PHASE I

# ARCHAEOLOGICAL SURVEY FOR US 460 RELOCATION, US ARMY CORPS OF ENGINEERS PERMIT AREAS, MORGAN COUNTY, KENTUCKY

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**Prepared for:**

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**Kentucky Office of State Archaeology Project Number:**

*FY16-8566*

CDM Smith

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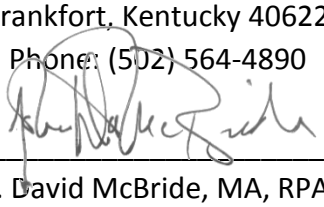

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# Abstract

At the request of the Kentucky Transportation Cabinet (KYTC), archaeologists from CDM Smith conducted a Phase I archaeological survey of the proposed reconstruction areas along US 460 in Morgan County, Kentucky . Field work was conducted from July 29 through July 31, 2015. The archaeological survey involved systematic shovel probe excavation, bucket augering, and visual inspection within the project's entire Area of Potential Effect.

Two previously unrecorded archaeological sites 15Mo170, 15Mo171 and one Isolated Find (IF 1) were identified within the project bounds. The known, surveyed extents of the sites identified within the APE were not deemed potentially eligible for nomination to the National Register of Historical Places (NRHP) under Criterion D, and no further work is recommended.

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# Acknowledgements

The Principal Investigator for the archaeological survey was Mr. J. David McBride, RPA. David McBride served as the Field Director and was assisted in the field by Ann Wilkinson and Caroline Paulus. Howard Beverly generated maps and formatted the report. Robert Ball provided support in Lexington.

# Section 1 -

# Introduction

This report describes the field and laboratory method and the results of a Phase I archaeological survey conducted at the request of the Kentucky Transportation Cabinet (KYTC) by archaeologists from CDM Smith (CDMS) of the proposed reconstruction areas along US 460 in Morgan County, Kentucky. Field work was conducted from July 29 through July 31, 2015.

## 1.1 Project Sponsor and Regulatory Authority

The state agency sponsoring this survey is the KYTC; the lead federal agency is the Federal Highway Administration. The survey was conducted in compliance with the guidelines established by the Kentucky Heritage Council Guidelines (Sanders 2006) and the National Historic Preservation Act of 1966 (P.L. 89-655; 80 Stat. 915, 16 U.S.C. 470 et seq), the National Environmental Policy Act of 1969 (P.L. 910190; 83 Stat. 852, 42 U.S.C. 4321 et seq), Procedures of the Advisory Council on Historic Preservation (36CFR800), Executive Order 11593, and the Protection and Enhancement of the Cultural Environment (16 U.S.C. 470; supp. 1, 1971).

## 1.2 Purpose and Scope of Work

A Phase I archaeological survey was conducted for the proposed reconstruction of along US 460 for Army Corps of Engineers (USACE) jurisdictional permit area in Morgan County, Kentucky. The archaeological surveyors were prepared to shovel probe areas of less than 15% slope, auger deeper soil deposits, and to visually inspect the entire area. The purpose of this work was to identify any archaeological resources which might have existed and to record their extent, significance, and the potential impact of the proposed project on these cultural resources.

## 1.3 Project Location and Description

This project is located along US 460, southwest of West Liberty and west of the community of Ezel in Morgan County, which is located in the Kentucky Department of Highways District 10 (Figure 1-1, Figure 1-2, and Figure 1-3).

## 1.4 Area of Potential Effect (APE)

The area of potential effect (APE) is defined as the limits of the proposed right-of-way and proposed temporary and permanent easements that are within the USACE jurisdictional permit areas. The jurisdictional permit areas are considered to be 100 ft. on either side of each stream impact and a 100 ft. buffer around any ponds. These areas were identified by KYTC archaeologist on design sheets provided by KYTC to CDM Smith. The total area is 20.9 acres (8.5 ha).

## 1.5 OSA Records Research

A summary of previously recorded sites and surveys was received, by request, from the Office of State Archaeology (OSA) on August 21, 2015. On August 24, 2015, the site files and survey records at the OSA were accessed for this report research and for fieldwork preparation.

**Figure 1-1. Project Location within Morgan County.**

**Figure 1-2. USGS Topographical Map showing Project Location.**

**Figure 1-3. Aerial Map showing Project Location.**

# 1.6 Principal Investigator

The principal investigator for the project was J. David McBride, MA, RPA.

# 1.7 Field and Laboratory Crew

The field crew consisted of J. David McBride, Ann Wilkinson and Caroline Paulus. David McBride served as the field director and planned, coordinated, and supervised all field activities. Ann Wilkinson, Dave McBride, Dona Daugherty, and Howard Beverly prepared the final report, and J. Howard Beverly, Jr., prepared the maps and formatted the report. Laboratory analysis was coordinated by Ann Wilkinson. Prehistoric and historic artifact analysis was conducted by Ann Wilkinson.

## 1.7.1 Field Effort

The total number of hours expended during fieldwork was 60 hours. Field work for the project was conducted between July 29 and July 31, 2015.

## 1.7.2 Laboratory Effort

The total number of hours expended to wash, catalog, analyze, and write up artifacts was 40 hours. Identification of artifacts was conducted using available library references and by comparison with artifact collections at CDMS.

# 1.8 Maps and Figures

Maps and figures for this report were prepared using a combination of Microstation design files, GIS data overlays, and databases gathered from a number of different resources. Existing site information was provided by the Office of State Archaeology. Soil mapping was provided by United States Department of Agriculture online and printed resources. Landowner data and vegetation coverage were obtained from aerial photographs and field reconnaissance. All GIS work was conducted by J. Howard Beverly, MA, RPA.

# 1.9 Curation

All field notes, maps, forms, and artifacts will be curated at the University of Kentucky's curation facility, the William S. Webb Museum of Anthropology.

# 1.10 Summary of Investigations

A Phase I archaeological survey was conducted for the proposed reconstruction of along US 460 for Army Corps of Engineers (USACE) jurisdictional permit area in Morgan County, Kentucky. The total APE measures 20.9 acres (8.5 ha). The survey identified two previously unrecorded archaeological sites: 15Mo170 and 15Mo171. One Isolated Find (IF1) is also reported herein. Both of the sites were determined to be ineligible for recommendation to the National Register of Historical Places (NRHP) under Criteria D. No further archaeological work is necessary within the APE.

# Section 2 -

# Environmental

Aspects of the natural environment often influence the development of prehistoric and historic communities. In this section, the environmental background of Morgan County and the surrounding region is reviewed. Environmental data includes physiography, geology, hydrology, soils, climate, flora, and fauna.

## 2.1 Physiography and Topography

Kentucky can be divided into six primary regions: the Cumberland Plateau (Eastern Coalfields) in the east, the north-central Bluegrass Region, the northeast-central Knobs Region, the south-central and western Pennyroyal Plateau, the Western Coal Fields and the far-west Jackson Purchase. The Bluegrass Region is divided further into two regions - the Inner Bluegrass and the Outer Bluegrass.

Morgan County lies within the Cumberland Plateau (Eastern Coalfields) Region (Figure 2-1). This region is comprised of three major physiographical features, the Pottersville Escarpment, the Cumberland Plateau, and the mountain and creek bottom areas (Bladen 1973:23; Bladen 1984:58). The Eastern Coalfield region begins in the west with the Pottersville Escarpment. It is a rock wall with a coarse grained Rockcastle sandstone conglomerate cap (Bladen 1973:25; Bladen 1984:59). This area is deeply incised by eroding streams. The Cumberland Plateau is located between the Pottersville Escarpment to the west and the mountain and creek bottom area to the east. Deep canyons and gorges have been created by streams cutting through layers of soft decomposed shale and shales (Bladen 1973:30; Bladen 1984:60). The last area, east of the Cumberland Plateau, is the mountain and creek bottom areas. This area is made up of the Cumberland and Pine Mountains. It includes the highest peak in the state, Big Black Mountain, part of the Cumberland mountain chain, in Harlan County with an elevation of 4,150 feet (Bladen 1973:32; Bladen 1984:60). The Cumberland Mountains are the projecting edge of the Pottsville sandstone, known as the Lee conglomerate. Similarly, the Pine Mountain range is the also the projecting edge of the Lee conglomerate. Both of these mountain ranges were formed by an uplifting fault (Bladen 1973:32; Bladen 1984:60).

Morgan County has heavily dissected upland areas with ridgetop elevations of 1,100 to 1,300 feet. The county has been carved by streams creating valleys 200 to 300 feet or more below the upland areas. Many of the valleys are cliff-lined in the northwestern part of the county but the majority of the valleys do not have such steep slopes. The lowest elevation in the county occurs at the point where the Licking River leaves the county line, at 690 ft., upstream of the impoundment of Cave Run Lake. Cave Run Lake is a flood-control facility which impounds waters of the Licking River (McGrain and Currens 1978).

## 2.2 Geology

The Eastern Coalfields physiographic region is an area of highly dissected area of varying altitude and relief. Consolidated sedimentary rocks are of the Breathitt Formation, which is ranging from Mississippian to Pennsylvanian age, and from unconsolidated sediments of Quaternary age (Figure 2-2). The sediments of the Mississippian sandstones and siltstones were deposited 350 million years ago, and were brought in by rivers and streams from uplands many miles to the northeast. The sediments of the Pennsylvanian were deposited 320 million years age. The warm climate of the Pennsylvanian grew extensive forests and great coastal swamps at the edges of water bodies. Marine waters advanced and

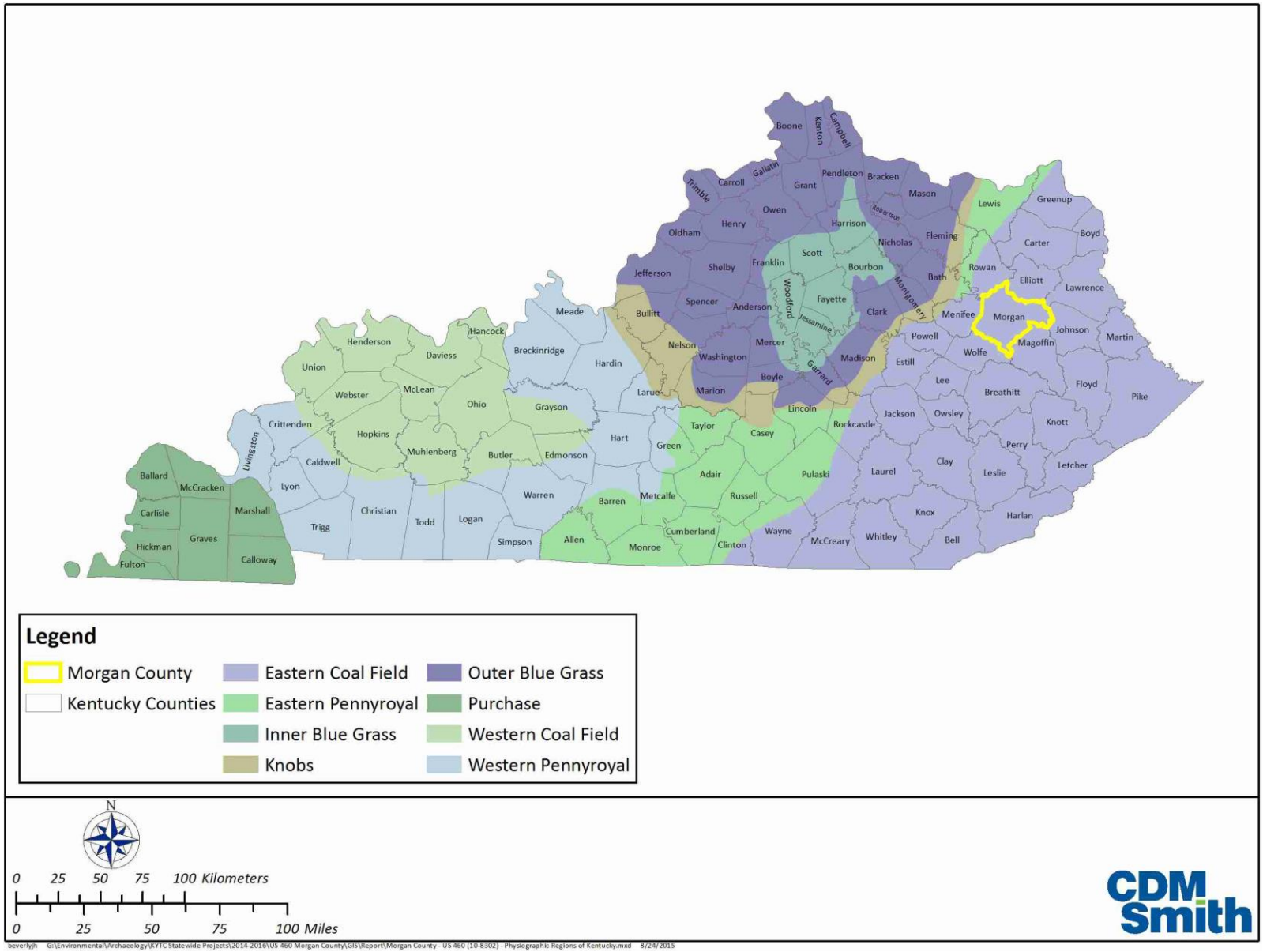


**Figure 2-1. Physiographic Map of Kentucky.**

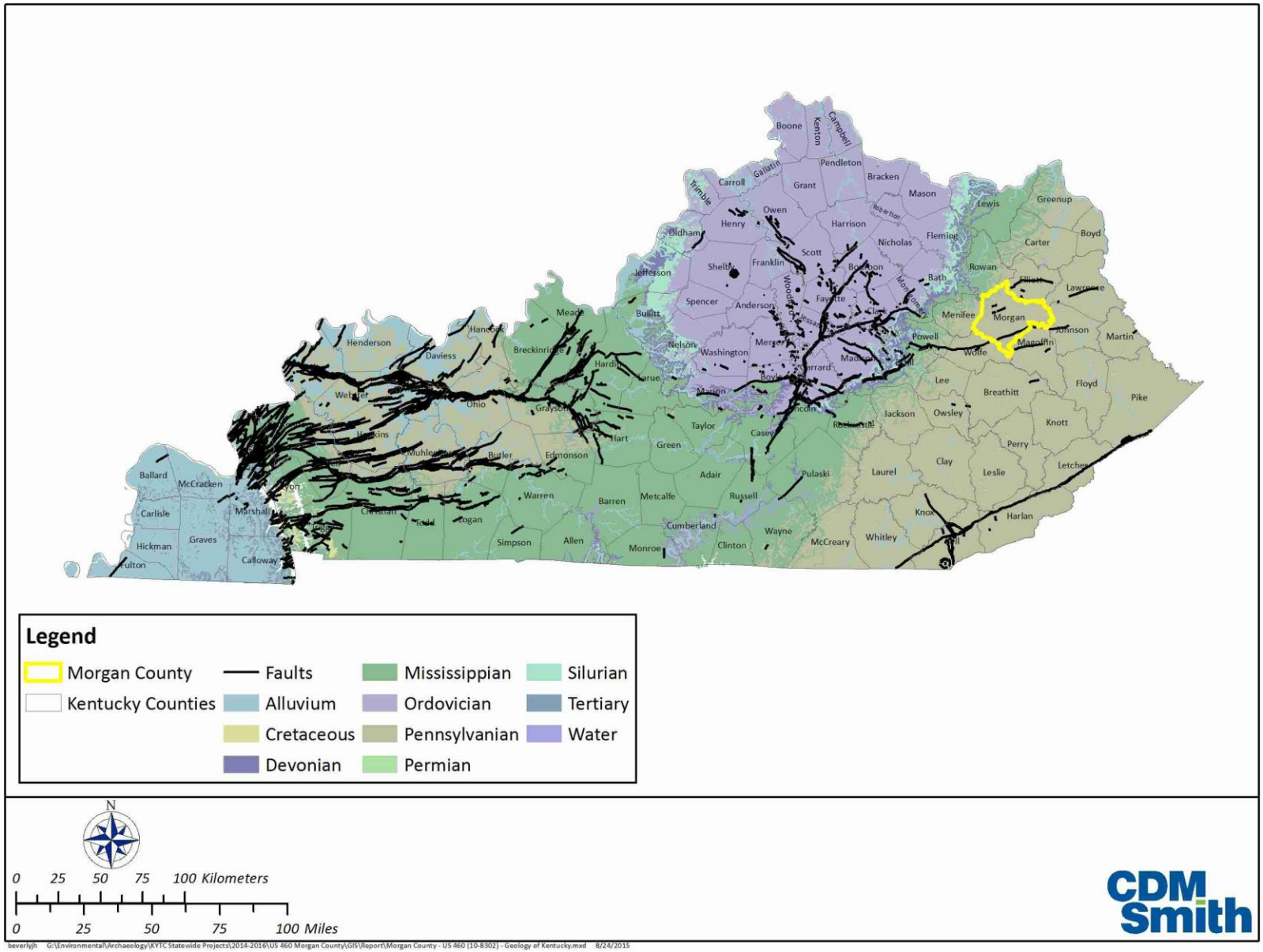


**Figure 2-2. Geologic Map of Kentucky.**

receded many times, which produced many layers of sandstone, shale, and coal. Vegetation of all sorts fell into the water and was buried under blankets of sediments, which over long geologic time were compressed into coal. The non-vegetative sediments such as sand, clay and silt were compressed into sandstone and shale. Over the last one million years unconsolidated Quaternary sediments have been deposited along the larger streams and rivers (McGrain 1983).

The geology underlying Morgan County is made up of unconsolidated deposits; limestones; sandstones; interbedded clay shales, siltstones, and sandstones; and coals, sandstones, and shales.

The unconsolidated deposits consist of Alluvium (Qal), sediment deposited by flowing water. It forms terraces and narrow floodplains of varying width along streams (Carey and Stickney 2005). Alluvium deposits are found throughout Kentucky along most of the larger streams and tributaries as boulders, cobbles, pellets, sand, silt and clays. It may also include sediment deposits found on terraces and floodplains, and in some cases as outwash deposits. In northern Kentucky, along the Ohio River, it may be present as lacustrine and eolian glacial deposited sediments. Most alluvium is Holocene, but some is late Pleistocene (McDowell and Newell 1986:H51-H52).

Limestones deposits consist of the Slade Formation (Mn). It underlies several of the valleys in Morgan County and its beds form some of the steep hillside and prominent bluffs where ridges and knobs are capped by Pennsylvanian aged rocks. Karst topography, cliffs and hanging valleys are common (Carey and Stickney 2005). Newman Limestone and St. Louis Limestone are present in Morgan County (Pipiringos et al. 1968).

Sandstones consist of the Grundy Formation (Plc). It forms steep-sided, rounded hills and ridges from erosional resistant sandstone beds 2 to 3 feet thick (Carey and Stickney 2005).

Interbedded clay shales, siltstones, and sandstones consist of the Borden Formation (MDbb). This form has dissected slopes and massive siltstone cliffs (Carey and Stickney 2005).

Coals, sandstones, and shales consist of the Breathitt Group (Pbu, Pbm, Pbl). The topography for this formation is generally rugged. Sandstone from this formation forms narrow valleys and cliffs or steep slopes on hillsides. The shales form wide valleys and moderate or gentle slopes. Ridge tops and hills are occasionally capped by sandstone (Carey and Stickney 2005). The Breathitt Group is made up largely of gray siltstone and shale, subgraywacke, and minor amounts of ironstone and limestone (Rice 1986:H36).

The majority of the APE is over Alluvium (Qal) deposits and the Breathitt Formation. The geology of the APE is shown in (Figure 2-3).

## 2.3 Hydrology

Kentucky is home to the most navigable inland waterways in the lower 48 states. Part of Kentucky's boundary with other states is formed by a few major drainages. The eastern boundary with West Virginia is demarked by the Big Sandy River. It joins the Ohio River near Ashland. The Ohio River then forms the northern boundary with Ohio, Indiana, and Illinois. The western boundary with Missouri is formed where the Ohio River merges with the Mississippi River.

**Figure 2-3. Geology of APE.**

The major drainages of Kentucky include the Big Sandy River, the Ohio River, and the Mississippi River. The interior is drained by smaller drainages that mostly flow into the Ohio River. These include the Licking, Kentucky, Salt, Green, Tradewater, Cumberland and Tennessee Rivers (Bladen 1984:13-14).

There are no natural lakes found completely within Kentucky. Only Reelfoot Lake, a naturally occurring lake in Tennessee, occasionally extends into Fulton County during wet weather (Bladen 1984:14).

Most of the streams in the Eastern Coalfields physiographic region are tributaries to larger streams found along valley bottoms between steep valley walls (Newell 1986). The main drainages of the Eastern Coalfields are the Big Sandy, the Licking, the Cumberland, and the Kentucky Rivers. They are dendritic in nature and drain into the Ohio. A few smaller streams, such as Tygarts Creek and the Little Sandy River drain directly into the Ohio (Bladen 1984:60).

Morgan County is drained by the Licking River which runs across the county's northwest corner. The Project Area is located within the Licking River watershed and is drained by the Elk Fork (Figure 2-4).

## 2.4 Soils

Most of the soils found in Kentucky developed under the same formation processes and climate conditions. The differences in soils from one area to another are chiefly dependent on three factors: parent material, the topography where the soils are found, and the amount of time exposed to erosional forces. There are three soil types found within the project area (Figure 2-5). They are described below.

The Gilpin silt loam, 12 to 25 percent slopes soils (GlD) are comprised of one major component ((Gilpin (80 percent)), and three minor components (Latham (10 percent), Fine-silty lithic dystrudepts (5 percent), Shelocta (3 percent), and Rayne (2 percent)). This soil is moderately deep, well drained, moderately steep and steep soil found on ridgetops and hill slides. The parent material consists of fine-loamy residuum weather from interbedded sedimentary rock. The soils are found on ridges on mountains and are not considered prime farmland (USDA 2015; McIntosh 2002:49-50).

The Latham-Shelocta-Gilpin complex, 12 to 30 percent slopes soils (LsE) is comprised of three major components ((Shelocta (30 percent), Latham (30 percent), Gilpin (25 percent)), and four minor components ((Rayne (7 percent), Marrowbone (3 percent), Grigsby (3percent), and Orrville (2 percent)). This soil is well drained and moderately well drained, moderately steep and steep soils found on hillsides. The parent material consists of find-loamy colluvium derived from interbedded sedimentary rock. The soils are found on hillslopes on hills and is not considered prime farmland (USDA 2015; McIntosh 2002:59-60).

The Rowdy loam, 0 to 4 percent slopes occasionally flooded soils (RoB) are comprised of one major component (Rowdy, occasionally flooded (85 percent)), and four minor components ((Shelocta (7 percent), Grigsby (4 percent), Orrville (3 percent), and Whitley (1 percent)). These soils are very deep, well drained, moderately permeable soils often found on stream terraces. The parent material consists of loamy alluvium washed mostly from sandstone, siltstone, and shale. The soils are found on low stream terraces and alluvial fans. The soils are prime for use as farmland (USDA 2015; McIntosh 2002:70-71).

## 2.5 Cherts

Chert is present in the Mississippi aged Newman Limestone in the quadrangle and possible in the gravel in the Alluvium deposits (Pipiringos et al. 1968). Chert is also found and in the terrace deposits

**Figure 2-4. Hydrology.**

**Figure 2-5. Soils in the Project Area.**

within the West Liberty quadrangle to the east (Englund et al. 1967). The Newman Limestone includes the St. Louis Limestone member, which contains the chert (Pipiringos et al. 1968).

## 2.6 Prehistoric Climate Conditions

The beginning of the Holocene Age, dating between 12,700 and 11,300 B.P., is believed to be associated with major and rapid warming temperatures, decreases in cloud cover, and generalized landscape instability (Delcourt 1979:270). Estimated temperature increases during this period are three times greater than later Holocene fluctuations. During the early Holocene, rapid increases in boreal plant species occurred on the Allegheny Plateau in response to the retreat of the Laurentide ice sheet from the continental United States (Maxwell and Davis 1972:517-519; Whitehead 1973:624). At lower elevations, deciduous species were returning after having migrated to the southern Mississippi Valley refugia during the Wisconsin advances (Delcourt and Delcourt 1981:147). The climate during the early Holocene seems considerably cooler than the modern climate, and extant species in upper altitude zones of the Allegheny Plateau reflect conditions most similar to the Canadian boreal forest region (Maxwell and Davis 1972:515-516).

