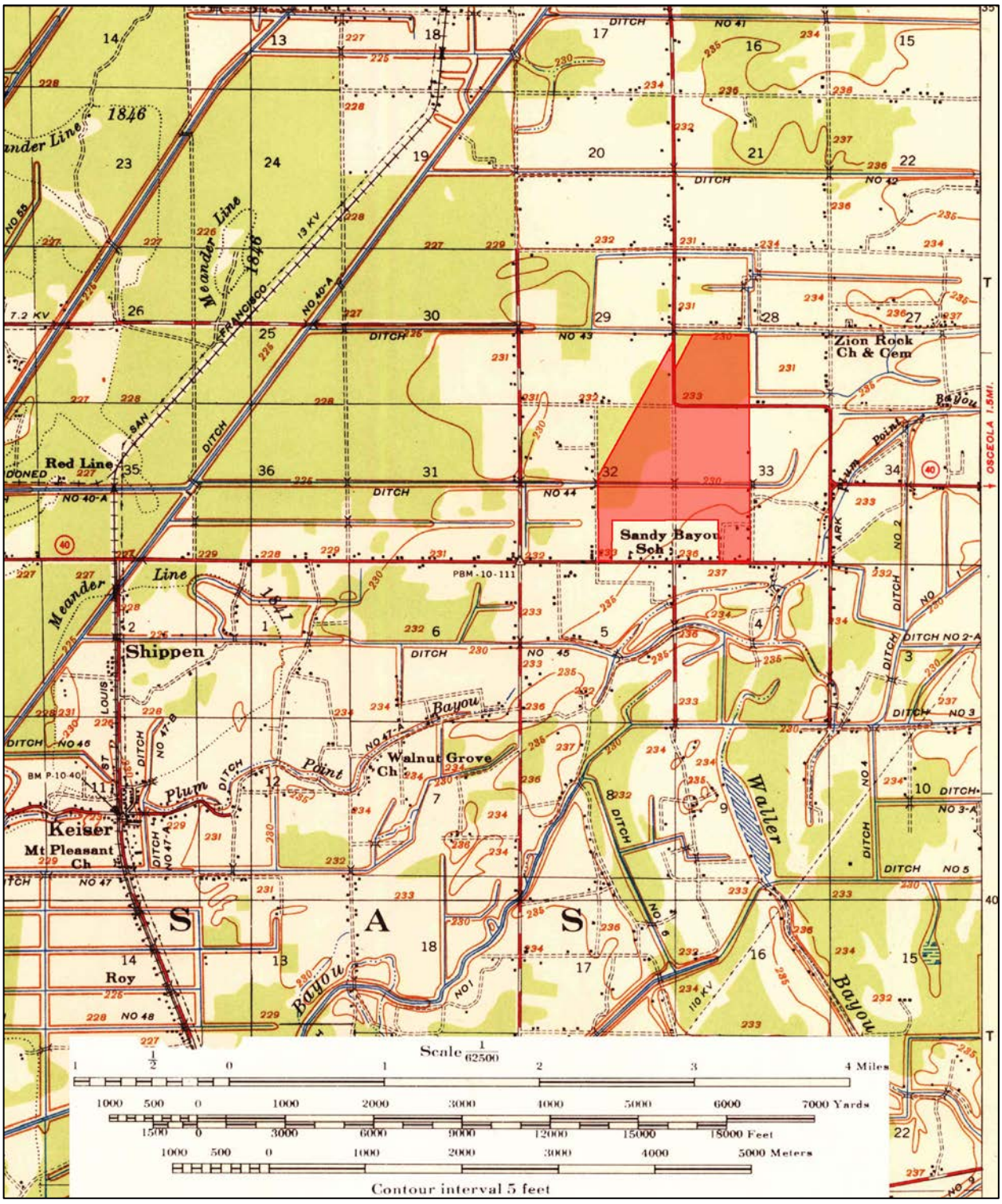

Figure 4-02. The 1939 Evadale 15-min. quad with the Astro Site project area added (in red).

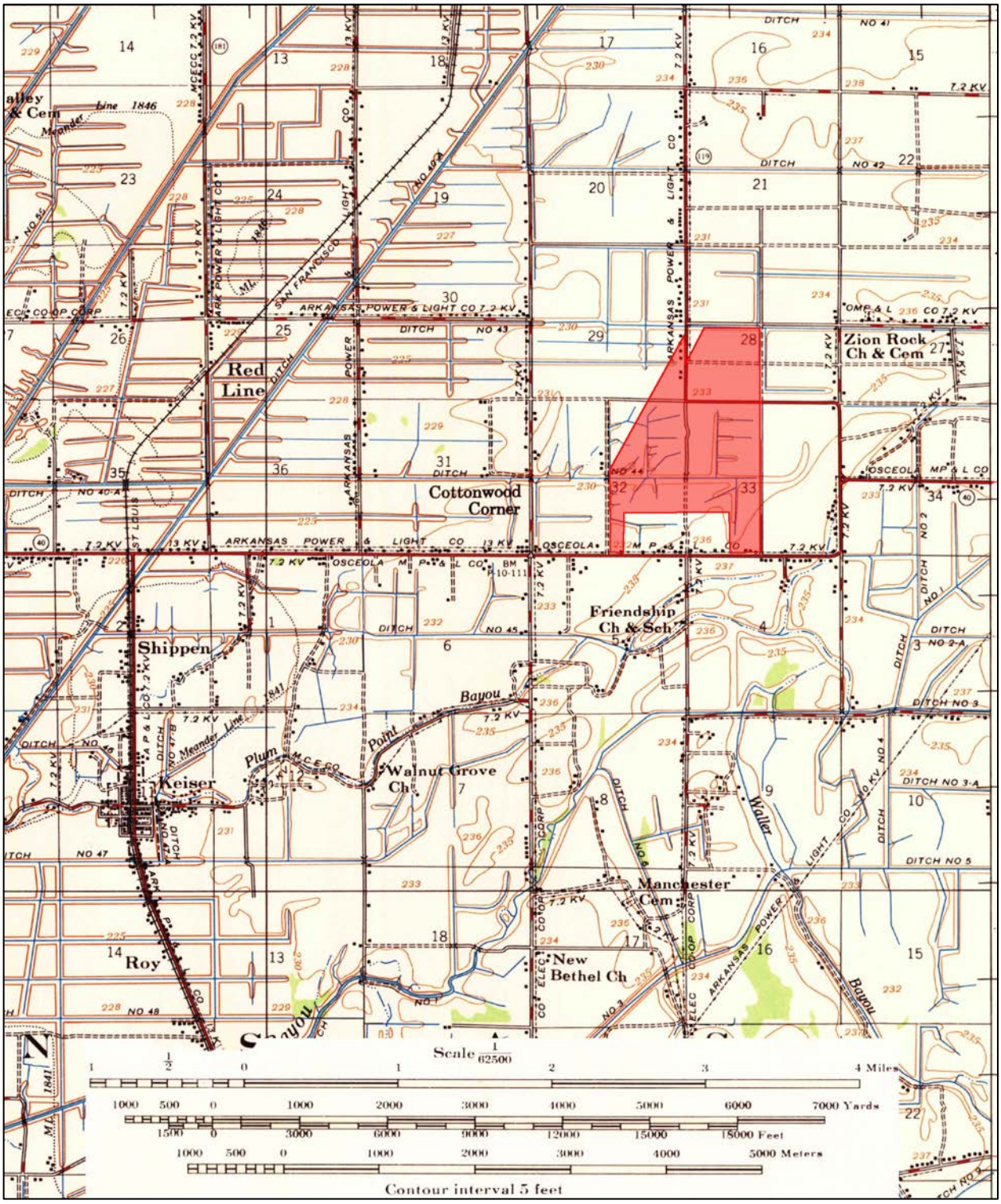

Figure 4-03. The 1956 Evadale 15-min. quad with the Astro Site project area added (in red).

