Contract Publication Series 16-041

AN ARCHAEOLOGICAL SURVEY FOR THE PROPOSED CONSTRUCTION OF A NEW I-65 INTERCHANGE AT MILE POINT 114.4 IN BULLITT COUNTY, KENTUCKY (ITEM NO. 5-527.00)

by
Alexandra D. Bybee, RPA

Prepared for

Parsons Transportation Group, Inc.

Prepared by

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cultural resource analysts, inc

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by
Alexandra D. Bybee, RPA
With contributions by Heather D. Barras and Tanya A. Faberson, Ph.D., RPA

Prepared for

Daniel Prevost, AICP CTP
Project Manager
Parsons Transportation Group, Inc.
2443 Crowne Point Drive
Cincinnati, Ohio 45241
Phone: (513) 552-7013

Prepared by

Cultural Resource Analysts, Inc.
151 Walton Avenue
Lexington, Kentucky 40508
Phone: (859) 252-4737
Fax: (859) 254-3747
Email: cmniquette@crai-ky.com
CRA Project No.: K16P004

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Alexandra D. Bybee, RPA
Principal Investigator

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Lead Agency: Federal Highway Administration
Kentucky Transportation Cabinet Item No.: 5-527.00
OSA Project Registration No.: FY16_8730

ABSTRACT

Between May 3 and 5, and on June 15, 2016, Cultural Resource Analysts, Inc., personnel conducted an archaeological survey of the proposed construction of a new I-65 interchange at mile point 114.4 in Bullitt County, Kentucky (Item No. 5-527.00). The survey was conducted at the request of Daniel Prevost of Parsons Transportation Group, Inc., on behalf of the Kentucky Transportation Cabinet. The project area totaled 55.3 ha (136.7 acres), the majority of which was investigated through pedestrian survey supplemented with screened shovel testing. Access to one property was denied by the landowner and the property was not surveyed. The unsurveyed area totaled 1.5 ha (3.8 acres).

Prior to the survey, a records review was conducted at the Office of State Archaeology. The review indicated that 17 previous professional archaeological surveys had been conducted within a 2 km (1.2 mi) radius of the project area, and that 32 archaeological sites had been recorded in this area. None of the previous surveys or sites were within the current project area.

The current survey resulted in the identification of one historic archaeological site (15Bu820). Site 15Bu820 was a historic schoolhouse for African-American children that was built circa 1916, and which was used as a schoolhouse until circa 1956, with reported subsequent use as a residence. The school building was moved from Site 15Bu820 and reconstructed in Shepherdsville, Kentucky, circa 2014. The site location contained push piles of sediment and structural debris, and there was no evidence for the presence of intact subsurface features, midden, cultural deposits, or structural remains within the project boundaries. The portion of Site 15Bu820 that was within the project area lacked archaeological integrity and is recommended as not eligible for the National Register of Historic Places.

The property that was not surveyed during the current investigation must be subjected to an archaeological survey prior to construction in that area. In regard to the remainder of the project area, no archaeological sites listed in or eligible for the National Register of Historic Places will be affected by the proposed construction activities. Therefore, archaeological clearance is recommended for the portions of the project area that were subjected to archaeological survey.

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I. INTRODUCTION

Between May 3 and 5, and on June 15, 2016, Cultural Resource Analysts, Inc. (CRA), personnel conducted an archaeological survey for the proposed construction of a new I-65 interchange at mile point 114.4 in Bullitt County, Kentucky (Item No. 5-527.00) (Figure 1). The survey was conducted at the request of Daniel Prevost of Parsons Transportation Group, Inc., on behalf of the Kentucky Transportation Cabinet (KYTC). The fieldwork was conducted by Alexandra Bybee, Brian DelCastello, Russell Quick, Karen Taylor, Justin Williams, and Marshall Wilson, and required approximately 85 work hours to complete. Office of State Archaeology (OSA) Geographic Information Systems (GIS) data requested by CRA on January 11, 2016, was returned on January 12, 2016. The results were researched by Heather D. Barras of CRA at the OSA on January 12, 2016. The OSA project registration number is FY16_8730.

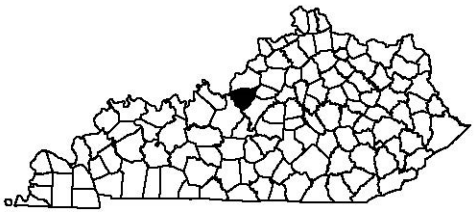

Figure 1. Map of Kentucky showing the location of Bullitt County.

Project Purpose and Need

The general purpose of the project is to improve access and/or mobility between I-65 and the rapidly growing commercial development in the area and provide congestion relief to the existing I-65/KY 480 interchange. Future commercial development plans near the I-65/KY 480 interchange such as the expansion of the Cedar Grove Business Park are expected to further contribute to increased traffic congestion at the interchange.

Project Purpose and Need

Archaeological surveys were conducted for two I-65 new interchange alternatives located near mile point 114.4: Alternative A/Option 1 and Alternative GE/Option 4A (Figures 2, 3a, 3b, 3c, and 3d). Alternative A/Option 1 consists of a standard diamond interchange with an east-west, three-lane roadway with one travel lane in each direction and a center turn lane that connects with KY 61 to the west and Ohm Drive to the east in the Cedar Grove Business Park. Alternative GE/Option 4A is similar to Alternative A/Option 1 east of I-65. West of I-65, however, Alternative GE/Option 4A connects with KY 61 approximately .72 km (.45 mi) south of Alternative A/Option 1. The proposed alternatives covered primarily forested land to the east and west of I-65, and the landforms included ridges, sideslopes, and terraces. The project area for both alternatives totaled 55.3 ha (136.7 acres), of which 53.8 ha (132.9 acres) were surveyed; access to one parcel owned by Ms. Kathryn McCubbins was denied by the landowner and was not surveyed (see Figure 3).

Purpose of Study

This study was conducted to comply with Section 106 of the National Historic Preservation Act. This transportation project is federally funded, and is, therefore, considered an undertaking subject to Section 106 review.

The purpose of this assessment was to locate, describe, evaluate, and make appropriate recommendations for the future treatment of any historic properties or sites that may be affected by the project. For the purposes of this assessment, a site was defined as “any location where human behavior has resulted in the deposition of artifacts, or other evidence of purposive behavior at least 50 years of age” (Sanders 2006:2). Cultural deposits less than 50 years of age were not considered sites in accordance with “Archeology and Historic Preservation: Secretary of the Interior’s Standards and Guidelines” (National Park Service 1983).

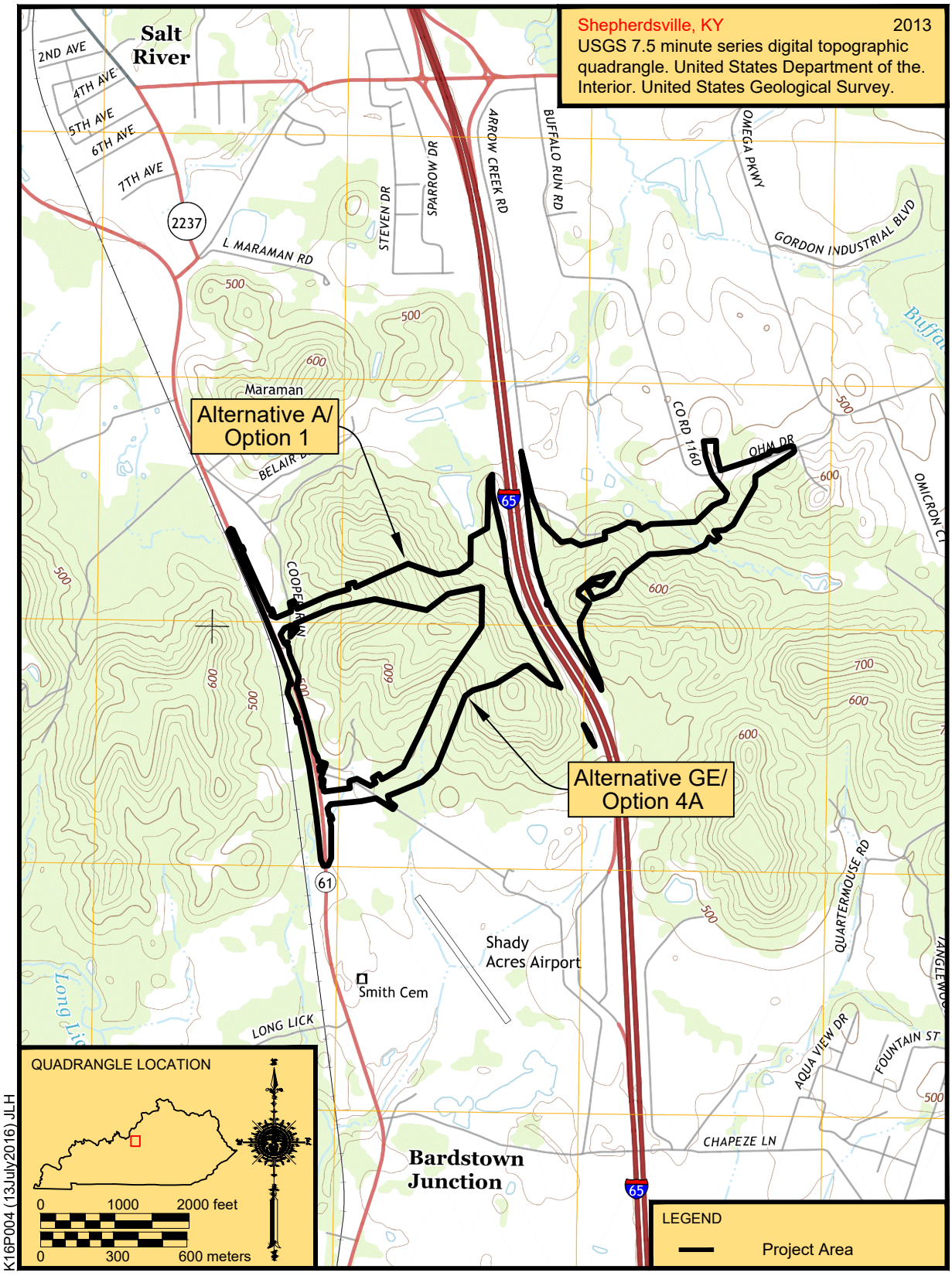

Figure 2. Location of project area on topographic quadrangle.

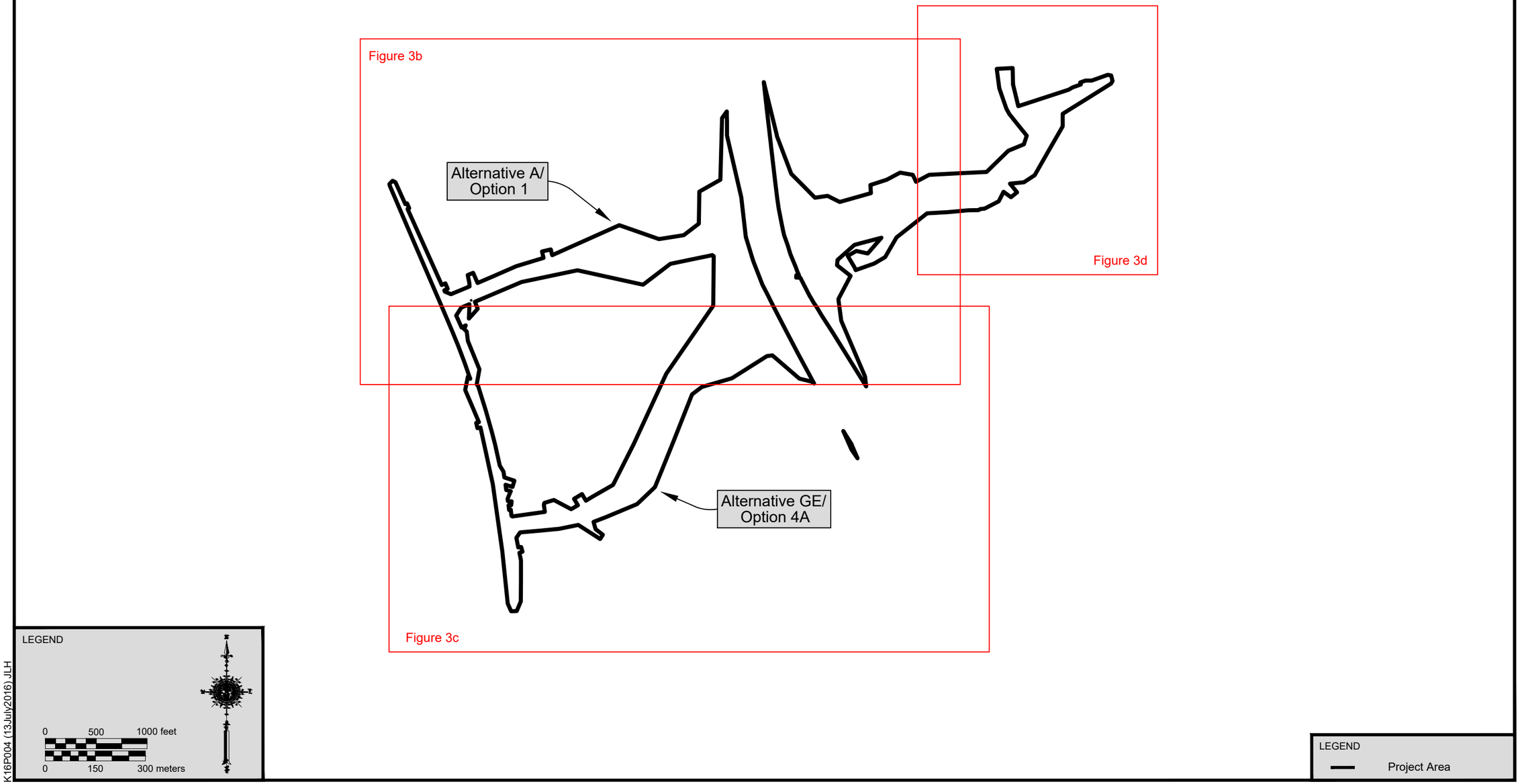

Figure 3a. Project area plan map (Key).

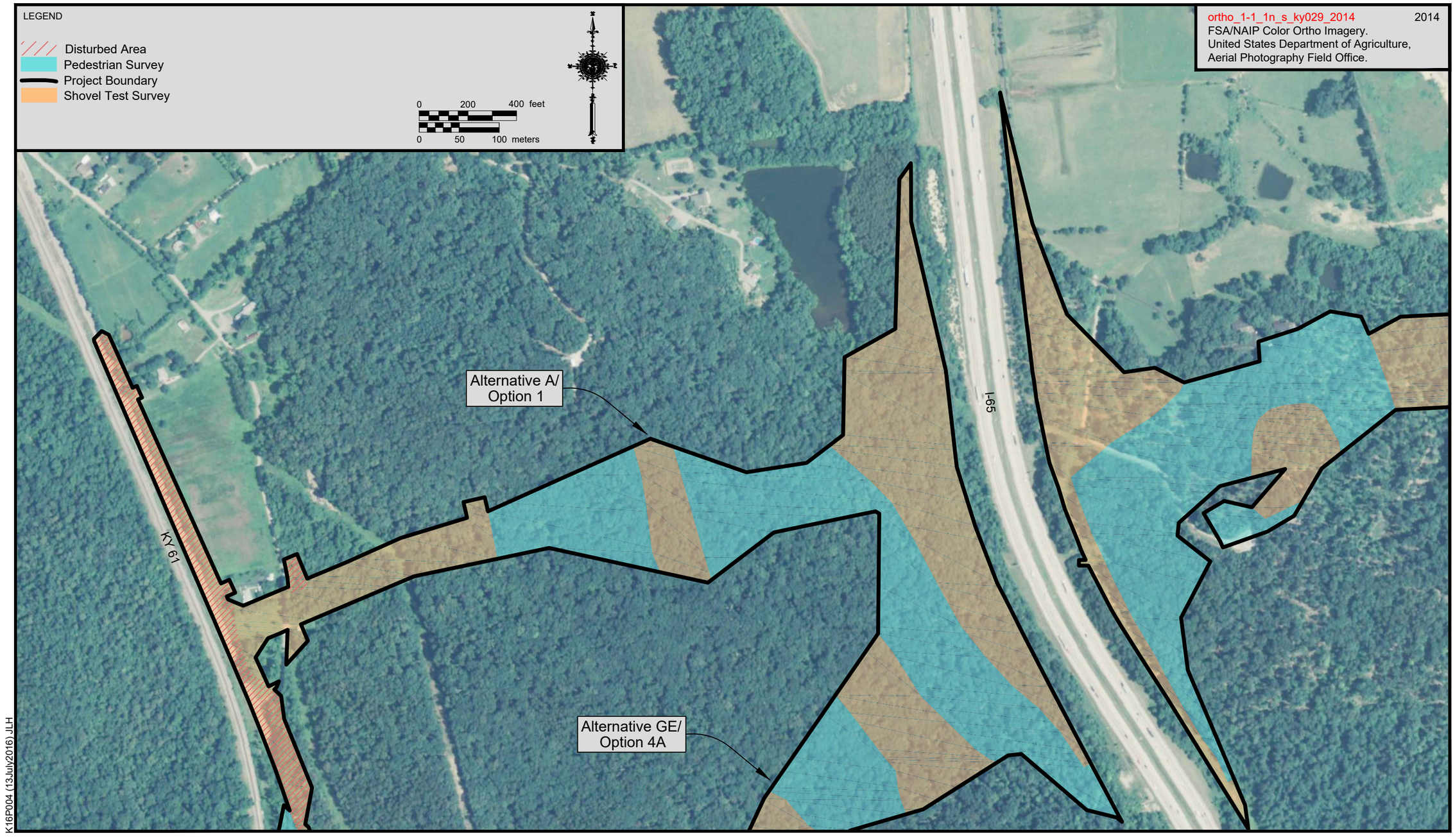

Figure 3b. Project area plan map.