Conditions at lower elevations were probably less severe and favored the transition from boreal to mixed mesophytic species. Middle Holocene (8,000 to 4,000 B.P.) climate conditions appear to have been consistently drier and warmer than twentieth century conditions (Delcourt 1979: 271; Wright 1968). The influx of westerly winds during this Hypsithermal climatic episode contributed to periods of severe moisture stress in the Prairie Peninsula and to an eastward advance of prairie vegetation (Wright 1968). Delcourt has identified Middle Holocene moisture stress along the Cumberland Plateau in Tennessee, but indicated that upland barrens did not expand appreciably as did the Midwestern prairies (Delcourt 1979:274). Changes in Archaic settlement patterns in both central and northern Missouri have been associated with possible decreases in upland resource availability during the Hypsithermal.

The earliest distinguishable Late Holocene climatic episode began circa 5,000 to 4,000 B.P. and ended around 2,800 B.P. This episode is associated with the establishment of modern deciduous forest communities in the southern highlands and increased precipitation across most of the mid-continental United States (Delcourt 1979:270; Maxwell and Davis 1972:517-519). Beginning around 2,800 B.P., warm conditions similar to the modern climate prevailed until the onset of the Neo-Boreal episode around 700 B.P. Fluctuations in this Late Holocene Pacific episode appear to have varied locally, with either increased or decreased temperatures and precipitation (Delcourt 2002). Certain fluctuations have been associated with adaptive shifts in midwestern prehistoric subsistence and settlement systems. An example is Struever and Vickery's (1973) suggestion of a possible correlation between the onset of a cooler and moister period circa 1,600 B.P. and increased use of polygonum species (smartweed) by Late Woodland groups in the Midwest (Struever and Vickery 1973:1215-1216). Researchers have inferred warmer temperatures for the Great Plains and drier conditions for the Upper Great Lakes during this same period (1,600-1,300 B.P.) (Delcourt 2002). Other fluctuations during the Pacific episode are similarly non-uniform across the mid-continental United States; however, the interfaces of all fluctuations are generally consistent.

Local paleoecological evidence is required to determine the kinds of climatic fluctuations Woodland populations experienced during the Pacific episode. Given evidence of fluctuations elsewhere, it is most likely that changes occurred circa 1,700 B.P., 1,300 B.P., and 900 B.P., with a possible fourth change around 2,300 B.P.

Studies of historic weather patterns and tree ring data by Fritts (1971) have indicated that climatological averages are "unusually mild" when compared with seventeenth and nineteenth century trends. His study suggests that winters were generally colder, weather anomalies were more common, and severe winters were more frequent between A.D. 1602 and 1899 than after 1900. These cooler, moister conditions are associated with the Neo-Boreal episode, or Little Ice Age, which began around 700 B.P. and coincided with minor glacial advances in the northwest and Europe.

The effects of the Neo-Boreal episode, which ended during the mid- to late nineteenth century, have not been studied in detail for this region. Despite this, it appears that the area experienced less radical temperature decreases during the late Neo-Boreal than did the upper Midwest and northern Plains (Fritts 1971). Related changes in extant vegetation should therefore be more difficult to detect. It is probably safe to assume, however, that average temperatures were at least a few degrees cooler during the late Prehistoric and early Historic periods. The frequency of severe winters and average winter precipitation were probably greater as well.

## 2.7 Current Climate Conditions

Morgan County has a temperate climate with moderately cold winters and warm, humid summers. The average year round temperature is around 52.95 °F (U.S. Climate Data 2014). The precipitation is well distributed throughout the year with July having the most rainfall and October the least (Avers et al 1974). On average, thunderstorms occur about 46 days each year, and the average annual precipitation is around 44 inches.

## 2.8 Prehistoric and Present Flora and Fauna

The archaeological APE area is included in the Western Mesophytic Forest Region, which is transitional between the extremely diverse Mixed Mesophytic Forest of the Appalachian Mountains and the Tall-Grass Prairies of the Midwest. The Western Mesophytic Forest contains a wide variety of vegetation climaxes and subclimaxes throughout its range, with oak and hickory as the dominant species. Trees commonly occurring in the archaeological APE area include chinquapin, red oak, water maple, honey locust, elm, black cherry, hackberry, Kentucky coffeetree, walnut, shagbark and butternut hickory, basswood, sycamore, box elder, willow, and cedar. Common shrubs include sumac, blackberry, poison ivy, Virginia creeper, pawpaw, spicebush, plum, hornbeam, redbud, wild grape, and buckberry. Some of the common native herbaceous plants are ironwood, milkweed, cane, nettle, white snakeroot, bloodroot, spring beauty, trillium, violets, cardinal flower, wild strawberry, goldenrod, and May apple.

These forest communities have produced and supported a wide variety of animals, such as white-tailed deer, red fox, raccoon, squirrel, rabbit, groundhog, other mammal species, birds, reptiles, amphibians, fish, and mollusks (Barbour and Davis 1974; Esarey et al 1992: 4). During prehistoric times white-tailed deer was by far and away the most important animal resource. Other species were also exploited, including turkey, fish, waterfowl, and mollusks (Fenton et al. 1996).

The archaeological APE area is located in the Ohio/Kentucky Carboniferous Plateau (Woods et al. 2002). It is described as a mixed mesophytic forest of woodland, pastureland, and cropland. It is a mixed deciduous–evergreen forests characterized by oaks and pines. The typical vegetation found on slopes include mixed oak and oak–pine forests variously dominated by white oak, black oak, yellow-poplar, red maple, scarlet oak, Virginia pine, shortleaf pine, white pine, and northern red oak. Yellow-poplar, black walnut, white oak, white pine, black walnut, buckeye, northern red oak, sugar maple, and eastern hemlock are found on well-drained bottoms, terraces, footslopes, and in coves. The vegetative cover on

poorly-drained bottoms includes forests dominated by pin oak, cottonwood, sweetgum, red maple, sycamore, hackberry, and slippery elm (Woods et al. 2002).

## 2.9 Current Land Use

Present land use for the Archaeological APE includes agricultural areas, deciduous forest, pasture, roadway, creek beds, scrub and brush areas, secondary tree growth, and residential areas. The current land use for the APE is illustrated in Figure 2-6 through Figure 2-11.

**Figure 2-6. Deciduous Forest Area inside the Project Area.**

**Figure 2-7. Grassy Lawn and Field Areas inside the Project Area.**

**Figure 2-8. Scrub, Brush, and Secondary Tree Growth Area inside the Project Area.**

**Figure 2-9. Agricultural Hay Field Area inside the Project Area.**

**Figure 2-10. Agricultural and Scrub Brush Areas inside the Project Area.**

**Figure 2-11. Creek Area inside the Project Area.**

# Section 3 –

# Cultural Context, Previous Investigation, and Summary of Known Sites

In this chapter, the culture history of Morgan County and this region of Kentucky are reviewed. The research methodology used to develop this background and context involved archival research at the Office of State Archaeology, and research at the University of Kentucky's various libraries. Included within the culture history section are reviews of the known prehistory from the State Plan for this part of the Commonwealth (Applegate 2008; Jefferies 2008; Maggard and Stackelbeck 2008; and Pollack 2008) followed by a consideration of the major historic time periods and sub periods (McBride and McBride 2008). This general review of the culture history of the region is followed by a synopsis of the cultural resource management recommendations for sites already documented within two kilometers of the archaeological APE. These recommendations are in accordance with the Kentucky Heritage Council specifications (Sanders 2006).

The prehistoric cultural chronology of Kentucky is divided into a series of periods that generally correspond to major shifts in subsistence procurement strategies, social organization, technology, and settlement patterning. They are also linked to distinct material cultural styles, particularly in projectile point shapes and (in later times) ceramic vessel form and decoration. These periods form a convenient framework for the discussion of human societies in eastern North America.

Since the Late Pleistocene, humans have occupied all areas of the continental U.S., adapting to the regionally diverse ecosystems and the long-term changes brought about by human occupation. Only the past 500 years is historically documented in any fashion; most of the past 15,000 years can be documented only by the study of prehistoric sites. This period of prehistory is commonly divided into four major chronological periods, which are discussed below.

## 3.1 Prehistoric Period

This section examines general prehistory of the archaeological APE area. The prehistory of the archaeological APE area can be usefully divided into four major periods – Paleo-Indian, Archaic, Woodland, and Late Prehistoric. Each of these periods is discussed below.

### 3.1.1 Paleoindian Period

The Paleoindian period's beginning is uncertain, but recent discoveries have pushed the date to at least 1,000 years before the earliest Clovis site date, and the period continues to circa 8,000 B.C., coinciding with the end of the Pleistocene and the beginning of the Holocene (Maggard and Stackelbeck 2008). The Monte Verde Site, located in southern Chile, puts humans in South America by at least 11,000 B.C. (Dillehay 1997, 1989; Meltzer et al. 1997), suggesting that initial entry into North America would be around 14,000 to 15,000 years ago. Within the last two decades, the Clovis-first theory of a homogeneous 'founder' culture has been questioned. The theory points to a common culture colonizing the New World, resulting in similarities of archaeological expressions and human physiology. However, biological, skeletal, linguistic, and genetic studies do not support this theory, but instead imply that a range of diversity existed (Maggard and Stackelbeck 2008)

The earliest documented inhabitants of the continental U.S. crossed from Asia sometime before 13,000 B.C. However, the colonization of North and South America most likely varied in the rate of exploration and expansion, and may have consisted of multiple and separate migrations. These migrations may have involved various cultural groups, who may or may not have originated from different geographic regions (Bonnichsen and Turnmire 1999; Bryan 1991; Dixon 1999; Gruhn 1987, 2004; Maggard and Stackelbeck 2008; Merriwether 2002; Schurr 2004). The adaptation to a new climate and ecological condition would likely produce cultural variability as seen at the Nenona complex of Alaska, the Western-stemmed Tradition of the Great Basin and Columbia Plateau, and maritime-focused coastal California sites (Maggard and Stackelbeck 2008). The above listed cultures are distinctly different than the traditional characterization of Clovis in their economic practices and technological traditions (Maggard and Stackelbeck 2008).

The arrival of humans in the region was probably linked to the movements of the Pleistocene glaciers. During the Paleoindian period, the last of these glacial advances and retreats, called Great Lakes Stadial (after 9,900 B.C.), occurred. Although the glaciers never actually extended south of the Ohio River, the climatic effects were felt. A cooler, moister climate affected the composition and distribution of floral and faunal communities (Delcourt and Delcourt 1982; Klippel and Parmalee 1982).

The Clovis phenomenon may not have been the initial migration into the New World, but remains significant in how rapidly the people, technology, and/or economy spread across North America (Anderson et al. 1996; Meltzer 2002; Maggard and Stackelbeck 2008)

The Paleoindian period is poorly understood in Kentucky and in the Southeast as a whole. Much of the information concerning Paleoindian subsistence, settlement patterns, and chronology comes from information outside of Kentucky because dated Paleoindian material in Kentucky is limited. Twelve Paleoindian sites have been recorded for the Upper Kentucky/Licking Management Area by 2008 (Maggard and Stackelbeck 2008).

#### 3.1.1.1 The Early Paleoindian: Pre-Clovis

The Pre-Clovis period dates from sometime before 13,000 B.C. to 9,500 B.C. In Kentucky, no sites from this time frame have been recovered, but several sites near Kentucky have reported cultural material in depositional contexts located stratigraphically below a Clovis layer. Cactus Hill is a stratified, multi-component site, located on a coastal plain of Southeastern Virginia. The site has a well-defined Clovis layer with fluted points, other tools, a hearth feature, and a radiocarbon date of ca. 8,900 B.C. Beneath the Clovis layer, several clusters of small quartzite flakes, small prismatic blades, blade cores, and retouched flakes were recovered. The quartzite came from locally-available cobbles. A charcoal concentration gave a radiocarbon age of 13,120 B.C. (15,070±70 B.P.), and soil samples collected yielded dates of 14,720 B.C. (16,670±730 B.P.) and 14,990 B.C. (16,940±50 B.P) (Maggard and Stackelbeck 2008; McAvoy and McAvoy 1997; Wagner and McAvoy 2004).

Meadowcroft Rockshelter is another example of pre-Clovis deposits. The site overlooks a tributary of the upper Ohio River, and consisted of stratified and multicomponent deposits that span the Late Pleistocene and Holocene (Adovasio et al. 1980, 1990, 1999; Adovasio and Pedler 2004; Maggard and Stackelbeck 2008). An unfluted, lanceolate-shaped projectile point was found from the lower levels of the shelter and was dated to 10,800-9.300 B.C. Small prismatic blades were also found in these lower strata. However, the site is controversial due to possible particulate and/or soluble contaminants in the lower deposits (Haynes 1980, 1987; Maggard and Stackelbeck 2008; Tankersley et al. 1987; Tankersley and Munson 1992).

Traditional time frames have recently been questioned, and although little is known about the pre-Clovis period, more attention will now be paid to layers beneath Clovis deposits. As a result, a better understanding of the pre-Clovis period will be possible.

### 3.1.1.2 The Early Paleoindian: Clovis

The Clovis culture dates from ca. 9,500 B.C. to 8,800 B.C., and is widely documented throughout North America and Kentucky (Anderson et al. 1996; Haynes 2002; Maggard and Stackelbeck 2008; Tankersley 1990a). Clovis projectile points are the hallmarks of the early part of the Paleoindian period. The hafted bifaces are distinctively lanceolate-shaped and often fluted. In addition to the Clovis point, unifacially and bifacially chipped tools such as knives, scrapers, spokeshaves, end scrapers with spurs, drills, and gravers have also been recovered (Boldurian and Cotter 1999; Frison 1999; Haynes 2002; Maggard and Stackelbeck 2008; Sanders 1990; Stanford 1999). Clovis points were multifunctional and often displayed resharpening along the distal margins of the blade (Boldurian and Cotter 1999; Kay 1996; Maggard and Stackelbeck 2008; Ray 2003). Archaeologists infer that tools of wood, bone, and shell were used, although their preservation is rare in the archaeological record. A number of these tools were manufactured for the killing and butchering of extinct fauna, including megafauna. For instance, at the Adams Mastodon site in Harrison County, Kentucky, the remains of a single mastodon were found in association with large limestone slabs and cut marks on the bones. The configuration of the skeletal remains, in addition to the above evidence, has been interpreted as possible human butchering (Duffield and Boisvert 1983; Walters 1988).

Most sites within Kentucky are short-lived, small occupations, occurring in shallow, deflated, or disturbed deposits, producing a low density of artifacts (Freeman and Smith 1996: 402; Maggard and Stackelbeck 2008). These small sites could represent short-term habitations that may have been used for various activities, such as temporary use sites and kill/butchering sites. The Adams Mastodon Site (15HR14), Big Bone Lick (15BE18, 15BE269-272), and Clay's Ferry Crevice (15FA163) site may all be kill/butchering sites, but no Early Paleoindian artifacts have been associated with Pleistocene faunal remains (Haag 2004; Lowthert 1998; Maggard and Stackelbeck 2008; Tankersley 1996; Walters 1988). Clovis period sites in Kentucky tend to cluster near terraces along major stream confluences, around karstic features (sinkholes and sinkponds), and near outcrops of high quality lithic raw material. In addition, studies in Marion and Washington counties show a preference for upland and headwater locations. In western Kentucky, sites have been proposed to be 'staging areas' for exploration and settlement of other nearby areas (Anderson 1990). The Christian County quarry/habitation sites of the Little River complex seem to uphold this theory, but these sites are very different from other sites in Kentucky (Maggard and Stackelbeck 2008: 121). Clovis groups are believed to be highly mobile, and therefore, the varying location of Kentucky sites should be expected.

The Clovis groups are characterized as big game hunters (Kelly and Todd 1988; Maggard and Stackelbeck 2008; Tankersley 1990b, 1996), but no kill/butchering sites in Kentucky are certain. However, preservation of Pleistocene bones may have been poor in eastern North America (Dincauze 1993; Maggard and Stackelbeck 2008). Big game was exploited at the Kimmswick site in Missouri and the Coats-Hines site in Tennessee (Breitburg et al. 1996; Graham et al. 1981). However, the diverse local environment of eastern Northern America may have provided a foraging strategy that consisted of a wider range of options (Dincauze 1993; Maggard and Stackelbeck 2008; Meltzer 1993; Walker and Driskell 2007). At the Kimmswick site, small mammals, fish, reptiles, and birds were all exploited along with big game (Graham et al. 1981; Graham and Kay 1988; Maggard and Stackelbeck 2008). In fact, the overall Clovis subsistence strategy appears to rely less on big game and more on a variety of subsistence

choices (Cannon and Meltzer 2004; Collins 2007; Kornfield 2007; Maggard and Stackelbeck 2008; Meltzer 1993).

The Clovis period is poorly understood in Kentucky with few sites having intact deposits. The Clovis occupation appears dense and widespread, but little is known about the timing, range of site types, or subsistence strategies (Maggard and Stackelbeck 2008). Tankersley (1996) suggests that Paleo occupations occur as isolated hafted bifaces within multicomponent sites. Larger sites are associated with areas that have access to quality lithic raw material or resources that would attract game, such as mineral springs, slow moving water, and at stream confluences and fords (King 2002:15; Freeman and Smith 1996; 402).

### 3.1.1.3 The Middle Paleoindian

The Middle Paleoindian phase ranges from ca. 9,000 B.C. to 8,500 B.C., and was a time of great climatic change, leading to the extinction of most species of Pleistocene mega-fauna (Anderson et al. 1996; Delcourt and Delcourt 1981; Grayson 1987; McWheeney 2007; Maggard and Stackelbeck 2008; Morse et al. 1996). The change in the environment lead to a more intense reliance on small game and locally available plant sources (Walker 2007). The Middle paleoindian lithic toolkits reflect this subsistence change in the wider range of tool types, such as limaces, spurred end scrapers, and a wide selection of flake tools. In addition, the toolkits relied more on local sources of chert, often of a lower quality. The increase in the utilization of local materials could represent a more settled lifestyle.

During the Middle paleoindian phase, a shift from direct to indirect percussion in fluting technology has also been noted (Maggard and Stackelbeck 2008; Morrow 1996; Ray 2003). The Cumberland and Gainey points emerged during this period. Gainey points, although similar to Clovis points, are thinner and have deeper basal concavities. Often, the distal end of the blade has been resharpened. Cumberland points, also similar to Clovis points, are usually longer and narrower with lateral proximal edges that expand slightly, giving it a 'fishtail-like' appearance (Justice 1987; Ray 2003; Tankersley 1996). Cumberland points were also often resharpened (Maggard and Stackelbeck 2008; Ray 2003).

Within Kentucky, Middle Paleoindian sites have a wider distribution than Clovis (Tankersley 1996). Sites have been recorded in the floodplain/terrace settings of the Purchase Management Area, in the Knobs region of the Salt River Management Area, and the uplands of the Upper Cumberland Management Area. Little is known about the Middle Paleoindian period in Kentucky. No sites have produced a radiocarbon date in direct association with diagnostic artifacts within Kentucky.

### 3.1.1.4 The Late Paleoindian

The Late Paleoindian period dates to ca. 8,500 to 8,000 B.C. During this period, the usage of local raw materials continues to be evident, with the overall quality of the chert material continuing to decrease (Maggard and Stackelbeck 2008). In addition, basal thinning replaces channel fluting, and the overall size of projectile points is reduced (Ray 2003). The toolkit is even more diverse than that of the Middle Paleoindian period. It includes beveled and backed bifaces, unifacial and flake scrapers, adzes, retouched flakes, and drills/perforators (Goodyear 1999; Maggard and Stackelbeck 2008; Morse 1997; Tankersley 1996).

The bifacially-flaked, lanceolate forms associated with the late Paleoindian period lack the characteristic flutes seen in the Early and Middle periods (Ray 2003; Tankersley 1996). At Kentucky sites, two stylistic clusters exist, Lanceolate Plano and Dalton, with the Lanceolate Plano being less common (Justice 1987; Ray 2003). The Dalton cluster includes the Beaver Lake, Quad, and the classic Dalton types (Justice 1987). The possibility of a migration from the west into Kentucky has been suggested based on

similarities between Kentucky Lanceolate projectile points and those documented in the Plains (Frison 1999; Stanford 1999; Wormington 1957).

Dalton cluster points are often identified by a 'fish-like' appearance, exhibiting extensive and even beveled resharpening above the haft element (Ray 2003; Tankersley 1996). The Beaver Lake types, though similar to Cumberland points, are shorter and narrower with the absence of flutes (Ray 2003). Quad points also demonstrate a 'fish-like' shape, but are short and wide and have basal ears that usually project from the widest section of the point (Ray 2003). In Kentucky, quad points range in length from 4.1 to 8.6 cm.

The Dalton type often demonstrates a serrated or right-handed beveled blade edge, but a large variation is found often due to resharpening (Ray 2003). Eventually, these points may reach a stage where they are converted into different tools. In Kentucky, Dalton point types range from 3.1 to 8.5 cm in length (Maggard and Stackelbeck 2008).

The Paleoindian phase continued to experience a vastly changing environment as seen in the Middle Paleoindian phase. Kentucky's spruce and jack pine parklands were replaced with mixed hardwood forests (Delcourt and Delcourt 1981). Mammoth, mastodon, horses, moose/elk, and other large herbivores became extinct. As a result, the shift towards a more varied subsistence strategy continued. At Dust Cave in Alabama, various nut species and animals were exploited within a Late Paleoindian component (Hollenbach 2007; Maggard and Stackelbeck 2008; Walker 2007; Walker and Driskell 2007). Across eastern North America, evidence exists that supports this change in subsistence strategies, from a big game emphasis to a broader foraging strategy. It is likely that such a change would lead to a less mobile lifestyle (Tankersley 1996). However, the change in subsistence could just be the result of regionalization, as groups began to settle into their environment, and begin to demonstrate characteristics common to certain regions (Maggard and Stackelbeck 2008).

### 3.1.2 Archaic Period

The Archaic period includes a long span of time during which important cultural changes took place. Because of the growing evidence for the existence of such transitional cultural manifestations, it is agreed generally that Archaic cultures evolved from late Paleoindian expressions of the Southeast and Midwest (Funk 1978:19). These manifestations probably occurred in response to environmental changes that took place at the close of the Pleistocene. The Archaic period is customarily divided into three sub-periods: Early (8,000-6,000 B.C.); Middle (6,000-3,000 B.C.); and Late (3,000-1,000 B.C.). Nevertheless, it is important to keep in mind that archaeologists often differ in opinion about these temporal boundaries, and they are best used only for general comparative purposes (Jefferies 2008).

During the Early Archaic, the last glaciers retreated and the arctic-like boreal forest began developing into the eastern deciduous forest. By the Middle Archaic, the environment was warmer and drier than it is today. In response to the changing climate and associated changes in plant and animal life, Late Archaic peoples developed a more diversified subsistence strategy. This included hunting, plant food gathering, fishing, and- in some areas- the beginnings of plant domestication in a planned seasonal round exploitation strategy. Caldwell (1958:6-18) has called this Archaic subsistence approach "primary forest efficiency." This strategy appears to have been a continuation of what had begun in the Middle and Late Paleoindian phase, and then continued well into the Woodland period.

As of mid-2006, Kentucky had recorded 4,703 Archaic components with the majority (seventy percent) concentrated in the Green River, Salt River, and Bluegrass Management Areas (Jefferies 2008). In contrast, little is known about Archaic presence in the Upper Kentucky/Licking, Big Sandy, and Upper

Cumberland Management Areas. As of 2008, 359 Archaic period sites had been identified in the Upper Kentucky/Licking Management Area (Jefferies 2008:214).