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V. FIELD INVESTIGATIONS

METHODS

A four-person team surveyed the Astro Site project area on 16–18 and 21 of September 2015. The tract consisted of a mosaic of harvested agricultural fields that exhibited good to excellent (50 to 100 percent surface visibility). As a result visual inspection using closely spaced parallel transects (15–20 m) was the primary site detection method employed within the project area. During the survey the field crew assigned each discrete field a letter designation; this information is retained in the project records.

Shovel tests were placed at 20-m intervals within all identified sites and in areas that exhibited poor surface visibility. This method conforms to that of an "intensive survey" under the 2010 *State Plan* guidelines (Appendix B of the Arkansas *State Plan*, revised version in effect as of 1 January 2010).

SHOVEL TEST DEFINITION

A shovel test consisted of the excavation of a four-sided hole at least 30 cm to a side (0.09 m^2). Each shovel test was excavated to culturally sterile deposits. To ensure consistent artifact recovery, all sediment was hand-screened through 0.25-in. mesh hardware cloth. All natural and cultural strata revealed in the individual shovel test profiles were recorded using metric depth measurements, and described in terms of textural class and color (using the Munsell Soil Color Chart). Additional strata descriptions were provided as needed, such as moisture, natural rock content, and number and size of roots. Panamerican employs a specialized shovel test form to insure consistent shovel test profile recording. Following recording a shovel test, artifact sample bags (if any) were labeled. All holes were subsequently backfilled as closely as possible to the original condition.

SITE DEFINITION

In Arkansas, an archeological site is "defined by the presence of three or more artifacts (chips, flakes, historic objects, etc.) within 5 m of each other, or by the presence of man-made features such as mounds, Civil War entrenchments, [or] wells," even when there are no artifacts present (2010 *State Plan* Appendix B guidelines). Additionally, to be recorded in the AAS site files database, a site must be 50 years or older.

An isolated find is recorded as a site if it is a diagnostic or significant artifact. By way of example, the 2010 *State Plan* Appendix B guidelines note that a *diagnostic* artifact is "one that provides temporal or cultural information" and an example of a *significant* artifact is a novaculite flake in the Delta.

SURVEY DOCUMENTATION

To ensure appropriate field data management, Panamerican employs a system the company developed for intensive surveys. This system has been successfully implemented for several years and, for example, it has been used successfully during various past projects within Arkansas. Throughout the course of the fieldwork, the crew used specialized forms to individually record the shovel test locations. The status of each shovel test was assessed as positive (■), negative (❑), or not excavated (Ø). In the case of the latter, which are referred to as "no-test" locations, the reason for not excavating a shovel test is provided on the forms. This allows for a complete inventory of shovel tests to be generated. Shovel test profiles, sediment characteristics, and depths of artifact recovery, if any, were recorded on the forms during the

fieldwork. At the end of each field day, this information is collected by the field director and reviewed for content.

In addition to the individual shovel test results recorded by the archaeological technicians, the field documentation included, but was not limited to, the following: (1) the Field Director maintained a set of field notes that outlines daily activities and provides a general commentary on the project findings, and it also includes any unique or significant findings; (2) the location of each identified cultural resource was recorded on a 7.5-min. quad map; and (3) the survey area and all recorded sites were recorded using digital photography.

FINDINGS

The survey of the Astro tract resulted in the documentation of three newly recorded Historic period sites (3MS937, 3MS938, and 3MS939). During the course of the survey, 33 shovel tests were excavated within the three sites; four were positive for cultural material and 29 were negative for cultural material (Table 5-01). Importantly, the central portion of the tract was found to consist of land-leveled rice fields with little archaeological potential (see NW¼ of Section 33 and NE¼ of Section 32 on Figure 1-01).

The only standing structures within the tract are located in the northwestern corner of the tract near I-55. While two structures are shown at this location on the 1956 quad, the present buildings here are modern.

Table 5-01. Shovel test inventory.

Site	Transect	Shovel Test	Result	Max Depth (cm)	Soil Description	Notes
3MS937	1	1	❑	50	0–50 cm 10YR 4/2 clay	
3MS937	1	2	❑	50	0–50 cm 10YR 4/2 clay	
3MS937	1	3	❑	50	0–50 cm 10YR 4/2 clay	
3MS937	1	4	❑	50	0–50 cm 10YR 4/2 clay	
3MS937	1	5	■	50	0–10 cm 10YR 4/2 clay; 10–50 cm 10YR 4/2 clay	recovered at 0–10 cmbs
3MS937	1	6	■	50	0–10 cm 10YR 4/2 clay; 10–30 cm 10YR 3/2 sandy clay; 30–50 cm 10YR 4/2 clay	recovered at 0–30 cmbs
3MS937	1	7	❑	50	0–50 cm 10YR 4/2 clay	
3MS937	2	1	❑	25	0–18 cm 10YR 3/2 loamy silt clay; 18–25 cm 10YR 3/2 hard compact clay	
3MS937	2	2	❑	25	0–18 cm 10YR 3/2 loamy silt clay; 18–25 cm 10YR 3/2 hard compact clay	
3MS937	2	3	❑	25	0–15 cm 10YR 3/2 loamy sand; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	2	4	❑	25	0–15 cm 10YR 3/2 loamy sand; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	2	5	❑	25	0–15 cm 10YR 3/2 loamy sand; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	2	6	❑	25	0–15 cm 10YR 3/2 loamy sand; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	2	7	❑	25	0–15 cm 10YR 3/2 loamy sand; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	3	1	❑	25	0–15 cm 10YR 3/2 sandy loam; 15–25 cm 10YR 3/2 hard compact clay	