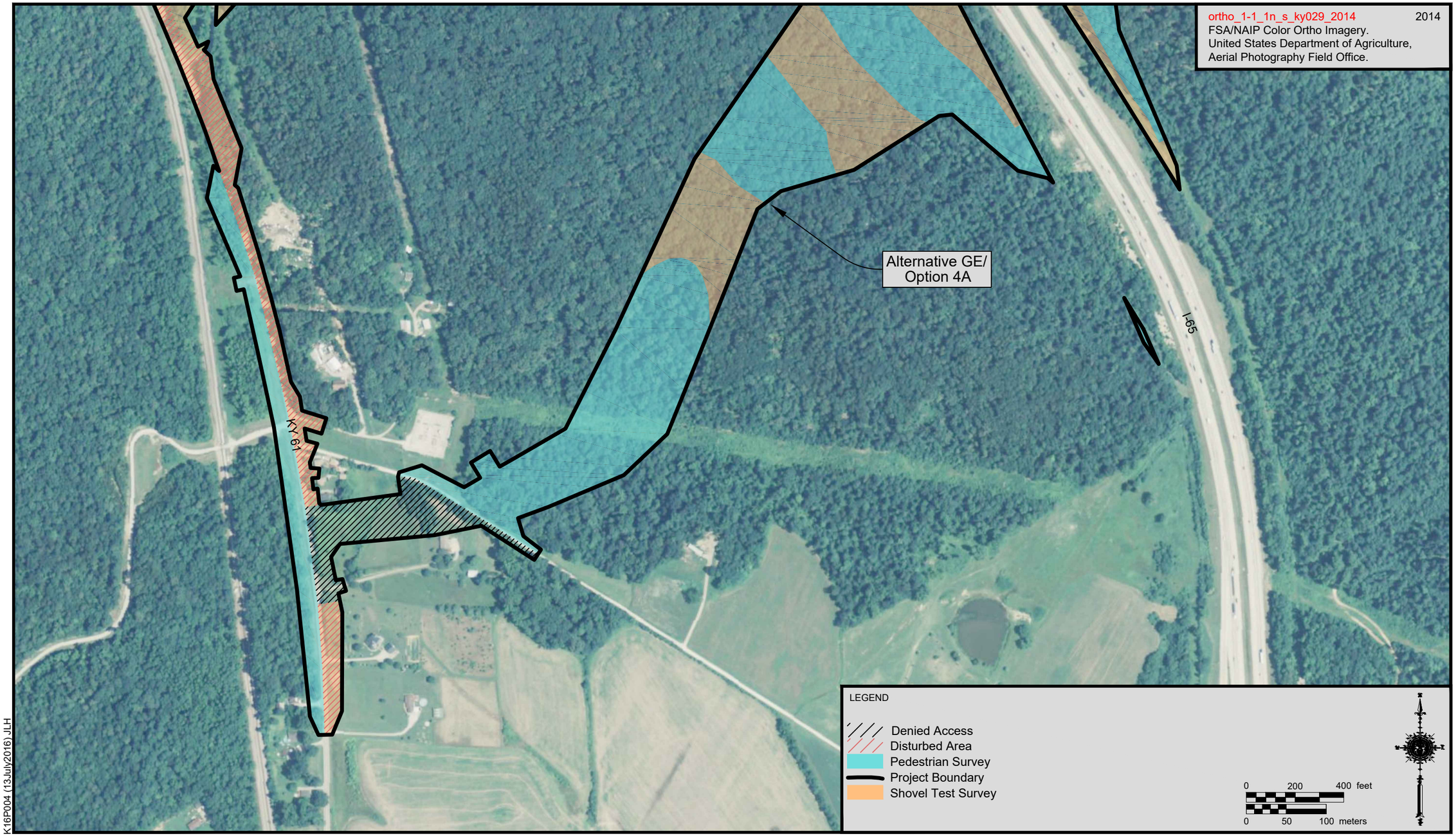

Figure 3c. Project area plan map.

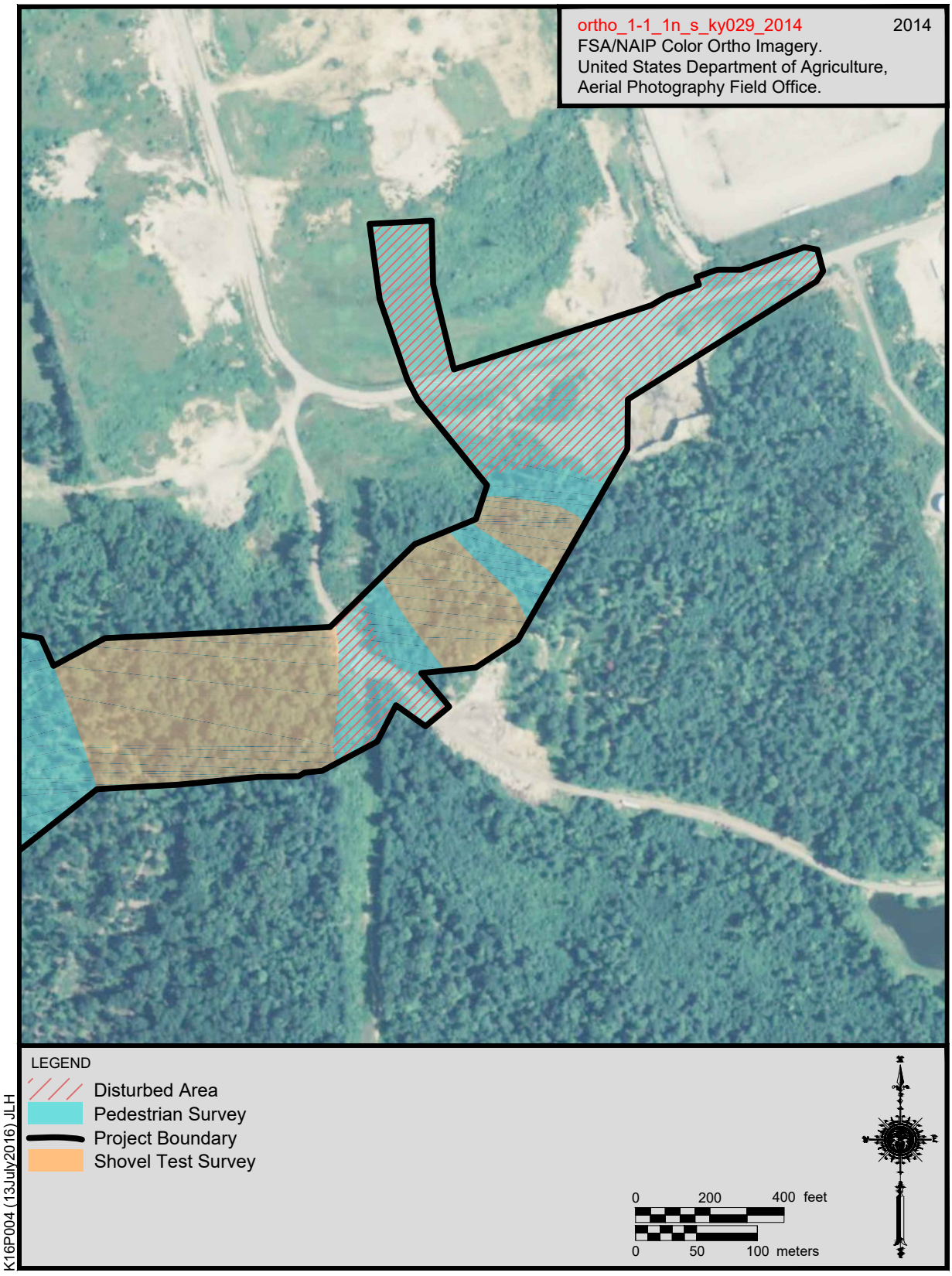

Figure 3d. Project area plan map.

A description of the project area, the field methods used, and the results of this investigation follow. The investigation is intended to conform to the *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Sanders 2006).

Summary of Findings

Prior to the survey, a records review was conducted at the OSA. The review indicated that 17 previous professional archaeological surveys had been conducted within a 2 km (1.2 mi) radius of the project area, and that 32 archaeological sites had been recorded in this area. None of the previous surveys or previously recorded archaeological sites were within the current project area.

The current survey resulted in the identification of one historic archaeological site (15Bu820). Site 15Bu820 was a historic schoolhouse for African-American children that was built circa 1916, and which was used as a schoolhouse until circa 1956, with reported subsequent use as a residence. The school building was moved from Site 15Bu820 and reconstructed in Shepherdsville, Kentucky, circa 2014. The site location contained push piles of sediment and structural debris, and there was no evidence for the presence of intact subsurface features, midden, cultural deposits, or structural remains within the project boundaries. The portion of Site 15Bu820 within the project boundaries lacked archaeological integrity and is recommended as not eligible for the National Register of Historic Places (NRHP).

The property that was not surveyed during the current investigation must be subjected to an archaeological survey prior to construction in that area. In regard to the remainder of the project area, no archaeological sites listed in or eligible for the NRHP will be affected by the proposed construction activities. Therefore, archaeological clearance is recommended for the portions of the project area that were subjected to archaeological survey.

II. ENVIRONMENTAL SETTING

This section of the report provides a description of the modern and prehistoric environment and considers those aspects of the environment that may have influenced the settlement choices of past peoples. Attributes of the physical environment also often guide the methods used to discover archaeological sites. Topography, bedrock geology, vegetation, hydrology, soils, lithic resources, and climate for the Bluegrass region are discussed below.

The Bluegrass region of Kentucky (Figure 4) is third in size behind the Mississippian Plateaus and Eastern Kentucky Coal Field regions, but it is larger than the Western Kentucky Coal Field and Mississippi Embayment regions (Raitz 1973:53; Schwendeman 1979:28). The Bluegrass region acquired its name from the appearance of a bluish colored grass that is known botanically as *Poa pratensis* and commonly as Kentucky Bluegrass, and the region is referred to as the "Heart of Kentucky" (Davis 1927:3; Raitz 1973:53). The Bluegrass region is divided into three subregions: the Inner Bluegrass, Outer Bluegrass, and the Knobs. Each of these subregions has unique physical differences that distinguish them from each other. Bullitt County is located within the Knobs portion of the Bluegrass region.

The Knobs

The Knobs subregion is comprised of a belt of conical hills called knobs that is shaped like a horseshoe or semicircle and encircles the eastern, southern, and western borders of the Outer Bluegrass (O'Brien 1984:61; Raitz 1973:53; Rhoades et al. 2005:1; Schwendeman 1979:31). These hills extend into the southern portions of Indiana and Ohio as well (Rhoades et al. 2005:1). The Knobs subregion is generally 16–24 km (10–15 mi) in width, and the knobs themselves typically occupy narrow interfluves between broad alluvial floodplains of the rivers and creeks

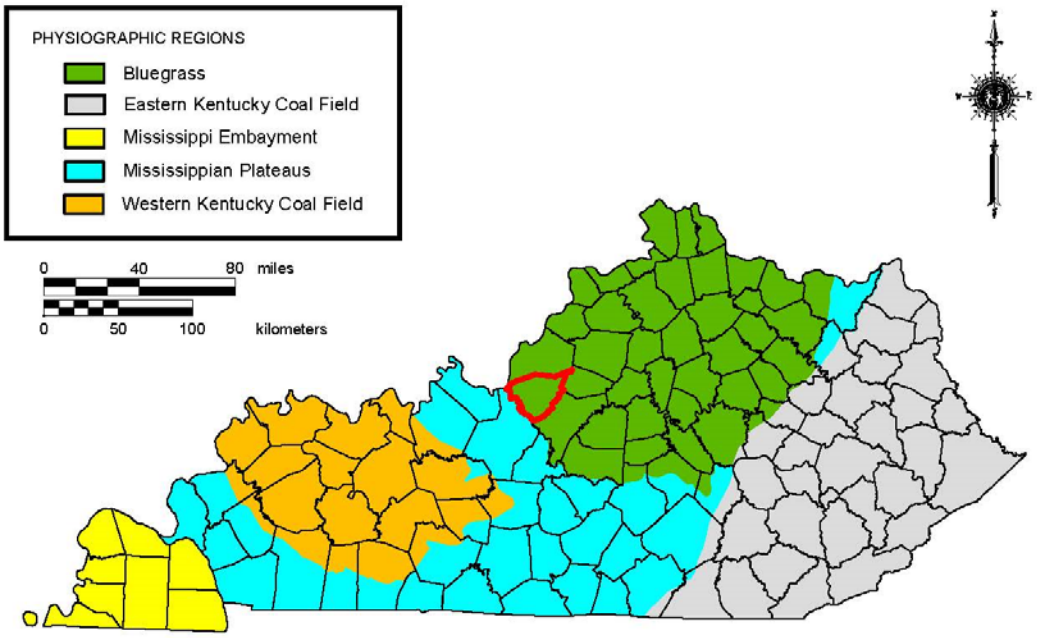

Figure 4. The Bluegrass region.

dissecting the nearby Pottsville and Dripping Springs escarpment (Newell 2001). According to Schwendeman (1979:32), the Knobs subregion encompasses approximately 5,957 sq km (2,300 sq mi).

Portions of Bath, Boyle, Bullitt, Fleming, Garrard, Jefferson, Lincoln, Madison, Marion, Montgomery, and Nelson Counties extend into the Knobs subregion from the Outer Bluegrass. Lewis and Rowan Counties encompass portions of the Knobs, a triangular-shaped wedge of the Mississippian Plateaus, and the Eastern Kentucky Coal Field in northeastern Kentucky. Casey County overlaps the Knobs and the Mississippian Plateaus region in the south-central portion of the commonwealth, and as noted earlier, small portions of Lincoln and Marion Counties extend into this region as well. Rockcastle County is situated partially within the Knobs subregion and partially within the Mississippian Plateaus and the Eastern Kentucky Coal Field regions. Finally, portions of Estill and Powell Counties are in the Knobs, and portions are in the Eastern Kentucky Coal Field as well. No single county is situated entirely within the Knobs.

Burroughs (1926) describes the Knobs subregion as an erosional remnant of both the Pottsville Escarpment, which divides the Bluegrass and Mississippian Plateaus regions from the Cumberland Plateau (Eastern Kentucky Coal Field), and Muldraughs Hill, which separates the Bluegrass from the Mississippian Plateaus and Western Kentucky Coal Field regions. Individual knobs are higher, sharper, and spaced closer together near highland rims, whereas along valley bottoms the spacing increases, elevation decreases, and more rounded shapes occur. The knobs are typically symmetrical, upward sloping, concave, and circular or elliptical rises. When caprocks are present, the slopes become steep cliffs, and when caprocks are not present, the crests are rounded (Newell 2001). This type of terrain develops when caprocks are located over unstable shale and siltstone and drainage systems cut the ridges and spurs of the caprocks, thus creating the knobs. The Knobs subregion is underlain by Silurian, Devonian, and Mississippian age dolomite, limestone, and shale.

The Dix, Kentucky, Licking, Ohio, and Salt Rivers and their tributaries, depending on geographical location, drain the Knobs region of Kentucky (Figure 5).