### 3.1.2.1 The Early Archaic Period

The limited amount of Early Archaic material found at most sites and the general absence of middens, features, and burials, suggests that most occupations were of short duration. Early Archaic social units were small, probably consisting of bands comprised of related individuals. The relatively high percentage of projectile points in Early Archaic assemblages made from non-local cherts suggests that social groups were highly mobile. Items manufactured from non-local chert would have been incorporated into tool kits when groups traveled near the source areas. Some tools manufactured from certain kinds of high quality chert were used and curated for an extended period of time and later discarded far from the source area (Binford 1979; Jefferies 1990:151; 2008).

According to Jefferies (2008), except for the adoption of new projectile point styles, Early Archaic tool kits are nearly identical to those of the Paleoindians. The scarcity of tools associated with the preparation of plant foods and fishing in the early part of the Archaic indicates that hunting was probably still the major subsistence activity (Dragoo 1976:II).

Archaeological investigations at a number of deeply buried sites in the Southeast, like the Longworth-Gick Site near Louisville, Kentucky (Collins 1979), have provided important information on Archaic lifeways and their changes through time. Excavations in western Kentucky, southern Illinois, and southern Indiana have refined our understanding of regional Early Archaic chronology, settlement-subsistence strategies, and social organization (Smith 1994, Swan's Landing site [12HR304]; Smith and Mocas 1995, Paddy's West [12FL46]; Stafford and Cantin 2008, James Farnsley site [12HR520] at Caesar's Palace; Wagner and Butler 2000, Hills Branch Rock Shelter) (Jefferies 2008).

The Longworth-Gick Site identified eight stratified Early Archaic components, recovering early archaic material from Zone III to Zone XIII, possibly Zone XXXVII (Collins 1979; Jefferies 1990, 2008). Small varieties of Kirk projectile points (7,540±230 B.C and 6,490±380 B.C.) were recovered from Zones XIII through VII, and Large Kirks (6,490±125 B.C.) were recovered from Zone V. Zone III contained LeCroy and Kanawha bifurcate base projectile points (6470±110 B.C.). The site appears to have been occupied for brief periods, most likely due to flooding. The most intensive period occurred during the Kirk (Zone VI and V) and the Bifurcate Base (Zone III) zones.

### 3.1.2.2 The Middle Archaic Period

The environment during the Middle Archaic sub-period was dryer and warmer than modern conditions. By the beginning of the Middle Archaic period, environmental remnants of the Pleistocene had disappeared and animal and plant communities more closely resembled those present at the time of European-American contact. Pollen records from some parts of the region indicate that drier climatic conditions associated with the Hypsithermal interval reached their maximum around 6,500 B.P. (King and Allen 1977). The subsequent reduction of arboreal communities and the influx of grass and herb communities appear to have affected Middle Archaic settlement and population distributions (Conaty 1985; Janzen 1977; Jefferies 1983; Nance 1985).

Increasing regionalization of artifact inventories and the addition of new artifact classes and projectile point styles implies the development of extensive exploitation strategies. The Middle Archaic is marked by the introduction of groundstone artifacts manufactured through pecking, grinding, and polishing. A number of these groundstone tools, such as manos, mortars and pestles, and nutting stones, are

interpreted as plant food processing artifacts, indicating an increasing utilization of plant food resources during the Middle Archaic.

Little is understood about the Middle Archaic subsistence strategies in Kentucky, but white-tailed deer and wild turkey are both widely regarded among scholars as important sources of meat during that sub-period. Within nearby states, a subsistence strategy that included hunting a variety of animals existed, which likely is true for Kentucky's Middle Archaic residents. In addition, a variety of nuts, especially the hickory nut, along with fruits, starchy seeds, and a wide range of plant resources were exploited during this period (Jefferies 2008).

New projectile point styles appeared during this sub-period, such as stemmed and corner notched points. The presence of a variety of bone tools, including antler projectile points, fishhooks, and gouges, suggests an improved efficiency in exploiting local resources. Middle Archaic sites tend to contain larger accumulations of materials than those of earlier periods, suggesting an increased group size and/or longer periods of occupation (Cohen 1977:191). Chapman (1975) has suggested that projectile points were probably used in conjunction with the atlatl, a device that increases the distance and accuracy of a thrown spear. The recovery of bone and groundstone objects (banner-stones) in Middle Archaic contexts that are interpreted as atlatl weights tends to support this suggestion (cf. Neuman 1967:36-53). Certain classes of chipped stone tool artifacts, such as scrapers, unifaces, drills, and gouges, indicate a continuation of their importance as seen in earlier periods.

High group mobility, like that of the Early Archaic period, is suggested by the ephemeral nature of most early Middle Archaic occupations (Jefferies et al. 2005; Jefferies 2008). However, the difficulty in identifying diagnostic projectile points may explain the lack of early Middle Archaic components (Stafford and Cantin 2008). Late Middle Archaic sites tend to contain deep middens, a high diversity of tool types, and burials, suggesting the sites were intensively occupied on a long-term or year-round basis (Conaty 1985; Janzen 1977; Jefferies 1983; 2008; Jefferies et al. 2005; Nance 1985; Stafford 1994).

Major Middle Archaic sites include Highland Creek (Maggard and Pollack 2006) and Morrisroe (Nance 1985) in Kentucky; Eva (Lewis and Lewis 1961), Anderson (Dowd 1989) and Icehouse Bottom in Tennessee (Chapman 1997); Black Earth (Jefferies and Lynch 1983), Koster (Cook 1976) and Modoc Rock Shelter (Fowler 1959; Styles et al. 1983) in Illinois; and several sites in the North Carolina piedmont (Coe 1964). In eastern and central Kentucky, Middle Archaic adaptation is very similar to Early Archaic. However, in the Green River area, a decrease in hunter-gatherer mobility and longer occupations seem to be the trend.

In the Falls of the Ohio River region, Granger's (1988) investigation of Archaic settlement patterns resulted in the definition of the late Middle Archaic Old Clarksville (4,000-3,000 B.C.) and the Terminal Archaic Lone Hill (2,400-1,200 B.C.) phases. Additional data supporting Granger's work includes the following: KYANG (Kentucky National Guard) (15JF267), McNeeley Lake (15JF200), and Mill Creek Station (15JF206) (Bader 1992; Bader and Granger 1989; Granger et al. 1992; Janzen 1977; Kreinbrink 2008). The KYANG site, located on a knoll overlooking a former marsh and sluggish stream, revealed two distinct midden zones, the upper with a Lone Hill phase and the lower with an Old Clarksville phase (Bader and Granger 1989). The Old Clarksville phase contained 32 flexed burials with numerous grave goods, including engraved bone pins; bear, dear and wolf tooth necklaces; red ochre; and an assortment of chert implements. Side-notched specimens, such as Big Sandy, Salt River Side Notched, and Brewerton types, were recovered, and a radiocarbon date put the occupation at ca. 3,060 B.C. (Bader and Granger 1989; Jefferies 2008).

In the middle Ohio Valley there appears to be at least two Middle Archaic horizons, although the second is not particularly well documented. The first is the North Carolina sequence, first defined by Coe (1964). The second Middle Archaic manifestation is represented by corner- notched and side-notched Brewerton-like points, which are typically thought of as Late Archaic points, but they may well have first appeared during the Middle Archaic (Hemmings 1977, 1985; Wilkins 1978).

### 3.1.2.3 The Late Archaic Period

The Late Archaic was a time of continued cultural expansion and growing complexity. Dragoo (1976:12-15) has discussed several Late Archaic traditions for the Eastern Woodlands. Their distinctiveness stems from varied regional responses reflected in material culture. Straight-stemmed, basal-notched, or contracted-base projectile point types characterize the Late Archaic. Judging from the greater number of sites that have been recorded, an increase in population can be postulated. Evidence of longer and more intensive site occupation suggests, in some cases, extended habitation within an area.

Aside from hickory nuts, a variety of other nuts, fruits, and seeds were exploited. The increased dietary significance of certain starchy seeds, such as goosefoot, marshelder, and knotweed, has been noted in the Eastern Woodlands (Cowan 1985:229-230). These seasonally available food resources were exploited at appropriate times during the social group's annual settlement/subsistence cycle. Group organization and movement were structured to efficiently accomplish these tasks. The occasional presence of native and tropical cultigens at some sites suggests that some Late Archaic groups were experimenting with horticulture (Chomko and Crawford 1978; Cowan et al. 1981; Watson 1985).

Population increase and, in some parts of Kentucky, an inferred increase in mortuary ceremonialism, have led some to suggest that a more complex social organization was developing in some areas of the eastern United States. Along the Green River in west-central Kentucky, large shell mound sites such as Chiggerville (Webb and Haag 1939), Indian Knoll (Webb 1946), and Carlson Annis (Webb 1950) contain hundreds of human burials and evidence of complex mortuary practices and rich ceremonial life. The development of inter-regional trading networks is indicated by the recovery of copper, marine shell, and other non-local artifacts from Late Archaic burials (Winters 1968) which testify to the growing complexity of burial ritual and the interaction of many groups (Dragoo 1976:17).

The appearance of cultigens in Late Archaic contexts has been interpreted as evidence of early plant domestication and use of these plants as subsistence resources. Evidence of early cultigens has been documented at such sites as Koster in central Illinois (Brown 1977:168), at the Carlson Annis and Bowles sites along the Green River in west-central Kentucky (Marquardt and Watson 1976:17), and at Cloudsplitter shelter in Menifee County (Cowan et al. 1981).

Struever and Vickery (1973) have defined two plant complexes domesticated at the close of the Archaic, which continued in use into the Woodland period. One consisted of non-native plants such as gourd and squash, occurring sporadically but early, and corn, which did not become important in the Ohio Valley until circa A.D. 1000. The other was a group of native plants, such as Chenopodium, marsh elder, and sunflower. Recent research in Missouri, Kentucky, and Tennessee suggests that squash was under cultivation in the mid-south by the late third millennium B.C. (Adovasio and Johnson 1981:74), and that by the second half of the second millennium B.C., evidence from Illinois, Kentucky, and Tennessee demonstrates that squash, gourd, and sunflower were well established (Adovasio and Johnson 1981:74), although some view these plants as two different groups of cultigens: the East Mexican Agricultural complex and the Eastern United States Agricultural complex. The latter includes sunflower (Helianthus annuus), sumpweed (Iva annua), chenopod (Chenopodium sp.), may grass (Phalaris sp.), and knotweed (Polygonum sp.). The East Mexican Agricultural complex includes squash (Curcurbita pepo), bottle

gourd (Lagenaria siceraria), and maize (Zea mays). Watson (1976), like Struever and Vickery (1973), suggests that corn, squash, and bottle gourd were domesticated in Mexico and imported into the eastern United States by way of the Gulf of Mexico and then up the Mississippi River and its tributaries. The native cultigens consist of local species whose seeds recovered from archaeological contexts are much larger than those which grow in a natural state; hence, cultivation is inferred.

Plant domestication was an important factor in Late Archaic cultural development. Research at Cloudsplitter shelter has documented early plant domestication. Desiccated squash rind was found in a Late Archaic deposit associated with a radiocarbon date of 3728 +/- 80 B.P. (1778+/- 80 B.C.) (UCA 2313- K) (Cowan et al. 1981:71). Seeds of the Eastern Agricultural complex (sunflower, sumpweed, may grass, and erect knotweed) are sparse in the Late Archaic levels in the site, but after 3000 B.P. (1050 B.C.), all members of the Eastern Agricultural complex underwent a sudden and dramatic increase in the rate at which they were being deposited in the site, perhaps indicative of a wholesale introduction of the complex into the region at this time. The Late Archaic and Early Woodland inhabitants of Cloudsplitter seem to have followed a similar trajectory in cultivated plant usage experienced in several other river drainages in the East (Cowan et al. 1981:71).

The data from Cloudsplitter suggest that squash may not have diffused into the East or Southwest from Mexico as previously postulated by Struever and Vickery (1973), but that it may have evolved in situ from North American stock (Cowan et al. 1981:71). This interpretation seems to be substantiated by more recent investigations conducted throughout the southeastern and Midwestern United States

### 3.1.3 Woodland Period

Although initially there was very little difference between Late Archaic and Woodland period settlement, over the two millennia of the period, Woodland cultures in the Ohio Valley diverged sharply from their Archaic beginning. Kentucky shared in this development that produced burial mounds and earthwork enclosures, some of the more notable prehistoric monuments in the Ohio Valley of Kentucky. These went along with intensification in the earlier efforts at plant domestication present in the Archaic period, the development of fired clay ceramic containers (first used as ceremonial containers, later used more widely), and the intensification of trade with distant regions of the Midwest in materials used specifically as burial offerings.

The Woodland period is customarily divided into Early (1000 B.C. – 300 B.C.), Middle (300 B.C. – A.D. 400), and Late (A.D. 400 – A.D. 1000) sub-periods. Of these, the Early Woodland is the least known, but reflects its Archaic origins. During the Middle Woodland, Kentucky was characterized by large burial mounds and earthwork complexes that are termed “Adena” and have counterparts north of the Ohio River. Towards the end of this sub-period, a few sites reflect the Hopewellian cultural fluorescence, best known again from Ohio in the major earthworks of the Scioto valley. During the Late Woodland, a distinctive cultural adaptation developed with similar variants throughout the Middle Ohio River valley.

In Kentucky, the introduction of shell tempered pottery and maize-based field agriculture characterized the upper boundary of the Woodland period. The adoption of pottery technology occurred between cal 1606 and 802 B.C. in the Salt River Management Section, cal 1258-829 B.C. in the eastern Ohio River II Section, and cal 1432-950 B.C. in the Southeastern Mountains Section (Applegate 2008). Few analyses of Woodland pottery have occurred within the Gorge Section of the Upper Kentucky/Licking Management Area, and most have not been assigned to specific types (Applegate 2008).

The Office of State Archaeology records indicate that 2,920 Woodland period sites are documented in Kentucky. Three hundred and thirty-two Woodland sites are in the Upper Kentucky/Licking Management Area (Applegate 2008).

### 3.1.3.1 Early Woodland

Variation exists in accepted beginning and ending dates for the Early Woodland sub period throughout regions of Kentucky. In the Mississippi River, Northern Bluegrass, and Lower Big Sandy sections, Kreisa and Stout (1991), Duerksen et al. (1994, 1995), and O'Steen et al. (1991) determined that the sub period dated between 1000-200 B.C. In the Ohio River II Section, deNeeve (2004) placed the dates at 1000-150 B.C. The Central Bluegrass was dated to 1000 B.C.-A.D. 1 (Schlarb 2005), and the Gorge and Lower Big Sandy sections ranged between 800-200 B.C. (Gremillion 1993, 1998; Ison 1988; Applegate 2008; O'Steen et al. 1991; Railey 1991).

Pottery technology, the hallmark of the Early Woodland sub period, surfaced at different times across Kentucky. In fact, some Early Woodland sites are without pottery while some Late Archaic sites do have pottery technology. The impact of pottery on cultural adaptations varied as well. In rugged terrains, such as portions of the Upper Green River Section, pottery would hinder travel while baskets and squash/gourd containers were a more practical option (Carstens 1996:10; Applegate 2008).

Another technological change during the Early Woodland sub period included a shift from chipped stone end scrapers to bone beamers, and a shift from grooved axes to ungrooved celts (Applegate 2008). A celt requires less maintenance than a grooved axe which needs to be continuously relashed. The ungrooved celt and bone beamer remained in use until the Historic period.

Other groundstone tools utilized during the Early Woodland sub period did not deviate from those used in previous periods. Pestles, nutting stones, atlatl weights, and hammerstones all continued to serve a purpose (Applegate 2008). Bone and shell also were used by Early Woodland groups as seen in bone awls, flakers, reamers, handles, bowls, shell spoons, scrapers, beads, and gorgets (Applegate 2008).

In Kentucky, the earliest textiles were recovered from Terminal Archaic to the Early Woodland sites. The textiles were located in caves and rockshelters in the Upper Green River and Gorge sections. A variety of clothing, foot wear, and bags were woven during this sub period (Applegate 2008).

Trade networks had existed since the Late Archaic, but towards the end of the Early Woodland, an increase in the frequency of copper, mica, and exotic cherts was recorded.

Subsistence strategies did not differ much from previous periods, with hunting and gathering being the focus. Garden products also were a part of their diet, and an increase in cultivation of weedy plants and cucurbits developed. Deer, box turtle, small mammals, birds, fish, and mussels were all consumed.

Projectile points that mark this sub-period are dominated by notched and stemmed forms including Kramer, Wade, Savannah River, Adena, and Turkey-tail. While the majority of these point types date the early portion of the Early Woodland, the Adena point type is more common towards the end of the sub-period (Railey 1990:250).

Early Woodland populations tended to live in upland, ridge top, floodplain, rockshelters, and cave vestibules. Rockshelters were used in eastern and western Kentucky. Cave exploration and mineral mining, which began in the Late Archaic, intensified during the Early Woodland. As documented at Mammoth and Salts cave, gypsum, mirabilite, and epsomite were all mined from caves. Mining has been documented in the Upper Green River, Pennyroyal, and Lake Cumberland sections (Applegate 2008).

Some of the earliest known Early Woodland sites in Kentucky and in the Ohio Valley include Peter Village in Fayette County (Clay 1984, 1985, 1987) and the West Runway site in Boone County (Duerksen et al. 1995). Quite different sites, Peter Village was an enclosure first surrounded by a post stockade, later by a ditch and internal bank, while the West Runway site was a campsite with multiple hearths, suggesting a series of short-term occupations. Radiocarbon dates place the occupation of West Runway possibly as early as 600 B.C. and Peter Village at about 350-400 B.C. While West Runway, in the types of features and their clustering in this upland location, is not that different from a Late Archaic site, the Peter Village enclosure marks a sharp break with Archaic settlement systems.

At both sites, that hallmark of the Woodland period occurs: thick and relatively crude ceramics representing quite large containers. First called Fayette Thick pottery from its occurrence at the Peter Village site (Griffin 1943), the pottery occurs widely, though sparsely, across central and eastern Kentucky (cf. Clay 1980) with some variation suggesting different pottery-making groups. The type even occurs in small and early burial mounds, for example the Hartman mound in Boone County (Webb 1943) where it may date to ca. 400 B.C. At the Peter Village enclosure, it is hypothesized by Clay (1987) that groups gathered to mine a source of barite and galena that was then fashioned into pigments and objects for personal use and for trading with other groups. The large ceramic vessels represented at the site may have been "feast containers" made to serve large work crews on the spot. The occurrence of thick pottery at the Hartman burial mound suggests also that the pots may have been made to serve funeral parties during the course of burial ceremonies, the first indication of customs that would become common in the Middle Woodland.

### 3.1.3.2 Middle Woodland

In most parts of the Southeast and Midwest, the development of Hopewell is a distinguishing difference between the Early and Middle Woodland sub periods. However, in Kentucky, Hopewell does not have a deep effect on Woodland populations, and as a result, considerable continuity exists between the Early and Middle sub periods (Applegate 2008). In addition, regions within Kentucky seem to differ with the beginning and ending dates for the Middle Woodland as did the Early Woodland. In the Mississippi River Section, Kreisa and Stout (1991) set the sub period at 200 B.C.-A.D. 400, and in the Ohio River II Section, deNeeve (2004) gives the sub period at 150 B.C.-A.D. 500. The Central Bluegrass Section has been given ranges of 400 B.C.-A.D. 400 and A.D. 1-500 (Richmond and Kerr 2005; Schlarb 2005). Gremillion (1993) gave the Middle Woodland sub period in the Gorge Section a range from 300 B.C.-A.D. 500.

In the Bluegrass, Upper Kentucky/Licking, and Big Sandy areas, ceramic vessels tend to have plain exterior surfaces during the early Middle Archaic. Cordmarked, cord-wrapped dowel-impressed, or fabric-impressed exterior surfaces are common in the Purchase, Green River, and Upper Cumberland areas (Applegate 2008). In the Salt River and Ohio River I Sections, sherds that exhibit Havana-like or Hopewellian decoration were documented, and southeastern stamped ceramics were found throughout the state but at low frequencies. Late Middle Woodland ceramic vessels tend to have subconoidal or subglobular jars, with outflaring, recurved, or direct rims. Jars usually have cordmarked or plain exterior surfaces, and small quantities of simple stamped or check stamped sherds are present. Complicated stamped, brushed, or rocker stamped sherds are also found in small quantities, but are often used as indicators for the late Middle Woodland sub period.

Robbins, Motley, Gary, and Adena Stemmed (cal 88 B.C.-A.D. 239 [Dowell 1981] points area all found in both the Early and Middle Woodland sub periods. Copena and Copena Triangular, which are Triangular/Lanceolate forms, are considered diagnostic of the Middle Woodland sub period along with corner-notched forms, such as Snyders (cal 1258 B.C.-A.D. 425 [Mocas 1992]) and Affins Snyders

(Applegate 2008). Late Middle Woodland contexts demonstrate expanding stemmed and shallow side notched types, such as Steuben, Bakers Creek, Lowe, and Chesser (cal A.D. 268-887 [Crane and Griffin 1966]). In addition, chert bladelets are also considered diagnostic of the Middle Woodland sub period (Applegate 2008).

In mortuary-ritual deposits, exotic raw materials continued to be used, and seemed to peak in the early Middle Woodland, but then decline again during the late Middle Woodland. These exotic raw materials included copper bracelets and breastplates/gorgets, copper and mica head ornaments, marine shell beads, and Vanport chert bladelets (Applegate 2088).

Subsistence strategies did not differ much from the Early Woodland sub period. The Middle Woodland populations continued to rely on wild foods more than cultigens. Settlement patterns saw an increase in usage of floodplain zones. Activity areas are suggested by midden deposits and feature clusters. In western Kentucky, earthworks were sometimes associated with habitation areas, and in the Lower Big Sandy, Upper Big Sandy, and the Central and Eastern Bluegrass, postmold patterns have been discovered that suggest small, single- and double-post circular and square/rectangular houses (Applegate 2008). In the Gorge Section, rockshelter occupations appear to decline. Settlement hierarchies have been noted in the Mississippi River and Ohio River II Sections.

The Middle Woodland in Kentucky is marked notably by the construction of burial mounds that have been called Adena after a site in southern Ohio (Webb and Snow 1945; Webb and Baby 1957). Major mound excavations in the region of Fischer, Drake, Mt. Horeb, Morgan Stone, Wright, Ricketts, Camargo, and many others, have given archaeologists a detailed picture of burial customs during this time period (Clay 1986). Excavations at the small Auvergne mound in Bourbon County (Clay 1983) suggest that Native Americans from a larger area came together at the time of a death to feast at graveside.

Some of the large mounds, containing multiple burials, suggest that these groups often returned to the same mound to add more burials to the structure. At times the burial mound could, like the Wright mound in Montgomery County (Webb 1940), grow to an imposing size. Although we have considerable excavated evidence for burial customs, the total settlement system is not well understood (Clay 1998:13-19). Those responsible for the burial mounds may have lived widely dispersed throughout Kentucky in relatively small groups. Seen in this light, the elaborate burial sites (mounds) offered essential foci for scattered groups where they could meet and interact. There were also small, circular enclosures called ceremonial circles of which the Mount Horeb site in Fayette County (Webb 1941) is an excavated example. Late in the Middle Woodland, hilltop enclosures were constructed, such as Indian Fort Hill near Berea, Madison County, Kentucky. Still, daily domestic sites are very poorly understood, although examples dating to the time period have been found to the south on the Cumberland Plateau (Kerr and Creasman 1998).

Several Middle Woodland mortuary-ritual sites have been documented, such as the conical burial mounds. In the Bluegrass and Big Sandy areas, these conical burial mounds date to the early Middle Woodland, but in other areas, they date to the late Middle Woodland. Stone mounds date to the late Middle Woodland. Although rare, geometric earthworks and hilltop enclosures date to the late Middle Woodland. In the Central Bluegrass, non-mound ceremonial sites without burials have been documented, such as ritualistic feasting and ceremonial plant use (Applegate 2008).