Site	Transect	Shovel Test	Result	Max Depth (cm)	Soil Description	Notes
3MS937	3	2	■	25	0–15 cm 10YR 3/2 sandy loam; 15–25 cm 10YR 3/2 hard compact clay	recovered at 0–15 cmbs
3MS937	3	3	❑	25	0–15 cm 10YR 3/2 sandy loam; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	3	4	❑	25	0–15 cm 10YR 3/2 sandy loam; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	3	5	❑	25	0–15 cm 10YR 3/2 sandy loam; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	3	6	❑	25	0–15 cm 10YR 3/2 sandy loam; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	3	7	❑	25	0–15 cm 10YR 3/2 sandy loam; 15–25 cm 10YR 3/2 hard compact clay	
3MS937	4	1	❑	50	0–10 cm 10YR 4/2 clay; 10–30 cm 10YR 3/2 sandy clay; 30–50 cm 10YR 4/2 clay	
3MS937	4	2	❑	50	0–10 cm 10YR 4/2 clay; 10–30 cm 10YR 3/2 sandy clay; 30–50 cm 10YR 4/2 clay	
3MS937	4	3	❑	50	0–10 cm 10YR 4/2 clay; 10–30 cm 10YR 3/2 sandy clay; 30–50 cm 10YR 4/2 clay	
3MS937	4	4	❑	50	0–50 cm 10YR 4/2 clay	
3MS937	4	5	❑	30	0–10 cm 10YR 4/2 clay; 10–30 cm 10YR 3/2 sandy clay	
3MS937	4	6	❑	30	0–10 cm 10YR 4/2 clay; 10–30 cm 10YR 3/2 sandy clay	
3MS938	5	1	❑	25	0–5 cm 10YR 5/2 silty loam; 5–25 cm 10YR 4/1 clay	
3MS938	5	2	■	40	0–20 cm 10YR 5/2 silty clay; 20–40 cm 10YR 4/1 clay	recovered at 0–10 cmbs
3MS938	5	3	❑	25	0–5 cm 10YR 5/2 silty loam; 5–25 cm 10YR 4/1 clay	
3MS939	6	1	❑	10	0–10 cm 10YR 4/1 sandy clay	
3MS939	6	2	❑	10	0–10 cm 10YR 4/1 sandy clay	
3MS939	6	3	❑	10	0–10 cm 10YR 4/1 sandy clay	

Key: Positive=■; Negative=❑; and No Test=Ø

SITE DESCRIPTIONS

3MS937

Cultural Affiliation .....Historic
Specific Component(s) ..... Twentieth-Century Historic
Site Type .....Farmstead
Site Size .....2,100 m^2
Artifact Recovery Total 26
Recommended NRHP Status .....Not eligible

Location and Setting

Site 3MS937 is a newly recorded cultural resource in Mississippi County that can be found on the Keiser 7.5-min. quad. The site is located along the northern side of State Highway 140 (HY-140; Figure 5-01). The topographic setting is a level field at 230 ft. elevation, and the cover consists of harvested corn (Figure 5-02). The Soil Conservation Service has mapped the 3MS937 location as Tunica silty clay (Tu). The nearest water is Ditch 44, which is located 700 m north.

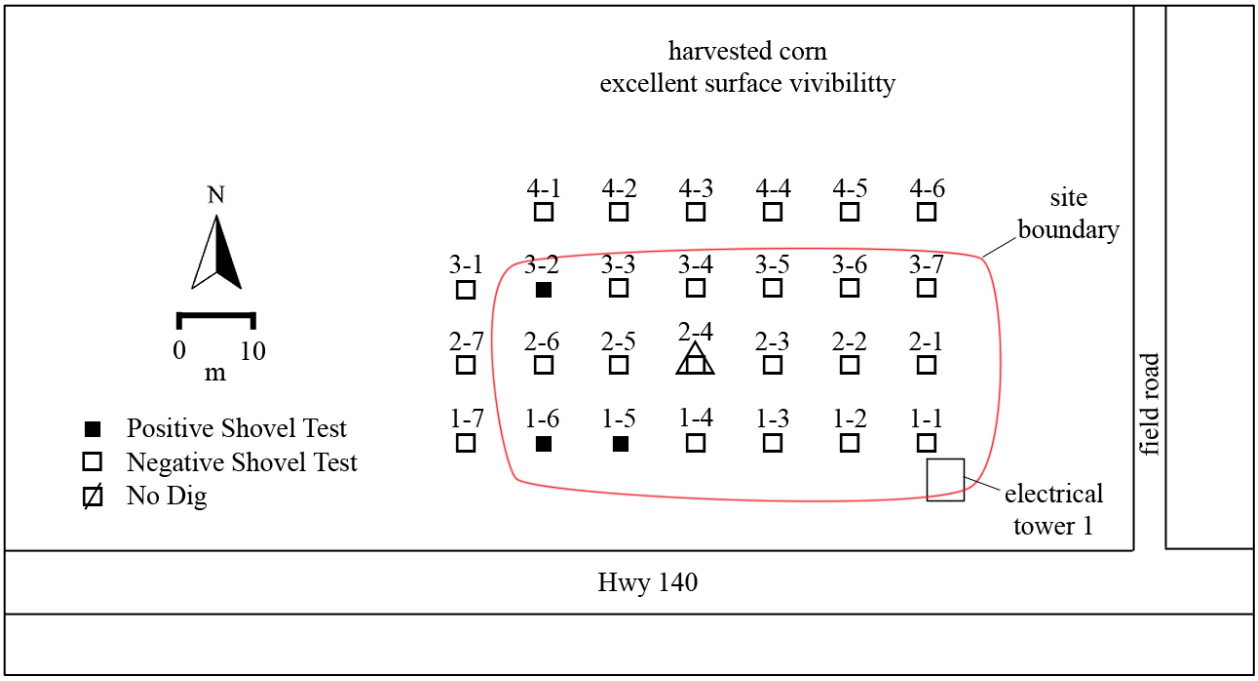

Figure 5-01. Site 3MS937 sketch map.

Archaeology

Panamerican recorded 3MS937 as Field Site 1 on 21 September 2015. The site was identified as a surface scatter of historic material near the southeastern corner of the project area. The site size, 30-x-70 m (2,100 m^2), is based on the surface distribution of artifacts (see Figure 5-01). A representative sample of artifacts was collected from the site surface (n=15).

Eighteen shovel tests were dug within the observed scatter limits, three of which were positive for cultural material. The average yield per positive shovel test was 6.0 artifacts.

A typical shovel test revealed the following soil profile:

- Zone I: 0–10 cmbs, 10YR 4/2 clay
- Zone II: 10–50 cmbs, 10YR 4/3 clay

The site location has been severely disturbed by plowing and possibly by road construction. A structure for a high voltage transmission line is also on site. The subsurface recovery was from the Zone I, which is interpreted as the plowzone.

Figure 5-02. Site 3MS937; view east (DSCN0106.jpg).

Artifact Assemblage

The Site 3MS937 assemblage consists of 33 historic artifacts. An itemized inventory by provenience is presented below (Table 5-02). The historic assemblage consists of: bottle glass (n=17); brick fragments (n=4); melted glass (n=2); table glass (n=2); wire nails (n=2); whiteware (n=2); flat glass (n=1); and stoneware (n=1). The assemblage is typical of a twentieth-century rural domestic site (i.e., tenant house).

Table 5-02. Site 3MS937 artifact inventory.

Transect	Shovel Test	Depth (cm)	Artifact Category	Comments	Count
1	3	0–10	bottle glass, amber		1
1	3	0–10	brick fragment		1
1	6	0–30	bottle glass, clear		3
1	6	0–30	bottle glass, amber		1
1	6	0–30	whiteware, plain		1
1	6	0–30	stoneware, Albany glazed interior/exterior		1
1	6	0–30	nail fragment, wire		2
1	6	0–30	melted glass		2
3	2	0–15	bottle glass, clear		2
3	2	0–15	bottle glass, clear, base		1
3	2	0–15	bottle glass, clear, yellow coated		1
3	2	0–15	brick fragment		2

Transect	Shovel Test	Depth (cm)	Artifact Category	Comments	Count
		surface	bottle glass, amber		1
		surface	bottle glass, amethyst		1
		surface	bottle glass, amethyst, base		1
		surface	bottle glass, aqua, bottleneck	external thread finish	1
		surface	bottle glass, blue		1
		surface	bottle glass, clear		1
		surface	bottle glass, clear, base		1
		surface	bottle glass, milkglass		1
		surface	brick fragment		1
		surface	flat glass, clear		1
		surface	porcelain cleat insulator	"Macomb"	1
		surface	table glass, amethyst, molded		1
		surface	table glass, milkglass, molded		1
		surface	whiteware, plain		1
		surface	whiteware, plain, rim		1
				3MS937 Total	**33**

Additional Remarks

A structure is shown at this location on 1939 and 1956 Evadale 15-min. quads. No structure is shown at this location on the 1983 Keiser 7.5-min quad, thus the house must have been razed ca. 1957–1982.