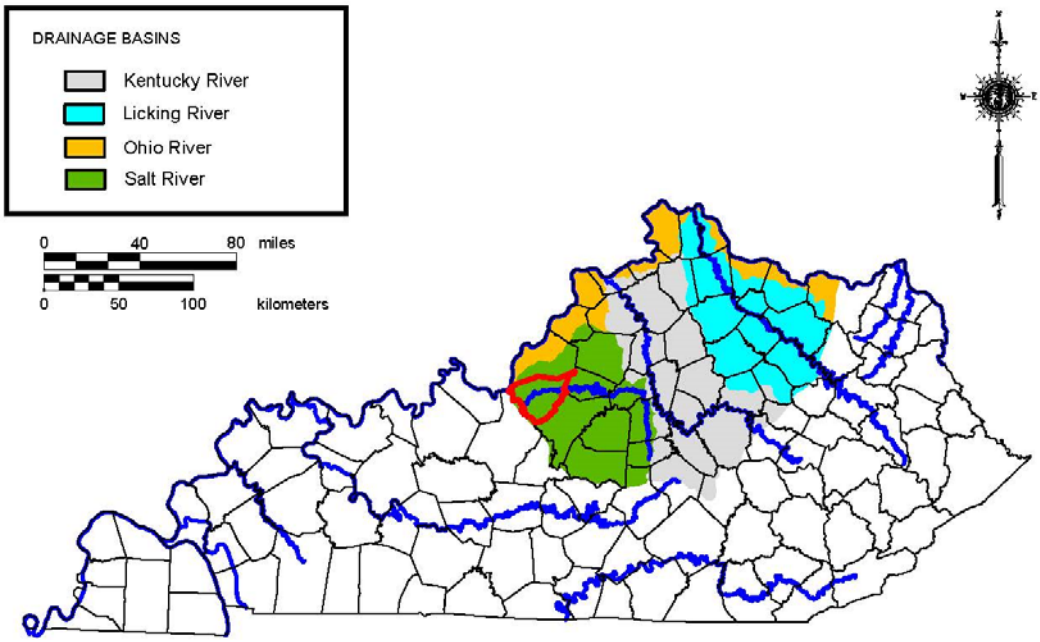

Figure 5. Rivers that drain the Bluegrass region.

Vegetation in the Bluegrass

The Inner and Outer Bluegrass and the western portion of the Knobs are located within the Western Mesophytic Forest region as defined by Braun (2001:122–161), whereas the eastern portion of the Knobs is situated within the Mixed Mesophytic Forest region. The Western Mesophytic Forest region offers a mosaic pattern of climax vegetation types that are often less luxuriant than those observed for the Mixed Mesophytic Forest region (Braun 2001:122–123). The Western Mesophytic region is considered a transition zone in which the effects of local environments allow different climax types to exist in proximity. Braun (2001:529) states that the modern pattern of forest distribution is the result of past and present environmental influences, such as changes in climate, topography, or soil, bringing about changes in vegetation.

The Mixed Mesophytic Forest region is described as the most complex and oldest association of the Deciduous Forest Formation (Braun 2001:39). Mixed mesophytic refers to a climax association in which dominance is shared by a number of species, and the dominant trees are beech, tulip tree, basswood, sugar maple, chestnut, sweet buckeye, red oak, white oak, and hemlock (Braun 2001:40). The composition and abundance of dominants in the Mixed Mesophytic Forest region vary by geographic location and correlate to soil moisture, humidity, and the character of underlying rock (Braun 2001:119). Oak-hickory and oak-chestnut communities are typically located along dry slopes and ridges, while scrubby oak thickets and groves of pine can be found along low slopes of wide valleys (Braun 2001:121). Secondary white oak forest occupies much of the valley floors not in pasture or cultivation, whereas swampy valley flats are composed primarily of pin oak, sweet gum, and red maple (Braun 2001:121).

A historic account from 1784 indicates that a variety of vegetation types were abundant in the Bluegrass region in general, including sugar maple, honey locust, mulberry, wild cherry, laurel, buckeye, cane, wild rye, clover, buffalo grass, wild lettuce, and pepper grass (Braun 2001:127–128). Mid-nineteenth-century accounts indicate that at least 25 species of trees were present in the Inner Bluegrass region, including sugar maple, walnut, several oaks, hickories, ash, wild

cherry, black locust, honey locust, and mulberry. Notably, beech was not mentioned in the early accounts (Braun 2001:129). Blue ash and bur oak are the dominant tree types in the modern Inner Bluegrass. Interestingly, the bluegrass for which the region is named is not considered an indigenous species (Davis 1927).

Locust, sugar maple, hickory, black walnut, ash, wild cherry, white oak, and an undergrowth of cane were reported for the Outer Bluegrass during the mid-nineteenth century, and unlike the Inner Bluegrass, the presence of beech was noted in some communities (Braun 2001:130). In areas of the subregion that have a more rolling topography, beech, tulip tree, sugar maple, white oak, and red oak were abundant (Braun 2001:130).

Burroughs (1926:93) states that a late-nineteenth-century account indicated maples and white oak were historically common in the Knobs subregion; that beech and red cedar were common in areas underlain by limestone; that pine, hemlock, laurel, and holly were located along cliffs and peaks; and that chestnut and oak forests were located along plateaus. During the 1920s, the natural forest growth consisted of oaks, hickory, chestnut, and Virginia pine, and sycamores were found along streams. Redbud and dogwood were found along knob slopes, and mistletoe was often seen along the limestone belts (Burroughs 1926:93–94).

Soils of the Bluegrass

The inner and outer portions of the Bluegrass region are predominantly mapped as the Alfisols order of soils. Alfisols developed on Late Pleistocene or older surfaces or on erosional surfaces of similar age. They have a thin, dark A-horizon rich in organic matter and nutrients and a clay-enriched subsoil, and they are relatively high in fertility due to being only moderately leached (Soil Survey Staff 1999:163–165). Alfisols may contain intact archaeological deposits very near or on the ground surface, depending upon the landform on which they formed (e.g., sideslope vs. ridgetop).

The Inner and Outer Bluegrass subregions are predominantly mapped as the Udalfs suborder of soils, which are the more or less freely-drained Alfisols in areas with well-distributed rainfall and seasonally varying soil temperatures. Some of the Udalfs are underlain by limestone or other calcareous sediments. Udalfs are thought to have developed under forest vegetation, and depending on temperature regime, they supported either a deciduous forest (mesic or warmer) or a mixed coniferous and deciduous forest (frigid). Many Udalfs have been cleared of trees and are intensively farmed. As a result of erosion, many now have only a clay-enriched or iron and aluminum oxide-enriched horizon below an Ap-horizon that is mostly made up of material once part of the subsoil. Udalfs on stable surfaces retain most of their weathered or leached eluvial horizons above the subsoil. A few Udalfs have a natric, or clay and sodium-enriched, horizon, and others have a compacted zone, such as a fragipan, in or below the subsoil (Soil Survey Staff 1999).

The Knobs portion of the Bluegrass region is predominantly mapped as the Inceptisol soil order. Inceptisols developed in silty, acid alluvium during the Late Pleistocene or Holocene time periods on nearly level to steep surfaces. Inceptisols may have deeply buried and intact archaeological deposits, depending upon the landform on which they formed (e.g., sideslope vs. alluvial terrace). Inceptisols exhibit a thick, dark colored surface horizon rich in organic matter and a weakly developed subsurface horizon with evidence of weathering and sometimes of gleying (Soil Survey Staff 1999:489–493).

The Knobs subregion is predominantly mapped as the Udepts suborder of soils, which are mainly the more or less freely-drained Inceptisols in areas with well-distributed to excessive rainfall. In these areas of excessive rainfall, the soils formed in older deposits. Most of the soils are thought to have developed under forest vegetation, but some supported shrubs or grasses. The majority of the soils have either a thinner or a thicker, but leached surface horizon and a weakly developed subsoil or B-horizon. Some also

have a sulfuric acid–enhanced horizon that is commonly the result of artificial drainage or surface mining or other earthmoving activities. Some also exhibit a subsurface cemented zone, such as a duripan, or a compacted zone, such as a fragipan (Soil Survey Staff 1999).

Lithic Resources

The Bluegrass region displays diverse and abundant sources of lithic raw material that could have been exploited by prehistoric inhabitants. Silurian- and Ordovician-age dolomite, limestone, siltstone, and shale deposits outcrop in various areas of the region (United States Geological Survey [USGS] 2016). These deposits contain Grier cherts, which predominate in the Inner Bluegrass area, and Gilbert, Tyrone, and Salvisa cherts, which predominate in the Outer Bluegrass. In the Knobs area, the Devonian to Mississippian-age limestone and shale deposits contain predominantly Boyle and Brassfield cherts. Pleistocene to Holocene-age glacial deposits in the Louisville area contain a variety of cherts. Grier chert is a low to moderate quality chert; however, it is abundant in some areas and was often used as a source of tool stone for prehistoric groups. Gilbert, Tyrone, and Salvisa cherts exhibit a more restricted geographic range than Grier chert; therefore, they are not as commonly recovered on prehistoric sites in the region. Boyle and Brassfield cherts are both high quality cherts and are abundant in the Outer Bluegrass region. Both of these materials were used by prehistoric people in the region.

Prehistoric and Historic Climate

Climatic conditions during the period of human occupation in the region (Late Pleistocene and Holocene ages) can be described as a series of transitions in temperature, rainfall, and seasonal patterns that created a wide range of ecological variation, altering the survival strategies of human populations (Anderson 2001; Niquette and Donham 1985:6–8; Shane et al. 2001). The landscape during the Pleistocene was quite different from that of today. Much of the mid-continent consisted of periglacial tundra dominated by boreal conifer and jack-pine forests. Eastern North America was populated by a variety of faunal species, including megafaunal taxa such as mastodon, mammoth, saber-toothed tiger, and Pleistocene horse, as well as by modern taxa such as white-tailed deer, raccoon, and rabbit.

The Wisconsinan glacial maximum occurred approximately 21,400 years B.P. (Anderson 2001; Delcourt and Delcourt 1987). By 15,000 B.P., following the Wisconsinan glacial maximum, a general warming trend and concomitant glacial retreat had set in (Anderson 2001; Shane 1994). Towards the end of the Pleistocene and after 14,000 B.P., the boreal forest gave way to a mixed conifer/northern hardwoods forest complex. In the Early Holocene and by 10,000 B.P., southern Indiana was probably on the northern fringes of expanding deciduous forests (Delcourt and Delcourt 1987:92–98). Pollen records from the Gallipolis Lock and Dam on the Ohio River near Putnam County, West Virginia, reveal that all the important arboreal taxa of mixed mesophytic forest had arrived in the region by 9000–8500 B.P. (Fredlund 1989:23). Similarly, Reidhead (1984:421) indicates that the generalized hardwood forests were well established in southeastern Indiana and southwest Ohio by circa 8200 B.P.

Prior to approximately 13,450 B.P., climatic conditions were harsh, but capable of supporting human populations (Adovasio et al. 1998; McAvoy and McAvoy 1997). Populations were probably small, scattered, and not reproductively viable (Anderson 2001). The Inter-Allerød Cold Period (circa 13,450–12,900 B.P.) brought about the dispersal of Native Americans across the continent. This period was followed by the rapid onset of a cooling event known as the Younger Dryas (circa 12,900–11,650 B.P.) during which megafauna species became extinct, vegetation changed dramatically, and temperature fluctuated markedly. It was also a period of noticeable settlement shift that marked the appearance of a variety of

subregional cultures across eastern North America (Anderson 2001).

In a recent review, Meeks and Anderson (2012:111) described the Pleistocene/Holocene transition as "a period of tremendous environmental dynamism coincident with the Younger Dryas event." The Younger Dryas represents one of the largest abrupt climate changes that has occurred within the past 100,000 years. The onset of the Younger Dryas appears to have been a relatively rapid event that may have been driven by a freshwater influx into the North Atlantic as a result of catastrophic outbursts of glacial lakes. "The net effect of these outbursts of freshwater was a reduction in sea surface salinity, which altered the thermohaline conveyor belt; effectively slowing ocean circulation of warmer water (heat) to the north and bringing cold conditions" (Meeks and Anderson 2012:111; though see Meltzer and Bar-Yosef 2012:251–252 for a critique of this view). This resulted in significantly lower temperatures during this time. The Younger Dryas ended approximately 1,300 years later over a several decade period. The onset of the Younger Dryas coincides with the end of Clovis and the advent of more geographically circumscribed cultural traditions.

Pollen records for the Younger Dryas indicate that vegetation shifts were sometimes abrupt and characterized by oscillations. These shifts were not uniform over the entire southeast and indicate that a variety of factors were at play. At Jackson Pond in Kentucky (Wilkins et al. 1991), for example, several pronounced reciprocal oscillations occurred in a large number of spruce and oak. According to Meeks and Anderson, "these oscillations reflect shifts between boreal/deciduous forest ecotones associated with cool/wet and cool/dry conditions, respectively" (2012:113).

Meeks and Anderson (2012:126–130) define five population events for the Paleoindian–Early Holocene transition. Population Event 1 (circa 15,000–13,800 cal. B.P.) is a pre-Clovis occupation that exhibits a slow rise in population. This event may represent the initial colonization of the southeast region and may represent the basis of later Clovis occupation or a failed migration (Meeks and Anderson 2012:129). Population Event 2 represents an apparent 600 year gap between Events 1 and 3. Population Event 3 (circa 13,200–12,800 cal. B.P.) occurred just prior to, and extended into, the Younger Dryas event. This event represents the "first unequivocal evidence for widespread human occupation across the southeastern United States" (Meeks and Anderson 2012:129). Event 3 coincided with the Clovis occupation in the region. A marked decline in the population is posited for Population Event 4 (12,800–11,900 cal. B.P.). This equates with the early to middle Younger Dryas and relates to a post-Clovis occupation of the region. Meeks and Anderson (2012:129) see a fragmentation of the regional Clovis culture at this time along with "the development of geographically circumscribed subregional, cultural traditions in the southeastern United States." A marked increase in population density is posited between 11,900 and 11,200 cal. B.P. This coincides with the late portion of the Younger Dryas and the early portion of the Holocene. Population Event 5 is represented by this time frame. Early Side Notched and Dalton are seen during this time.

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 southern Mississippi Valley refugia during the Wisconsinan advances (Delcourt and Delcourt 1981:147). The climate during the Early Holocene was still considerably cooler than the modern climate, and based on species extant at that time in upper altitude zones of the Allegheny Plateau, conditions would have been similar to the Canadian boreal forest region of today (Maxwell and Davis 1972:515–516). Conditions at lower elevations were less severe and favored the transition from boreal to mixed mesophytic species. At

Cheek Bend Cave in the Nashville Basin, an assemblage of small animals from the Late Pleistocene confirms the environmental changes that took place during the Pleistocene to Holocene transition and the resulting extinction of Pleistocene megafauna and establishment of modern fauna in this area (Klippel and Parmalee 1982).

Traditionally, Middle Holocene (circa 8000–5000 B.P., also referred to as the Hypsithermal) climate conditions were thought to be consistently dryer and warmer than the present (Delcourt 1979:271; Klippel and Parmalee 1982; Wright 1968). The influx of westerly winds contributed to periods of severe moisture stress in the Prairie Peninsula and to an eastward advance of prairie vegetation (Wright 1968). More recent research (Anderson 2001; Shane et al. 2001:32–33) suggests that the Middle Holocene was marked by considerable local climatic variability. Paleoclimatic data indicate that the period was marked by more pronounced seasonality characterized by warmer summers and cooler winters.

The earliest distinguishable Late Holocene climatic episode began circa 5000 B.P. and ended around 2800 B.P. This Sub-Boreal episode is associated with the establishment of essentially modern deciduous forest communities in the southern highlands and increased precipitation across most of the mid-continental United States (Delcourt 1979:271; Maxwell and Davis 1972:517–519; Shane et al. 2001; Warren and O'Brien 1982:73). Changes in local and extra-local forests after approximately 4800 B.P. may also have been the result of anthropogenic influences. Fredlund (1989:23) reports that the Gallipolis pollen record showed increasing local disturbance of the vegetation from circa 4800 B.P. to the present, a disturbance that may have been associated with the development and expansion of horticultural activity. Based on a study of pollen and wood charcoal from the Cliff Palace Pond in Jackson County, Kentucky, Delcourt and Delcourt (1997:35–36) recorded the replacement of a red cedar–dominated forest with a forest dominated by fire-tolerant taxa (oaks and chestnuts) around 3000 B.P. The change is associated with increased local wildfires (both natural and culturally augmented) and coincided with increases in cultural utilization of upland (mountain) forests.

Beginning around 2800 B.P., generally warm conditions, probably similar to those of the twentieth century, prevailed during the Sub-Atlantic and Post–Sub-Atlantic climatic episodes, with the exception of the Neo-Boreal sub-episode, or Little Ice Age (circa 700–100 B.P.), which was coldest from circa 400 until its end. Despite the prevailing trend, brief temperature and moisture variations occurred during this period. Some of these fluctuations have been associated with adaptive shifts in Midwestern prehistoric subsistence and settlement systems (Baerreis et al. 1976; Griffin 1961; Struever and Vickery 1973; Warren and O'Brien 1982).

Studies of historic weather patterns and tree-ring data by Fritts et al. (1979) indicate that twentieth-century climatological averages were “unusually mild” when compared to seventeenth- to nineteenth-century trends (the time period used for comparison represents the coldest period of the Neo-Boreal [400–100 B.P.], or the Little Ice Age) (Fritts et al. 1979:18). The study suggested that winters were generally colder, weather anomalies were more common, and unusually severe winters were more frequent between A.D. 1602 and A.D. 1900 than after A.D. 1900. The effects of the Neo-Boreal sub-episode, which ended during the mid- to late nineteenth century, have not been studied in detail for this region. It appears that the area experienced smaller temperature decreases during the late Neo-Boreal than did the upper Midwest and northern Plains (Fritts et al. 1979), so it follows that related changes in extant vegetation would be more difficult to detect.