#### 3.1.3.3 Late Woodland

Defining the temporal parameters of the Late Woodland has not been an easy task. Clear boundaries have not been identified in the archaeological record, and diagnostic ceramic and lithic attributes,

although widespread, show little temporal variability within this period. As a result, the transition from Middle to Late Woodland traditions was a gradual process and not an abrupt one, since no dramatic shifts in cultural practice or in styles of tools or ceramics occurs (Pollack and Henderson 2000). Changes that did occur between the Middle and Late Woodland are probably linked to changes in plant subsistence strategies, hunting technologies, long-distance trade networks, and the degree of ritual expression (Pollack and Henderson 2000:615).

While Pollack and Henderson's study demonstrates continuity in material culture, analysis of some site data suggests that population increase or at least localized aggregation occurred, which over time may have led to a smaller number of larger settlements, or increased inter-community violence. In other words, population cycles may have impacted lifeways and contributed to some changes in subsistence, settlement organization, and the duration of a particular settlement. A recent survey of available radiocarbon-dated sites in Kentucky and adjacent parts of West Virginia reveals some trends during the Middle and Late Woodland that support (in part) a population increase, and possibly some subsequent population declines.

The above discussion has highlighted the fact that a large number of sites are assigned to the Late Woodland period, and that many have been dated. These dated sites suggest that the Late Woodland period, as Pollack and Henderson (2000) among others have suggested, can be subdivided into at least two sub-periods. This apparent division may reflect some cyclicity in population expansion, changes in subsistence, settlement re-organization, or the introduction or incorporation of new technologies- such as corn agriculture and the bow and arrow- into pre-existing cultural complexes. While these data provide a substantive framework that identifies some temporal parameters, recent syntheses- along with earlier studies of the Late Woodland period- suggest that within the region of southern Ohio, northern and central Kentucky, and extreme southern Indiana, a single cultural complex or phase was present: the Newtown tradition.

Griffin (1956:187), working on artifacts from the Turpin site in Ohio, recognized a previously undocumented cultural complex which he named "Newtown," and which he considered to post-date the Middle Woodland Hopewell tradition and to pre-date the Fort Ancient tradition in the Middle Ohio Valley. Although he could not discern the length of the period during which this Late Woodland culture flourished, he did suggest that little cultural progress was made during this period (Griffin 1952). Owing to the paucity of Late Woodland archaeological data, Griffin was unable to characterize the Newtown culture or ascertain if distinctive regional variations existed (1952, 1956).

More archaeological data has been gathered since Griffin's groundbreaking research, but considerable debate on the temporal and geographic extent of Newtown and other Late Woodland cultures still exists (e.g., Clay and Creasman 1999; Davis et al. 1997). Site assemblages throughout the region are linked by the occurrence of the ceramic complex known as Newtown Cordmarked, a type described by McMichael (1968) in the 1960s and characterized by large jars with thickened, angular shoulders. More recent research (e.g., Pollack and Henderson 2000; Seeman and Dancey 2000) indicates that while a thickened, angular shoulder may be a characteristic of some Newtown vessels, some site assemblages are considered Newtown even though they lack ceramic vessels with this particular characteristic.

Recent archaeological investigations at several sites in the region have revealed additional traits about Newtown phase assemblages (e.g., Ahler 1988; Dancey 1988, 1991, 1992; Henderson and Pollack 1985; Kreinbrink 1992; Railey 1990). Typically, Newtown lithic assemblages are characterized by Steuben, Lowe, or Chesser notched variety projectile points (see Justice 1987), thick stone bifaces, and small, triangular, shaped celts. The ceramic assemblage includes ceramic jars with incurvate to direct rims,

flattened lips, and vertical cordmarking on their outer surfaces. Personal adornment, highly developed in the preceding Middle Woodland period, was apparently limited in the Late Woodland, as Newtown assemblages are distinguished by a lack of decorative and personal ornaments. Seeman and Dancey report "...Late Woodland societies created virtually nothing that can be considered artistic..." (2000:598). The few documented artifacts showing artistic style include some stone and bone gorgets, bone pins, small mica sheets, limestone elbow pipes, and stone and shell beads.

Pollack and Henderson's recent review of the Late Woodland period in Kentucky offers current data on what the term "the Newtown phase/complex/tradition" (2000:625) means in Kentucky, while Seeman and Dancey's review of southern Ohio Late Woodland traditions incorporates discussion of some northern Kentucky sites (2000:595). Pollack and Henderson focus their study on either side of the Falls of the Ohio, which serves to demarcate two regions of Kentucky that appear to differ culturally, and which may have maintained distinct cultural traditions for a long period of time.

One of Pollack and Henderson's sub-regions is downstream of the Falls of the Ohio, and occupies the western portion of the state; the second sub-region, is upstream of the Falls and is in the eastern portion of the state. This eastern region encompasses the Middle Ohio River valley, the Central and Inner Bluegrass region, and the Knobs and mountains of Eastern Kentucky. Major rivers in the region include the Ohio, as well as its Kentucky tributaries (Kentucky, Licking, and Big Sandy), all of which are deeply entrenched with narrow flood plains. Within this region, only one cultural complex is well documented for the early Late Woodland sub period: the "Newtown phase/complex/tradition" (Pollack and Henderson 2000:625). Components associated with this phase are noted at several important Kentucky sites such as the Dreaming Creek site in Madison County, Hansen and Bentley sites in Greenup County, and the Pyles site in Mason County, as well as numerous smaller sites in the Bluegrass (e.g., Shelby Lake, Froman), and sites in the Eastern Coalfields such as Rock Bridge and Haystack rock shelters. Other Late Woodland cultural traditions (e.g., Beal's Run) in this region are only now being examined, since this period has typically been understudied (e.g., Pollack and Henderson 2000), so additional variation may be present that is only recently being documented.

Early and late Middle Woodland artifacts are very similar in most areas, but the late Middle Woodland tends to lack decorated ceramics. In Kentucky, early Late Woodland ceramics consist of subconoidal and subglobular cordmarked jars, and vessel rims are usually unmodified and lips are usually flattened and plain. Plain and cordmarked forms are common throughout Kentucky during the terminal Late Woodland sub period, but variation does exist. Pottery vessels with zones of incised geometric designs on the jar necks are found in the lower Ohio River valley. In far western Kentucky, during the terminal Late Woodland, pan-shaped vessels and red film surface treatment begins to appear although these types are diagnostic of the Mississippian period. In the Bluegrass Management Area, vessels with angular shoulders continue to be used (Applegate 2008).

In the terminal Late Woodland sub period, the 'true arrowheads' begin to appear in Kentucky (Applegate 2008). Point types found at Late Woodland sites, including several from dated contexts, are Jacks Reef (cal A.D. 442-776, cal A.D. 548-859 [Ahler 1987], and cal A.D. 675-938 [Ledbetter and O'Steen 1992]), Raccon (cal A.D. 663-1151 and cal A.D. 695-1223 [Ledbetter and O'Steen 1992]), Hamilton (cal A.D. 223-592 and cal A.D. 569-768 [Des Jean 2004]), and Levanna.

Wild animals and plants continued to be the mainstay of the subsistence strategy utilized during the early Late Woodland sub period. Cultivation of native plants continued and maize appears during the Middle and early Late Woodland contexts, but not as a significant source until the terminal Late

Woodland (ca. A.D. 800) (Applegate 2008). In Kentucky, maize cultivation appeared mostly in the Purchase and Green River management areas.

Regional variability dictated settlement patterns within the Late Woodland sub period. In the Pennyroyal Section, domestic structures included rectangular and circular single-post forms and possible Late Woodland wall trench structure (Applegate 2008). Late Woodland sites in the Bluegrass Management Area concentrated on upland ridges, while other areas continued a focus on floodplain zones. Two- and three-tiered settlement hierarchies have been documented in the Purchase Management Area during the terminal Late Woodland sub period. In contrast, nucleated settlements are more common in the early Late Woodland in central and northeastern Kentucky.

By A.D. 500, the construction of large earthen or stone enclosures had ceased. In contrast, construction of stone mounds increased during the Late Woodland. In western, southern, and parts of northern Kentucky, stone box grave cemeteries became common.

### 3.1.4 Late Prehistoric Period

Both the Mississippian and Fort Ancient cultural manifestations are widespread in the Midwest and are characterized by distinctive settlement patterns. Mississippian society is characterized by a hierarchical social organization, in contrast with the non-hierarchical social organization evident in Fort Ancient society. Examination of site structure, settlement pattern and mortuary behaviors confirm these distinctions. Generally, Mississippian and Fort Ancient cultures were spatially discrete. Mississippian societies are documented in western Kentucky, Illinois, and states further south, whereas Fort Ancient societies are documented from western West Virginia to southeastern Indiana and from south-central Ohio to north-central and eastern Kentucky (Griffin 1978:551). More specifically within Kentucky, Fort Ancient is present within the Salt River, Bluegrass, Big Sandy, and Upper Kentucky/Licking River management areas (Sharp 1990:467).

The Late Prehistoric archaeological complex of the middle Ohio Valley is Fort Ancient, which spans the time period from approximately A.D. 1000 to about A.D. 1700. In the Bluegrass, Fort Ancient is divided into the early Osborne Phase (circa A.D. 950 – A.D. 1200), Middle Fort Ancient (A.D. 1200 – A.D. 1400) and Madisonville Horizon (A.D. 1400 – A.D. 1700). The Osborne Phase is known in the Bluegrass from the Muir and Dry Run sites (Sharp 1990) in Jessamine and Scott counties. Middle Fort Ancient sites include Buckner, Gilfoil, and Florence (Fassler 1987). Fort Ancient within the Mountains of east Kentucky is found only in the Kentucky and Big Sandy drainages and a single phase, Woodside, is present (Dunnell 1972).

The development of Fort Ancient and its relationship to Late Woodland cultures has been a debated issue. Two hypotheses have been offered in explanation for the relationship between Fort Ancient and Late Woodland cultures. One hypothesis suggests that Fort Ancient represents the fluorescence of an indigenous Late Woodland culture (Graybill 1981; Rafferty 1974). Others (e.g., Essenpreis 1978:154-155) suggest that Fort Ancient represents an influx of Mississippian peoples from the lower Ohio River Valley. Although the question has yet to be resolved, it is entirely possible that each of these hypotheses may be correct, depending upon the data set and region employed to address the problem. Essenpreis (1978), for example, has suggested that these two hypotheses are appropriate for explaining Fort Ancient manifestations at different times during the Late Prehistoric. In this scenario, Fort Ancient is viewed as a fluorescence of Mississippian-influenced Late Woodland culture during the early phases (Baum, Anderson, and Feurt) and as an influx of Mississippian peoples during the later Madisonville phase (Essenpreis 1978:164).

Fort Ancient reflects an elaboration of Late Woodland subsistence activities and social organization. Settlements were much more nucleated, as evidenced by large village sites (Mayer-Oakes 1955). Village sites tend to be situated in valley bottoms along the main stems of the region's larger drainage (Graybill 1981). On the other hand, smaller sites tend to be located throughout tributary drainage and are thought to represent seasonal camps and resource procurement activity stations. A number of sites along the Ohio River, or close to it, were fortified; and many have central courtyards or plaza areas (Griffin 1978:552). Within the Mountains only two types of sites have been documented, villages and camps. It has been hypothesized that camps might represent hunting camps associated with the villages (Sharp 1996:177). The Slone site, located in Pike County, was a village site shaped circularly with a stockade. At least 12 houses were documented within the stockade and contained centrally located hearths with some small attached porticos. Houses also included nearby hearths, basins, earth ovens, and rock- or potsherd-lined storage pits. Burials were found between houses and the village stockade and were often covered with stone slabs (Sharp 1990). A smaller Fort Ancient open habitation site located in Breathitt County, site 15BR9, contained one structure, several features, and two burials (Sharp 1990:514). Rock shelters within this area of Kentucky have also served usage during the Fort Ancient Period (Sharp 1990:515; 1996:177-178).

Fort Ancient subsistence is characterized for the first time by a reliance on the cultivation of maize, coupled with beans and squash. Despite the increased importance of horticulture, hunting provided an important source of food. Deer was the main meat source; at some sites it made up to 80 percent of the game consumed. The cultural material assemblage included elaborate ceramic styles (usually tempered with crushed mussel shell, although limestone and grit-tempered ceramics also occurred), triangular arrow points, mussel shell tools (e.g., knives, scrapers, and hoes), and bone tools (e.g., bone reamers), which also serve to distinguish Fort Ancient cultures from Late Woodland occupations (Griffin 1978:552). Ceramics recovered from the Slone site were shell-tempered plain, cordmarked, or exterior roughened jars with strap handles. A saltpan was the only type of identifiable vessel found at this site. Tools from the Slone site included small, triangular points, as well stone disks, elbow pipes, and bone and antler tools (Sharp 1996:177).

Although Fort Ancient subsistence, like that of Mississippian populations, was based on the cultivation of corn and other cultigens, other aspects of Fort Ancient clearly distinguish it from the contemporary Mississippian occupations: Fort Ancient sites lack large ceremonial centers and earthworks, although Early and Middle Fort Ancient sites (through circa A.D. 1250) exhibited burial mounds. For example the Rowena Site, flooded by Lake Cumberland, was described as a small Mississippian regional center, possibly occupied from A.D. 1300-1400 (Weinland 1980:133). The artifact assemblage indicated the site was influenced strongly by eastern Tennessee cultures throughout most of its history, especially the Dallas cultures (Weinland 1980:131). Other Mississippian sites along the Cumberland, like Crowley-Evans (Jefferies 1995; Jefferies and Flood 1996), were built around low platform mounds on which the house of a local chief was constructed. However, the complex settlement hierarchy found in the Mississippian, some sites having mounds, others with none, does not occur in Fort Ancient. Villages and hunting camps have been the only Fort Ancient site types defined thus far.

Within the Upper Kentucky/Licking area considerably more Fort Ancient sites have been found within the Gorge Section than the Interior Mountains Section. Very little information is known still about the Fort Ancient chronology in this region. However, the Fort Ancient material culture of the Mountains region appears to resemble the culture from the more well documented Bluegrass and Ohio Valley sites (Sharp 1996:178).

# 3.2 Historic Period

## 3.2.1 Exploration and Early Settlement (ca. 17th Century-1820)

It is not exactly known when the first Europeans entered Kentucky, but early explorers like Marquette and Jolliet certainly witnessed the western portion of Kentucky as they traveled the Mississippi and it's possible that La Salle may have visited the Ohio Valley. British exploration of the New and Holston rivers and stories from Native Americans led them across the mountains (Alvord 1920).

The Native American tribe that was first contacted by Europeans in Kentucky is believed to be the Shawnee (Turnbow 1980:17). It has been traditionally and historically maintained that the earliest routes into Kentucky followed buffalo and game trails frequented by Native Americans (Boisvert 1984:46-49, Brown 1929:4). It was quickly discovered by European Americans that these early trails were easy to follow and that they invariably led to salt and water.

Other important early routes into Kentucky went overland through the Cumberland Gap, while a major water route proceeded down the Monongahela River, then the Ohio River. The exploration and the ultimate European American settlement of Kentucky began in earnest in 1750 when Dr. Thomas Walker explored some of eastern Kentucky. His party reached the confluence of the Red and Kentucky Rivers. He was followed in rapid succession by a number of other Englishmen: Christopher Gist in 1751, John Finley in 1752, and Daniel Boone in 1769. In 1775, Boone established the first permanent European American settlement in Kentucky at Boonesborough in Madison County. Both the overland and water routes were considered dangerous during the eighteenth century due to intermittent Indian attacks.

By the late 1760s, "Long Hunters" from the eastern United States were venturing into the area via the Cumberland Gap (McBride and McBride 1990:587). Daniel Boone, negotiating with the Cherokee, built the Wilderness Road, which became the primary overland route through Kentucky from 1775 to 1818 (Ison et al. 1991:11). The Wilderness Road passed through the Gap, down Yellow Creek, through the Little Log Mountain gap, on through Ferndale, up Moore's Branch, through the Big Log Mountain gap, through the "Narrows" south of Pineville, through Cumberland Ford in Pineville, past the Cumberland River to Flat Lick, and finally on to Boonesborough (Fuson 1947). An earlier traveler's account described the land after passing through the Gap:

> *"From thence (from Cumberland Gap) until you pass Rockcastle River there is very little good road; this tract of country is very mountainous, and badly watered along the trace, especially for springs. There is some good land on the water-courses, and just on this side Cumberland River appears to be a good trace, and within a few years I expect to have a settlement on it. Some parts of the road is very miry in rainy weather. The fords of Cumberland and Rockcastle are both good unless the waters be too high." (William Brown in 1782, Fuson 1947:2).*

A second gap, Pound Gap, also played a significant role in the settlement of Kentucky and the western frontier. Pound Gap is an opening in Pine Mountain and is located in northeast Letcher County above Jenkins on the border with Virginia. It was a route that became known as the Kentucky Trace which branched off the Wilderness Road at Castles Woods (now Castlewood, Virginia) to Indian Creek and from there through the Gap and into Kentucky. Most of those settlers who moved to the hills of eastern Kentucky called this "the Pound".

With increasing European American settlement in the region, the struggle for control between the French, British, and Native Americans led to the steady decline of Native populations, primarily resulting

from introduced Old World diseases, such as smallpox, chicken pox, influenza, measles, and the common cold, to which they had no developed resistance.

Initially, early stations or forts like Martin's Station (1769), Gibson's Station (1785), Wilderness Road Block House (1775), Fort Watagua (1775), and Fort Chiswell (1758) were established east of the mountains to protect the settlers from Indian attacks. In 1776, the Virginia General Assembly created Kentucky County out of Fincastle County (Clark 1992:xix), and later Lincoln County. With the increase in settlers moving into Kentucky on the Wilderness Road, more forts and stations followed.

Agricultural production included corn, cane, hemp, oats, flax, and tobacco which were almost all grown on flood plains. Within the mountains of eastern Kentucky, agriculture remained at a subsistence level much longer than elsewhere in the state (McBride and McBride 1990:592). The Wilderness Road greatly benefitted these early settlers of Kentucky as it served as a commercial road connecting Kentucky with neighboring states like North Carolina, Virginia, and further on to Maryland. Livestock such as horses, cattle, sheep and hogs, and furs and surplus crops were transported via the road to markets east of the mountains. Beef had become a main source of income for farmers in central Kentucky as it became popular in Eastern cities (Kinkaid 1992:187; McBride and McBride 1990:590). To further benefit the settlers, after statehood was granted in 1792 efforts made by Governor Isaac Shelby led to an improvement in communication when a postal route was opened that same year connecting Bean Station, Tennessee, via the Cumberland Gap with Danville in the Bluegrass area of Kentucky. Mail and news from and to the settlements was now possible. Although eastern Kentucky saw growth, significant growth was primarily in central Kentucky or the Bluegrass, where soils were more fertile.

Although not as great as the remainder of the state, the mountains of eastern Kentucky did see growth in population between 1810 and 1820. Population of eastern Kentucky went from 20,297 to 34,602. Again- though not to the same degree as the remainder of the state- the eight eastern counties did practice commercialized agriculture and were producing grains, livestock, hides, and fur for trade in the Ohio Valley, central Kentucky's Bluegrass, and western Virginia. Towns in the mountain region remained small compared to the towns elsewhere in the state (McBride and McBride 1990:596). The area that is now Morgan County was part of Virginia when the first surveying parties arrived; by 1800 the area had some settlement. Earliest settlers in the area of Morgan County included Daniel Williams who came to Kentucky with Daniel Boone in the 1770's and was a veteran of the Battle of the Blue Licks. Other early settlers in the area included Thomas Lewis, who served with General George Rogers Clark, and Gardner (or Garner) Hopkins, a Revolutionary War veteran (Nickell 1992a). The early settlement of Wells Mills was established in 1816 where Edmund Wells had begun operating a water mill on the Licking River. This settlement would later be the location of the town of West Liberty (Nickell 1992b). Figure 3-1 illustrates eastern Kentucky and Virginia in 1794.

### 3.2.2 Antebellum (1820-1861)

While river and railroad transportation routes were opened up in the first part of the nineteenth century by steamboats and trains, eastern Kentucky became more remote. Small steamboats were able to traverse the Big Sandy after 1837 and some road improvement occurred, but the mountainous part of Kentucky did not benefit from the revolutionary transportation improvements in the rest of the state. It was at this time that a "distinct Appalachian subculture" evolved (McBride and McBride 1990:601). Agriculture did not change significantly for the people of eastern Kentucky and most crops and livestock were produced for home consumption. Hog was the meat of choice, but some cattle were still bred (McBride and McBride 1990:605). An abundance of timber was also sold. By 1840 small commercial coal mines were present in eastern Kentucky. In 1845 the first large coal mine community of Peach


**Figure 3-1. Kentucky and Virginia in 1794 (Lewis).**

Orchard, located in Lawrence County in the northeastern part of the state, was established by coal company owners. Its success would lead to many similarly organized communities in the region, wherein coal mining companies constructed dwellings along with commercial necessities like a grocery, gristmill, and/or sawmill (McBride and McBride 1990:605). By 1860 urban development of eastern Kentucky was still poor and very few cities existed. Of those that did exist, most were very small and associated with the commercial mines. The only well populated towns in this region of Kentucky were located on the Ohio River where more traffic was seen.

In 1822, within the vicinity of the current project area, settlers sought to form a new county from parts of Floyd and Bath counties. Morgan County was established, receiving its name from General Daniel Morgan, a Revolutionary War hero (Nickell 1992a). West Liberty was created as the county seat in 1823 from land donated by Edmund Wills and quickly a log jail and a two story frame courthouse were constructed (Nickell 1992b). West Liberty is located about 100 miles east of Liberty, Kentucky, but the town was named under the belief that Pikeville, Kentucky, would be called Liberty when incorporated. Figure 3-2 illustrates Morgan County, Kentucky, in 1839.

## 3.2.3 Civil War (1861-1865)

Kentucky's status as a border state not fully joining the Confederacy but yet still allowing slavery brought division within the population. The Union Army headquarters for Kentucky were at Louisville, and Camp Nelson in Jessamine County was a large quartermaster depot and African–American recruitment center that operated from 1863 to 1865. The fort employed over 2,000 civilian employees, and housed between 900 and 5,000 troops at any time (McBride et al. 2003).

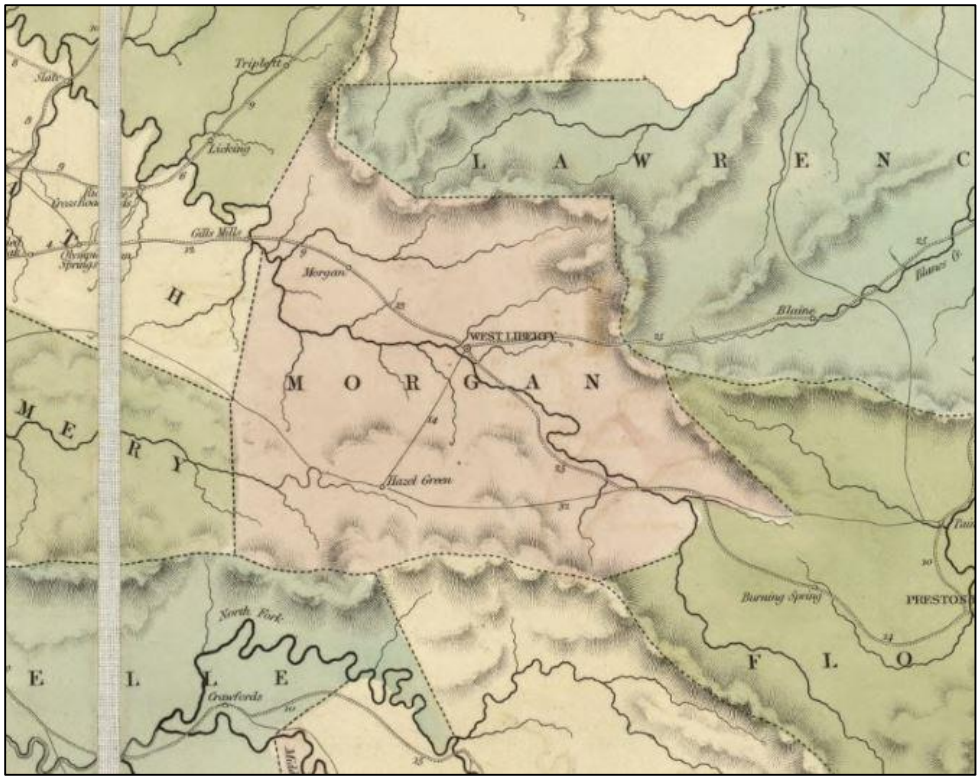


**Figure 3-2. Morgan County, Kentucky in 1839 (Burr).**

During the Civil War, both sides recognized the importance of the Cumberland Gap and its strategic value . As a result, there was a constant battle for its possession with both sides occupying the Gap at different times during the war. The mountain inhabitants of Kentucky sided strongly with the Union since they had few to no slaves. Some of these mountain inhabitants were part of the first blow against the Confederacy in Kentucky at Wildcat Mountain. Known as the Battle of Wildcat Mountain, this engagement took place in October of 1861 with principal commanders U.S. Brig. Gen. Albin F. Schoepf and C.S.A. Brig. Gen. Felix Zollicoffer. In mid-September 1861, Zollicoffer and his 5,400 men occupied the Cumberland Gap and took control of Cumberland Ford at Pineville, defeating a group of home guard volunteers from the town of Barbourville in the process. Responding to the Confederates, a detachment of Kentuckians led by Col. Theophilous Garrard was sent for three reasons: 1) to secure the ford on the Rockcastle River, 2) establish a camp at Wildcat Mountain, and 3) obstruct the Wilderness Road. Garrard, greatly outnumbered, would have been forced to retreat had not Gen. A. Schoepf arrived with reinforcements. On the morning of October 21, Confederate troops attacked and Union soldiers repelled the Confederates successfully. Another Confederate offensive later that afternoon was also repelled by the Union forces and later that night, the Confederates finally withdrew. The battle was considered the first Union victory in Kentucky as well as the first engagement of regular troops in Kentucky (Fuson 1947).