Recommendation

The recommended NRHP status for 3MS937 is not eligible. The site's integrity has been degraded by cultivation. The site is a shallow subsurface deposit that lacks subsurface integrity and the artifacts appear to have been dragged around the site by plowing. Historic scatters are ubiquitous in agricultural areas of eastern Arkansas, and this example does not meet enough of the criteria for farmstead eligibility established by Wilson (1990) to be considered eligible. Additional investigations at 3MS937 are unlikely to yield any additional significant archaeological data relevant to our understanding of twentieth-century historic occupations in the Delta.

3MS938

Cultural Affiliation ..... Historic
Specific Component(s) ..... Twentieth-Century Historic
Site Type ..... Farmstead
Site Size ..... 400 m^2
Artifact Recovery Total 14
Recommended NRHP Status ..... Not Eligible

Location and Setting

Site 3MS938 is a newly recorded cultural resource in Mississippi County that can be found on the Keiser 7.5-min. quad. The site is located on the northern side of a field road (Figure 5-03). The topographic setting is a level field at 230 ft. elevation, and the cover was dry soybean field with good surface visibility and parches of excellent surface visibility. The Soil Conservation Service has mapped the 3MS938 location as Sharkey-Steele complex (Sm). The nearest water is Ditch 43 (800 m north) and Ditch 44 (800 m south).

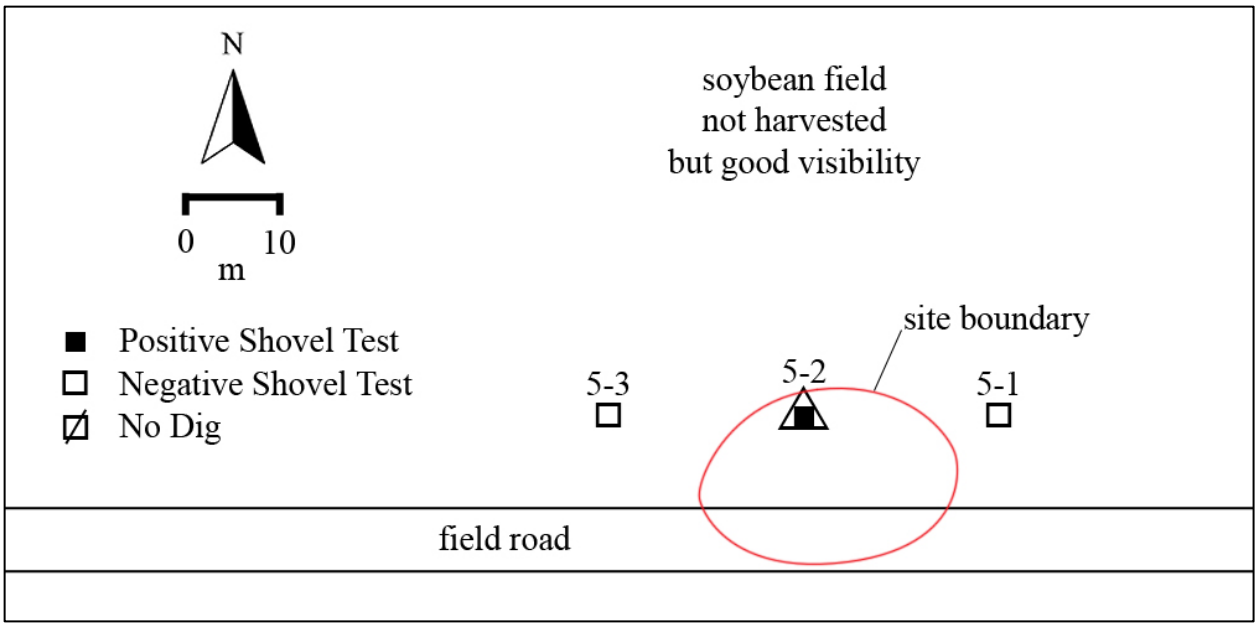

Figure 5-03. Site 3MS938 sketch map.

Figure 5-04. Site 3MS938; view south (DSCN0112.jpg).

Archaeology

Panamerican recorded 3MS938 as Field Site 2 on 21 September 2015. The site was identified as a surface scatter of historic material in the northern portion of the project area, west of a sharp

turn in HY-119. The site size, 20-x-20 m (400 m^2), is based on the observed surface scatter. All observed artifacts were collected from the surface; these 12 items form most of the site assemblage.

Three shovel tests were excavated at 20-m intervals at and near the site, of which one was positive for cultural material (shovel test 5-2). This shovel test produced two artifacts from the plowzone and revealed the following soil profile:

- Zone I (plowzone): 0–20 cmbs, 10YR 5/2 silty clay
- Zone II: 20–40 cmbs, 10YR 4/1 clay

The site location has been severely disturbed by plowing and possibly by road construction.

Artifact Assemblage

The Site 3MS938 assemblage consists of 14 historic artifacts. An itemized inventory by provenience is presented below (Table 5-03). The historic assemblage consists of: bottle glass (n=9); brick fragments (n=3); table glass (n=2); flat glass (n=1); and metal (n=1). The assemblage is typical of a twentieth-century rural domestic site (i.e., tenant house).

Table 5-03. Site 3MS938 artifact inventory.

Transect	Shovel Test	Depth (cm)	Artifact Category	Comments	Count
5	2	0–10	bottle glass, Georgia green, molded	hobbleskirt	1
5	2	0–10	brick fragment		1
		surface	bottle glass, Georgia green, molded	hobbleskirt	1
		surface	bottle glass, clear		4
		surface	bottle glass, clear, bottleneck	external thread finish	1
		surface	bottle glass, clear, molded		1
		surface	bottle glass, cobalt blue, bottleneck	external thread finish	1
		surface	brick fragment		2
		surface	metal, undifferentiated		1
		surface	table glass, clear, rim		1
				3MS938 Total	**14**

Additional Remarks

No structure is indicated at this location on the 1983 Keiser 7.5-min. quad, 1939 Evadale 15-min. quad, or 1956 Evadale 15-min. quad. A road, however, is shown on the two older maps just south of the location of the site.

Recommendation

The recommended NRHP status for 3MS938 is not eligible. The site's integrity has been degraded by cultivation. The site is a low-density, plowzone deposit that lacks integrity. Historic scatters are ubiquitous in agricultural areas of eastern Arkansas, and this example does not meet enough of the criteria for farmstead eligibility established by Wilson (1990) to be considered eligible. Additional investigations at 3MS938 are unlikely to yield any additional significant archaeological data relevant to our understanding of twentieth-century historic occupations in the Delta.