Modern Climate

The modern climate of Kentucky is moderate in character and temperature, and precipitation levels fluctuate widely. The prevailing winds are westerly, and most storms cross the state in a west to east pattern.

Low pressure storms that originate in the Gulf of Mexico and move in a northeasterly direction across Kentucky contribute the majority of the precipitation received by the state. Warm, moist, tropical air masses from the Gulf predominate during the summer months and contribute to the high humidity levels experienced throughout the state. As storms move through the state, occasional hot and cold periods of short duration may be experienced. During the spring and fall, storm systems tend to be less severe and less frequent, resulting in less radical extremes in temperature and rainfall (Anderson 1975).

Description of the Project Area

The project area was located south of the City of Shepherdsville, Bullitt County, Kentucky, and was to the east and west of I-65 (see Figures 2, 3a, 3b, 3c, and 3d). Elevations in the project area ranged from 207 m (680 ft) above mean sea level (AMSL) along the ridgetops to 152 m (500 ft) AMSL along the terraces.

The majority of the project area consisted of upland ridges and sideslopes that were covered in dense secondary growth woods (Figures 6 and 7). Vegetation in the wooded areas generally consisted of mature deciduous and coniferous trees with understories of saplings, vines, and weeds. There was no ground surface visibility in the wooded areas. Above-ground utility corridors were also present and these areas consisted of tall grass and weeds (see Figure 7). The only disturbances noted in the wooded areas were light earth moving that had occurred along the utility corridors, along with natural erosion along the ridgetops.

Much of the area along the northeast portion of the project area had been disturbed through earth moving (Figures 8–10; see Figure 3d). In this area, the topsoil had been removed, resulting in subsoil being observed on the ground surface. A modern quarry had also been excavated in this area.

Figure 6. Upland wooded area east of I-65, looking northwest).

Figure 7. Wooded area and utility corridor east of I-65, looking south.

Figure 8. Disturbed area east of I-65, looking north.

Figure 9. Disturbed area east of I-65, looking west.

Figure 10. Modern quarry east of I-65, looking southwest.

Disturbed areas to the west of I-65 were located primarily along KY 61 (Preston Highway) and Cooper Run Road (Figures 11 and 12; see Figures 3b and 3c). Disturbances in these areas were due primarily to installation of underground utilities, manufacture of drainages, and construction of residential driveways.

The project area was mapped as the McGary-Markland soil association, and four soil associations were defined for the area: Lenberg-Carpenter complex, Otwell silt loam, Trappist silt loam, and Zanesville silt loam. Soils are classified by the amount of time it has taken them to form and the landscape position they are found on (Birkeland 1984; Soil Survey Staff 1999). This information can provide a relative age of the soils and can express the potential for buried archaeological deposits within them (Stafford 2004). The soil order and group classifications for each soil series are used to assist with determining this potential. Fragiudalfs (Otwell and Zanesville), hapludalfs (Lenberg-Carpenter complex), and hapludults (Trappist) formed on landforms that formed during the late Pleistocene or earlier (Soil Survey Staff 1999:202, 208, 750). Archaeological deposits would only be found on or very near the ground surface on landforms mapped with these soils. Otwell and Zanesville series soils were found on low-lying areas, whereas the Lenberg-Carpenter complex and Trappist series were found on the ridges and sideslopes.

Lenberg-Carpenter complex soils are typically moderately deep, well drained, and formed in residuum of acid clayey shale. The typical profile consists of an A horizon of very dark grayish brown (10YR 3/2) silt loam to 5 cm (2 in) below ground surface (bgs) followed by an E horizon of brown (10YR 5/3) silt loam to 10 cm (4 in) bgs. These are underlain by Bt1 and Bt2 horizons of strong brown (7.5YR 5/6) silty clay loam and silty clay to 46 and 64 (18 and 25 in) bgs, respectively. These are followed by a C horizon of mottled light olive brown (2.5Y 7/2) and light gray (2.5Y 7/1) channery silty clay to 89 cm (35 in) bgs, and a Cr horizon of shale (Soil Survey Staff 2016).

Figure 11. Underground utility (fire hydrant) near the intersection of Cooper Run Road and KY 61, looking south.

Figure 12. Ditch between KY 61 and railroad, looking south.

Otwell series soils are very deep, moderately well drained, and formed in loess and other underlying sediments. The typical soil profile consists of an Ap horizon of dark yellowish brown (10YR 4/4) silt loam to 18 cm (7 in) bgs, followed by Bt1 and Bt2 horizons of strong brown (7.5YR 5/6) silt loam to 43 and 58 cm (17 and 23 in), respectively. These are underlain by 2Btx1, 2Btx2, and 2Bt1 horizons of brown (7.5YR 5/4) silt loam to 102, 132, and 165 cm (40, 52, and 65 in) bgs, respectively. These are underlain by a 2Bt2 horizon of reddish brown (5YR 5/4) silty clay loam to 203 cm (80 in) bgs (Soil Survey Staff 2016).

Trappist series soils are moderately deep, well drained, and formed in residuum weathered from acid shale. The typical profile consists of an A horizon of very dark grayish brown (10YR 3/2) silt loam to 5 cm (2 in) bgs followed by an E horizon of brown (10YR 5/3) silt loam to 15 cm (6 in) bgs and a BE horizon of strong brown (7.5YR 5/6) silty clay loam to 23 cm (9 in) bgs. These are underlain by Bt1 and Bt2 horizons of strong brown (7.5YR 5/6) silty clay to 53 and 71 cm (21 and 28 in) bgs, respectively. These are followed by a C horizon of yellowish red (5YR 4/6) clay to 89 cm (35 in) bgs and an R horizon of shale (Soil Survey Staff 2016).

Zanesville series soils are located on upland sideslopes, ridges, and saddles, and they derived from loess over residuum of sandstone, siltstone, and shale. The typical profile consists of an Ap horizon of brown (10YR 4/3) silt loam to 18 cm (7 in) bgs followed by Bt and Btx horizons of strong brown (7.5YR 5/6) silt loam and yellowish brown (10YR 5/4) silt loam to 71 and 99 cm (28 and 39 in) bgs, respectively. These are underlain by a 2BC horizon of yellowish brown (10YR 5/4) sandy clay loam to 152 cm (60 in) bgs and an R horizon of sandstone and siltstone bedrock (Soil Survey Staff 2016).

Soils observed during shovel testing in areas mapped as each of the above soil series generally conformed to the mapped series. Exceptions occurred in areas that had been disturbed, such as along KY 61 and in the

northeastern portion of the project area where earth moving and excavation of a quarry had occurred. Shovel testing in areas mapped as Lenberg-Carpenter complex typically exhibited an A horizon of very dark grayish brown (10YR 3/2) silt loam to between 5 and 10 cm (2 and 4 in) bgs followed by strong brown (7.5YR 5/6) silty clay loam subsoil. Shovel test profiles in areas mapped as the Otwell series typically consisted of an Ap horizon of dark yellowish brown (10YR 4/4) silt loam to between 15 and 20 cm (6 and 8 in) bgs overlying a subsoil of strong brown (7.5YR 5/6) silty clay loam. Shovel test profiles in areas mapped as the Trappist series typically consisted of an A or Ap horizon of very dark grayish brown (10YR 3/2) silt loam to 10 cm (4 in) bgs followed by a subsoil of strong brown (7.5YR 5/6) silty clay loam. Soil profiles observed in areas mapped as the Zanesville series typically consisted of an Ap horizon of dark yellowish brown (10YR 4/4) silt loam to 20 cm (8 in) bgs followed by a subsoil of strong brown (7.5YR 5/6) silty clay loam.

Cultural materials were recovered from Site 15Bu820, which was mapped as the Otwell series. The soil profile for the site is described in detail in Section 6 of this report. No cultural materials were recovered from areas mapped as any of the other soil series.

III. PREVIOUS RESEARCH AND CULTURAL OVERVIEW

Prior to initiating fieldwork, a search of records maintained by the NRHP (available online at: http://nrhp.focus.nps.gov/natreghome.do?searchtype=natreghome) and the OSA (FY16_8730) was conducted to: 1) determine if the project area had been previously surveyed for archaeological resources; 2) identify any previously recorded archaeological sites that were situated within the project area; 3) provide information concerning what archaeological resources could be expected within the project area; and 4) provide a context for any archaeological resources recovered within the project area.

A search of the NRHP records indicated that no archaeological sites listed in the NRHP were situated within the current project area or within a 2 km (1.2 mi) radius of the project area. The OSA file search was conducted on January 11 and 12, 2016. The work at OSA consisted of a review of professional survey reports and records of archaeological sites for an area encompassing a 2 km radius of the project footprint. To further characterize the archaeological resources in the general area, the OSA archaeological site databases for the county was reviewed and synthesized. The review of professional survey reports and archaeological site data in the county provided basic information on the types of archaeological resources that were likely to occur within the project area and the landforms that were most likely to contain these resources. The results are discussed below.

OSA records revealed that 11 previous professional archaeological surveys have been conducted within a 2 km radius of the project area. Thirty-two archaeological sites have also been recorded in this area. Six additional surveys completed within the 2 km area have not yet been entered in the OSA GIS (Arnold 2005; Huser 1993; Kryst and Weinland 1980; McGraw 1975; Schock 1987; Tuma 2000).

The records search revealed that 4 of the 32 sites in the file search area (15Bu249, 15Bu505, 15Bu599, and 15Bu600) are historic farms/residences. One site (15Bu594) is a historic farm/residence with an associated cemetery. Twenty-four sites (15Bu68, 15Bu238, 15Bu463, 15Bu465, 15Bu482–15Bu484, 15Bu595–15Bu598, 15Bu664–15Bu666, 15Bu669, 15Bu670, 15Bu674, 15Bu680–15Bu685, and 15Bu711) are prehistoric open habitations without mounds. The remaining three sites (15Bu466, 15Bu672, and 15Bu673) are multicomponent sites with prehistoric and historic components. The 2 km radius included areas within the Shepherdsville quadrangle (USGS 1991).

Previous Archaeological Surveys

Heather D. Barras

Between June and December, 1974, Betty J. McGraw conducted a 64 km (40 mi) long archaeological survey along a proposed expansion route for I-65 in Bullitt County, Kentucky (McGraw 1975). The project area was subjected to pedestrian survey and 12 archaeological sites were recorded (15Bu230–15Bu241). Test excavations were also conducted on 5 of the 12 sites (15Bu234, 15Bu236–15Bu238, and 15Bu241). Of these, only Site 15Bu238 is located within 2 km (1.2 mi) of the current project area. Site 15Bu268 is a prehistoric open habitation without mounds of indeterminate temporal affiliation. Cultural deposits at the site were shallow, with all cultural material recovered from the plow zone. The site was considered ineligible for NRHP inclusion, and no further work was recommended (McGraw 1975).

Sandra Kryst and Marcia K. Weinland of the Kentucky Heritage Council (KHC) conducted a research-oriented archaeological survey to examine salt licks and their environments, sandstone strata, upland Bluegrass areas, gaps between the Knobs, and the Salt River floodplain to add data in support of several existing assumptions and to suggest research which could result in testable hypotheses (Kryst and Weinland 1980). An area of unspecified size in Bullitt County, Kentucky, was investigated by pedestrian survey, and one archaeological site (15Bu71) that was documented during the survey was subjected to NRHP testing.

Twenty-one archaeological sites were recorded during the KHC survey (15Bu55–15Bu75) (Kryst and Weinland 1980).

Of these, only Site 15Bu68 was located within 2 km of the current project area. Site 15Bu68 was initially documented by the KHC in 1978, but no report was on file at the OSA for this documentation; however, the information was summarized in the Kryst and Weinland (1980) report. Site 15Bu68 was a large, open prehistoric site affiliated with the Woodland and Mississippian periods. They reported that the site contained four artifact loci (A–D) on landforms across the site area. Site loci A and C contained five hafted bifaces, one grit-tempered ceramic sherd, and lithic debitage. Site loci B and D contained only lithic debitage. The hafted bifaces and the prehistoric ceramic indicated that the site had Woodland and Late Prehistoric occupations (Kryst and Weinland 1980).

Kryst and Weinland (1980) revisited Site 15Bu68 and determined that Loci A and C contained Middle Woodland and Late Woodland components. The diagnostic materials included a Lowe Flared Base hafted biface (Middle Woodland), and a Small Triangular Cluster hafted biface and grog/grit tempered cordmarked pottery (Late Woodland). Site 15Bu68 was recommended for further archaeological work to assess NRHP eligibility (Kryst and Weinland 1980). It is unclear if additional archaeological work has been conducted at this site.

In March of 1980, Granger Associates, Inc., conducted an archaeological survey for proposed sewer line interceptors in Bullitt County, Kentucky (Granger 1980). The survey was conducted at the request of the City of Shepherdsville on behalf of Armstrong Smith Engineering, Inc. It consisted of a pedestrian survey of a linear area and auger testing. No archaeological sites were identified, and no further work was recommended.

In February of 1987, Arrow Enterprises, Inc., conducted an archaeological survey of proposed rest areas along I-65 in Bullitt County, Kentucky (Schock 1987). Approximately 20 ha (50 acres) were investigated at the request of Balke Engineers, Inc. Field methods consisted of pedestrian survey and one previously recorded site (15Bu238) and three previously unrecorded sites (15Bu482–15Bu484) were documented. Sites 15Bu482–15Bu484 were located within the 2 km radius of the current project area. All three sites were open habitations without mounds. Site 15Bu483 had a Late Archaic

occupation represented by a possible Big Sandy hafted biface, but Sites 15Bu482 and 15Bu484 did not contain diagnostic artifacts. Site 15Bu482 was considered ineligible for the NRHP and no further work was recommended. NRHP evaluations were recommended for Sites 15Bu483 and 15Bu484 (Schock 1987), but it is unclear if additional work has been conducted at these sites.

On May 15, 1991, Cultural Horizons, Inc., personnel completed an archaeological survey of a proposed borrow site in Bullitt County, Kentucky (Stallings and Ross-Stallings 1991). At the request of Mac Construction and Excavating, Inc., 1.8 ha (4.5 acres) were investigated by surface inspection of paths cleared by heavy equipment. No archaeological sites were identified and project clearance was recommended.

From October 6 to 8, 1993, Wilbur Smith Associates, Inc., personnel conducted an archaeological survey for the proposed relocation of KY 480 in Bullitt County, Kentucky (Huser 1993). The survey was completed at the request of the KYTC. The linear survey area measured approximately 2.2 km (1.4 mi) and was investigated by intensive pedestrian survey supplemented with shovel testing. One previously unrecorded multicomponent site (15Bu505), which is located inside the 2 km radius of the current project area, was identified. Site 15Bu505 was a nineteenth- through twentieth-century historic residence with an indeterminate prehistoric component. The NRHP eligibility could not be assessed, and avoidance was recommended (Huser 1993).

Between July 20 and September 29, 1999, Mindel, Scott & Associates, Inc., conducted a 170 ha (420 acre) archaeological survey of the proposed Cedar Grove Business Center in Shepherdsville, Bullitt County, Kentucky (Harris 1999). The survey was completed at the request of Salt River Development Co., LLC. The survey methods consisted of intensive pedestrian survey, shovel testing, and test trenching. Six previously unrecorded sites were documented (15Bu594–15Bu599), all of which were located within 2 km of the current project area.

Site 15Bu594 was a nineteenth- through twentieth-century historic residence with an associated cemetery that included graves for at least three slaves. The residence was no longer present and a buffer around the cemetery was recommended. Site 15Bu595 is an open prehistoric site consisting of a lithic scatter from the plow zone. Diagnostic hafted bifaces included two Kirk Corner Notched, one Late Archaic Stemmed, one Knob Creek, one indeterminate Early Woodland, and one possible Buck Creek Barbed types. The site lacked archaeological features and integrity due to agricultural activities. Sites 15Bu596–15Bu598 were prehistoric open habitations without mounds of indeterminate temporal affiliations. These sites consisted of low density lithic scatters and they lacked evidence of intact subsurface deposits, midden, or features. Site 15Bu599 was a historic farm/residence dating from the mid-nineteenth to early twentieth century consisting of a foundation and an associated cistern made from cut limestone blocks, along with a scatter of historic materials. None of the sites were considered eligible for the NRHP, and no further work was recommended (Harris 1999).

On April 4, 2000, CRA personnel completed an archaeological survey of the proposed Travel Stop Property in Bullitt County, Kentucky (Tuma 2000). The project was conducted at the request of Redwing Ecological Services, Inc. The project area consisted of a 4.5 ha (11.0 acre) tract of land. Field methods consisted of pedestrian survey and systematic screened shovel testing. One archaeological site (15Bu600) was documented. Site 15Bu600 was a historic farm/residence dating from the late nineteenth through twentieth centuries consisting of a concrete-lined well and a very low-density historic artifact scatter. Historic materials were mixed with modern materials in the plow zone. The site was disturbed by bulldozing associated with logging activities. Site 15Bu600 was not considered eligible for

the NRHP, and no further work at the site was recommended.