Afterwards, an extermination of the rebels in the region began, but the Confederate sympathizers retaliated in turn by killing Federal soldiers. In this way, feuds grew out of the Civil War. After the war, relations of those killed began to settle the matter by killing others. Long-standing feuds broke out in different parts of the mountains, but only a very small part of the population was engaged at any or all times in these feuds (Fuson 1947). Figure 3-3 illustrates Morgan County, Kentucky, in 1861.

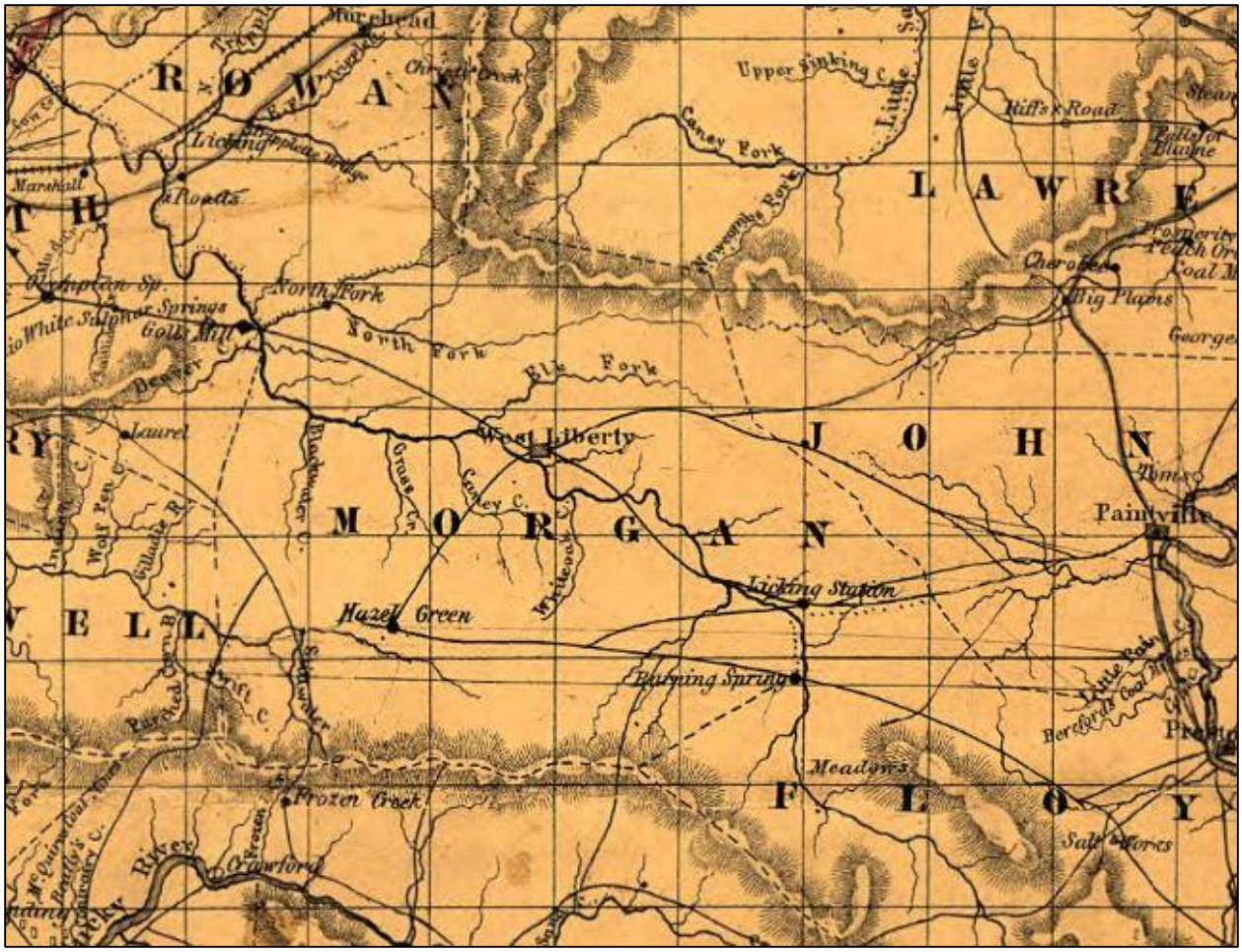


**Figure 3-3. Morgan County, Kentucky, in 1861 (Campbell & Barlow).**

The largest single Civil War battle to occur in Kentucky was the Battle of Perryville. This battle was fought near Perryville in Boyle County, 70 miles to the west of West Liberty in the central part of the state. On October 8, 1862, the battle ensued, involving 16,000 Confederate troops and 58,000 Union troops. The Confederate force was defeated and they retreated via the Cumberland Gap to Tennessee, and a three-month long Confederate effort to secure Kentucky was halted. (Kleber 1992).

Control of Pound Gap was also important for both Union and Confederate troops. The Gap exchanged hands numerous times during the Civil War and was used continually as a route for supplies. In the winter of 1862, Confederate troops managed to maintain camps on both sides of the pass. Numerous skirmishes were fought for control until 800 hundred Union troops managed to outflank 500 Confederate troops and forced them into retreat.

The economic effects of the war were probably more significant to people in Kentucky than the physical devastation. Many farmers and merchants were hurt by the curtailment of trade with the south (McBride and McBride 1990:609). There were also transportation system disruptions due to war damage or to Union control. Throughout Kentucky, the Louisville and Nashville (L&N) Railroad suffered considerable damage during the war (Castner 1992:579). The L & N survived the war in reasonably good conditions since it became part of the vital supply route supporting Union troops advancing through the south (Castner 1992:579). The largest single factor in the deterioration of Kentucky's

agriculture and industry was the loss of the labor force. About 100,000 Kentucky men entered the Union Army and up to 40,000 entered the Confederate Army (McBride and McBride 1990:610). Almost one third of those enlisted died. Slaves escaped across the Ohio River in the early years of the war. In 1864, the U.S. Government granted freedom to any slave that enlisted in the U.S. Army. The male slaves also brought their families to the encampments (McBride et al. 2003).

Unlike other areas in Eastern Kentucky, Morgan County mostly sympathized with the Confederacy, although some influential families within the county were pro-Union. However, no major battles occurred within the county, only a few skirmishes. The court house in West Liberty was destroyed along with the offices of the circuit and county clerks during the war (Nickell 1992b).

### 3.2.4 Postbellum Industrialization (1865-1914)

There were changes in social and economic systems that greatly affected Kentucky during the Postbellum period. During this period the state began to deal with the emancipation of African-Americans and their changing role in society. The introduction of white burley tobacco brought many changes to the agricultural industry. There were significant improvements in communication and transportation, growth in industry and commerce, and increased urbanization. However in Morgan County, as in the rest of the mountainous region of eastern Kentucky, population was only slowly growing during the late nineteenth century (McBride and McBride 1990:615).

Many mountain people refused to work in the coal and lumber industry and remained farmers. However, eroded soils became more common and agricultural losses forced many farmers into part time work for coal and lumber companies. This in turn had an effect on the production of food and availability of livestock, much of which now had to be shipped in (McBride and McBride 1990:624).

In Morgan County and most of eastern Kentucky, both the logging and mining industries played vital roles. Both industries started up in the 1880s and by the early twentieth century they were thriving. By the beginning of the twentieth century, railroads had entered Morgan County in search of timber and cannel coal. The Morehead & North Fork Railroad reached Blairs Mills, Wrigley, Redwine, and Lenox. This railroad would later be abandoned in the 1920's. The Ohio & Kentucky Railroad extended to Adele, Cannel City, Caney, Stacy Fork, Malone, Index, Liberty Road, and Licking River, later abandoned in 1933 (Nickell 1992a).

### 3.2.5 Twentieth Century

The beginning of this century was very similar to the previous period. Kentucky was still a leader among the southern states in agricultural products and a continued production pattern in industrialization and manufacturing also occurred.

The Great Depression and World War II were two of the most important events of the Twentieth Century. For many, the onslaught of the Depression was not apparent until the stock market crashed in October 1929. For farmers, however, hard times began much earlier. Agricultural prices had been depressed for nearly a decade before the crash and remained so until World War II.

The Great Depression affected every facet of American life, sapping energy from the economy and draining the citizenry's ability to build. Although no unemployment figures were kept, it is generally thought that the jobless rate hovered around 12 percent in Kentucky.

New Deal programs put together by the Roosevelt administration in the 1930s changed the face of Kentucky. Born of economic desperation of the Great Depression, the New Deal implemented work

programs that provided paying jobs for the unemployed. The Civilian Conservation Corps (CCC), Works Progress Administration (WPA), Public Works Administration (PWA), Civil Works Administration (CWA), and Resettlement Administration put to work many of the Kentucky unemployed. In 1937, Eleanor Roosevelt dedicated a new stone building in West Liberty, built by the WPA (Nickell 1992a).

New Deal programs put together by the Roosevelt administration in the 1930s changed the face of Kentucky. Born of the economic desperation of the Great Depression, the New Deal implemented work Mechanization of agriculture and the general decline in farming as a way of life, continued urbanization, major improvements in roads, and a decline in river traffic all occurred at this time. There were also increases in stores and access to consumer goods. Kentucky's population increased during the period, but at a slower rate than the rest of the Southeast. Morgan County's population fluctuations (as measured by the United States Census Bureau [USCB]) are shown in Table 3-1 (McBride and McBride 2008:967).

Morgan County continued to rely heavily on agriculture and timber harvests in the mid to late twentieth century. Tourism also became important to the county. The northwest corner of the county is part of the Daniel Boone National Forest, and Cave Run Lake forms a portion of the county's northwest boundary. In the 1990's, the main agricultural products for the county include cattle and burley tobacco, and timber continued to be an important industry (Nickell 1992a). In addition, Morgan County became home to the Mennonite World Headquarters and Bible Printing Facility, the Eastern Kentucky Correctional Complex, and the extended campus of Morehead State University, and the University of Kentucky Regional Technology Center (Nickell 1992b). In 2012, West Liberty suffered severe damage to its downtown region as an EF3 tornado tore through the area (WYMT TV 57 Mountain News 2012).

**Table 3-1. Population changes for Morgan County, Kentucky (USCB 2015).**

| Census Year | Total Population |
|---|---|
| 1830 | 2,857 |
| 1840 | 4,603 |
| 1850 | 7,620 |
| 1860 | 9,237 |
| 1870 | 5,975 |
| 1880 | 8,455 |
| 1890 | 11,249 |
| 1900 | 12,792 |
| 1910 | 16,259 |
| 1920 | 16,518 |
| 1930 | 15,130 |
| 1940 | 16,827 |
| 1950 | 13,624 |
| 1960 | 11,056 |
| 1970 | 10,019 |
| 1980 | 12,103 |
| 1990 | 11,648 |
| 2000 | 13,948 |
| 2010 | 13,380 |

# 3.3 Historic Map and Aerial Photography Research

The Kentucky Geological Society produced a *Map of Morgan and Johnson Counties and Parts of Magoffin, Floyd, and Martin* in 1880. This map shows names of residents and businesses in the vicinity of the current project area. USGS maps available were the 1951 and the 1978 7.5 minute topographic maps of the quadrangle. Also available were a 1937 *Highway and Transportation Map of Morgan County, Kentucky* (Kentucky Department of Highways 1937) and the 1955 *Rural Highway Series Map of Morgan County, Kentucky* (Kentucky Department of Highways 1955).

## 3.4 Previous Archaeological Research

A summary of previous archaeological survey reports, within a two-kilometer buffer of the current project area, was received from the Office of State Archaeology (OSA) on August 21, 2015. At that time, two previous completed and recorded surveys within the two kilometer buffer area (Figure 3-4). The physical survey report files at the OSA were consulted on August 24, 2015.

An archaeological reconnaissance of the proposed Smith-Magoffin 58 mile long power line route in Magoffin, Menifee, Morgan, and Powell Counties was conducted in Magoffin, Menifee, Morgan, and Powell Counties in Kentucky (Schock and Weis-Langford 1982). This report was not on file at the time of research. However, the site forms for 15Mo89 – 92 identify the survey as where each site was first identified. These sites are discussed below.

At the request of the Menifee County Fiscal Court, the University of Kentucky's Program for Archaeological Research (UK-PAR) conducted a Phase I archaeological survey of the 14.825 acre parcel at the Broke Leg Falls Roadside Park in Menifee County, Kentucky (Baril et al. 2004). The investigations occurred on November 17 and December 2, 2003. After consultation with KHC and OSA, the project area was revisited and additional testing performed on May 1, 2004. During the survey, two new sites, sites 15MF714 and 15MF715, and two isolated finds, Isolated Find 1 and Isolated Find 2, were identified. These two sites are discussed below.

## 3.5 Known Archaeological Sites

The site files at the OSA were consulted on August 24, 2015. Within a two kilometer buffer of the current survey area there were six previously recorded sites: 15Mo89, 15Mo90, 15Mo91, 15Mo92, 15Mf714 and 15Mf715.

Site 15Mo89 is a rockshelter with an indeterminate, prehistoric occupation. The shelter measures about 75 m in length, 20 to 25 m deep, and 30 to 40 m high. Within the shelter, a circular design is located on a flat rock that appears to be a petroglyph. No other cultural material was identified and no further work was recommended for the site (Site 15Mo89).

Site 15Mo90 is an indeterminate, prehistoric rock mound. The mound measures about 3 x 1.5 m, and is located in a wooded area with poor visibility. No cultural material was recovered. However, further work was recommended to establish eligibility for the National Register (Site Form for 15MO90).

Site 15Mo91 is a small, dry rockshelter with an indeterminate, prehistoric occupation. The rockshelter faces west and it measures 18 m in length, 3 m deep, and 3 m in height. Surface visibility was low within the rockshelter, and no cultural material was recovered. However, further work was recommended for this shelter to establish eligibility for the NRHP (Site Form for 15Mo91).

Site 15Mo92 is a small, west facing rockshelter with a Fort Ancient or late Woodland, prehistoric occupation. It measures 18 m in length, 3 m deep, and 3 m in height. The surface visibility was good within the shelter and cultural material recovered consisted of one black, triangular projectile point. No further work was recommended due to its location outside the survey project area (Site Form for 15Mo92).

Site 15Mf714 is a rockshelter with a Late Archaic component. Thirty-one prehistoric artifacts were recovered from the site, including non-diagnostic debitage and a single Lamoka Cluster projectile point.

**Figure 3-4. Locations of Previous Archaeological Investigations.**

The material was recovered through surface collecting and shovel probing. The rockshelter measures about 25.6 m in length, 4 m in maximum depth, and 2 m above the shelter floor. The shelter roof is estimated to extend 10 m over the creek. The site was deemed potentially eligible for listing in the National Register of Historic Places (NRHP) under Criterion D, due to the presence of intact archaeological deposits, diagnostic artifacts, and a moderate artifact density. No further archaeological work was recommended at the site unless it became in danger of being disturbed or impacted at any time, and then further work would be recommended (Baril et al. 2004; Site Form for 15Mf714).

Site 15Mf715 is a rockshelter with an ephemeral prehistoric occupation. Four non-diagnostic, prehistoric artifacts were recovered. Historic artifacts dating to the twentieth-century were also recovered. This site was not considered eligible for nomination to the NRHP under Criteria A-D, due to low artifact density, lack of diagnostic artifacts, lack of intact deposits, and low potential for further research at the site. No further archaeological work was recommended (Baril et al. 2004; Site Form for 15Mf715).

# Section 4 -

# Methodology

In this chapter, the methods employed during the course of this study are described. These methods include the fieldwork activities, their application in different portions of the archaeological APE reflecting conditions encountered, and an evaluation of their effectiveness in aiding initial NRHP evaluation of archaeological sites. Laboratory methods are discussed in the following section (Section 5) along with the site assemblage and a discussion of the associated contexts of recovery and interpretation. This section concludes with an overview of the requirement for nomination to the NRHP.

## 4.1 Implemented Field Methods

The field methods implemented for Phase I investigations conform to the Kentucky Heritage Council's specifications for conducting a Phase I survey (Sanders 2006). The field methods included systematic shovel probes and visual inspection. Systematic shovel test probes (STPs) were excavated where possible. All soil excavated from the STPs was screened through ¼ inch mesh screens with the intention that any and all artifacts retained in the screen would be collected and bagged according to provenience. Shovel probes located beside streams were augered to determine whether or not prehistoric or historic surfaces were present beneath alluvial deposits 50 to 160 cm below the present surface. Areas of 15 percent or greater slope were visually inspected for surface remains and potential rock shelters.

A total of 69 STPs were excavated and six of these were augered. The location of all the shovel probes on USGS quadrangle maps are shown in Figure 4-1 though Figure 4-5 and on an aerial photograph in Figure 4-6 though Figure 4-10.

### 4.1.1 Field Conditions

The entire APE was subjected to visual inspection. Shovel probing was conducted everywhere within the APE where conditions allowed.

Approximately 49.2 percent of the APE was too sloped for shovel probing and was subjected solely to visual inspection. No rockshelters or historic surface features were identified in any of the sloped areas.

One area was disturbed. It is located along a paved access road leading to residential structures on private property. This area has also been disturbed by cut/fill activities associated with the creation of a dam and pond.

Based on the initial plans received from KYTC at the onset of the project, property owned by REDACTED was identified as within the APE. During the course of field work REDACTED denied access to her property. After field work was completed, the plans were changed. These changes exclude her property from the APE.

The portions of the APE that were subjected to systematic shovel probing generally traversed hayfields, brushy areas around creeks, woods, and maintained barnyards and residential yards. Ground surface visibility was greater than 50 percent only in the sloped and eroded portion of the APE, which was within a power-line corridor at the time of survey. In this area, systematic surface inspection was possible. The various field conditions encountered during the survey are depicted in Figure 4-11 through Figure 4-20.

**Figure 4-1. Location of STPs on USGS Topographical Map, Page 1.**

**Figure 4-2. Location of STPs on USGS Topographical Map, Page 2.**

**Figure 4-3. Location of STPs on USGS Topographical Map, Page 3.**

**Figure 4-4. Location of STPs on USGS Topographical Map, Page 4.**

**Figure 4-5. Location of STPs on USGS Topographical Map, Page 5.**

**Figure 4-6. Location of STPs on Aerial Photograph, Page 1.**

**Figure 4-7. Location of STPs on Aerial Photograph, Page 2.**

**Figure 4-8. Location of STPs on Aerial Photograph, Page 3.**

**Figure 4-9. Location of STPs on Aerial Photograph, Page 4.**

**Figure 4-10. Location of STPs on Aerial Photograph, Page 5.**

**Figure 4-11. View of General Project Area: Fields and Farm Buildings. Looking Southwest.**

**Figure 4-12. View of General Project Area: Field and Residence. Looking Southwest.**

**Figure 4-13. View of General Project Area: Field and Barn. Looking Northeast.**

**Figure 4-14. View of General Project Area: Slope and Pond. Looking South.**

**Figure 4-15. View of General Project Area: Woods and Slope. Looking Southeast.**

**Figure 4-16. View of General Project Area: Woods, Slope, and Stream. Looking East.**

**Figure 4-17. View of General Project Area: Curve and Bridge on US 460. Looking Northwest.**

**Figure 4-18. View of General Project Area: Slope, Farm Buildings, and Stream. Looking South.**

**Figure 4-19. View of General Project Area: Field and Barn along Stream. Looking North.**

**Figure 4-20. View of General Project Area: Woods and Farm Road over Stream. Looking Northeast.**

### 4.1.2 Evaluation of Field Methods Used

Visual inspection and shovel testing were used to identify and define approximate site limits within the survey area. Augering of shovel probes was employed to identify possible buried cultural contexts within alluvial zones. The methods were successful in identifying site location, delineating site boundaries, obtaining a sample of cultural materials from the site, and ruling out the presence of buried cultural layers.

## 4.2 National Register Evaluation of Archaeological Sites

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to take into account the effects of their undertakings on properties listed or eligible for listing in the National Register and to give the Advisory Council on Historic Preservation a reasonable opportunity to comment. While it does not require the preservation of such properties, it does require that their historic or prehistoric values be considered in weighing the benefits and costs of federal undertakings to determine what is in the public interest. Section 106 is invoked when "any project, activity, or program that can result in changes in the character or use of historic properties" (36 CFR Part 800) whether federal agency jurisdiction is direct or indirect.

Pursuant to the October 1992 Amendments to the National Historic Preservation Act (Section 110 of NHPA 1980, amended 1992) an "undertaking" means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including (A) those carried out by or on behalf of the agency; (B) those carried out with federal financial assistance; (C) those requiring a federal permit, license, or approval; and (D) those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- that are associated with events that have made a significant contribution to the broad patterns of our history; or
- that are associated with the lives of persons significant in our past; or
- that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- that have yielded, or may be likely to yield, information important in prehistory or history.

Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A-the property's specific association must be considered important as well. Often, a comparative framework is necessary to determine if a site is considered an important example of an event or pattern of events.

In order to qualify under Criterion B, the persons associated with the property must be individually significant within a historic context. As with all Criterion B properties, the individual associated with the property must have made some specific important contribution to history.

To be eligible under Criterion C, a property must meet at least one of the following requirements: the property must embody distinctive characteristics of a type, period, or method of construction, represent the work of a master, possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction.

Criterion D requires that a property "has yielded, or may be likely to yield, information important in prehistory or history." Most properties listed under Criterion D are archaeological sites and districts, although extant structures and buildings may be significant for their information potential under this criterion. In order to qualify under Criterion D, a property must meet two basic requirements:

- The property must have, or have had, information that can contribute to our understanding of human history of any time period;
- The information must be considered important.

The use of Criteria A, B, and C for archaeological sites are appropriate in limited circumstances and have never been supported as a universal application of the criteria. However, it is important to consider the applicability of criteria other than D when evaluating archaeological properties. It is important to note that under Criteria A, B, and C the archaeological property must have demonstrated its ability to convey its significance, as opposed to sites eligible under Criterion D, where only the potential to yield information is required.

# Section 5 -

# Materials Recovered

In this section the laboratory procedures and analytic methods are discussed and the materials recovered are presented. The analytic methods involve the use of an artifact classification scheme that creates useful analytic categories for evaluating National Register eligibility. The artifact assemblages are also discussed with the site descriptions and results in Section Six.