3MS939

Cultural Affiliation ..... Historic
Specific Component(s) ..... Twentieth-Century Historic
Site Type ..... Farmstead
Site Size ..... 800 m^2
Artifact Recovery Total 12
Recommended NRHP Status ..... Not Eligible

Location and Setting

Site 3MS939 is a newly recorded cultural resource in Mississippi County that can be found on the Keiser 7.5-min. quad. The site is located on western side of HY-119 (Figure 5-05). The topographic setting is a level field at 230 ft. elevation, and the cover consists of a dry soybean with good surface visibility and patches of excellent surface visibility (Figure 5-06). The Soil Conservation Service has mapped the 3MS939 location as Sharkey-Steele complex (Sm). The nearest water is Ditch 43, which is located 400 m north.

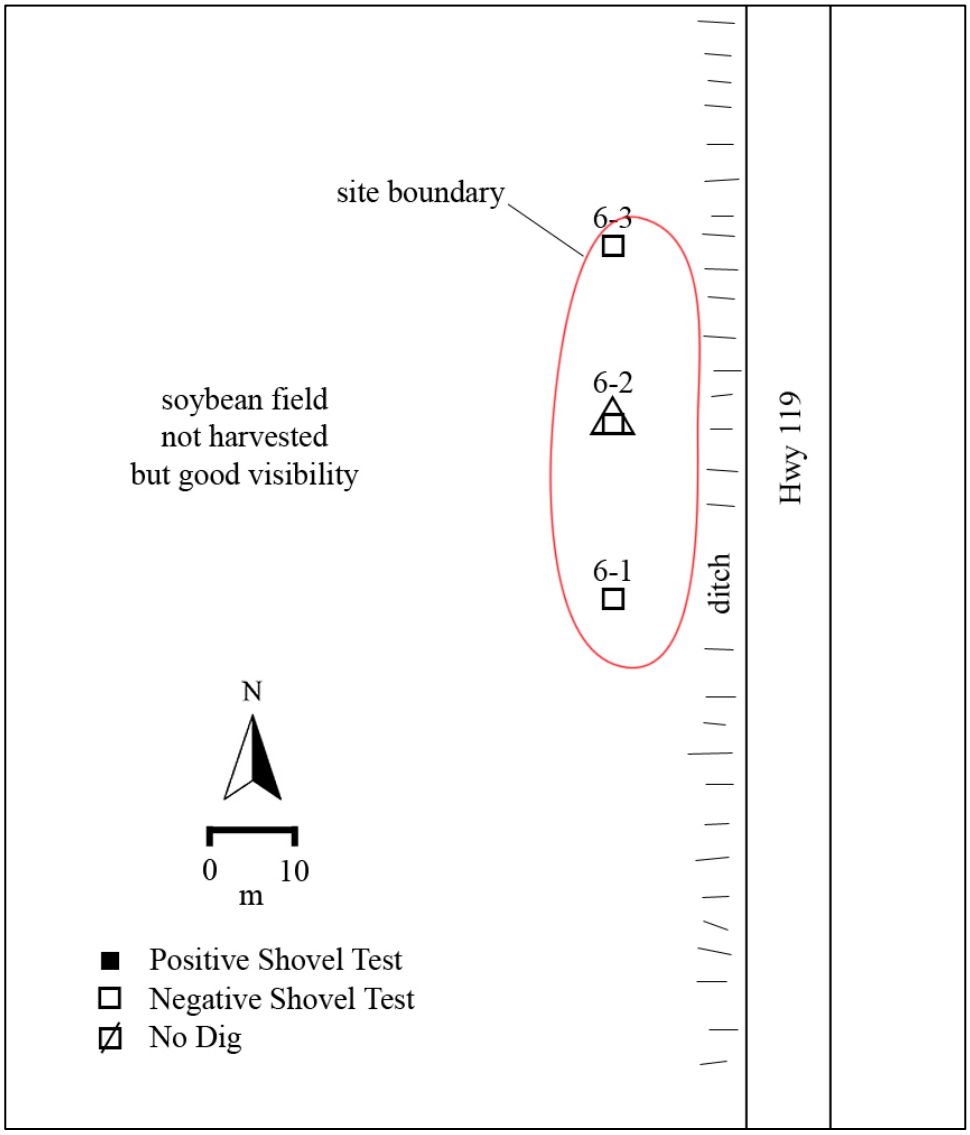

Figure 5-05. Site 3MS939 sketch map.

Figure 5-06. Site 3MS939; view south (DSCN0114.jpg).

Archaeology

Panamerican recorded 3MS939 as Field Site 3 on 21 September 2015. The site was identified as a surface scatter of historic material near the northern portion of the project area along HY-119. The site size, 20-x-40 m (800 m^2), is based on the observed surface scatter (Figure 5-06). A sample of the observed surface artifacts was collected.

Three shovel tests were dug at 20-m intervals within the observed scatter limits, all were negative for cultural material. A typical shovel test revealed the following soil profile:

- Zone I (plowzone): 0–20 cmbs, 10YR 5/2 silty clay
- Zone II: 20–40 cmbs, 10YR 4/1 clay

The site location has been severely disturbed by plowing and possibly by road construction.

Artifact Assemblage

The Site 3MS939 assemblage consists of 12 historic artifacts. An itemized inventory by provenience is presented below (Table 5-04). The historic assemblage consists of: bottle glass (n=6); whiteware (n=3); brick fragment (n=1); metal (n=1); and plastic (n=1). The assemblage is typical of a twentieth-century rural domestic site (i.e., tenant house).

Table 5-04. Site 3MS939 artifact inventory.

Transect	Shovel Test	Depth (cm)	Artifact Category	Comments	Count
		surface	bottle glass, clear, bottleneck	crown finish	1
		surface	bottle glass, clear, base		1
		surface	bottle glass, amber		1
		surface	bottle glass, green, label	unreadable	1
		surface	bottle glass, green, base		1
		surface	bottle glass, green, bottleneck	crown finish	1
		surface	whiteware, plain		2
		surface	whiteware, plain, rim		1
		surface	plastic, lid		1
		surface	brick fragment		1
		surface	metal, undifferentiated		1
				3MS939 Total	**12**

Additional Remarks

A structure is shown at this location on the 1939 Evadale 15-min. quad and two are shown on the 1956 Evadale 15-min. quad at this location. No structure is indicated at this location on the 1983 Keiser 7.5-min. quad, there the structure(s) at 3MS939 was razed ca. 1957–1982.

Recommendation

The recommended NRHP status for 3MS939 is not eligible. The site's integrity has been degraded by intentional razing and years of cultivation. It is low-density surface scatter that failed to produced sub-surface recovery. Historic scatters are ubiquitous in agricultural areas of eastern Arkansas, and this example does not meet enough of the criteria for farmstead eligibility established by Wilson (1990) to be considered eligible. Additional investigations at 3MS939 are unlikely to yield any additional significant archaeological data relevant to our understanding of twentieth century historic occupations in the Delta.

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VI. ARTIFACT ANALYSIS

All artifacts recovered during the survey were transported to Panamerican's laboratory for processing and analysis under the supervision of Karla Oesch, Laboratory Director. Analysis proceeded by provenience (shovel test). Standardized analysis forms and artifact categories were used and the data were keyed into a spreadsheet-type artifact inventory using Excel. All of the artifacts have been cataloged using a system compatible with the requirements of 36 CFR 79.