On November 22, 2000, Arrow Enterprises personnel conducted a 1.6 km (1.0 mi) long archaeological survey of a proposed waterline and associated pump station in Bullitt County, Kentucky (Schock 2000). The survey was conducted at the request of Carlos Miller of Kenvirons, Inc. The field methods consisted of intensive pedestrian survey supplemented with shovel testing. No archaeological sites were recorded as a result of this survey, and no further work was recommended.

Between September 23 and October 1, 2004, CRA personnel completed an archaeological survey of the proposed Shepherdsville Waste Water Interceptor Line in central Bullitt County, Kentucky (Arnold 2004). The survey was conducted at the request of Redwing Ecological Services, Inc., Louisville, Kentucky, on behalf of Qk4 Engineers. Archaeological investigations consisted of 4.3 km (2.7 mi) of pedestrian survey supplemented with screened shovel testing. The survey resulted in the documentation of three previously recorded archaeological sites (15Bu268, 15Bu463, and 15Bu466) and three previously unrecorded sites (15Bu663–15Bu665). Sites 15Bu463, 15Bu466, 15Bu664, and 15Bu665 were located within the 2 km radius of the current project area. Site 15Bu463 was an open habitation with artifacts diagnostic of the Late Archaic, Middle Woodland, and Late Prehistoric periods. The site consisted of a high-density, large lithic scatter of over 700 artifacts located on both the surface and in sub–plow zone deposits that implied the potential for intact subsurface deposits. The site was recommended for further archaeological work. Sites 15Bu466, 15Bu664, and 15Bu665 were open habitations with unknown cultural affiliations. The NRHP status of Site 15Bu466 was not assessed at the time, and the other two sites were not considered eligible for listing in the NRHP. Aside from an NRHP evaluation of Site 15Bu463, no further work was recommended for the project (Arnold 2004).

Between November 15 and December 2, 2004, CRA personnel conducted an archaeological survey of the Project Adam development in Bullitt County, Kentucky (Ezell and Hand 2004). The survey was conducted at the request of Lauth Property Group of Indianapolis, Indiana. The survey consisted of approximately 69 ha (170 acres) located between the Salt River and KY 480. Field methods included intensive pedestrian survey along systematically spaced plowed transects, and areas not strip plowed were investigated through screened shovel testing along transects spaced at 20 m intervals. During the survey, two previously recorded archaeological sites were revisited (15Bu68 and 15Bu663) and eight previously unrecorded archaeological sites were documented (15Bu666–15Bu673). Site 15Bu464 was reported by OSA site files to be partially included in their project area, but it was not relocated. Sites 15Bu68, 15Bu666, 15Bu669, 15Bu670, 15Bu672, and 15Bu673 were located within the 2 km radius of the current project area. Site 15Bu68, as stated above, was originally reported by Kryst and Weinland (1980). During the site revisit, lithics were recovered from both plowed transects and shovel tests. Diagnostic hafted bifaces associated with the Early Archaic, Middle to Late Woodland, and Late Prehistoric periods, which included Snyders, Lowe, Small Triangular, and Kirk Corner Notched cluster types, were recovered. All artifacts were from either the surface or plow zone, the site was not recommended for further work. The OSA has it listed as an inventory site that does not meet NRHP Criterion D (Ezell and Hand 2004).

Sites 15Bu666, 15Bu669, and 15Bu670 were prehistoric open habitation sites with indeterminate cultural affiliations. The sites lacked sub–plow zone deposits, features, and integrity due to agricultural activities. Sites 15Bu672 and 15Bu673 contained both prehistoric lithic scatters and small numbers of historic artifacts. Artifacts from both sites were found on the surface and in the plow zone, but no sub–plow zone deposits or features were located. According to Ezell and

Hand (2004), all 11 sites had limited research potential because of previous agricultural disturbances and the paucity of cultural remains. Additional archaeological work would not produce significant information beyond what was collected, and no further work was recommended for these sites.

On January 31 and February 1, 2005, CRA personnel completed an archaeological survey of three additional parcels of land for the proposed Shepherdsville Waste Water Interceptor Line in central Bullitt County, Kentucky (Arnold 2005). Sections of the same project were first surveyed and reported the previous year (Arnold 2004). The 2005 survey was conducted at the request of Kiersten R. Fuchs of Redwing Ecological Services, Inc., on behalf of Qk4 Engineers. The survey revisited one previously recorded site (15Bu463) and documented one previously unrecorded site (15Bu674), both of which were located within the 2 km radius of the current project area. Site 15Bu463, as stated above, was originally reported by Arnold (2004). CRA revisited the site and found over 160 additional lithic artifacts. The cultural remains support the previous findings and extended the site boundaries by 60 m (197 ft). Site 15Bu463 was recommended for testing to assess NRHP eligibility. Site 15Bu674 was an open habitation with a small lithic scatter that included one diagnostic tool (an Early Archaic Kirk Corner Notched hafted biface). All artifacts were confined to the plow zone and the site lacked depositional integrity. The site was not considered eligible for listing in the NRHP, and no additional work was recommended (Arnold 2005).

On February 22 and 23 and March 16, 2005, ARCS Ventures, Inc., completed an archaeological survey of the Heritage Hill Golf and Residential Development near Shepherdsville, Kentucky (Granger and Smith 2005). The survey was conducted at the request of Redwing Ecological Services, Inc., and consisted of 20.4 ha (50.3 acres). It was investigated using pedestrian survey, rake-backs of vegetation, and shovel testing. No archaeological sites were recorded as a result of this survey, and no further work was recommended.

Between November 5 and 7, 2007, CRA personnel conducted an archaeological survey of the proposed Park 480 Development in Bullitt County, Kentucky (Anderson 2007). The survey was conducted at the request of Jeff Robinson of Global Port United, LLC. Field methods consisted of pedestrian survey supplemented by screened shovel testing and limited auger testing of 17 ha (43 acres). One previously identified site (15Bu674), two previously unrecorded sites (15Bu680 and 15Bu681), and one isolated prehistoric find were documented during the survey. All three sites were located within the 2 km radius of the current project area. Site 15Bu674, as stated previously, was originally reported by Arnold (2005). The site was an Early Archaic period open habitation. The Anderson (2007) survey revisited the site and found a very small lithic scatter, but no additional diagnostic artifacts were recovered. The site was not considered eligible for listing in the NRHP, and no additional work was recommended. Sites 15Bu680 and 15Bu681 were prehistoric open habitations without mounds of indeterminate temporal affiliation. Both sites consisted of low density lithic scatters with no evidence of intact subsurface cultural deposits or features. Neither site was considered eligible for NRHP listing; no further work was recommended (Anderson 2007).

Between April 28 and May 7, 2008, CRA personnel conducted an archaeological survey of the proposed Weller Farm Industrial Development area near the community of Shepherdsville in central Bullitt County, Kentucky (Arnold 2008). The survey was conducted at the request of Ron Thomas of Redwing Ecological Services, Inc., on behalf of Flynn Brothers Contracting, Inc. The project area consisted of approximately 64.7 ha (160.0 acres). Field methods consisted of pedestrian survey and screened shovel testing. The survey resulted in the documentation of four previously unrecorded prehistoric sites (15Bu682–15Bu685). All four sites were located within the 2 km radius of the current

project area. Sites 15Bu682, 15Bu683, 15Bu684, and 15Bu685 were open habitations of indeterminate cultural affiliation. The sites had limited research potential due to erosion and/or the paucity and low diversity of cultural remains, and they were not considered eligible for inclusion in the NRHP. No further work was recommended (Arnold 2008).

On October 19, 2010, Corn Island Archaeology, LLC, personnel conducted an archaeological survey of areas near the Salt River planned for wetland mitigation in Bullitt County, Kentucky (Wetzel 2010). Approximately 1.7 ha (4.3 acres) were subjected to a pedestrian survey supplemented with screened shovel testing at the request of Gary McGruder of 2M Tractor. One archaeological site (15Bu711) was recorded, and it was an open habitation without mounds of indeterminate temporal affiliation consisting of a low density lithic scatter. The site was disturbed from agricultural activities and no evidence of intact subsurface features or deposits was identified. The site was recommended as not eligible for the NRHP, and project clearance was recommended.

Between June 27 and July 15, 2014, CDM Smith personnel conducted an archaeological survey for the proposed widening of KY 480 in Bullitt County, Kentucky (McBride et al. 2014). At the request of the KYTC (Item Number 5-391.20), 19.6 ha (48.5 acres) were investigated by pedestrian survey supplemented with systematic screened shovel testing. No archaeological sites were encountered, and no further work was recommended.

Four archaeological sites (15Bu249, 15Bu463, 15Bu465, and 15Bu466) did not have associated reports with their original documentation. The information regarding these sites was acquired from the site forms found on file in the OSA records (Table 1).

Archaeological Site Data

OSA records show that prior to this survey, 523 archaeological sites had been recorded in Bullitt County (Table 2). Over half of these (n = 321, 61.38 percent) were prehistoric open habitations without mounds. Other types of sites that were recorded for Bullitt County were historic farms/residences (n = 117; 22.37 percent), workshops (n = 15; 2.87 percent), rockshelters (n = 11; 2.1 percent), industrial (n = 6; 1.15 percent), stone mounds (n = 5; .96 percent), caves (n = 5; .96 percent), cemeteries (n = 3; .57 percent), quarries (n = 2; .38 percent), a special activity area (n = 1; .19 percent), an isolated find (n = 1; .19 percent), and an earth mound (n = 1; .19 percent). Thirty-five sites (6.69 percent) were indeterminate or “other” type.

The landform locations of sites in Bullitt County were examined to determine the likelihood of encountering sites on similar landforms within the project area. The majority of sites in Bullitt County were located on dissected uplands (n = 162; 30.98 percent), floodplains (n = 146; 27.92 percent), and terraces (n = 141; 26.96 percent). Sites were also located on undissected uplands (n = 38; 7.27 percent), hillsides (n = 29; 5.54 percent), and unspecified (n = 7; 1.34 percent). Sites located on dissected uplands in Bullitt County are primarily prehistoric open habitations without mounds (n = 79; 48.77 percent), followed by historic farms/residences (n = 54; 33.33 percent). Sites located on floodplains are also mostly open habitations without mounds (n = 95; 65.07 percent) and historic farms/residences (n = 27; 18.49 percent). Sites located on terraces are primarily open habitations without mounds (n = 105; 74.47 percent), and historic farms/residences (n = 25; 17.73 percent).

Temporal periods represented in Bullitt County consisted of Paleoindian (n = 2; .29 percent), Archaic (n = 93; 13.42 percent), Woodland (n = 60; 8.66 percent), Late Prehistoric (n = 48; 6.93 percent), Indeterminate Prehistoric (n = 293; 42.28 percent), Historic (n = 180; 25.97 percent), and Unspecified (n = 17; 2.45 percent).

Table 1. Sites without Reports.

Site	Site Name	Site Type	Cultural Affiliation	Materials collected	Surveyed By	Survey Company	Survey Date	Investigation Type	NRHP Status
15Bu249	Paroquet Lick	Historic Farm/Residence	Indeterminate Historic	Not specified	Hoehler	Not specified	1978	Volunteered report	Not specified
15Bu463	-	Open Habitation without Mounds	Indeterminate Prehistoric	243 proj pts/frags, 36 hafted scrapers/drills, 9 “other drills”, 504 bifaces/frags, 13 “other scrapers”, 367 flakes/cores/chunks, 28 ground/pecked/battered stone, 13 flint hammerstones	Informant (Donald Janzen - Centre College Collection)	Recorded by Hemberger & DiBlasi – Louisville Museum of History & Science	Not specified	Volunteered report	Not assessed
15Bu465	-	Open Habitation without Mounds	Indeterminate Prehistoric	11 proj pt/frags, 1 hafted scrapers/ drills, 2 "other drills", 44 bifaces/ frags, 2 "other scrapers", 155 flakes/cores/ chunks, 1 flint hammerstone	Informant (Donald Janzen - Centre College Collection)	Recorded by Hemberger & DiBlasi – Louisville Museum of History & Science	Not specified	Volunteered report	Not assessed
15Bu466	-	Open Habitation without Mounds; Indeterminate Historic	Indeterminate Prehistoric Indeterminate Historic	2 projectile pts/frags, 1 hafted scraper/drill, 9 bifaces/frags, 78 flakes/cores/chunks, 1 whiteware, 1 brown salt glazed	Hemberger & DiBlasi	Recorded by Hemberger & DiBlasi – Louisville Museum of History & Science	Not specified	Volunteered report	Not assessed

Table 2. Summary of Selected Information for Previously Recorded Sites in Bullitt County. Data Obtained from OSA and May Contain Coding Errors.

Site Type:	N	%
Cave	5	0.96
Cemetery	3	0.57
Earth Mound	1	0.19
Historic Farm/Residence	117	22.37
Industrial	6	1.15
Isolated Find	1	0.19
Open Habitation without Mounds	321	61.38
Other	19	3.63
Other Special Activity Area	1	0.19
Quarry	2	0.38
Rockshelter	11	2.1
Stone Mound	5	0.96
Undetermined	16	3.06
Workshop	15	2.87
Total	523	100
Time Periods Represented	N	%
Paleoindian	2	0.29
Archaic	93	13.42
Woodland	60	8.66
Late Prehistoric	48	6.93
Indeterminate Prehistoric	293	42.28
Historic	180	25.97
Unspecified	17	2.45
Total	693*	100
Landform	N	%
Dissected Uplands	162	30.98
Floodplain	146	27.92
Hillside	29	5.54
Terrace	141	26.96
Undissected Uplands	38	7.27
Unspecified	7	1.34
Total	523	100

**One site may represent more than one time period.*

Map Data

In addition to the file search, a review of available historic maps was initiated to help identify possible historic properties that may have been located within the proposed project area. The following maps were reviewed:

1925 Geological Map of Bullitt County, Kentucky (Kentucky Geological Survey [KGS]);

1929 Geological Map of Bullitt County, Kentucky (KGS);

1949 General Highway Map of Bullitt County, Kentucky (Kentucky Department of Highways [KDOH]);

1949a Shepherdsville, Kentucky, 7.5-minute series topographic quadrangle (USGS);

1949b Shepherdsville, Kentucky, 15-minute series topographic quadrangle (USGS); and

1958 General Highway Map of Bullitt County, Kentucky (KDOH).

The review of historic maps indicated that a single structure (Map Structure [MS] 1) was located within the project area. The earliest map available dated to 1925 (KGS 1925) and it showed a school at the location of the historic site recorded during the current investigation (Site 15Bu820) (Figure 13). With the exception of the 1958 map (KDOH 1958), all later maps showed a school at this location. The school was labeled as Bowman's Valley School on the 1949 map (USGS 1949a) (Figure 14). The building was reportedly constructed circa 1916 for use as a school for local African-American children, and it remained in use as a school until the 1950s. It was later reportedly used as a residence, and was recently moved to the City of Shepherdsville.

Survey Predictions

Considering the known distribution of sites in the county, the available information on site types recorded, and the nature of the present project area, certain predictions were possible regarding the kinds of sites that might be encountered within the project area. The project area consisted of dissected uplands and floodplains, and prehistoric open habitations without mounds are commonly found on this type of landform in Bullitt County; therefore, prehistoric open habitations were considered the most likely site type to be encountered. The historic map search suggested that a historic school would also be identified.

Cultural Overview

Early Human Occupation (before 11,500 B.C.)