## 5.1 Laboratory Methods

Artifacts recovered during field investigations were brought to the CDM Smith archaeology laboratory in Lexington, Kentucky, for washing, cataloging, and initial analysis. Materials were washed and sorted by general material type (e g., historic vs. prehistoric). All prehistoric specimens are classifiable into one class based on stage of reduction, tool form, and portion represented. A series of attributes and metric data were then collected for specific prehistoric artifact classes including size of debitage, cortex presence and absence, thermal alteration, and raw material type. Prehistoric lithic specimens were identified by J. David McBride. Historic artifacts were washed and sorted into major material categories. These were then cataloged according to the system of artifact-function association modified from South (1977). All artifacts were assigned to the functional groups (kitchen, architecture), then to a material class (e.g., ceramic, glass, metal), to a type (e.g., base of bottle, jar lip), and to a subtype (e.g., color, decoration type). Historic specimens were identified by Ann Wilkinson.

In the following discussion, each of the major categories of artifacts is defined. Prehistoric artifact types are discussed first, followed by the standard classifications of historic artifacts developed by South (1977).

### 5.1.1 Prehistoric Artifact Assemblages

#### 5.1.1.1 Prehistoric Lithics

The analyses included tool analysis, raw material analysis, and mass analysis. These different techniques provide complementary data and permit the extrapolation of stronger inferences about the organization of lithic technology at the four sites. One hundred percent of all surface-collected and excavated materials were subjected to these, except where noted below.

All debitage was macroscopically examined for evidence of retouch and/or utilization. Those artifacts displaying retouch and/or utilization were then separated from non-utilized debitage. Additionally, all chipped stone artifacts were analyzed for presence of primary geologic or secondary incipient cone cortex and macroscopic evidence of thermal alteration. A typology of specimens was developed using standard techniques and definitions employed throughout eastern North America (e.g., Callahan 1979; Crabtree 1982; and Odell 1996).

##### *5.1.1.1.1 Lithic Debitage*

One of the most ubiquitous artifact categories on prehistoric sites is lithic debitage, which is considered to include all the material produced from the initial reduction stage to the use/reworking stage. Debitage is produced during all stages of reduction, but the representation of each class as compared to the other classes provides insight into the types of lithic use that occurred at a specific location. All

flakes, blades, chunks/shatter were analyzed according to platform facet and dorsal scar counts, presence of cortex, and macroscopic evidence of thermal alteration and/or utilization.

*Flakes* are pieces of debitage with two faces, a dorsal and a ventral. The dorsal surface can be partly or totally covered by cortex, but normally shows the scars from removals that were made before the flake was removed from the core. The ventral surface contains only the features related to the detachment of the particular flake.

Flake debitage produced in bifacial and unifacial technologies is divided into three major categories including primary flakes, secondary flakes, and tertiary flakes, and several subcategories based on specific morphological attributes. These lithic reduction categories follow classification stages proposed by Collins (1974), Flenniken (1978), Boisvert et al. (1979), Magne and Pokotylo (1981), Magne (1985), Ebright (1987), and Bradbury and Carr (1995) with some modifications. A brief description of each debitage category is provided.

> *Primary flakes* (primary and secondary decortication flakes) are those produced during the earliest stages of lithic reduction and result from the removal of cortex from the raw material. *Primary decortication flakes* are usually large and cortex is present on over 50 percent of the dorsal surface. *Secondary decortication flakes* contain cortex on less than 50 percent of the dorsal surface.
>
> *Secondary flakes* (interior and thinning flakes) result from the reduction and shaping of the initial biface. Secondary flakes characteristically display a well-developed bulb of percussion, one or more flake scars on the dorsal surface, and may exhibit platform preparation. *Interior flakes* generally have large, double faceted platforms perpendicular to the orientation of the flake. *Thinning flakes* may have multi-faceted platforms at an acute or obtuse angle to the flake's orientation and may show signs of crushing or battering in preparation for flake removal from the parent material.
>
> *Tertiary flakes* (late stage percussion and pressure flakes) result from the sharpening and/or reworking of tools or points. These flakes are generally very small with small striking platforms, often multifaceted and steeply angled. Tertiary flakes are usually underrepresented in artifact assemblages recovered with standard ¼ inch hardware mesh screens, as these flakes are frequently smaller than ¼ inch and pass through the screens.

Flakes struck from flake cores for further unifacial modification are generally indistinguishable from those produced in bifacial reduction. However, a formal, specialized unifacial technology is blade manufacture, which produces morphologically distinct artifacts.

> *Blades* are specialized flakes with more or less parallel or sub-parallel lateral edges which, when complete, are at least twice as long as wide (Owen 1982: 2). Blades contain at least one dorsal crest but may contain two or more dorsal crests. Blades are associated with prepared cores and blade technique and are not produced randomly (Crabtree 1982: 16).
>
> Debitage displaying some flake characteristics are classified as *undetermined flakes* if they are too fragmentary to determine flaking stage.
>
> *Chunks/shatter* are pieces of usable raw material with at least one freshly broken surface. Blocky and angular fragments are usually produced in the initial stages of flint knapping as a result of removing unstable areas of material from the core or blank. Chunks/shatter are

distinguished from cores by the absence of negative flake scars and striking platforms. Natural processes may produce a small proportion of chunk/shatter.

#### *5.1.1.1.2 Raw Material Analysis*

The determination of raw material type was accomplished with the aid of written descriptions (DeRegnaucourt and Georgiady 1998, Gatus 1980, 1982). All debitage and tools in the assemblage were macroscopically inspected to determine raw material type and compared with existing descriptions. Examining raw material procurement trends can yield data on settlement patterns, resource procurement strategies, and trade and exchange networks.

#### *5.1.1.1.3 Mass Analysis*

Mass analysis focuses on the variables of size, shape, and presence of cortex on aggregate batches of debitage as a means of distinguishing various forms and characteristics of reduction within a lithic artifact assemblage. Because there are several disadvantages in using reduction stage classification exclusively to analyze flaking debris, data obtained from mass analysis can be used to compare with those gained from reduction stage classification to provide more solid interpretations of the lithic artifact assemblage (Ahler and Christensen 1983, Ahler 1989, Bradbury and Franklin 2000). Two general theoretical observations regarding flintknapping underlie mass analysis and are relevant to the current study:

Flintknapping is fundamentally a reductive technology, and the nature of this technology places predictable and repetitive size constraints on the byproducts (and products) produced. Most flakes produced early in reduction should be larger, and most flakes produced late in reduction should be smaller. Similarly, the frequency of flakes with cortex should be highest in early reduction and lowest in late reduction.

Variation in load application in the flintknapping procedure produces corresponding variations in both size and flake shape. Experimental data shows that percussion flaking, on the whole, is capable of producing flakes much larger in size than any produced by pressure flaking. Size grade distribution data provides a fairly direct measure of load application variation (Ahler 1989: 89-91).

For this project, all non-utilized debitage (flakes, flake fragments) were passed through a series of nested laboratory hardware cloth screens to sort by size. Size grades follow Stahle and Dunn (1982, 1984). The size grades are as follows:

Grade 0 includes specimens smaller than ¼ inch

Grade 1 includes specimens smaller than ½ inch but larger than ¼ inch

Grade 2 includes specimens smaller than 1 inch but larger than ½ inch

Grade 3 includes specimens smaller than 2 inches but larger than 1 inch

Grade 4 includes specimens larger than 2 inches

Flake debris from each provenience in each grade was weighed as an aggregate to the nearest tenth of a gram and then counted. One attribute, thermal alteration, was also recorded for the reduction debris. Thermal alteration is often intentional within the culture in order to change the properties of the chert in order to make the raw material more adept to tool production.

The presence of primary geologic cortex may indicate that the raw material was procured from outcrops, whereas secondary incipient cone cortex on the core surface suggests that raw material was procured from a stream context. Research has shown that reduction analysis insufficiently provides data on the stage during which a flake was removed. However, by comparing frequency of occurrence of cortex on flakes, research indicates that a higher percentage of flakes during the initial stages of lithic reduction will have cortex and a lower percentage will have cortex during the final stages of lithic reduction. In addition, the amount of the flake covered in cortex is also an indicator of the stage during which the flake was removed, again more coverage indicates removal during the initial stages and less coverage indicates later removal. Flakes with cortex were evaluated according to the following criteria:

Grade 1 includes specimens with primary geologic cortex over greater than 50% surface

Grade 2 includes specimens with primary geologic cortex over less than 50% surface

Grade 3 includes specimens with secondary conical cortex over greater than 50% surface

Grade 4 includes specimens with secondary conical cortex over less than 50% surface

All of these methods compose mass analysis. When taken together, they can provide extensive data on the methods of tool production.

#### 5.1.1.2 Materials Recovered

A total of five pieces of lithic debitage were recovered during this Phase I survey (Table 5-1). Two of the flakes are from river cobbles and one piece of shatter has primary cortex and may be St. Louis chert.

**Table 5-1. Prehistoric Artifacts.**

| Type | Size Grade 0 | Size Grade 1 | Size Grade 2 | Size Grade 3 | Total |
|---|---|---|---|---|---|
| Flake | 0 | 1 | 2 | 0 | **3** |
| Shatter | 0 | 0 | 1 | 1 | **2** |
| **Grand Total** | | | | | **5** |

### 5.1.2 Historic Artifact Assemblages

In accordance with South (1977), artifacts are ascribed to functional groups reflecting their association with the dwelling (architecture); food preparation, serving, and preserving (kitchen); personal items; clothing items; furnishing; jobs/activities; arms; transportation; and finally fuel and miscellaneous categories.

A total of 51 historic artifacts were recovered during the Phase I investigation. Table 5-2 shows the various groups or artifact classes recovered.

#### 5.1.2.1 Kitchen Group

This group consists of artifacts used in the preparation, consumption, and/or storage of foods and beverages. For the most part, this group comprises container glass and ceramics. As most of these are manufactured, there is significant variation in decorative style and manufacturing techniques over time. This chronological variation forms the basis for the assignment of individual sites to historic time periods.

**Table 5-2. Historic Artifacts by Group.**

| Functional Group | Total |
|---|---|
| Kitchen | 39 |
| Architectural | 3 |
| Fuel | 5 |
| Transportation | 4 |
| **Grand Total** | **51** |

A total of 39 Kitchen Group related artifacts were recovered (Table 5-3). An example of the assemblage is shown in Figure 5-1.

**Table 5-3. Kitchen Group Artifacts.**

| Type | Total |
|---|---|
| Bottle/Jar | 27 |
| Table Glass | 2 |
| Whiteware | 7 |
| Stoneware | 1 |
| Beer Can | 1 |
| Porcelain | 1 |
| **Grand Total** | **39** |


**Figure 5-1. Kitchen Artifacts. A) Heaven Hill Whiskey Bottle; B) Falls City Beer Can; C) Pepsi Cola Bottle.**

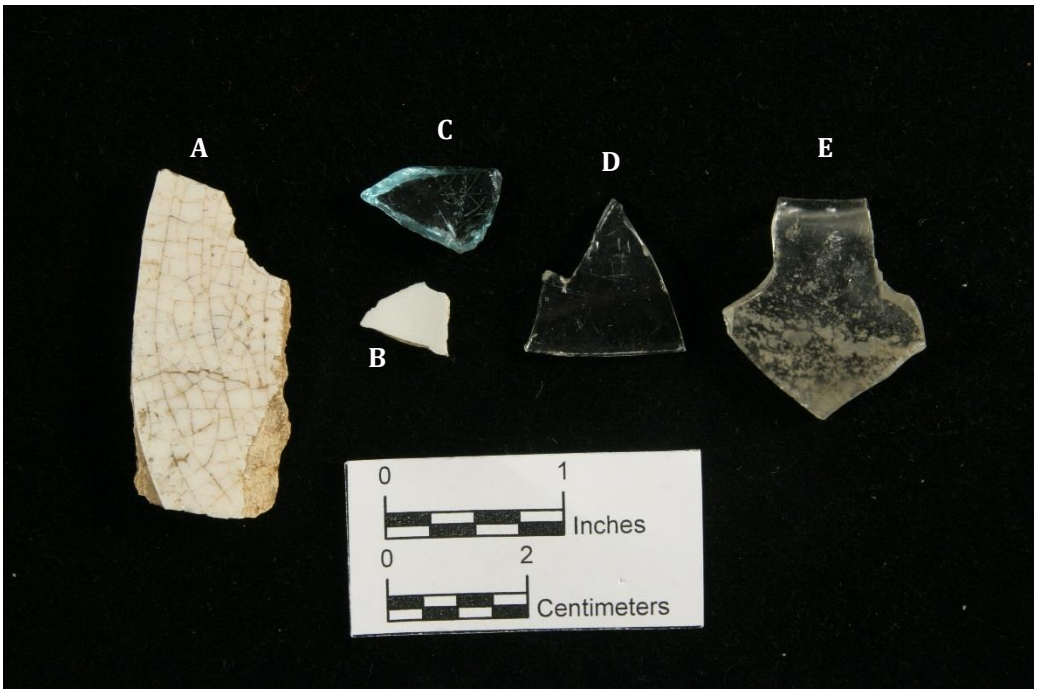


**Figure 5-2. Kitchen Artifacts. A-B) Whiteware; C-E) Bottle/Jar Glass.**

### *5.1.2.1.1 Container Glass*

Container glass, like ceramic sherds, constitutes one of the most important components of a historic assemblage. Like domestic ceramics, these artifacts convey significant chronological, functional, and social information. Analysis offers an important source of data about the period of occupation of the site, the kinds of activities undertaken there, and potentially the social or ethnic status of the occupants. Studies of bottle glass have isolated the significant chronological characteristics of these vessels. Jars and other glass containers are discussed in a separate section.

#### 5.1.2.1.1.1 Bottle Glass

European and American bottles were free blown and shaped to the vessel form, or were blown into simple dip molds. Dip molds are single component iron or wooden molds that give the body of the vessel its shape. These molds can only be square or cylindrical with the basal area being smaller or the same width as the shoulder area. Dip molds continued to be used as late as 1860 (Deiss 1981:12-18). Multipart molds having dip molded bodies (Rickett's molds) were produced into the 1920s (Jones and Sullivan 1985). To finish the neck of these early bottles, a glass-tipped rod (pontil) was attached to the bottle base to provide a means of holding it. Early types of finishing included fire-polished, flanged, folded, and applied string. All of these finishes persisted until the 1840s-1870s, when they were replaced by improved methods (Deiss 1981:18-24; Jones and Sullivan 1985; Jones 1971).

English bottle manufacturers used simple two-piece molds to make proprietary medicine bottles since the mid-1700s, and by 1800, American bottle makers were also using two-piece molds. These molds were hinged at the base or shoulder and may be referred to as open and shut molds. Bottles could be shaped in any form, such as square, round, or multi-sided. Consequently, polygonal bottle forms were very popular in the mid-nineteenth century (Deiss 1981:62). These molds enabled embossed lettering to be put on the fronts, backs, sides, and shoulders of the bottles (Jones and Sullivan 1985) and Gothic-style lettering was the most common style used until circa 1850 (Deiss 1981:48-49). Liquor flasks made

in two-piece molds were introduced circa 1810 and were very popular by 1830. Embellished with a wide variety of molded or pictorial images, flasks remained popular until after the mid-1800s (Deiss 1981:62-65). Removable plates or panels that could be inserted into the mold were patented in 1867 (Jones and Sullivan 1985). These panels or plates were often embossed with the manufacturer name, product name, and city of manufacture, and could be used to personalize large shipments of bottles. This became popularly used on pharmaceutical and bitters bottles.

Two-piece molds were eventually eclipsed by multipart open and shut molds by 1850. These molds are similar to two-piece molds, but have a separate base plate. During the period 1840 to 1860, the two-piece and multi-part open and shut molds were the most popular mold types (Jones and Sullivan 1985). Vessel finishes (lip and necks) could still be hand formed by applying additional glass to the vessel and hand shaping a lip. By the 1820s, lipping shears were being used to shape the inside of the bottle, producing a standardized form known as an applied-tooled finish, which was most common from about 1840 to 1870.

Open and shut molds, dip molds, and multipart dip molds were all popularly used molds during the nineteenth century. Another mold, the turn-mold or turn-paste mold was developed and used in France on wine bottles as early as 1860 (Jones and Sullivan 1985). This mold type leaves no mold seams. In America, this mold type was most frequently used for wine and other beverages from 1870 to the 1920s (Jones and Sullivan 1985).

Even though molds are the most often used method to establish the manufacturing date of glass vessels, changes in the glass formula and innovations in overall glass vessel manufacture can aid in establishing chronology. For example, although the soda-lime formula was in use to make moderately clear glass for many centuries, a modified form of the soda-lime formula was developed in 1864 that revolutionized the glass industry in that it was less brittle and could be molded, cut, and engraved easily (Jones and Sullivan 1985). Because of this new formula, decorated and highly colored glass became cheaper and easier to produce, allowing it to be affordable and subsequently popular after the 1870s (Jones and Sullivan 1985; Innes 1976). By 1880, manganese oxide was used in molten glass as a decolorizer. Glass containers made with manganese oxide turn purple or amethyst when exposed to sunlight. Selenium began replacing manganese oxide as a decolorizer by 1915, and the replacement was complete by 1918 (Deiss 1981:78-83). Selenium glass when exposed to ultraviolet rays becomes a straw yellow color.

Another turning point in the glass industry occurred between 1850 and 1860, with the development of a device called the snap case. This implement held the vessel while the neck and lip were finished. No longer was a pontil rod attached to the base of a glass vessel. Other innovations occurred to revolutionize glass production. By the 1870s, finishes incorporated in the mold had become common. This type, involving the reheating and tooling of the finish to eradicate mold seams on the lip, is referred to as the improved-tooled finish. Improvements in annealing ovens also helped to totally fuse the lip to the neck. Bottle lips were no longer distinctly separate bits of glass. Molds with incorporated finishes predominated until the early twentieth century, when automated glass vessel manufacture replaced less efficient processes (Deiss 1981:54-59).

By circa 1884 to 1892, semi-automatic manufacture of wide and small mouth containers was possible. The only difference between semi-automatic manufacture and automatic manufacture is the way that the melted glass is passed to the machine. In semi-automatic manufacture, the glass is introduced by laborers and in automatic manufacture; the glass is introduced mechanically to the machine. It was not until the perfection of the Owen's machine in 1903 that fully automatic bottle manufacture was possible. This machine leaves a distinct mark on the base of the vessel. By 1917, 50 percent of glass containers

were made using this machine (Miller and Sullivan 1984). Vessels made using the Owen's machine are not found in archaeological contexts after 1970 (Miller and Sullivan 1984). Also, during the late nineteenth and early twentieth centuries, semi-automatic machines continued to be used and modified for automatic manufacture through the development of glass feeding devices like the Peeler Paddle Gob Feeder (Miller and Sullivan 1984). Vessels made by semi-automatic machines are indistinguishable from vessels made on other machines (except the Owen's machine). The precision of automatic manufacturing enabled the standardization of continuous thread finishes, and screw caps replaced other forms of non-pressurized sealing.

Bottle/jar glass recovered from the Phase I investigations consisted of 27 fragments.

#### 5.1.2.1.1.2 Tableware

The manufacture of glass tableware is a somewhat problematic process. In many cases, discerning the manufacture type is not helpful in answering questions concerning chronology. Processes used to make tableware were used over long periods of time. These processes include free blowing, press molding, optic molding, and pattern molding. Most of these methods are still used to lesser degrees today.

Free blowing is still used today to make tableware. Eighteenth and nineteenth century glass was also formed by hand. Usually these pieces are distinctive to specific glass houses and their age can be determined if the manufacturing house can be ascertained. For instance, table glass produced at the Stiegle glass house had a distinctive smoky color and specific stylistic motifs were patented and developed by glass houses for their use.

Although the process of press molding glass had been used to make door knobs and stemware feet, by the late 1820s, press molding hollowware became possible. Pressed glass made in the first few decades of the nineteenth century was often decorated with relief motifs, including classical busts, and a finely stippled or mat background that hid defects in the glass and mold seams. These highly decorated pieces, usually made using leaded glass, reflected light and were aptly referred to as "lacy glass". By the 1850s, improvements in manufacturing eliminated the need to hide defects. By the 1870s, the popularity of pressed glass increased as white, multi-colored, and other new shades of glass became affordable due to improvements in the glass formula (Deiss 1981:71-76; Davis 1949; Innes 1976; McKearin and McKearin 1948). The new glass formula resembled leaded formulas and was used extensively in press-molding after the 1870s. Consequently, press molded, leaded tableware is uncommon on American sites after 1870 (McKearin and McKearin 1948:395).

More elaborate combinations of decoration types and color became popular in press molded table glass after 1870 (Innes 1976). Carnival glass, for example, often given away as prizes at carnivals and fairs, was made by coating pressed glass with metallic paint to simulate more-expensive wares. Carnival glass was produced from the late 1890s to the 1930s (Deiss 1981:86).

Optic molding was used to make tableware during the eighteenth century. Optic molding, never a popular form of manufacture, was eclipsed by press molding early in the nineteenth century. By the late nineteenth century, optic molding had resurgence in popularity. This molding type was used predominantly for tableware, specifically tumblers. It is a distinctive molding style involving a two-stage process. The vessel is formed by blowing glass into a part-size mold. This gives the vessel a rudimentary shape and decoration on the interior of the vessel. The vessel is then placed in another mold that provides the final shape to the vessel. This type of molding is easy to identify as the interior of the vessel will often have a totally different decoration than the exterior of the vessel.

The process of pattern molding has been used for several centuries but was most popular in the late eighteenth and early to mid-nineteenth centuries (Jones and Sullivan 1985). This method involves two stages. Glass is blown into a mold that imparts the rudimentary shape and decoration to the vessel. Usually the decorations are simple ribs, panels, and stars. The partially blown vessel is then removed from the parison and its final shape is free blown. The enlargement of the vessel causes the decorations to become very diffuse.

Although these methods of manufacture alone are not useful in determining chronology, decorative style can be used to temporally place a vessel. Decorative styles changed over time in table glass. For example, after 1870 naturalistic designs featuring animals and flowers became popular, eclipsing the geometric motifs of the earlier part of the nineteenth century (Innes 1976).

Two fragments of table glass were recovered.

#### *5.1.2.1.2 Ceramics*

Domestic ceramics are one of the most important chronologically diagnostic artifact categories from archaeological sites. In addition, these materials offer important clues to functional and social status variation among sites and cultural or ethnic components. For this reason, the ceramics are described in detail in the following chapter. Typically, ceramics are divided into two major groups: refined and unrefined earthenware. Refined earthenware was primarily used as serving vessels, such as dinner and tea services, or toiletry items. Refined wares treated here included delft or Tin-enameled ware, porcelain, creamware, pearlware, whiteware, and ironstone. Unrefined earthenware was used for storage and food preparation, such as mixing bowls, churns, and milk pans.

##### 5.1.2.1.2.1 Whiteware

Whitewares are non-vitreous and semi-vitreous, white-paste earthenwares usually having a clear, colorless glaze. Whitewares were first manufactured in England circa 1800, had become popular by 1820, remained common throughout the 1800s, and are still being manufactured today. The period of greatest popularity of whiteware was 1830 to 1890 (Majewski and O'Brien 1987:119-125; Miller 1980:16-17; Noel-Hume 1969:130-131; Price 1982). Whiteware occurs in virtually every decorative type that was available in the nineteenth century, and decoration type and style can be used as relative temporal indicators.

Three undecorated whiteware sherds were recovered during the Phase I investigations.