The recovered assemblage at the Astro tract consists of 59 artifacts that were recovered from three sites: 3MS937; 3MS938; and 3MS939 (Table 6-01). The assemblage consisted solely of historic artifacts that principally interpreted as dating to the twentieth century, although a few artifact categories have date ranges that extend into the late nineteenth century.

Table 6-01. Astro tract artifact recovery by site.

Artifact Categories	3MS937	3MS938	3MS939	Total
KITCHEN GROUP				
Bottle glass	17	9	6	32
Table glass	2	1	0	3
Whiteware	3	0	3	6
Stoneware	1	0	0	1
ARCHITECTURE GROUP				
Brick	4	3	1	8
Nails	2	0	0	2
Flat glass	1	0	0	1
ELECTRIC GROUP				
Porcelain insulator	1	0	0	1
MISCELLANEOUS	2	1	2	5
Total	***33***	***14***	***12***	***59***

HISTORIC ARTIFACTS

Historic artifact groups were formulated and presented following the functional group classification system originally developed by Stanley South (1977). Artifacts were analyzed within a general type-ware-materials-class-group system, with the most detailed analysis performed at the type level and the most generalized analysis at the group level. Each artifact was analyzed largely upon the differences in formal characteristics based on South's system. Three functional groups are recognized in the recovered assemblage: Kitchen, Architecture, and Electric. Artifacts that could not be placed into a functional group are considered miscellaneous items.

KITCHEN GROUP

Kitchen Group items are those associated with food preparation and consumption. The artifacts classes in this group include bottle glass (n=32), table glass (n=3), and ceramics (n=7).

Bottle Glass

The bottle glass in this assemblage is all machine-made; no free- or mold-blown glass was recovered. Bottle glass can be one of the more chronologically sensitive artifact categories in Arkansas Historic sites assemblages that post-date the Civil War. The importance of bottle glass in dating Historic period assemblages cannot be overemphasized, partly because the ceramics

associated with postbellum sites exhibit such broad production ranges. As a result, analysis of bottle glass often provides a more accurate and refined view of a site's chronology than reliance on ceramics.

All the bottle glass was sub-sorted by color and the following results were obtained: clear (n=17); amber (n=4); green (n=3); amethyst (n=2); Georgia green (n=2); aqua (n=1); blue (n=1); cobalt blue (n=1); and milkglass (n=1).

Seventeen shards of clear bottle glass were recovered. During the 1860s and 1870s there was an increased demand for clear glass containers that "became readily apparent by 1880" (Fike 1987:17). Consumer pressure forced the growing food-preservation industry into using clear glass containers so a bottle's contents could be viewed without distortion at the point of purchase. Clear is by far the most frequent bottle glass color at the site, forming most of the small assemblage. Heavy recovery of clear bottle glass is a common trait of archaeological assemblages that post-date the 1880s. Clear glass ranks first in the assemblage and was recovered from all three sites. One piece was noted as a bottleneck with crown finish.

Initially, clear glass was made by adding soda lime to the glass formula, which was an expensive process. After 1880, manganese oxide was used to produce clear glass, which continued until World War I interrupted the supply of manganese oxide from Germany (Jones and Sullivan 1989). Manganese reacts to UV rays in sunlight (i.e., solarizes), leaving the formerly clear glass a violet or purple shade known as "amethyst glass." Lack of control over the amount of manganese introduced into the glass formula occurred when machine production began; thus, the bottles produced 1893–1917 generally tend to show a deeper color change. Amethyst glass ranks fourth in the assemblage and was only recovered from 3MS937. Additionally, one piece of amethyst glass was classified as a base (Figure 6-01b), though no manufacturer's mark was observed.

Amber glass ranks second in the assemblage and four pieces were recovered. Amber, or brown, glass is produced by adding carbon and/or nickel, and/or iron to molten glass (Fike 1987:17). Amber glass was used widely after 1860 and had a general application, including use for alcoholic beverages such as beer and whiskey, as well as for mineral water bottles and various other household compounds.

Georgia green glass ranks fifth in the assemblage (n=2). Coca-Cola introduced this glass color around 1917 (Toulouse 1971:446). Both Georgia green fragments are noted as fragments of a "hobbleskirt"-style bottle (Figure 6-01a).

The remaining glass recovery is all minority colors. These include green, blue, aqua, cobalt blue (Figure 6-01c), and white (i.e., milkglass).

Table Glass

The table glass genre includes both utilitarian and decorative household glass, such as drinking vessels, bowls, stemware, vases, pitchers, candy dishes, and plates. Three pieces of table glass were recovered (Table 6-01). Noted colors include white (i.e., milkglass), clear, and amethyst.

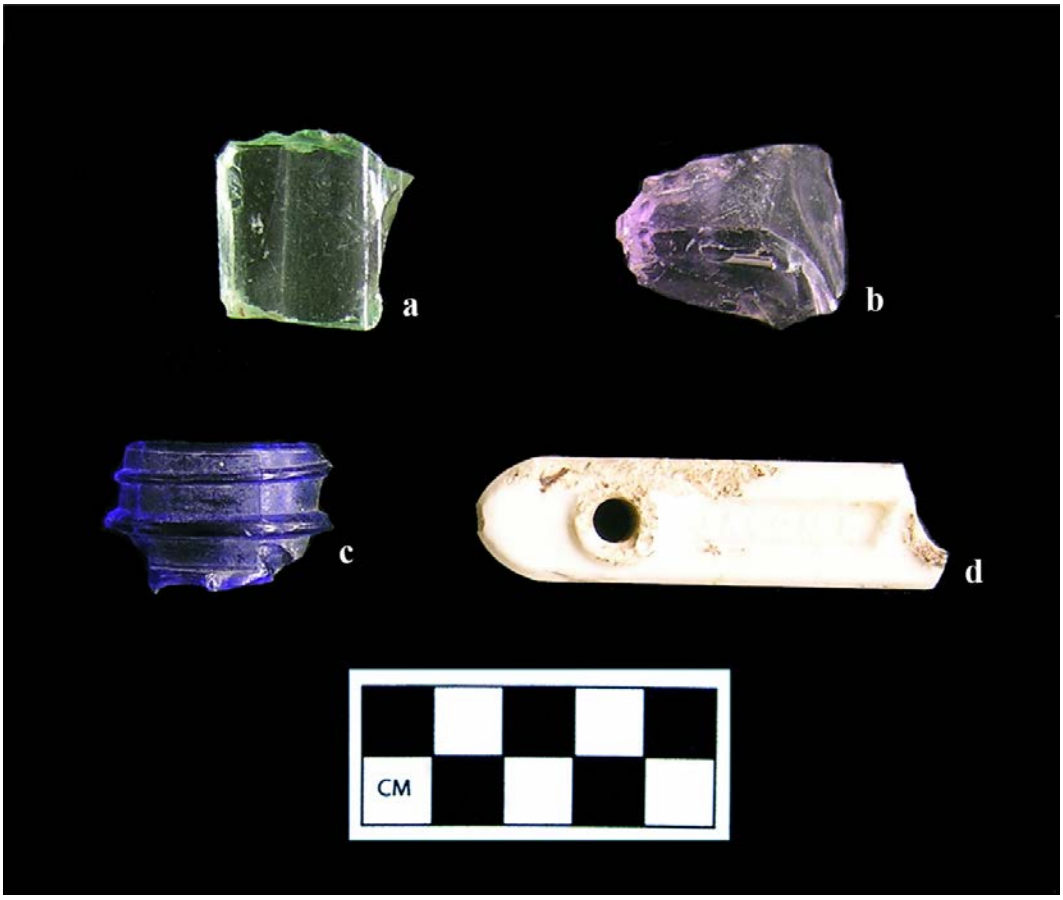

Figure 6-01. Artifact plate: a-Georgia green "hobbleskirt" design bottle glass (3MS938 ST5-2); b-amethyst glass base (3MS937 surface); c-cobalt blue bottleneck (3MS938 surface); and d-porcelain insulator (3MS937 surface).