There is an increasing amount of evidence documented over the last two decades suggesting that humans arrived in North America before what has traditionally been thought of as the first migration of peoples into the Americas. Archaeologists thought that humans first entered the Americas while following Pleistocene megafauna or other

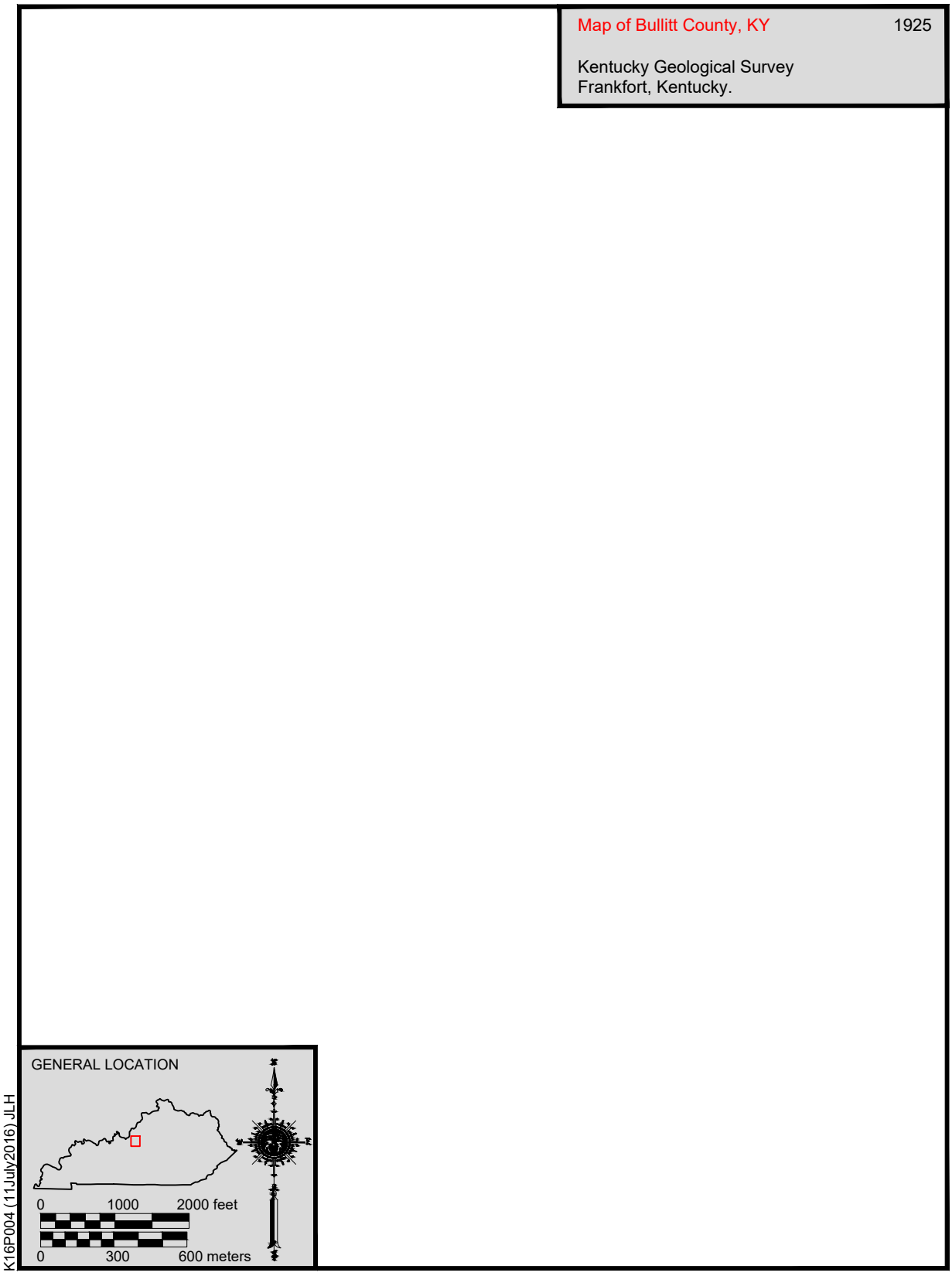

Figure 13. 1925 map showing the location of MS 1 (KGS 1925).

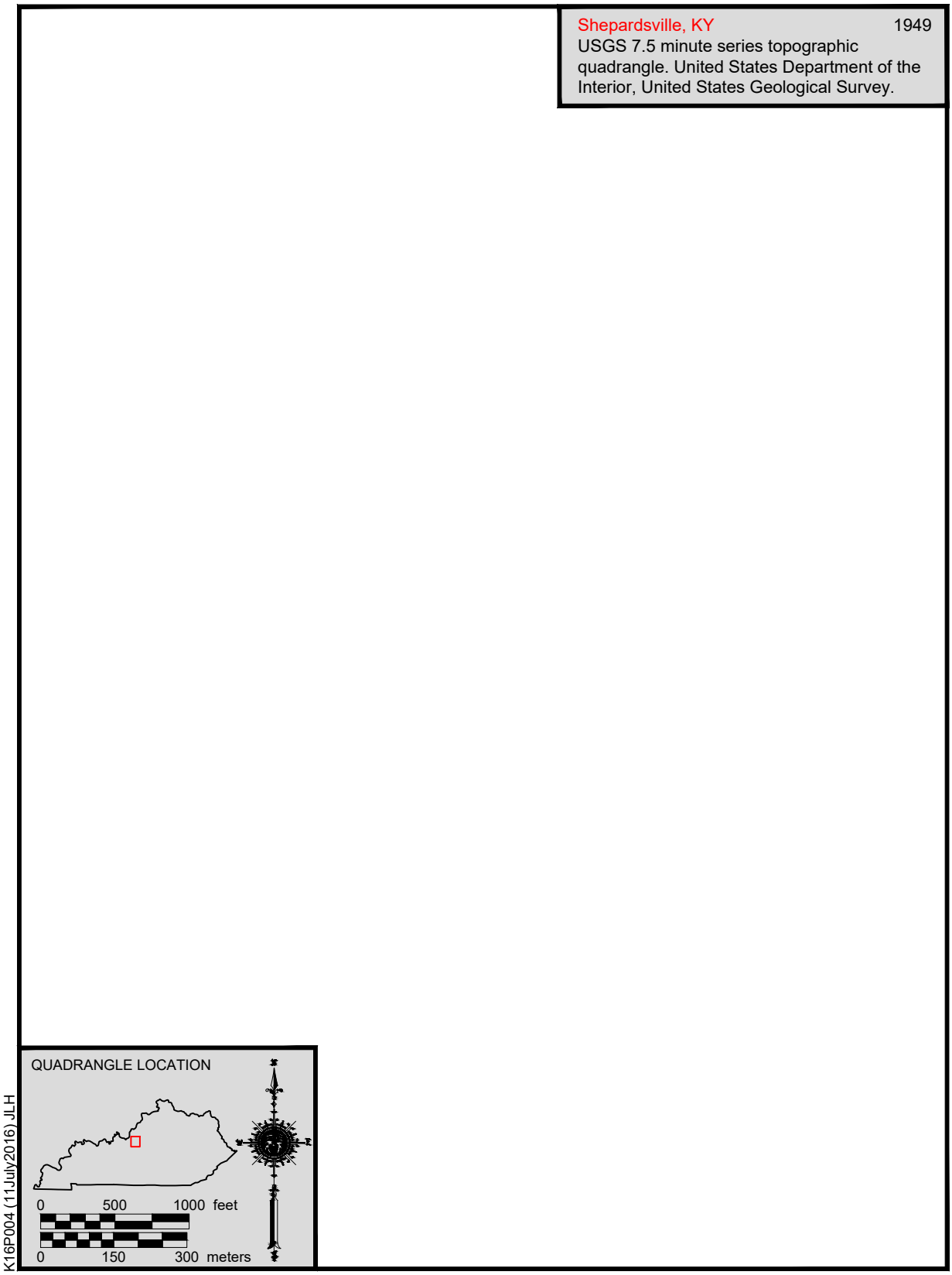

Figure 14. 1949 map showing the location of MS 1 (USGS 1949).

animal species over the Bering Land Bridge that once joined Siberia and Alaska no earlier than about 11,500 years ago. It was thought that after arrival, these migrants—referred to as the Clovis people—quickly spread across North and South America.

Evidence for a pre-Clovis migration is becoming stronger as additional data are collected. Furthermore, multiple entry points or routes have been suggested. Not only did entry into North America occur across a land bridge, but it may also have happened via northern coastal waterways leading to the western (Waguespack 2007), and possibly the eastern (Lowery et al. 2010), seaboards. According to Maggard and Stackelbeck (2008:110) "these discoveries have seriously challenged the Clovis-first model and force us to reconsider the timing of colonization and the processes that were involved in the initial settlement of the New World."

Paleoindian Period (11,500–8000 B.C.)

The Paleoindian cultural tradition in the northeastern United States has been recognized as part of the Clovis culture, a widespread, homogeneous New World culture typified by a distinctive lithic assemblage. The most distinctive members of this assemblage are lanceolate shaped, often fluted, hafted bifaces (Maggard and Stackelbeck 2008). The presence of other artifact types in these Paleoindian assemblages, such as chert knives, scrapers, unifacial tools, and blades, is consistent across the eastern United States. These types of artifacts have been recovered from Clovis sites such as Holcombe Beach in Michigan (Fitting et al. 1966), Debert in Nova Scotia (MacDonald 1968), Martens in Missouri (Martens et al. 2004; Morrow 1998, 2000), and Topper in South Carolina (Goodyear and Steffy 2003).

Clovis components are not well represented in Kentucky, but they have been identified at sites such as Adams, Adams Mastodon, Big Bone Lick, Clay's Ferry Crevice, and Parrish (Tankersley 1996). The artifacts in the Clovis toolkit represent predominantly hunting, butchering, and hide-working activities. Bone tools (e.g., awls, needles, flakers, and possibly shaft straighteners) and ornaments are assumed to have been used, but have not been recovered because of unfavorable environmental conditions (Griffin 1978:226).

Post-Pleistocene adaptive strategies were geared for coping with a harsh, but rapidly changing, environment. In general, Paleoindian sites are reflective of areas where small groups of people, perhaps no more than 50 individuals (Tankersley 1996:21), would perform specific tasks of short duration. This type of site casts a very low archaeological profile across the landscape. It has been argued that the earliest subsistence strategies in the eastern United States were not typified by a focus on the harvest of megafauna, but rather by a balanced hunting economy based on the exploitation of migratory game—especially caribou—and supplemented by foraged food (Fitting et al. 1966:103–104; Gingerich 2011; Ritchie and Funk 1973:336; Tankersley 1996:22; Walker et al. 2001).

Archaic Period (8000–1000 B.C.)

As Griffin (1978:226) states, "a purely arbitrary division is made between the earlier fluted point hunter and their direct descendants," yet typological comparisons of artifact assemblages begin to take on distinctly regional characteristics with time. The Archaic period is customarily divided into three subperiods: Early (8000–6000 B.C.), Middle (6000–3500 B.C.), and Late (3500–1000 B.C.) (Jefferies 2008). By the Early Archaic, the last glaciers had retreated and the arctic-like boreal forest was developing into the eastern deciduous forest. By the Middle Archaic subperiod, the environment was much as it is today. This subperiod is marked by the introduction of groundstone tools, some of which have been interpreted as plant processing implements. At the beginning of the Late Archaic subperiod, the modern deciduous climax forest covered the entire eastern United States. In response to the changing environment and concurrent changes in plant and animal communities, Archaic

period peoples developed a more diversified subsistence strategy that included a shift to exploitation of riverine ecosystems and, perhaps, the beginnings of a planned seasonal round exploitation strategy (Winters 1967:32, 1969).

The typical artifact assemblage representative of the Archaic period is composed of corner- and side-notched, or stemmed, hafted bifaces, increasing in both quantity and stylistic variation through time but accompanied by a decrease in quality of individual workmanship. Corner- and side-notched forms appear earlier in the sequence, whereas stemmed bifaces appear later (Jefferies 2008).

Judging from the greater frequency with which Late Archaic sites appear among sites that are recognized in the prehistoric record, a population increase may be postulated. Moreover, evidence of longer, more intensive site occupation suggests, in some cases, the possibility of extended habitation in parts of the state (Jefferies 2008).

Woodland Period (1000 B.C.–A.D. 900)

Griffin (1978:231) notes that during the Late Archaic subperiod there was "considerable evidence for the long distance movement of goods." The interregional movement of goods provided a structure for the transmission of information as well. During this period of interregional dynamism, there was a trend towards a more sedentary lifestyle with increasingly elaborate burial ceremonialism and, possibly, stratified social organization. These trends, along with the appearance of fired ceramic vessels, mark the transition between Archaic and Woodland peoples (Griffin 1978).

The Woodland period, like the preceding Archaic period, is divided into three subperiods: Early Woodland (1000–200 B.C.), Middle Woodland (200 B.C.–A.D. 400), and Late Woodland (A.D. 400–900) (Applegate 2008). Overall, the Woodland period witnessed a continuation and elaboration of cultural practices that began during the Late Archaic subperiod. Woodland peoples became increasingly dependent on the cultivation of plant foods, which allowed for a more sedentary lifestyle. Except for the latter part of the Late Woodland subperiod, subsistence practices remained similar to the Archaic subsistence patterns, which is to say a combination of hunting, plant food gathering, and fishing in a seasonal round exploitation pattern. It is within the Woodland period that highly visible site types, such as mounds and enclosures, were constructed (Applegate 2008).

Late Prehistoric Period (A.D. 900–1650)

In addition to an increase in cultural integration and cultural complexity, the Late Prehistoric period witnessed a rapidly growing dependence upon horticulture in the subsistence activities of native populations. Cultural materials are assigned to the Late Prehistoric period by the presence of seemingly diagnostic artifacts, such as mixed limestone and shell or purely shell tempered pottery and triangular projectile points. Temporal assignment based on the presence of triangular points can be misleading since they first appeared during the Late Woodland period. The Late Prehistoric period in this region of Kentucky is referred to as Fort Ancient (Henderson 2008).

During the Fort Ancient period, there was an increased reliance on agriculture, an increase in sedentism, and an increase in the complexity of sociopolitical organization. Subsistence practices focused on the cultivation of corn and beans. This was supplemented with hunting, fishing, and wild plant collecting. Many Fort Ancient villages were circular or elliptical and "exhibit distinct activity areas that encircle a central plaza: domestic/habitation, storage/trash disposal, and mortuary" (Henderson 2008:745). Some, but not all, of these circular villages were surrounded by a palisade.

Cultures with a somewhat similar level of development included Pisgah in the

Appalachian Summit, Mississippian in the middle Mississippi River area, and the Plaquemine culture of the lower Mississippi River area. A Late Woodland level of society continued in the Midwest, the Great Lakes, the Northeast, and the piedmont and coastal areas of the Middle Atlantic until European contact (Geier 1992:279–280). The Fort Ancient period is dated between approximately A.D. 900 and 1650.

Historic Period

The first Europeans to visit Kentucky included explorers, trappers, traders, and surveyors. It was in the 1750s, when the English Crown attempted to colonize the Ohio Valley, that the first organized attempt to settle Kentucky occurred. This attempt stimulated the formation of land companies that sent surveyors into the area (McBride and McBride 2008:909). One of these, the Ohio Land Company, sent Christopher Gist into Kentucky in 1751. The French and Indian War that erupted in 1754 disrupted this early exploration (Talbert 1992:689).

In 1763, England's King George III set aside the land west of the Appalachians for native populations and English fur traders and closed the area to permanent settlement. His decree was ignored, and further colonial exploration and development could not be stopped. One man who took advantage of the commercial expansion westward was Daniel Boone. Boone first explored Kentucky in 1767, and by 1769, he had explored much of the Red and Kentucky River valleys. Harrodsburg was established soon after in 1774 followed by Boonesboro in 1775. The western movement of the American frontier pushed the Native Americans further and further west, and Kentucky was one of the places where they decided to take a stand. In response, Governor Dunmore (of Virginia) waged two large campaigns in the Ohio Valley (later known as Dunmore's War), and the Native Americans were defeated. Dunmore's War opened Kentucky for settlement, although some hostilities continued after this time (Nickell 1992:96–98; Stone 1992:571).

Bullitt County History

In 1776, the Virginia General Assembly had created Kentucky County from its western lands. The newly created Kentucky County had approximately the same boundaries as the state of Kentucky does today. This county in 1780 was divided into three separate counties (Fayette, Lincoln, and Jefferson), which would collectively become the District of Kentucky in 1783 (Hammon 1992:495). Then, in 1792, the Kentucky District would dissipate in favor of the Commonwealth of Kentucky, and the counties that comprised the district would eventually be divided and subdivided into the 120 counties that presently make up Kentucky.

Bullitt County is located in north-central Kentucky and is part of the Outer Bluegrass cultural landscape (Pack 1992a:140). Bullitt County was created from portions of Jefferson and Nelson Counties in December of 1796. Surrounding counties include Jefferson, Nelson, Spencer, and Hardin Counties. The Salt River, which drains to the west, is also found in Bullitt County. The county has an area of 777 sq km (300 sq mi) and was named for Alexander Scott Bullitt, the first lieutenant governor and the nephew of Captain Thomas Bullitt. The county seat is Shepherdsville, founded in 1793 (Pack 1992a:140).

Native Americans were the first occupants of Bullitt County. Evidence along the Salt River and Floyds Fork suggests that this area was occupied by Native Americans as early as 15,000 years ago. Early European-American settlers in the late 1700s experienced a number of conflicts with the early Native-American occupants. In fact, Henry Christ, an early settler, was attacked by Native Americans in 1788 as he traveled by boat up the Salt River. The majority of his party was killed, and he was severely injured in the attack (Pack 1992a:140).

Pioneers were originally attracted to this area because of the presence of salt licks. Bullitt's Lick in Bullitt County, named for Thomas Bullitt, became the first commercial saltworks in Kentucky in 1779. Other salt manufacturers opened in several other areas of

the county, including Long Lick, Dry Lick, and Parakeet Lick. The Bullitt's Lick salt works continued production until the 1830s, when a rival salt works manufacturer forced its closing (Pack 1992a:140, 1992b:141).

Towns were established early in Bullitt County, the most prominent of which were Shepherdsville and Mt. Washington. Shepherdsville, located just south of Louisville, was established on the north bank of the Salt River. In 1800, Shepherdsville was the eighteenth largest town in Kentucky. A combination gristmill and iron forge was constructed in 1819. The forge became the Shepherdsville Iron Manufacturing Company in 1837 (Pack 1992c:818). Mt. Washington was established along stagecoach roads connecting Louisville with Shepherdsville. By 1822, it had become large enough to incorporate into a town originally named Mt. Vernon. The name was changed in 1833 to Mt. Washington (Kleber 1992a:659).