##### 5.1.2.1.2.2 Porcelain

Porcelains are vitreous white-paste, usually glazed, wares of a variety of compositions. Porcelain was a very expensive ware until the late nineteenth century, and therefore typically is rare on sites. Moreover, porcelain on nineteenth century sites can include pieces made in North America, Great Britain, continental Europe, China, and Japan. Porcelains are divided into two basic types, hard paste and soft paste, with several varieties of each paste type. The difference between these is body composition and firing temperature. Hard paste porcelains are composed of kaolin and feldspathic clays and are fired at a high temperature. Chinese export porcelain is a hard paste variety that can be readily distinguished from European and Japanese hard pastes. The major period of Chinese export trade to America was circa 1784 - 1820 and declined sharply after 1830 (Palmer 1983:25). Painted underglaze wares were exported to England until 1840 and painted overglaze enamels were exported into the 1820s (Palmer 1983:16). Bone china is a type of soft paste porcelain that has been continuously produced since 1794. This ware is composed of feldspathic clays and calcined cattle bone fired at a lower temperature than

hard paste porcelains. It appears with many decorative preparations, including underglaze blue painted, overglaze polychrome painted, gilding, transfer printing, luster, and decals. Because of the long history of manufacture, porcelain has limited potential as a temporal indicator (Majewski and O'Brien 1987:124-127).

One fragment of a porcelain was recovered.

#### 5.1.2.1.2.3 Stoneware

Stonewares are semi-vitreous wares, usually glazed, which were made in a great variety of thick, utilitarian forms. Stoneware paste ranges in color from red to buff to brown, and can turn grey during firing. Stoneware is primarily categorized by exterior surface treatment, the most common category of which is salt glazed. Stonewares were made in Europe by the seventeenth century, in England by the eighteenth century, and were in abundance in the United States, including Kentucky, by the mid-nineteenth century. Although salt-glazing was the most common form of glazing, natural clay glazes, known as slip-glazes, were used in America by 1800. A clay would have water added to it to create a fluid suspension into which a vessel would be dipped. The most famous of the slip glazes was Albany slip produced from superior clays in the New York area during the last quarter of the nineteenth century. Albany slip ranges in color from light brown to black, and was ubiquitous in the Midwest from 1830 to 1900 (Phillipe 1990:80). But other clays were used to produce slips almost identical to Albany slip by 1800 (Zug 1986). In the Deep South, salt-glazing and cobalt (blue) decoration was uncommon. Salt was often too expensive and scarce for utilitarian wares in rural areas of the South, making brown slip glazed vessels the most common and economical stoneware (Zug 1986). By the 1820s, southern potters were developing a form of alkaline glazing that used readily available ingredients which were inexpensive and abundant (Burrison 1983; Zug 1986). The alkaline glazes used an alkaline substance like wood-ash or lime in combination with a silica-bearing material like sand. When a clay is added to this substance to bond the suspension and contribute color, the result is a translucent, runny glaze which dripped down the ware in a wide variation of brown and green shades of color (Zug 1986). By the late nineteenth century, another glaze came to be used, often in combination with true Albany slip. Bristol glaze or slip is white and was introduced into the United States from Britain by circa 1884 (Greer 1981). Bristol slip was used in combination with Albany slip by 1920 (Lebo 1987). After 1920, Bristol slip generally occurred alone (Lebo 1987:132).

One fragment of stoneware was recovered.

#### *5.1.2.1.3 Other Kitchen*

This category includes all kitchen artifacts not accommodated by the above categories, including utensils, cooking vessels, metal cans, metal can pull-tabs, glass bottle crown caps, metal foil, and other wrapping materials, etc. Metal cans with pull tabs were first manufactured in 1962 (Maxwell 1993).

One beer can was recovered.

### 5.1.2.2 Architecture Group

Artifacts assigned to this group include all items associated with construction and hardware furnishings. Specimens include bricks, mortar, cement, window glass, doorknobs, faucet parts, and various nails. The major categories of this group are described below.

A total of three Architectural Group artifacts were recovered during this survey (Table 5-4). A sample of the artifacts is shown in Figure 5-3.

**Table 5-4. Architectural Artifacts.**

| Type | Total |
|---|---|
| Brick | 1 |
| Nail – Unidentified | 1 |
| Mortar | 1 |
| **Grand Total** | **3** |

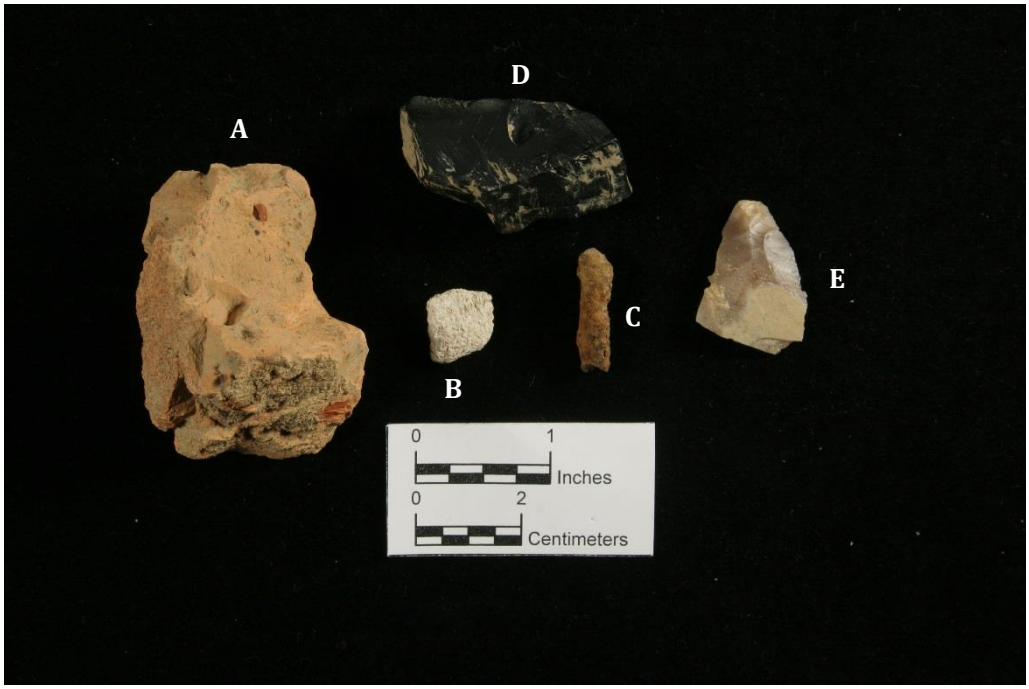


**Figure 5-3. Architecture, Fuel, and Prehistoric Flake. A) Brick; B) Mortar; C) Unidentified Nail; D) Coal; E) Prehistoric Lithic Flake.**

### *5.1.2.2.1 Nails*

Nails form one of the most widespread categories of artifacts recovered from historic sites. As with many other materials, increasing industrialization has had a major impact on the manufacturing of nails and associated hardware. Archaeologists have devoted considerable attention to nails in order to identify their chronologically significant characteristics (Nelson 1968). These are identified by manufacturing process (wrought, cut, wire) and, when possible, by size.

Cut nails are stamped from a sheet of steel, and consequently taper on two sides only. The artifacts show some variation between early and late forms. Early cut nails have a constricted shank just below the head and were first produced in the late 1790s. Later cut nails are not constricted below the head, and were in general use by the late 1830s. Cut nails are still made and used today for special purposes.

Wire nails are made by cutting hardened steel wire and are round in cross-section. Wire nails were first produced in the 1850s but were not commonly used until the 1880s. These are the dominant type manufactured today (Nelson 1968).

All nails were assigned to one of these three major categories; unidentified fragments were assigned to a miscellaneous category. The presence of cut nails at a site suggests a mid-nineteenth century occupation

rather than an early nineteenth century occupation; the presence of significant numbers of wire nails indicates that some portion of a site occupation postdates the 1880s and continues into the twentieth century.

A total of one unidentified nail fragments were recovered during the survey.

#### *5.1.2.2.2 Bricks*

The manufacturing of bricks changed from locally crafted, handmade varieties to machine-produced during the nineteenth century. With this chronological information in mind, bricks are classified according to method of manufacture (Gurke 1987). The nature of most brick fragments often precludes an accurate assessment of age. However, the identifiable brick in the assemblage which appears to have been machine made.

One brick fragment was recovered.

#### *5.1.2.2.3 Other Architectural Material*

This category includes other architectural material. One fragment of mortar was recovered during the survey.

### 5.1.2.3 Fuel Group

This category includes items such as coal, coal cinders, ash, slag, and charcoal. Coal was adopted as a primary fuel in the middle to late nineteenth century, prior to which firewood and charcoal were used both domestically and commercially as an energy sources.

A total of five Fuel Group artifacts were recovered during this Phase I survey, consisting of five coal fragments.

### 5.1.2.4 Transportation Group

This category includes materials related to transportation. Artifacts included in this group are wagon parts, harness parts, horse shoes, and automobile parts.

A total of four Other Group artifacts recovered during the survey, consisting of four fragments of auto window glass (safety glass).

# Section 6

# Results

Two archaeological sites (15Mo170 and 171) and one isolated find (IF 1) were identified within the APE. Their location is shown in Figure 6-1 and Figure 6-2. The following is a description of the findings.

## 6.1 Site 15Mo170

Site 15Mo170 is an unassigned prehistoric lithic scatter with a late nineteenth to late twentieth century historic farmstead component. The site area within the APE measures .18 acre (.07 hectare) with firm western and northern boundaries. The eastern and southern limits continue beyond the APE to an extent unknown.

### 6.1.1 Location

Site 15Mo170 can be found  in Figure 6-5.

### 6.1.2 Site Description

Site 15Mo170 measures 80 meters north-south by 20 m east-west, an area which was defined by eight positive shovel probes. The known site extent is bound to the west and south by APE limits, to the west by the stream and negative shovel probes, and to the north by Knocking Cave Creek, negative shovel probes, and steeply sloping terrain. It is likely that the prehistoric component extends both north and south of the survey boundaries, and that the historic component likely extends to the north. The site area is situated on a level terrace above the Knocking Cave Creek floodplain at 1,000 ft. AMSL, and at the time of survey it was in tall hay grasses, which was cut during the survey. The Knocking Cave Creek empties into Broke Leg Creek, then into Blackwater Creek, and then into the Licking River approximately five miles downstream.

Shovel test probes (STPs) were excavated across this portion of the project area at 20 m intervals. When a site was identified, interval distance was reduced to 10 m between positives and negatives in order to refine the site boundary definitions. Surface inspection was not possible because of the thick grass coverage, which offered less than 10 percent ground surface visibility. The shovel probe at the western extent of the site was augered due to the presence of alluvial deposits and the possibility for buried surfaces. There were no buried cultural deposits identified.

A total of three unassigned prehistoric, lithic debitage artifacts and thirty-five historic artifacts were recovered from eight positive shovel test probes. Modern artifacts, less than fifty years old, were also recovered but discarded.

### 6.1.3 Stratigraphy

Site 15Mo170 consists of eight positive STPs. Two STPs produced prehistoric artifacts and seven STPs produced historic artifacts (Tables 6-1 and 6-2). A stratigraphic profile of STP F-R2 is illustrated in Figure 6-6.

**Figure 6-1. Location of Newly Recorded Archaeological Sites on USGS Topography Map.**

**Figure 6-2. Location of Newly Recorded Archaeological Sites on Aerial Photograph.**

**Figure 6-3. Location of Archaeological Site 15Mo170 on USGS Topography Map.**

**Figure 6-4. Location of Archaeological Site 15Mo170 on 2010 Aerial Photograph.**

**Figure 6-5. Site 15Mo170, Looking North.**

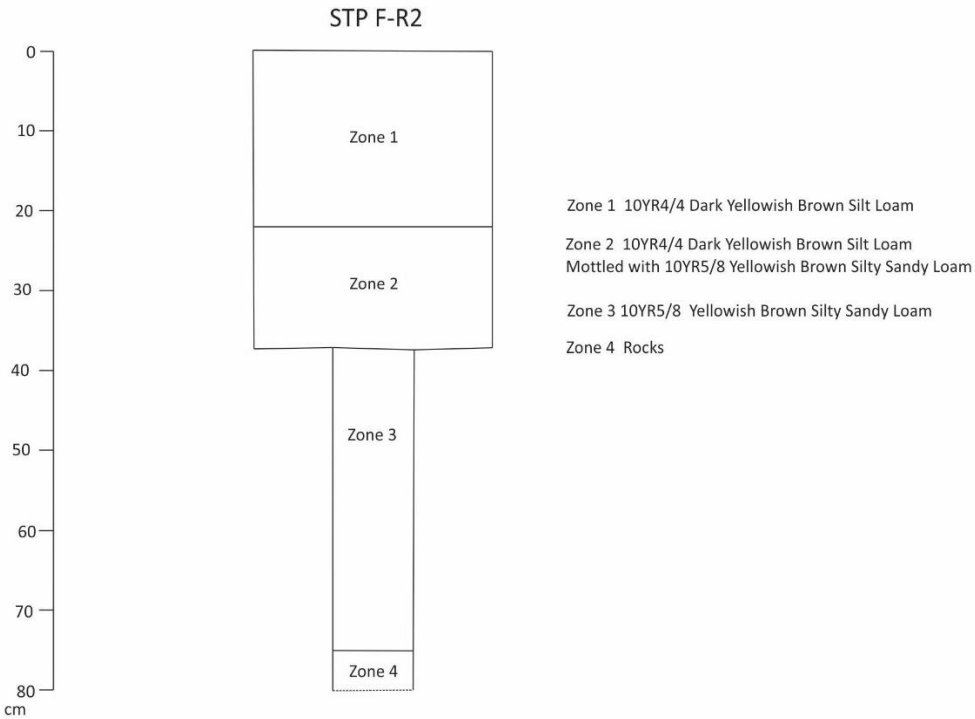


**Figure 6-6. Shovel Test Probe Profile from Site 15Mo170.**

#### 6.1.3.1 STP F-R2

The shovel probe, excavated to a depth of 37 cm below the surface (cmbs) and augered to 80 cmbs, consisted of four zones. Zone 1 was a 10YR 4/4 dark yellowish brown silt loam that extended from surface to 22 cmbs. Zone II extended from 22 and 37 cmbs and consisted of a 10YR 4/4 dark yellowish brown silt loam mottled with 10YR 5/8 yellowish brown silty sand loam. Zone 3 consisted of a 10YR 5/8 yellowish brown silty sandy loam that extended from 37 cmbs to 75 cmbs. Zone 4 consisted of rocks and extended from 75 cmbs to 80 cmbs. The auger was used after 37 cmbs and could not continue past 80 cmbs.

Non-diagnostic flake debitage were recovered from Zones 1 and 2. No artifacts were recovered from Zones 3 or 4.

### 6.1.4 Materials Recovered

In all, four prehistoric artifacts (Table 6-1) and 35 historic artifacts (Table 6-2) were recovered from the site. The prehistoric artifacts were all non-diagnostic lithic debitage pieces. Two pieces of debitage are from river cobbles and one piece of debitage may be from the local St. Louis Limestone member. The historic artifacts were all domestic or architecture related artifacts dating from the early twentieth century to the late twentieth century. A sample of historic artifacts from the site is illustrated in Figure 6-7. Diagnostic artifacts within the historic assemblage were limited, and included machine-made bottle/jar glass fragments. The machine-made bottle glass suggests a date of post 1890, but little else can be determined from the fragments (Miller and Sullivan 1984). All artifacts were associated with a topsoil context. Modern artifacts were also recovered at the site.

**Table 6-1. Site 15Mo170 Prehistoric Artifacts.**

| Type | STP F-R2 | STP F-R1 | Total |
|---|---|---|---|
| Debitage | 2 | 2 | 4 |
| **Total** | **2** | **2** | **4** |

**Table 6-2. Site 15Mo170 Historic Artifacts.**

| Type | STP F-1 | STP F-2 | STP F-5 | STP F-7 | STP F-R1 | STP F-R3 | STP F-R5 | Total |
|---|---|---|---|---|---|---|---|---|
| Bottle Glass | | | | | 1 | | | 1 |
| Bottle/Jar Glass | 4 | 1 | 2 | 1 | 3 | 2 | | 13 |
| Jar | | | | | 1 | | | 1 |
| Table Glass | | | | | | 1 | | 1 |
| Brick | | | | | | 1 | | 1 |
| Mortar | | | | | 1 | | | 1 |
| Nail | | | | | 1 | | | 1 |
| Coal | 1 | | | 1 | 2 | | | 4 |
| Whiteware | 1 | 1 | 1 | | 1 | 2 | 1 | 7 |
| Stoneware | | 1 | | | | | | 2 |
| Auto Window Glass | | | | | 4 | | | 4 |
| Total | 6 | 3 | 3 | 2 | 14 | 6 | 1 | 35 |


**Figure 6-7. Sample of Artifacts from 15Mo170: A) Clear bottle/jar Bottle Glass; B) Whiteware; C) Unidentified nail; D) Amethyst Bottle/jar; E) Safety glass; F-G) Lithics; H) Coal.**

## 6.1.5 Features

No features, surface or subsurface, were located during the Phase I archaeological investigations at Site 15Mo170.

## 6.1.6 Prehistoric Interpretation

The prehistoric component consists of a lithic debitage scatter. Neither the assemblage nor any of the individual artifacts is diagnostic of any cultural tradition or temporal period.

## 6.1.7 Historic Interpretation

The historic component consists of a medium density historic scatter associated with a farmstead/residential occupation, likely dating from the late nineteenth to the late twentieth century. No surface or subsurface features were identified in the shovel probes.

No house is indicated in the general vicinity of Site 15Mo170 on the 1978 and 1951 USGS quadrangle maps. A barn is across Knocking Cave Creek and it is shown on the 1951 and 1978 Ezel USGS quadrangle. A house is across US 460 in the 1951 and 1978 USGS quadrangle maps. The presence of amethyst glass at the site may indicate an earlier structure. The limited size of the assemblage and small size of the artifacts suggests that the deposits could be related to activities related to the barn.

The artifact assemblage included bottle/jar glass, table glass, whiteware, stoneware, nails and brick. The ceramics were undecorated and were manufactured from the nineteenth century through the twentieth century. Most of the bottle/jar glass and table glass were small fragments without evidence for manufacture and could date to the nineteenth or twentieth centuries. The handmade brick is typically dated to the nineteenth century (Gurke 1987) and amethyst glass dates to ca. 1880 (Miller et al. 2000). Auto window glass, or safety glass came into use after WWI (Miller at al. 2000).

### 6.1.8 National Register Eligibility

Site 15Mo170 consists of an unassigned prehistoric lithic scatter with a late nineteenth to late twentieth century historic farmstead residential component. The prehistoric component consists of three (n=3) pieces of flake debitage with no cultural or temporal affiliation. The historic component consists of a medium density scatter, likely dating from the late nineteenth to late twentieth century. The limited range of artifact types in both components of the assemblage, the low number of artifacts for both components, plus the lack of intact subsurface features indicates that the site has limited research potential. Therefore, Site 15Mo170 as understood within the APE is not considered eligible for nomination to the NRHP under Criterion D. The possibility exists for the site to extend north and south beyond the survey boundaries. The National Register eligibility of any unknown extents or components of the site cannot be assessed without further work.

### 6.1.9 Recommendations

No further archaeological work is recommended for the portion of Site 15Mo170 within the project APE.

# 6.2 Site 15Mo171

Site 15Mo171 is a mid- to late twentieth century historic occupation. The site consists of the ruins of a cinderblock structure, which is located south of US 460 between a creek and the slope.

## 6.2.1 Location

Site 15Mo171 can be found on a terrace above an unnamed creek floodplain (1,000 ft. AMSL), on the south side ofthe road. The site measures .29 acres (.12 hectare). Figure 6-10 through Figure 6-13 show the site area.

## 6.2.2 Site Description

The area of Site 15Mo171 measures 20 m northwest-southeast by 30 meters southwest-northeast within the APE. Two positive shovel probes, surface artifact scatter, and the structure ruins identified the site. The project's APE survey boundary stands as the current southern and western site boundary; negative shovel probes and the creek define the northern and eastern boundaries. The cinderblock structure ruins had collapsed on the interior and toward the creek to the northwest and to the northeast and shovel probes could not be excavated. Behind the structure, to the southeast, is slope, where surface artifacts were recovered. There was a cellar or basement entrance at the northeast end of the structure (Figure 6-12). Vegetation, darkness, and structural instability prevented further investigation.

Situated at 1,000 ft. AMSL on a level terrace above the floodplain of an unnamed creek, Site 15Mo171 lies 2 m from the creek. At the time of survey, the area was in scrub vegetation on the floodplain and offered zero ground surface visibility and in woods along the slope behind the structure which offered greater than 50% visibility.

A review of historic maps showed a structure in the location in the 1951 and 1978 USGS quadrangle map (Figure 6-14).

STPs were excavated across the site area at 20 m intervals. An unnamed creek is to the northwest of the site and a slope of more than 15% is to the southeast. There is rubble and disturbed areas around the ruins that prevented shovel probe excavation. A shovel probe was places to the west of the ruins and one STP near the western corner. Two shovel probes were places on the slope near a surface scatter of historic artifacts.

Sixteen historic artifacts were recovered from 15Mo171. Four artifacts were recovered from two positive shovel probes. The remaining 12 artifacts were recovered from the surface behind the ruins. Diagnostic bottles and cans date to between the 1950s and 1970s.

## 6.2.3 Stratigraphy

Site 15Mo171 is composed of two positive STPs and a surface scatter of artifacts. A representative stratigraphic soil profile is illustrated in Figure 6-15.

### 6.2.3.1 STP 11-1

STP 11-1 consisted of four zones (Figure 6-15). Zone 1 consisted of a 10YR 4/3 brown silt loam and extended from surface to eight cmbs. Zone 2 consisted of a 10YR3/2 very dark gray silt loam which extended from eight to 18 cmbs. Zone 2 appeared to be part of driveway or road, or fill. Zone 3 consisted of a culturally sterile10YR 4/4 dark yellowish brown silt loam that extended from 18 cmbs to 38 cmbs.

**Figure 6-8. Location of Archaeological Site 15Mo171 USGS Topography Map.**

**Figure 6-9. Location of Archaeological Site 15Mo171 on 2010 Aerial Photograph.**

**Figure 6-10. View of Site 15Mo171, Looking West.**

**Figure 6-11. View of Site 15Mo171, Looking Northeast.**

**Figure 6-12. View of Site 15Mo171, Cellar Entrance on West Side of Ruins. Looking Northeast.**

**Figure 6-13. View of Site 15Mo171, near creek and west of ruins. Looking West.**

**Figure 6-14. Location of Archaeological Site 15Mo171 on 1951 Ezel USGS Quadrangle Map.**

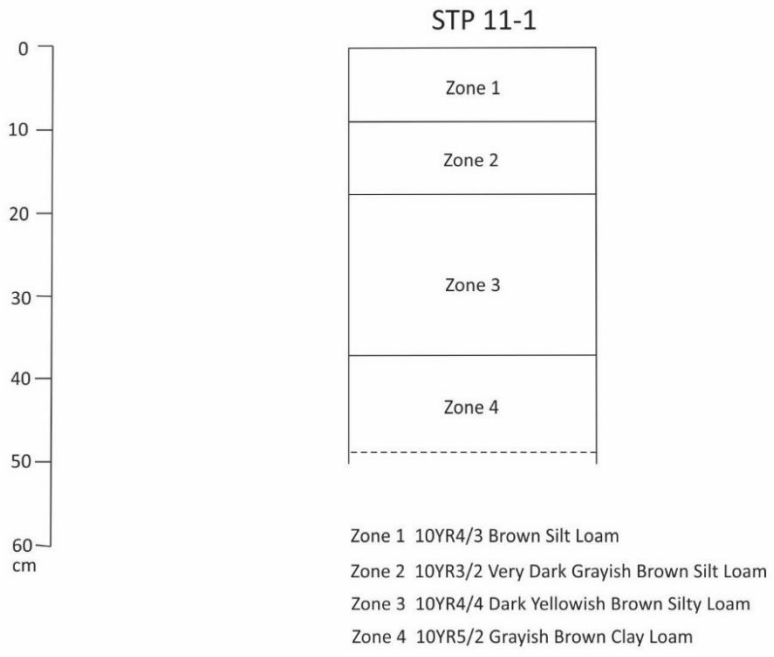


**Figure 6-15. Shovel Test Probe Profile from Site 15Mo171.**

Zone 4 consisted of a culturally sterile10YR 5/2 grayish brown clay loam which extended from 38 to 48 cmbs.