Ceramics

The ceramics were sorted by ware group and surface treatment. Two ware groups were recognized: whiteware (n=6); and stoneware (n=1).

Classification of eighteenth- and nineteenth-century refined ceramics into specific types has been problematic for historic archaeologists (Majewski and O'Brien 1987; Miller 1991; Noël Hume 1980; South 1977). Paste composition can be used as a general chronological indicator because creamware was an eighteenth-century product from which pearlware evolved in the 1780s, followed by whiteware and ironstone. This evolution in wares resulted in a paste gradient that becomes evident as a problem in the reliable sorting of refined earthenwares into the common typological categories. Miller (1980:2) has remarked that differences between the types often "hinge on personal opinion." The gradient from whiteware to ironstone probably presents the most significant problem in identification.

The oldest ceramics in the assemblage are whiteware; no pearlware or creamware sherds were identified. Whiteware has a buff-colored or whitish paste, a clear or colorless lead glaze, and lacks the bluish tint of pearlware. Whiteware began replacing pearlware ca. 1820 and continued production throughout the century (Noël Hume 1980:130-131).

Undecorated whiteware is relatively common. It is difficult to precisely date plain whiteware due to its long production span; thus, the most chronologically sensitive attribute of plain whiteware is the backmark. Price (1979) suggests plain whiteware is most common after the Civil War. All whiteware in the assemblage is undecorated. Whiteware was recovered from 3MS937 and 3MS939.

Stoneware was generally made for utilitarian purposes and was manufactured locally throughout the U.S. Benton, in Saline County, was the center of the stoneware industry in Arkansas during the late nineteenth century (Buchner 2011). An attempt was made to identify the glaze according to Greer (1981). A single piece of stoneware was recovered from 3MS937. It is classified as Albany-glazed (both exterior and interior).

The most well-known slip glaze is Albany, a shiny dark-dark colored glaze that was developed during the early 1800s by potters using clay from Albany, New York. Similar glazes that are derived from other clay sources are referred to Albany-like. After 1850, most vessels that were salt-glazed on the exterior were Albany-glazed on the interior to prevent seepage (Greer 1981:197). During the late nineteenth to early twentieth centuries, the increasing popularity of lighter colored slips, which were associated with cleanliness, diminished the popularity of dark slip glazes.

ARCHITECTURE GROUP

Architectural Group artifacts consist of those items that can be associated with historic structures; in this case they include brick fragments (n=8), wire nail fragments (n=2), and flat glass (n=1; see Table 6-01).

Brick fragments

Brick fragments were recovered from all three sites. All fragments (n=8) were too fragmentary and amorphous to reveal any significant traits.

Nails

Nails are typically sorted into two types based on morphology: wire and square (or cut). Only two wire nail fragments were noted in the recovery from 3MS938. Wire nails are round and processed from metal cylinders.

During the early 1800s, when the Euro-American settlement of Mississippi was in its infancy, machine cut nails became available in the Lower Mississippi Valley. Based on research at Millwood Plantation in South Carolina, Orser et al. (1987:549-558) suggest that the relative proportion of cut nails to wire nails can serve as an index to the age of a structure or a site. They propose that sites containing almost entirely cut nails will predate 1855. Sites featuring more cut nails than wire nails should date to the period from ca. 1855–1880. Sites featuring a relatively even mixture of wire and cut nails should date to the period from 1880–1890, and sites featuring more wire nails than cut nails postdate 1890.

Because the entirety of the assemblage is wire nails, this indicates a post-1890 occupation.

Flat glass

Architectural or window glass consists of thin, flat fragments (shards) of glass. A single piece of flat glass was recovered from 3MS937. This piece is clear. Thickness measurements were not taken.

ELECTRIC GROUP

The "Electric Group" was not created by South, but was devised to avoid having these diagnostic artifacts "buried" within the Activities Group discussion. In this case, only a single artifact represents the Electric Group, a porcelain, cleat-style insulator recovered from the surface of 3MS937 (Figure 6-01d). This insulator is nearly intact and is embossed with "Macomb" on the face. No further information could be determined.

MISCELLANEOUS ITEMS

"Miscellaneous Items" is not a true functional group, rather it is a "catchall" category that includes various items that could not be placed in any of the above-mentioned groups. Five artifacts were placed in this category, including melted glass, undifferentiated ferrous metal, and a plastic lid.

CURATION

The assemblage is temporarily stored at Panamerican's lab in Memphis. The collection will be permanently curated the University of Arkansas Collection Facility (UACF) in Fayetteville.

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VII. SUMMARY AND RECOMMENDATION

SUMMARY

At the request of Great River Economic Development, Panamerican performed a Phase I cultural resources survey of a 660-ac. (267-ha) tract west of the City of Osceola, Arkansas. All field and office work was conducted in accordance with the Standards and Guidelines established in 36 CFR Part 66 (Federal Register, Volume 42, Number 19-Friday, 18 January 1977), and Appendix B of the Arkansas State Plan: *Guidelines for Archeological Fieldwork and Report Writing in Arkansas* (Revised Version in effect as of 1 January 2010).

The proposed Astro Site project area is located west of the City of Osceola, north of Keiser Avenue. I-55 forms a large part of the western boundary. The eastern boundary is a field road. HY-119 runs through the northern part of the project area, but it is not a boundary. The terrain is level and low-lying, and the elevation is generally 230 ft. The area was in harvested fields and had excellent surface visibility. The project area is located in portions of Sections 28, 29, 32, and 33 of T13N R10E, and can be identified on the Keiser, AR-TN 7.5-min. quad (see Figures 1-01 and 1-02).

A standard cultural resources literature and records search was conducted. Importantly, the research reveals that there is no previously recorded archaeological site or historic property within the study area. Archival maps dating to 1939 and 1956 show some structures in the project area (see Figures 4-02 and 4-03). Additionally, they show that the surrounding area has been modified to promote drainage.

A four-person team surveyed the proposed Astro Site project area on 16–21 August 2015. The tract consisted of a mosaic of harvested agricultural fields that exhibited good to excellent (50 to 100 percent surface visibility). As a result visual inspection using closely spaced parallel transects (15–20 m) was the primary site detection method employed within the project area. Shovel tests were placed at 20-m intervals within all identified sites and in areas that exhibited poor surface visibility.

The survey of the Astro Site project area resulted in the identification of three Historic period sites: 3MS937; 3MS938; and 3MS939. All are considered twentieth-century components.