Paroquet Springs, a well-known mineral spa, was opened in Shepherdsville in 1837. This spa was located on 40 ha (100 acres) and had accommodations for 250 guests. This facility was very popular during the summer season. With the exception of a brief period during the Civil War, Paroquet Springs was in operation until a fire in March of 1879 destroyed the hotel building (Pack 1992d:712).

Other than the presence of the well-traveled Wilderness Road and flatboats used for salt shipment, transport throughout the county was not formally established until the 1850s, when the Louisville and Nashville Railroad (now CSX Transportation) was constructed in Bullitt County. Lebanon Junction became one of the first stops in the county. As a result of the railroad construction, this town became one of the largest in the county. It was selected by L&N as the site of a railyard and roundhouse for steam locomotives (Lee 1981:202; Pack 1992a:140). One of the worst train disasters in the L&N Railroad history occurred on December 20, 1917, in the Shepherdsville area. Two trains utilizing the same track collided 8 km (5 mi) from Shepherdsville, killing 51 people and injuring 48 others (Pack 1992d:818).

The growth of Bullitt County was slow and steady throughout the first half of the nineteenth century. In 1800, the county's population was just over 3,500 people. There were 969 enslaved African Americans in the county at this time, making up nearly 30 percent of the total population. By 1810, the population had grown to just 4,322, and the enslaved African-American population had increased to 976. By 1830, the population had increased to 5,652, and the enslaved population had grown to over 1,100. The year 1840 showed a population increase of nearly 1,000, and the number of enslaved African Americans rose to 1,320. Between 1800 and 1850, the population nearly doubled and was listed at 6,774 in the 1850 census. By this year, the number of enslaved African Americans had risen to 1,355, and 562 farms were recorded in the county (United States Bureau of the Census [USBC], 1800–1850, Washington, D.C.).

The Civil War impacted many areas of Bullitt County; however, the Mt. Washington area experienced the most fighting. Mt. Washington was held by members of John Wharton's Confederate cavalry. In 1862, a Union infantry division moved out of Louisville and battled with Wharton's men just north of Mt. Washington. On October 2, 1862, 25 Union soldiers were killed along Bardstown Pike. However, by the next day, fighting had moved south to the Salt River as the Confederates retreated (Kleber 1992b:659). Confederate forces occupied Shepherdsville in September 1862, and destroyed the railroad bridge that crossed the Salt River; however, Federal forces were able to gain control of the town in October of that same year (Pack 1992d:818). In 1861, General Sherman used the train station at Lebanon Junction as headquarters (Bullitt County Genealogical Society 1996:11).

Even though fighting did occur in Bullitt County during the Civil War, it did not seem to have a drastic impact on the population. In

1860, 7,280 people resided in the county. Of these, 1,458 were enslaved African Americans held by 277 slaveholders. The number of farms in the county rose slightly to 595. By 1870, the population had increased to 7,781, and the number of farms had risen to 656 (USBC 1860, 1870).

Whiskey distilling was an important industry that developed at the turn of the twentieth century in Bullitt County. The Beam family took notice of the water quality in the Clermont area and began making Jim Beam Bourbon (Shepherdsville/Bullitt County Tourist and Convention Commission [SBCTC] 2009).

The twentieth century also brought the development of a nature conservancy to Bullitt County. In May of 1929, Isaac W. Bernheim established the Bernheim Forest and Arboretum. This forest contains approximately 5,666 ha (14,000 acres) of land and houses a nature museum and arboretum. This forest is similar to the ones settled by the first pioneers. Only 607 ha (1,500 acres) of the forest have experienced any development (Holmberg 1992:72¬73).

During the mid-twentieth century, the Kentucky Turnpike (now I-65) was constructed from Louisville to Elizabethtown, giving Shepherdsville access to a modern highway. This construction brought a new period of growth to Bullitt County. Shopping centers, restaurants, and other businesses grew near the interstate exchange. The Kentucky Turnpike also allowed residents of Bullitt County to easily commute to Louisville (Pack 1992d:818). Not only did Shepherdsville experience growth after this construction, but Lebanon Junction was also revitalized (Pack 1992a:140). Hillview, a town in Bullitt County, experienced rapid growth after the Kentucky Turnpike construction as well. In the 1960s, Bullitt County grew faster than any other county in the Commonwealth of Kentucky (Kleber 1992a:432).

Improvements in transportation throughout the county obviously had quite an impact on the population of Bullitt County. In 1900, the population was 9,602. The population over the next 40 years seemed quite dormant and changed very little. In 1940, the population was 9,511. With the new road improvements discussed above came new residents. By 1960, 15,726 residents occupied the county (USBC 1900–1960).

The major industries in the county today are whiskey distilling, manufacturing, printing, and quarrying. After more than 100 years of continuous operations, the Jim Beam Distillery produces some of the most popular bourbons in the world (SBCTCC 2009). A museum and the Beam family homestead are still on the property and draw many tourists each year.

Tourism and recreation in Bullitt County include many opportunities for the whole family. The Bernheim Arboretum and Research Forest features thousands of acres of wildlife sanctuary. Churchill Downs and The Kentucky Derby museum draw thousands of visitors to the area each year. Other activities in the county include two wineries, the Knob State Forest, the Bullitt County History Museum, and many others (SBCTCC 2009).

Agriculture is also important to the county. The major crops include burley tobacco, corn, and soybeans. Beef and dairy cattle, as well as hogs, are also popular in the county. In 2007, Bullitt County ranked first in the commonwealth in the livestock inventory of pigeons and pheasants. The year 2007 also showed 519 farms operating in the county (Bullitt County History Museum 2009).

The public school system in Bullitt County is one of Kentucky's 10 largest districts. The school system contains 23 schools, including 12 elementary schools, 6 middle schools, 4 high schools, and 1 Area Technology Center. This school system provides educational services to over 12,000 students (Bullitt County Public Schools 2009).

The population of Bullitt County drastically increased in the late twentieth and early twenty-first century. In the 30 years after 1960, the county's population increased by more than 50 percent to 47,567. By 2000, the population had increased to 61,236. In 2006,

the total population of the county was 72,851. The close proximity to Louisville, as well as the growth of Shepherdsville, contributed greatly to the population increase (USBC 1990–2006).

IV. METHODS

This section describes the methods used during the survey. Site-specific field methods are discussed in further detail in Section 6 of this report. General laboratory methods are described below, whereas methods specific to the analysis of recovered historic cultural materials are discussed in Section 5, Materials Recovered.

Field Methods

The project area was determined by maps provided by the client and by an Ashtech Spectra Precision MobileMapper 10 global positioning system (GPS) handheld unit in the field. Landowner permission was obtained prior to initiating fieldwork.

Intensive pedestrian survey was conducted over much of the project area due to steeply sloped terrain. Pedestrian survey was conducted by walking parallel transects, spaced no more than 20 m (66 ft) apart along natural contours. Steep sideslopes were inspected for natural rock benches and rock overhangs, and historic structural remains and cemeteries.

Shovel testing at 20 m intervals was conducted in all level or fairly level portions of the project area. When cultural materials were encountered, the shovel test interval was reduced to 10 m (33 ft). All shovel tests measured no less than 35 cm (14 in) in diameter and extended well into subsoil. All sediments removed from the shovel tests were screened through .64 cm (.25 in) mesh hardware cloth, and the sidewalls and bottoms of each shovel test were examined for cultural material and features. All artifacts recovered were bagged by shovel test number and level.

Laboratory Methods

All cultural material recovered during the field work was transported to CRA for processing and analysis. Initial processing of the recovered materials involved washing all artifacts and assigning catalog numbers. Catalog numbers consisted of the site number and a unique number for each provenience lot.

The methods, specifics, and results of the subsequent analysis of the recovered historic materials are discussed in the Materials Recovered section of this report. All cultural materials, field notes, records, and site photographs will be curated at the William S. Webb Museum of Anthropology at the University of Kentucky.

V. MATERIALS RECOVERED

Historic materials were recovered from a single historic archaeological site during the current survey (Site 15Bu820). The artifacts are described below and an inventory of materials recovered is presented in Appendix A.

Historic Materials Recovered

Tanya A. Faberson

Methods

The historic assemblage includes artifacts classified and grouped according to a scheme originally developed by Stanley South (1977). South believed that his classification scheme would present patterns in historic site artifact assemblages that would provide cultural insights. Questions of historic site function, the cultural background of a site's occupants, and regional behavior patterns were topics to be addressed using this system.

South's system was widely accepted and adopted by historical archaeologists. However, some have criticized South's model on theoretical and organizational grounds (Orser 1988; Wesler 1984). One criticism is that the

organization of artifacts is too simplistic. Swann (2002) observed that South's groups have the potential to be insufficiently detailed. She suggested the use of sub-groups to distinguish between, for example, candleholders used for religious purposes and those used for general lighting. Others, such as Sprague (1981), have criticized South's classification scheme for its limited usefulness on late nineteenth- and early-twentieth-century sites, which include an array of material culture—such as automobile parts—not considered by South. Despite its shortcomings, most archaeologists recognize the usefulness of South's classification system to present data.

Stewart-Abernathy (1986), Orser (1988), and Wagner and McCorvie (1992) have subsequently revised this classification scheme. For our purposes, artifacts are grouped into the following categories: domestic, architecture, arms, furnishings, clothing, personal, communication and education, maintenance and subsistence, biological, and unidentified. The artifacts recovered during this project are summarized in Table 3.

Table 3. Historic Artifacts Recovered According to Functional Group.

Group	15Bu820	Percent
Architecture	7	15.56
Arms	1	2.22
Domestic	34	75.56
Furnishings	1	2.22
Maintenance/Subsistence	1	2.22
Unidentified	1	2.22
Totals	45	100

Grouping artifacts into these specific categories makes it more efficient to associate artifact assemblages with historic activities or site types. One primary change associated with the refinement of these categories is reassigning artifacts associated with the "Miscellaneous and Activities" under South's (1977) original system. Considering the potential variety of historic dwellings and outbuildings within the project area, a refinement of the artifact groupings was considered important to perhaps observe whether the distribution of specific artifact groups would produce interpretable patterns related to activity areas or structure types. Each one of these groups and associated artifacts is discussed in turn.

Information on the age of artifacts as described in the artifact tables is derived from a variety of sources cited in the discussion of the materials recovered. The beginning and ending dates cited need some clarification. Usually, an artifact has specific attributes that represent a technological change, an invention in the manufacturing process, or simple stylistic changes in decoration. These attribute changes usually have associated dates derived from historical and archaeological research. For example, bottles may have seams that indicate a specific manufacturing process patented in a certain year. The bottle then can be assigned a "beginning," or incept, date for the same year of the patent. New technology may eliminate the need for the same patent and the bottle would no longer be produced. The "ending," or terminal, date will be the approximate time when the new technology took hold and the older manufacturing processes are no longer in use.

The dates presented here should not be considered absolute, but rather the best estimates of an artifact's age available at this time. A blank space indicates that the artifact could not be dated or, alternately, that the period of manufacture was so prolonged that the artifact was being manufactured before North America was colonized. An open-ended terminal date was assigned for artifacts that may be acquired today. The rationale for presenting dates for the artifacts recovered is to allow a more precise estimate of the time span the site was occupied, rather than the mean occupation date of a site.

A summary of the artifacts recovered follows. A complete inventory of the historic artifacts can be found in Appendix A.

Materials Recovered by Functional Group

There were 45 historic artifacts recovered during the current survey. The following

provides a descriptive discussion of the types and age of artifacts recovered from Site 15Bu820.

Architecture Group (N = 7)

The architecture group is comprised of artifacts directly related to buildings, as well as those artifacts used to enhance the interior or exterior of buildings. These artifacts typically consist of window glass, plate glass, nails, and construction materials, such as brick and mortar. The architecture group items are discussed below.

Flat Glass (n = 7)

Cylinder glass was developed in the late eighteenth century to enable the inexpensive production of window glass. With this method, glass was blown into a cylinder and then cut flat (Roenke 1978:7). This method of producing window glass replaced that of crown glass production, which dates back to the Medieval period and was capable of fabricating only very small, usually diamond-shaped, panes (Roenke 1978:5). Cylinder glass was the primary method of window glass production from the late eighteenth century through the early twentieth century, at which time cylinder glass windows were slowly replaced by plate glass windows. Plate glass window production became mechanized after 1900, but did not become a commercial success in the United States until around 1917 (Roenke 1978:11).

Cylinder window glass has been shown to gradually increase in thickness through time and can be a useful tool for dating historic sites. Several dating schemes and formulas have been devised that use average glass thickness to calculate building construction or modification dates. These include Ball (1984), Roenke (1978), and Chance and Chance (1976) to name a few. Like previously derived formulas, Moir (1987) developed a window glass dating formula to estimate the initial construction dates for structures built primarily during the nineteenth century. Although Moir (1987:80) warns that analysis on structures built prior to 1810 or later than 1915 have shown poor results, most research in this area shows the regression line extending back beyond 1810 (Moir 1977; Roenke 1978). Hence, dates calculated back to 1785 were considered plausible. Sample size is also a consideration when using the Moir window glass regression formula. According to Moir (1987:78), sample sizes also need to be "reasonable and not collected from a point or two" in order to accurately date the construction of a building. Moir (1987:80) indicates sample sizes as small as 15 sherds are acceptable, but recommends larger sample sizes for better accuracy, and we agree with his assessment. For our purposes, a "reasonable" sample size is considered 25 window glass sherds. It should be noted that for window glass assemblages with less than 25 sherds, however, "tentative" dates based on measurements are still presented for the purpose of reporting and providing additional information regarding the material collected. Individual sherd/small assemblage measurements/dates are not presented as "absolute" dates for sites, and as a general principle, any window glass dates derived using the Moir (1987) method should be contextualized utilizing other artifact dating methods whenever possible.

Each fragment of flat glass was measured for thickness and recorded to the nearest hundredth of a millimeter using digital calipers. Although Moir (1987:80) states that dating window glass after 1915 is not as reliable for dating sites, for our purposes, window glass that measured 2.41 mm (dating to 1916) was included in the calculations because according to Roenke (1978:11), plate glass does not become widely or successfully produced in the United States until 1917. There were seven flat glass sherds recovered during the current project (Table 4). Four of these were identified as window glass, and Moir's window glass technique was used to date the sherds, which tentatively ranged from 1883 to 1898. A mean window glass date was not calculated since there were only four sherds. In addition to the window glass, there were three plate glass sherds recovered. They date from 1917 to the present.

Table 4. Summary of Historic Artifacts.

Class	Type	15Bu820
Flat glass		
	Window glass	4
	Plate glass	3
Projectiles		
	Rimfire cartridge	1
Ceramics		
	Whiteware	1
Container glass		
	ABM	30
Beverage cans		
	Beer can	1
Glass tableware		
	Press-molded	2
Lighting		
	Lamp chimney	1
General tools		
	File	1
Metal		
	Item/part	1
	Totals	45

Arms Group (N = 1)

The arms group includes artifacts generally associated with civilian and military weaponry. Examples of arms include gun parts, bullets or projectiles, cartridge cases, and gunflints. The artifact recovered in this group was reflective of civilian firearm use. One rimfire .22 caliber brass projectile was recovered dating after 1871 (Ball 1997:121) (see Table 4).

Domestic Group (N = 34)

Artifacts included in the domestic group consisted of ceramics (n = 1), container glass (n = 30), beverage cans (n = 1), and glass tableware (n = 2) (see Table 4).

Ceramics (n = 1)

Only one ceramic vessel sherd was recovered. It was identified as whiteware. As a ware type, whiteware includes all refined earthenware that possesses a relatively non-vitreous, white to grayish-white clay body. Undecorated areas on dishes exhibit a white finish under clear glaze. This glaze is usually a variant combination of feldspar, borax, sand, nitre, soda, and china clay (Wetherbee 1980:32). Small amounts of cobalt were added to some glazes, particularly during the period of transition from pearlware to whiteware and during early ironstone manufacture. Some areas of thick glaze on whiteware may, therefore, exhibit bluish or greenish-blue tinting. Weathered paste surfaces are often buff or off-white and vary considerably in color from freshly exposed paste (Majewski and O'Brien 1987).

Most whiteware produced before 1840 had some type of colored decoration. These decorations are often used to designate ware groups (i.e., edgeware, polychrome, and colored transfer print). Most of the decorative types are not, however, confined to whiteware. Therefore, decoration alone is not a particularly accurate temporal indicator or actual ware group designator (Price 1981).

The most frequently used name for undecorated whiteware is the generic "ironstone," which derives from "Ironstone China" patented by Charles Mason in 1813 (Mankowitz and Haggar 1957). For purposes of clarification, ironstone will not be used when referring to whiteware. Ironstone is theoretically harder and denser than whiteware produced prior to circa 1840. Manufacturer variability is, however, considerable and precludes using paste as a definite ironstone identifier or as a temporal indicator. Consequently, without independent temporal control, whiteware that is not ironstone is difficult to identify, as is early vs. later ironstone. For our analysis, the primary determining factor in classification of a sherd as whiteware is the hardness and porosity of the ceramic paste.