## 6.2.4 Materials Recovered

A total of 16 historic artifacts were recovered during the Phase I excavation of Site 15Mo171 (Table 6-3). They are illustrated in Figure 6-16 and Figure 6-17. The artifacts recovered from the surface and the shovel probes consisted primarily of kitchen group bottle/jar glass. Most of the glass were machine made fragments which dated to the twentieth century (Miller et al. 2000). The more complete bottles and cans recovered from the surface on the slope behind the ruins can be dated more precisely. A Pepsi Cola bottles dated to the 1950s and may have a manufactured date of 1952, based on numbers on the bottle base (Product Manufacturers Blogspot 2012). A whiskey bottle dates to the 1960s or 1970s and a beer can with a pull tab dates to the 1960s.

## 6.2.5 Features

A road or fill zone was located in STP 11-1. It appeared to continue to the structure to the cellar entrance. One piece of coal was recovered from the zone in STP 11-1. No other features were located during the Phase I investigations at Site 15Mo171.

## 6.2.6 Historic Interpretation

Site 15Mo171 is a mid- to late twentieth century historic occupation. The earliest evidence for the construction is the presence on the 1951 USGS quadrangle map. Artifacts recovered from the site generally indicate a post-1950 occupation. The nature and form of the cinderblock structure ruins made it difficult to determine if the structure was residential or commercial. The artifact assemblage was limited, but the presence of kitchen group artifacts and a bathtub suggests that it was a residence. The presence of beer cans and whiskey bottles on the slope behind the structure date to the 1960s and 1970s and be the result of post-occupation activities.

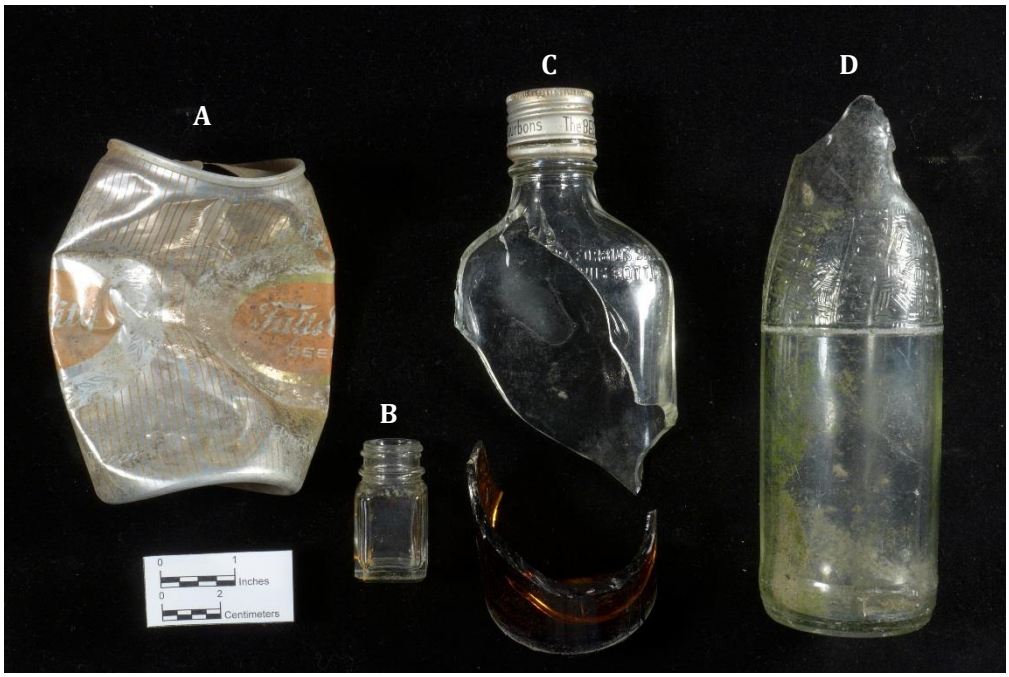


**Figure 6-16. Sample of Artifacts from 15Mo171: A) Falls City Beer Can with Pull Tab; B) Hobby Paint Bottle; C) Heaven Hill Half Pint Whiskey Bottle; D) Amber Bottle Base; E) Pepsi Cola Bottle.**

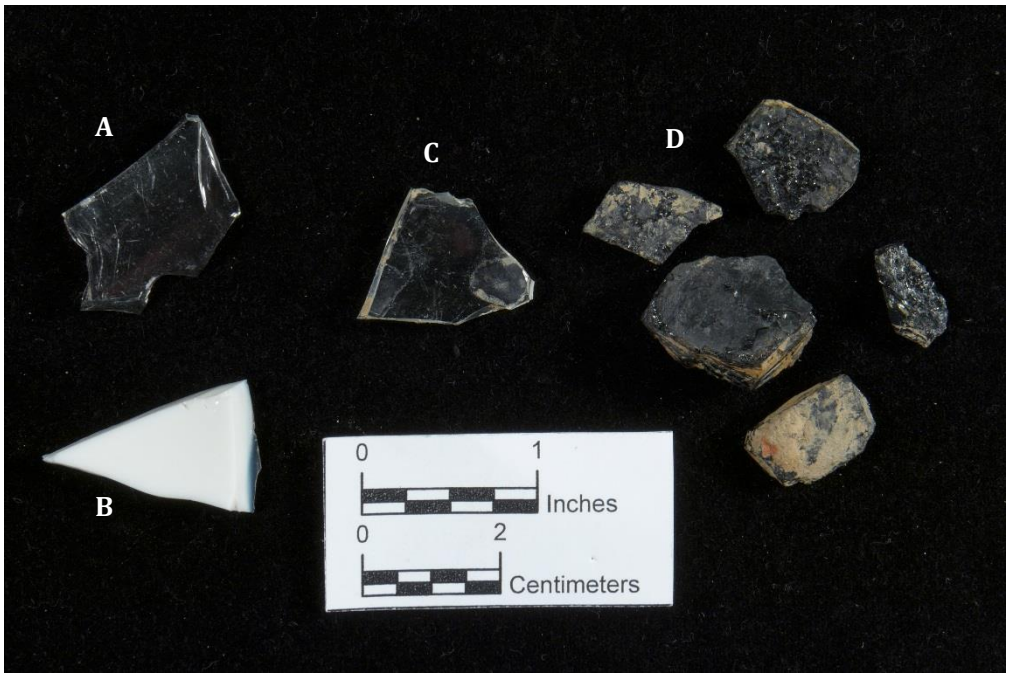


**Figure 6-17. Artifacts from 15Mo171. A) Clear Bottle/Jar Glass; B) Milk Glass; C) Clear Bottle/Jar Glass; D) Coal.**

**Table 6-3. Site 15Mo171 Historic Artifacts.**

| Type | STP 11-1 | STP 11-2 | Surface | Total |
|---|---|---|---|---|
| Bottle/Jar | 1 | 1 | 2 | 4 |
| Bottle | | | 4 | 4 |
| Jar | | | 4 | 4 |
| Table Glass | | 1 | | 1 |
| Porcelain | | | 1 | 1 |
| Can, Beer | | | 1 | 1 |
| Coal | 1 | | | 1 |
| **Total** | **2** | **2** | **12** | **16** |

### 6.2.7 National Register Eligibility

Site 15Mo171 is a mid- to late twentieth century historic occupation with limited research potential. The site has a limited artifact assemblage with diagnostic artifacts dating to after 1950. The shovel probes indicated that the site lacked subsurface features and had a limited artifact assemblage. Therefore, Site 15Mo171 is not considered potentially eligible for nomination to the NRHP under Criterion D. The National Register eligibility of any unknown extents or components of the site cannot be assessed without further work.

### 6.2.8 Recommendations

No further archaeological work is recommended for Site 15Mo171.

# 6.3 Isolated Find 1

Isolated Find 1 (IF 1) is a single piece of non-diagnostic prehistoric lithic debitage recovered from the topsoil of STP 10-8.

## 6.3.1 Location

The location of IF 1 can be found on the USGS quadrangle map (Figure 6-18). Figure 6-20 shows the setting of IF 1 at the time of survey.

## 6.3.2 Isolated Find Description

IF 1 was located in an agricultural field on the south side. Three negative probes, 10 m from the positive, bound the isolate to the east, west, and south. The area to the north of the isolated find is slope. An unnamed creek is located 20 m to the south from the isolated find.

The isolated find is located at 1,000 ft. AMSL on a terrace above an unnamed creek. At the time of survey, the area was in brush and offered zero ground surface visibility.

STPs were excavated across the site area at 20 m intervals. When the isolate was identified, interval distance was reduced to 10 m between positives and negatives in order to refine the site boundary definitions. Surface inspection was not possible because of the thick grass coverage, which offered less than 10 percent ground surface visibility.

The single artifact recovered was a non-diagnostic prehistoric lithic flake. The flake was recovered from a topsoil context, and there were no subsurface features identified in the shovel probe. The flake was from a river cobble.

## 6.3.3 Stratigraphy

IF 1 was recovered from the topsoil of STP 10-8. The stratigraphic soil profile of that STP is illustrated in Figure 6-22.

### 6.3.3.1 STP 10-8

STP 10-8 consisted of two zones. Zone 1 consisted of a 10YR 4/3 brown silt loam and extended from surface to nine cmbs. Zone 2 consisted of a 10YR 5/6 yellowish brown clay loam and extended from nine to 18 cmbs.

A single piece of non-diagnostic prehistoric lithic debitage was produced from Zone I of this STP.

**Figure 6-18. Location of Isolated Find 1 USGS Topography Map.**

**Figure 6-19. Location of Isolated Find 1 on 2010 Aerial Photograph.**

**Figure 6-20. View of IF 1, in brush north of barn. Looking Northeast.**

**Figure 6-21. Conditions near IF 1.**

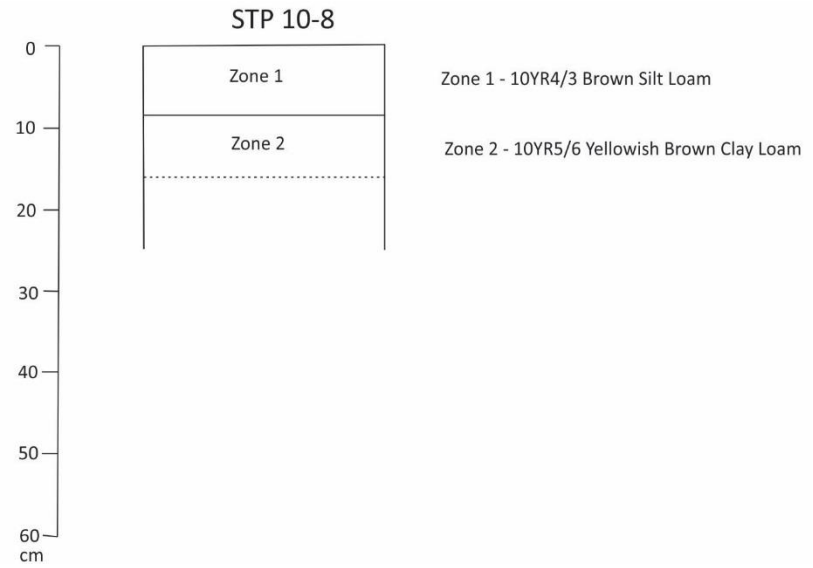


**Figure 6-22. Shovel Test Probe Profile from IF 1.**

## 6.3.4 Materials Recovered

IF 1 consists of a non-diagnostic prehistoric lithic debitage artifact was recovered from the topsoil zone.

## 6.3.5 Features

No features, surface or subsurface, were located during the Phase I archaeological investigations at IF 1.

## 6.3.6 National Register Eligibility

IF 1 is a non-diagnostic prehistoric lithic debitage artifact that was recovered from a topsoil context with no associated subsurface features or other artifacts. The artifact offers very limited research potential and is therefore not considered potentially eligible for nomination to the NRHP under Criterion D. The possibility remains that IF 1 could be the northern extent of a site lying south beyond the present survey boundaries, and NRHP eligibility cannot be fully assessed on the potentially unexplored extent of such a site.

## 6.3.7 Recommendations

No further archaeological work is recommended for IF 1 within the project APE.

# Section 7 -

# Recommendations and Summary

## Recommendations

## 7.1 Site 15Mo170

Site 15Mo170 is an unassigned prehistoric lithic scatter with a late nineteenth to late twentieth century historic farmstead component. The site area within the APE measures 0.18 acre (.07 hectare). The site area is situated on a level terrace above the Knocking Cave Creek floodplain at 1,000 ft. AMSL, and at the time of survey, it was in tall hay grasses, which was cut during the survey. The Knocking Cave Creek empties into Broke Leg Creek, then into Blackwater Creek, and then into the Licking River approximately five miles downstream.

A total of four unassigned prehistoric, lithic debitage artifacts and thirty-five historic artifacts were recovered from eight positive shovel test probes. Modern artifacts, less than fifty years old, were also recovered but discarded.

### 7.1.1 National Register Eligibility

Site 15Mo170 consists of an unassigned prehistoric lithic scatter with a late nineteenth to late twentieth century historic farmstead residential component. The prehistoric component consists of three (n=3) pieces of flake debitage with no cultural or temporal affiliation. The historic component consists of a medium density scatter, likely dating from the late nineteenth to late twentieth century. The limited range of artifact types in both components of the assemblage, the low number of artifacts for both components, plus the lack of intact subsurface features indicates that the site has limited research potential. Therefore, Site 15Mo170 as understood within the APE is not considered eligible for nomination to the NRHP under Criterion D. The possibility exists for the site to extend north and south beyond the survey boundaries. The National Register eligibility of any unknown extents or components of the site cannot be assessed without further work.

### 7.1.2 Recommendations

No further archaeological work is recommended for the portion of Site 15Mo170 within the project APE.

## 7.2 Site 15Mo171

Site 15Mo171 is a mid- to late twentieth century historic occupation. The site consists of the ruins of a cinderblock structure, which is located south between a creek and the slope. Situated at 1,000 ft. AMSL on a level terrace above the floodplain of an unnamed creek, Site 15Mo171 lies 2 m from the creek. The site measured .29 acres (.12 hectare). At the time of survey, the area was in scrub vegetation on the floodplain and offered zero ground surface visibility and in woods along the slope behind the structure which offered greater than 50% visibility. Artifacts recovered from the site generally indicate a post-1950 occupation. The nature and form of the cinderblock structure ruins made it difficult to determine if the structure was residential or commercial. The artifact assemblage was limited, but the presence of kitchen group artifacts and a bathtub suggests that it was a residence. The presence of beer cans and whiskey bottles on the slope behind the structure date to the 1960s and 1970s and may be the result of post-occupation activities.

### 7.2.1 National Register Eligibility

Site 15Mo171 is a mid- to late twentieth century historic occupation with limited research potential. The site has a limited artifact assemblage with diagnostic artifacts dating to after 1950. The shovel probes indicated that the site lacked subsurface features and had a limited artifact assemblage. Therefore, Site 15Mo171 is not considered potentially eligible for nomination to the NRHP under Criterion D. The National Register eligibility of any unknown extents or components of the site cannot be assessed without further work.

### 7.2.2 Recommendations

No further archaeological work is recommended for the portion of Site 15Mo171 within the project APE.

## 7.3 Isolated Find 1

Isolated Find 1 (IF 1) is a single piece of non-diagnostic prehistoric lithic debitage recovered from the topsoil of STP 10-8. IF 1 was located in an agricultural field on the south side of US 460. Three negative probes, 10 m from the positive, bound the isolate to the east, west, and south. The area to the north of the isolated find is slope leading to US 460. An unnamed creek is located 20 m to the south from the isolated find. The isolated find is located at 1,000 ft. AMSL on a terrace above an unnamed creek. At the time of survey, the area was in brush and offered zero ground surface visibility.

### 7.3.1 National Register Eligibility

IF 1 is a non-diagnostic, prehistoric lithic debitage artifact that was recovered from a topsoil context with no associated subsurface features or other artifacts. The artifact offers very limited research potential and therefore, is not considered potentially eligible for nomination to the NRHP under Criterion D. The possibility remains that IF 1 could be the northern extent of a site lying south beyond the present survey boundaries, and NRHP eligibility cannot be fully assessed on the potentially unexplored extent of such a site.

### 7.3.2 Recommendations

No further archaeological work is recommended for IF 1 within the project APE.

## 7.4 Summary

At the request of the KYTC, archaeologists from CDMS conducted a Phase I archaeological survey for the proposed reconstruction areas in Morgan County, Kentucky for Army Corps of Engineers (USACE) jurisdictional permit. The APE consisted of 23.6 acres (9.6 ha). The survey was conducted by a CDM Smith archaeology crew on July 29 through July 31, 2015. The archaeological survey involved systematic shovel test excavation, discretionary bucket augering, and visual inspection over the entire APE.

As a result of this survey, two previously unrecorded archaeological sites (15Mo170 and 15Mo171) and one isolated find (IF 1) were recorded. None of the sites as surveyed within the project boundaries and APE were deemed potentially eligible for recommendation to the NRHP under Criterion D.

# Section 8 -

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# Appendix A -

# Artifact Inventory

**Table A-1. Prehistoric Artifact Catalog**

| Cat No. | Site | Field Site | Unit | Depth | Group | Class | Type | Subtype 1 | Subtype 2 | Deb SG | Raw Material | Cortex | HT | Length | Width | Thickness | Weight | Quantity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 15MO170 | CDMS 1 | STP F-2 R 20 W | 0-37 cmbs | Lithic | Chipped | Debitage | Flake | | 2 | purplish brown opaque | 4 | N | | | | 0.9 | 1 |
| 8 | 15MO170 | CDMS 1 | STP F-2 R 20 W | 0-37 cmbs | Lithic | Chipped | Debitage | Flake | | 1 | white, semi-transparent | 0 | N | | | | 0.1 | 1 |
| | IF 1 | IF 1 | STP 10-8 | 0-9 cmbs | Lithic | Chipped | Debitage | Flake | | 2 | purplish brown opaque | 4 | N | | | | 2.3 | 1 |
| 7 | 15MO170 | CDMS 1 | STP F-R1 | 0-38 cmbs | Lithic | Chipped | Debitage | Shatter | | 3 | striated white and purplish brown opaque | 2 | N | | | | 24.9 | 1 |
| 7 | 15MO170 | CDMS 1 | STP F-R1 | 0-38 cmbs | Lithic | Chipped | Debitage | Shatter | | 2 | purplish brown opaque | 0 | N | | | | 2.5 | 1 |

**Table A-2. Historic Artifact Catalog**

| Site # | Field Site # | Catalog # | STP# | Level | Functional Group | Material Class | Type | Sub Type 1 | Subtype 2 | Subtype 3 | # | Weight (gm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15MO170 | CDMS 1 | 1 | STP F-1 | 0-28 | Kitchen | Glass | Bottle/Jar | Unidentified Fragment | Machine Made | Aqua | 1 | |
| 15MO170 | CDMS 1 | 1 | STP F-1 | 0-28 | Kitchen | Glass | Bottle/Jar | Unidentified Fragment | Machine Made | Blue | 1 | |
| 15MO170 | CDMS 1 | 1 | STP F-1 | 0-28 | Kitchen | Glass | Bottle/Jar | Unidentified Fragment | Machine Made | Clear | 2 | |
| 15MO170 | CDMS 1 | 1 | STP F-1 | 0-28 | Kitchen | Ceramic | Whiteware | body | flatware | undecorated | 1 | |
| 15MO170 | CDMS 1 | 1 | STP F-1 | 0-28 | Fuel | Biological | Coal | | | | 1 | 3 |
| 15MO170 | CDMS 1 | 2 | STP F-2 | 0-17 | Kitchen | Glass | Bottle/Jar | Unidentified Fragment | unidentified manufacture | Clear | 1 | |
| 15MO170 | CDMS 1 | 2 | STP F-2 | 0-17 | Kitchen | Ceramic | Stoneware | rim | Hollowware | Salt and Lead int+ext glaze | 1 | |
| 15MO170 | CDMS 1 | 2 | STP F-2 | 0-17 | Kitchen | Ceramic | Whiteware | rim | Unidentified Vessel | undecorated | 1 | |
| 15MO170 | CDMS 1 | 3 | STP F-R3 | | Architectural | Ceramic | Brick | Fragment | handmade | | 1 | 46.5 |
| 15MO170 | CDMS 1 | 3 | STP F-R3 | | Kitchen | Glass | Bottle/Jar | Unidentified Fragment | unidentified manufacture | Clear | 2 | |
| 15MO170 | CDMS 1 | 3 | STP F-R3 | | Kitchen | Glass | table glass | Unidentified Fragment | unidentified manufacture | Clear | 1 | |
| 15MO170 | CDMS 1 | 3 | STP F-R3 | | Kitchen | Ceramic | Whiteware | body | flatware | undecorated | 2 | |
| 15MO170 | CDMS 1 | 4 | STP F-5 | 0-34 | Kitchen | Glass | Bottle/Jar | body | Machine Made | Amethyst solarized | 1 | |
| 15MO170 | CDMS 1 | 4 | STP F-5 | 0-34 | Kitchen | Glass | Bottle/Jar | body | unidentified manufacture | Clear | 1 | |
| 15MO170 | CDMS 1 | 4 | STP F-5 | 0-34 | Kitchen | Ceramic | Whiteware | body | flatware | undecorated | 1 | |
| 15MO170 | CDMS 1 | 5 | STP R10Wof F6 and 10E of F7 | | Kitchen | Ceramic | Whiteware | body | Hollowware | Annular Mocha | 1 | |
| 15MO170 | CDMS 1 | 6 | STP F-7 | | Kitchen | Glass | Bottle/Jar | Body | Machine Made | Amber | 1 | |
| 15MO170 | CDMS 1 | 6 | STP F-7 | | Fuel | Biological | Coal | | | | 1 | 0.1 |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Architectural | Metal | Nail | Unidentified | Fragment | medial | 1 | |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Architectural | Stone/Material | Mortar | Fragment | | | 1 | |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Kitchen | Glass | Bottle/Jar | body | unidentified manufacture | Clear | 2 | |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Kitchen | Glass | Bottle/Jar | body | Machine Made | Amethyst solarized | 1 | |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Kitchen | Glass | Bottle/Jar | body | unidentified manufacture | Clear | 1 | |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Kitchen | Glass | Bottle/Jar | body | Machine Made | Blue | 1 | |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Kitchen | Ceramic | Whiteware | body | Hollowware | undecorated | 1 | |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Transportation | Glass | Auto Window Glass | | | Clear | 4 | |
| 15MO170 | CDMS 1 | 7 | STP F-R1 | 0-34 | Fuel | Biological | Coal | | | | 2 | |
| 15MO171 | CDMS 2 | 1 | STP 11-1 | | Kitchen | Glass | Bottle/Jar | Body | Machine Made | Clear | 1 | |
| 15MO171 | CDMS 2 | 1 | STP 11-1 | | Fuel | Biological | Coal | | | | 1 | 5.6 |
| 15MO171 | CDMS 2 | 2 | STP 11-2 | | Kitchen | Glass | Bottle/Jar | Body | Machine Made | Clear | 1 | |
| 15MO171 | CDMS 2 | 2 | STP 11-2 | | Kitchen | Glass | Table Glass | body | Machine Made | opaque white/milk | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | base | Machine Made | amber | 1 | |

| Site # | Field Site # | Catalog # | STP# | Level | Functional Group | Material Class | Type | Sub Type 1 | Subtype 2 | Subtype 3 | # | Weight (gm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | Complete | Machine Made | Clear | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | body | Machine Made | Blue | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | Base | Machine Made | Clear | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Metal | Can, Beer | Complete | Pull Tab | Printed-on Label | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | Rim | Machine Made | Clear | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | Complete | 2 piece mold | Clear | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | Complete | Machine Made | Clear | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | Base | unidentified manufacture | Clear | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | Rim | 2 piece mold | Aqua | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Glass | Bottle/Jar | body | unidentified manufacture | Clear | 1 | |
| 15MO171 | CDMS 2 | 3 | Transect 11 | General | Kitchen | Ceramic | Porcelain | body | unidentified vessel | undecorated | 1 | |