RECOMMENDATION

Sites 3MS937, 3MS938, and 3MS939 are recommended not eligible for listing in the NRHP. As there is no NRHP listed, eligible, or potentially significant cultural resource within the Astro tract, no further cultural resource work is recommended.

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APPENDIX A: BIOGRAPHIES OF KEY PERSONNEL

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C. ANDREW BUCHNER, PRINCIPAL INVESTIGATOR/AUTHOR

Drew Buchner has 26 years experience as a cultural resource management (CRM) archeologist, is an owner/partner in Panamerican Consultants, Inc., and currently manages the company's Memphis office. His degrees include an M.A. (1989) in Anthropology from the University of Memphis, and a B.A. (1984) in Anthropology/Sociology from Westminster College, Fulton, Missouri. A native Arkansan (Little Rock Catholic High Class of 1980), he is certified by the Register of Professional Archeologists (RPA ID# 12420), and is a member of various professional organizations including the Society for American Archeology, the Southeastern Archeological Conference, the Caddo Conference, the Society for Historical Archeology, and the Society for Industrial Archeology. Additionally, he is a Life Member of the Arkansas Archeological Society. "Drew" has participated in dozens of projects in rural and urban contexts within Arkansas for clients including AHTD, the Corps of Engineers, the National Park Service, the Ouachita National Forest, Arkansas State Parks, Arkansas Game & Fish Commission, and the Arkansas Department of Veterans Affairs, as well as various engineering firms. Mr. Buchner has written over 600 technical reports, and is published in various peer reviewed journals including the Arkansas Archeological Survey's *Research Series*, the *Missouri Archaeological Quarterly*, *Mississippi Archaeology*, and *Tennessee Archaeology*.

ANDREW SAATKAMP, FIELD DIRECTOR/AUTHOR

Andrew Saatkamp has 16 years of experience. His degrees include an M.A. (1994) in Anthropology from the University of Memphis and a B.A. (1989) in Anthropology from the University of Tennessee, Knoxville. Mr. Saatkamp is certified by the Register of Professional Archaeologists (RPA ID# 15459), and he is a member the Society for American Archaeology and the Mid-South Association of Professional Anthropologists. Since joining Panamerican in 1994, Mr. Saatkamp has served as a Field Director for numerous survey projects in the southeastern United States, including numerous Phase I cultural resources projects in Arkansas. During his career, Mr. Saatkamp has authored or co-authored more than 60 major contract reports. Mr. Saatkamp possesses various ancillary and computer skills, including GIS manipulation and analysis.

KARLA OESCH, LABORATORY DIRECTOR/AUTHOR

Ms. Karla Oesch received her B.A. in Anthropology from the University of Alabama in 2008 and is currently working on her M.A. at the University of Memphis (expected Dec 2014). She first joined Panamerican as a field technician in 2007 and is currently the Laboratory Director at the Memphis office of Panamerican Consultants, Inc. While working for Panamerican, she has conducted artifact analysis of prehistoric and historic materials from both large and small scale projects throughout Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, and Tennessee. She has also been a contributing author for Phase I, II, and III investigations in these areas. She is currently a member of both the Southeastern Archaeological Conference and the Society for American Archaeology. Ms. Oesch is also very adept at creating graphic designs for Panamerican including logos and marketing materials, as well as managing web sites.

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APPENDIX B: REMOVABLE SITE LOCATOR MAP

THIS APPENDIX CONTAINS SITE-SENSITIVE INFORMATION AND IS NOT INTENDED FOR PUBLIC DISTRIBUTION.

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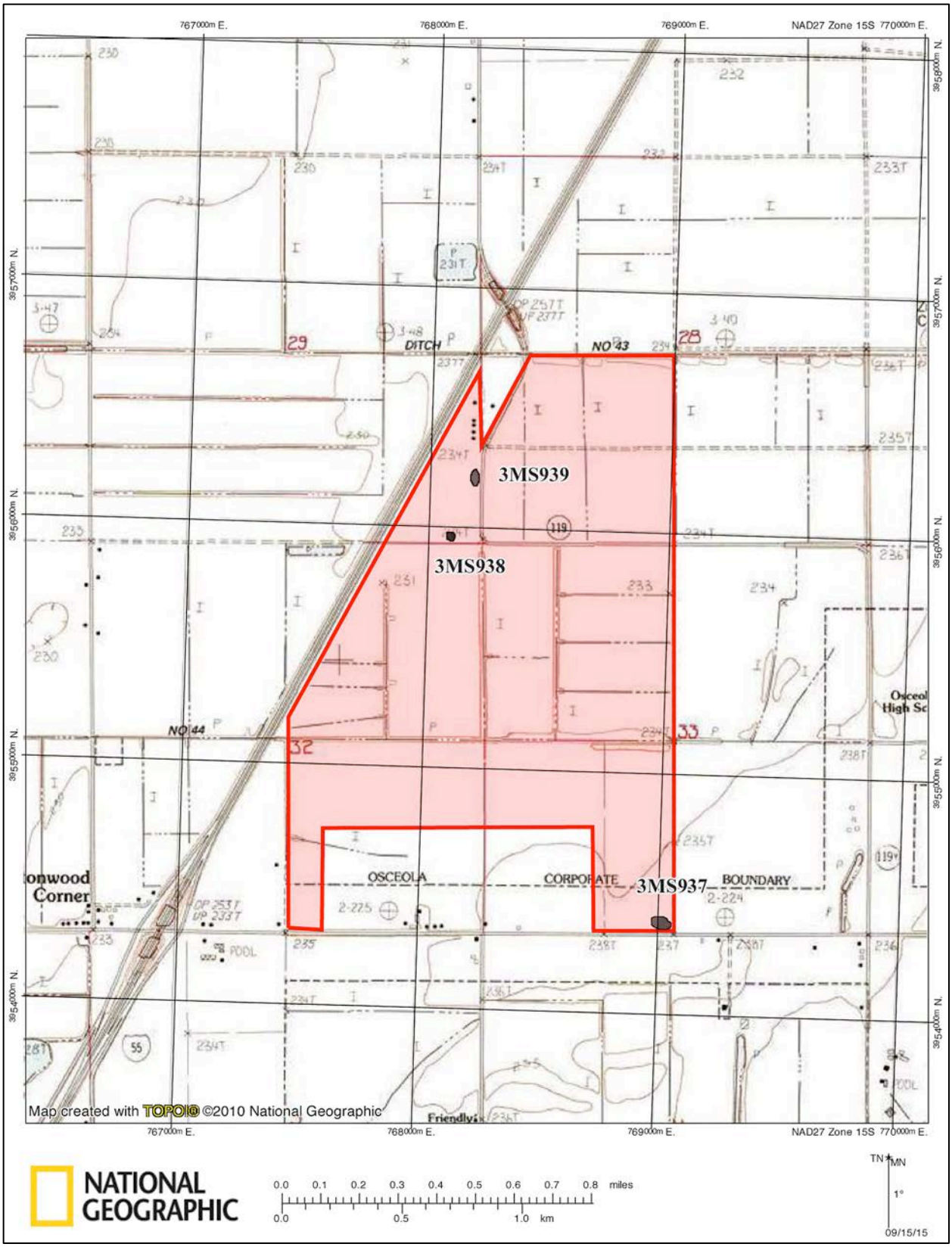

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