One whiteware sherd was recovered (Figure 15a). It is not known whether it came from a plain vessel, or if it had been an undecorated part of a decorated vessel. It dates after 1830 (Majewski and O'Brien 1987:119). Its vessel form is unknown.

Container Glass (n = 30)

Research by Baugher-Perlin (1982), Jones and Sullivan (1985), Lindsey (2015), and Toulouse (1972) was used to date the assemblage. Glass color was the only attribute that could be used for dating those fragments that were not identifiable as to type of manufacture. The approximate date of

Figure 15. Historic materials recovered from Site 15Bu820: (a) undecorated whiteware body sherd from GSC 1; (b) amber ABM embossed beer bottle body/base from STP 1, Zone I; (c) press-molded pink Depression glass sherd from STP 2, Zone I; and (d) iron/steel file fragment from STP 1, Zone I.

manufacture for bottles and bottle fragments recovered from the project area was established by determining the manufacturing process associated with the bottle (i.e., creation of the base and lip of the container) and using any patent or company manufacturing dates embossed on the bottle.

When examining glass vessels, bottle lips can be informative. A lipping tool, patented in the United States in 1856, smoothes and shapes the glass rim into a more uniform edge than a hand-smoothed lip or "laid-on ring." Certain types or styles of lips were associated with specific contents; for example, medicines were often contained in bottles with prescription lips (Jones and Sullivan 1985). A "sheared," or unfinished, bottle lip typically dates before 1880.

Lipping tools were used throughout the middle and end of the nineteenth century until the advent of the fully automatic bottle machine (ABM) in 1903. It should be noted, however, that as automated bottle manufacture became available after the turn of the twentieth century (see below), tooled finishes continued to be produced—albeit in steadily decreasing numbers. That is, there is a lag time between tooled finishes and ABM finishes, and although ABM glass is given an incept date of 1903, most tooled-glass vessel sherds will be given a terminal date around the 1920s due to this lag time, unless other diagnostic characteristics are observed enabling one to give it an earlier terminal date.

Color also is an important aspect of container glass identification, and oftentimes it is used to date vessels/sherds in conjunction with other diagnostic characteristics. In the event that no other manufacturing characteristics are observable, glass color alone can be used to date container glass. Jones and Sullivan (1985) observed that chemicals color glass, either as natural inclusions or additions by the manufacturer. "Black glass" is one of the earliest glass colors, possibly dating back to mid-seventeenth-century Europe. It was not actually black, but more of a very dark olive green or olive amber. The coloring of the glass was usually the result of high iron concentrations as well as carbon, copper with iron, and/or magnesia (Jones and Sullivan

1985). It was called black because the color was so deep as to appear black unless held up to direct lighting (McKearin and Wilson 1978:9). "Black glass" protected contents from the effects of direct light and was strong and resilient. Typically, black glass was utilized for liquor, wine, and ale/beer, and it was mass produced for ale and beer between 1840 and the 1880s (Lindsey 2015; Wilson and Wilson 1968). According to McKearin and Wilson (1978:229–232), black glass container sherds are not typically found on sites dating after 1880.

According to Lockhart (2006), amethyst glass began to be manufactured around 1870, when manganese was being added to the glass recipe. Although initially colorless, the glass will turn a distinctive purplish color when exposed to sunlight over time. It was previously thought that amethyst glass production ceased by 1914 due to a shortage of manganese from Germany during World War I; however, the change was actually a result of technological advancements in the glass industry, mainly the conversion to automatic bottle machines (Lockhart 2006:53). Although manganese was more difficult to obtain after World War I, and selenium was often less expensive, the improvement in technology was the major reason for the change. The use of selenium proved to be an inexpensive decolorant in glass production and ultimately displaced manganese as a decolorizer by 1920 (Lockhart 2006:53). Amber glass had a general application in the mid-nineteenth century, but was not widely used until after 1860. Cobalt glass is produced with the addition of the coloring agent cobalt oxide to the glass batch (Lindsey 2015). The introduction of what Lindsey (2015) calls "true blue" glass began in 1840 with the production of soda, mineral water, and ink bottles.

With the growing public desire to see the contents of the bottles, clear glass came into demand and was popular beginning in the 1860s with the burgeoning public health movements following the Civil War (Baugher-Perlin 1982:261; Wiebe 1967). However, it should be noted that clear glass was available to a limited degree before this time, especially colorless leaded glass, which dates between 1827 and 1875 (Jones 2000:149, 161; Miller and Sullivan 1984). Opaque white, or "milk," glass has been manufactured as long as glass has been made, but milk glass became common in the late-nineteenth and twentieth centuries as it became frequently used in "containers, tablewares, and lighting devices" (Jones and Sullivan 1985:14). Aqua and olive colored glass were also used for many different containers, but they generally are not assigned specific dates due to their long period of use over the last several centuries. In some cases, however, aqua glass blown in mold (BIM) sherds with no other diagnostic characteristics are assigned a date range of 1800–1920, and olive green sherds are given a date range of 1780–1920.

The manufacturing process can be roughly divided into three basic groups including free blown, blown in mold (BIM), and automatic bottle machine manufactured (ABM) vessels (Baugher-Perlin 1982:262–265). Only ABM glass was recovered during the current project.

Automatic Bottle Machine (ABM) (n = 30)

The Owens automatic bottle-making machine was patented in 1903 and creates suction scars and distinctive seams that run up the length of the bottle neck and onto the lip. Bottles were being manufactured regularly with this machine by 1905, and by 1907, it was utilized to produce significant quantities of container glass vessels (Lindsey 2015; Miller and McNichol 2002). Hence, the ABM mold provides a firm manufacturing date at the beginning of the twentieth century. Another automatic bottle machine called the Individual Section was also used in the commercial production of bottles. This machine was widely used starting in 1925 and by 1940 became the most widely used bottle manufacturing device (Jones and Sullivan 1985:39). This bottle machine was more cost effective than the Owens machine, which was no longer used after 1955.

There were 30 glass fragments assigned to the ABM category during the current project, and several had distinguishing characteristics

(see Table 4). One base type was observed: cup bottom mold. One amber beer bottle body/base sherd of this mold type was embossed "NO DEPOSIT" and dates after 1940 (Figure 15b) (Intermountain Antiquities Computer System [IMACS] 1992). Another amber cup bottom base sherd was knurled/stippled and also dates after 1940 (Lindsey 2015). The only body type was embossed. Three clear body sherds with unknown embossed parallel lines were recovered. They date after 1903. The only finish type was a bead lip and it was observed on two clear meat jar fragments and also date after 1903. The remaining ABM sherds could only be classified according to color, and these included amber (n = 15), aqua (n = 1), clear (n = 6), and light green (n = 1). Identifiable vessel forms included beer bottles (n = 12; likely all from the same vessel), a liquor bottle (n = 1), and a soda bottle (n = 1).

Beverage Can (n = 1)

In 1847, Allen Taylor invented a machine that converted flat metal disks into stamped or flanged can ends. This machine was improved upon over the next two years, yielding a machine that stamped both can ends and cut a filler hole in the cap (Rock 1984). Most canneries in the United States used these stamped-end cans until the 1880s.

As the demand for canned goods rose, a separate can producing industry evolved. Max Ams, a New York machine-made can company owner, developed a "double-side seam" in 1888 that locked the parts of the cans together (Collins 1924; May 1937). By 1898, the company had perfected this technique with the introduction of the "Ams Can" (Collins 1924; May 1937). This can eliminated the need for interior seam soldering by closing the top, bottom, and side seams with double seams. These innovations reduced the manufacture time of the cans and significantly reduced can failure (i.e., swelling and bursting) due to the superior strength of the seam.

The hole-in-top can, an improvement of the hole-in-cap can, used a small pinhole, no larger than .125 inch in diameter. The hole was sealed with solder. By 1920, evaporated milk was found almost exclusively in hole-in-top cans (Rock 1984).

In 1904, the Sanitary Can Company of New York developed the first airtight solderless can (Rock 1984). The cans were completely machine made and were produced at a rate of almost 25,000 cans a day (May 1937). By the early 1960s, the tin can was replaced by a steel body, which was stronger and more durable than tin. Aluminum tops were added to beverage cans in order to make opening the cans easier. Modern cans are steel or alloys, and usually lined with plastic on the interior to prevent chemical reactions between the contents of the can and the can itself.

One beer can fragment was recovered (see Table 4). The manufacturer is unknown, but it did have a partial label that read "PREMIUM PILSNER." It also had an opening for a ring tab. It dates between 1965 and 1985 (Busch 1981; Rock 1980, 1984, 1987).

Glass Tableware (n = 2)

Press molding was first used (although on a very small scale) in England in the late-seventeenth century to make small solid glass objects, such as watch faces and imitation precious stones (Buckley 1934). By the end of the eighteenth century, decanter stoppers and glass feet for objects were also being produced (Jones and Sullivan 1985). The production of complete hollowware glass objects did not become possible until there were innovations in press-molded techniques in the United States during the late 1820s (Watkins 1930). Mass production of press-molded glassware was well established by the 1830s (Watkins 1930).

Earlier press-molded glass objects were predominately made of colorless lead glass (Jones and Sullivan 1985). William Leighton of the Hobbs-Brockunier Glass Works in Wheeling, West Virginia, invented lime glass. This type of glass looked like lead glass, had superior pressing attributes, and was much more inexpensive than lead glass (Revi 1964). Advancements in mold technology in the 1860s and 1870s led to the application of

steam-powered mold operation. This in turn led to increased production and reduced costs (Revi 1964). Modern press molding is conducted entirely by machine (Jones and Sullivan 1985).

Press-molded table glass was made by dropping hot pieces of glass into a mold. A plunger was then forced into the mold, pressing the hot glass against it. The outer surface of the glass took on the form of the mold, while the inner surface of the glass was shaped by the plunger. The plunger was withdrawn and the glass object was removed from the mold. The surface of the glass was often fire polished to restore the brilliance of the glass surface that was disturbed by its contact with the mold (Jones and Sullivan 1985).

Press-molded glass may be recognized by several characteristics. Usually, the glass object must be open-topped in order for the plunger to be withdrawn from the mold. Narrow mouthed vessels were produced, but additional manipulation of the glass was necessary after the plunger was removed from the mold. Evidence of this manipulation should be present on the vessel (Jones and Sullivan 1985). There is no relationship between the exterior shape and design of a press-molded vessel to the interior shape and design because the plunger shapes the interior of the object most often leaving behind a smooth surface. This differs from earlier glass vessel production techniques like blown glassware, where interior shape was related to the exterior shape and design (Jones and Sullivan 1985).

Another characteristic of press-molded containers was that mold seams were generally present. The seams were sharp and distinct, unless steps had been taken to deliberately remove them. The texture of the glass surface of press-molded glass was disturbed and often disguised by an all-over stipple design. The edges of the designs on press-molded glass had a predisposition toward rounded edges. The bases of press-molded objects were usually polished. The quality of the designs on press-molded glassware was precise and the design motifs were numerous (Jones and Sullivan 1985).

In contrast to press-molded glass, cut glass generally had a polished, smooth, and glossy surface texture. The design edges were sharp and distinct. Cut glass designs consisted mostly of panels, flutes, and miters. The designs were often slightly uneven and asymmetrical. Mold seams were usually absent; they were polished off prior to cutting (Jones and Sullivan 1985). Contact-molded glass also differs from press-molded glass in that the exterior and interior of the vessel will portray parallel patterns. The interior of the vessel is also generally much more diffuse towards the base.

Two pieces of glass tableware were recovered (see Table 4). Both were press-molded translucent pink Depression glass sherds of unknown vessel form (Figure 15c). They date after 1920 (Jones 2000:149).

Furnishings Group (N = 1)

The furnishings category includes artifacts usually associated with the home or building, but are not elements of the actual construction. Examples of furnishings include decorative elements, furniture, heating, lighting, and wall decorations. One lighting artifact was recovered (see Table 4). It was a piece of clear lamp chimney glass and dates from 1854 to 1940 (Faulkner 2008:100; Pullin 1986).

Maintenance and Subsistence Group (N = 1)

The maintenance and subsistence group contains artifacts grouped into classes containing non-food containers, electrical, farming and gardening, hunting and fishing, stable and barn activities, general hardware, general tools, transportation, and fuel-related items such as coal. One tool fragment was recovered (see Table 4). It was a portion of an iron/steel file (Figure 15d). It was not assigned a specific date.

Unidentified (N = 1)

This category contains artifacts that could not be identified beyond the material from

which the artifact was made. One unidentified metal item was recovered (see Table 4). It was circular and labeled with the words “Imperial” and “Made in China.” It was not assigned a specific date.

Discussion

There were 45 historic artifacts recovered during the current survey from Site 15Bu820. Seven of these were architectural and consisted of flat glass. Four were window glass and tentatively dated between 1883 and 1898. The remaining 3 flat glass sherds were plate glass that dated after 1917.

Domestic artifacts included ceramics (n = 1), container glass (n = 30), beverage cans (n = 1), and glass tableware (n = 2). Only one ceramic sherd was recovered, and it was an undecorated whiteware sherd of unknown vessel form. It dated after 1830. All of the container glass was ABM. There were two amber cup bottom mold beer bottle sherds that date after 1940. Three clear sherds were embossed with unknown parallel lines and date after 1903. Two bead finish clear meat jar rims also were observed, and they date after 1903. The sherds that could only be classified according to color were amber (n = 15), aqua (n = 1), clear (n = 6), and light green (n = 1). Vessel forms included beer bottles (n = 12; all likely from the same vessel), a liquor bottle (n = 1), and a soda bottle (n = 1). The beverage can consisted of an aluminum beer can with a ring pull top. It dated between 1965 and 1985. Two press-molded pastel pink Depression glass tableware sherds were recovered from Site 15Bu820, and they dated after 1920.

One furnishing artifact was recovered, and it was a piece of lamp chimney glass that dated between 1854 and 1940. The maintenance and subsistence item was a portion of a corroded file. The unidentified artifact was a circular metal disk.

The historic artifacts recovered from Site 15Bu820 had an average date range of 1902–1962, and the mean was 1932. The site was the location of an African-American schoolhouse that was constructed circa 1916 and used as such through circa 1956; after that date, the building was used as a residence for an unknown period. The dominance of the architectural and domestic group artifacts supports the use of the site as a domestic residence, and some of the items may be associated with the use of the structure as a school, but none of the artifacts specifically point to schoolhouse activities (such as with the presence of writing implements and erasers, for example). The only architectural items recovered were window glass and plate glass, and while the window glass suggested an earlier date for the occupation of the site, only a few sherds were recovered and cannot be used reliably for dating purposes. Several of the artifacts, such as the .22 caliber cartridge and liquor/beer bottle fragments likely do not coincide with the use of the structure as a school, but this is ultimately unknown. The presence of lamp chimney glass does suggest that the school used oil lamps for lighting, and the ceramic sherd, glass tableware, and some of the other ABM glass could have been used by the students or teachers. Unfortunately, based on the paucity of items collected, little more can be said about the former activities of the schoolhouse or residence based solely on the cultural materials.

VI. RESULTS

One historic archaeological site (15Bu820) was identified during the current survey. The site is described below and its location is depicted on Figures 2 and 3b.

15Bu820

Component(s): Historic (early to mid-twentieth century)
Site type(s): School, later used as farm/residence
Size: 2,500 sq m (26,910 sq ft)
Distance to nearest water: 280 m (981 ft)
Direction to nearest water: North
Extent of previous disturbance: Removal of structure
Topography: Terrace

Vegetation: Grass, weeds, bushes, saplings, and mature deciduous trees
Ground surface visibility: Less than 10 percent due to vegetation
Aspect: Level
Recommended NRHP status: Not eligible

Site Description

Site 15Bu820 was a historic schoolhouse that was in use circa 1916 to 1956, with reported subsequent use as a residence. The site was located along the east side of Cooper Run Road. The site was identified in a small clearing within a larger secondary growth forest on a level terrace at an elevation of 142 m (466 ft) AMSL.

Vegetation primarily consisted of grass, weeds, saplings, and mature deciduous trees (Figure 16). Several large deciduous trees lined the former property boundary to the north (i.e., along an old fence line). Ground surface visibility within the wooded area was poor due to undergrowth and leaf litter, but was fair in the area where the structure once stood. The area where the structure once stood, along with its immediate vicinity to the south and east, had been heavily disturbed. Two push piles, consisting of sediment covered in recent vegetation growth, were observed south of the former house location, and there were other piles of structural debris around the site.

Site 15Bu820 was identified by the presence of historic artifacts in shovel tests, but the presence of the site was anticipated based on the identification of a historic structure on a 1925 map (MS 1; see Figure 13). Site boundaries were defined by the lack of cultural materials to the north and south, by Cooper Run Road to the west, and by the project boundary to the east (Figure 17). The portion of the site within the project boundaries measured approximately 50 m (164 ft) north to south by 50 m (164 ft) east to west, covering 2,500 sq (26,910 sq ft). The site probably extends outside the project boundaries to the east.

Figure 16. Overview of Site 15Bu820, looking southeast.

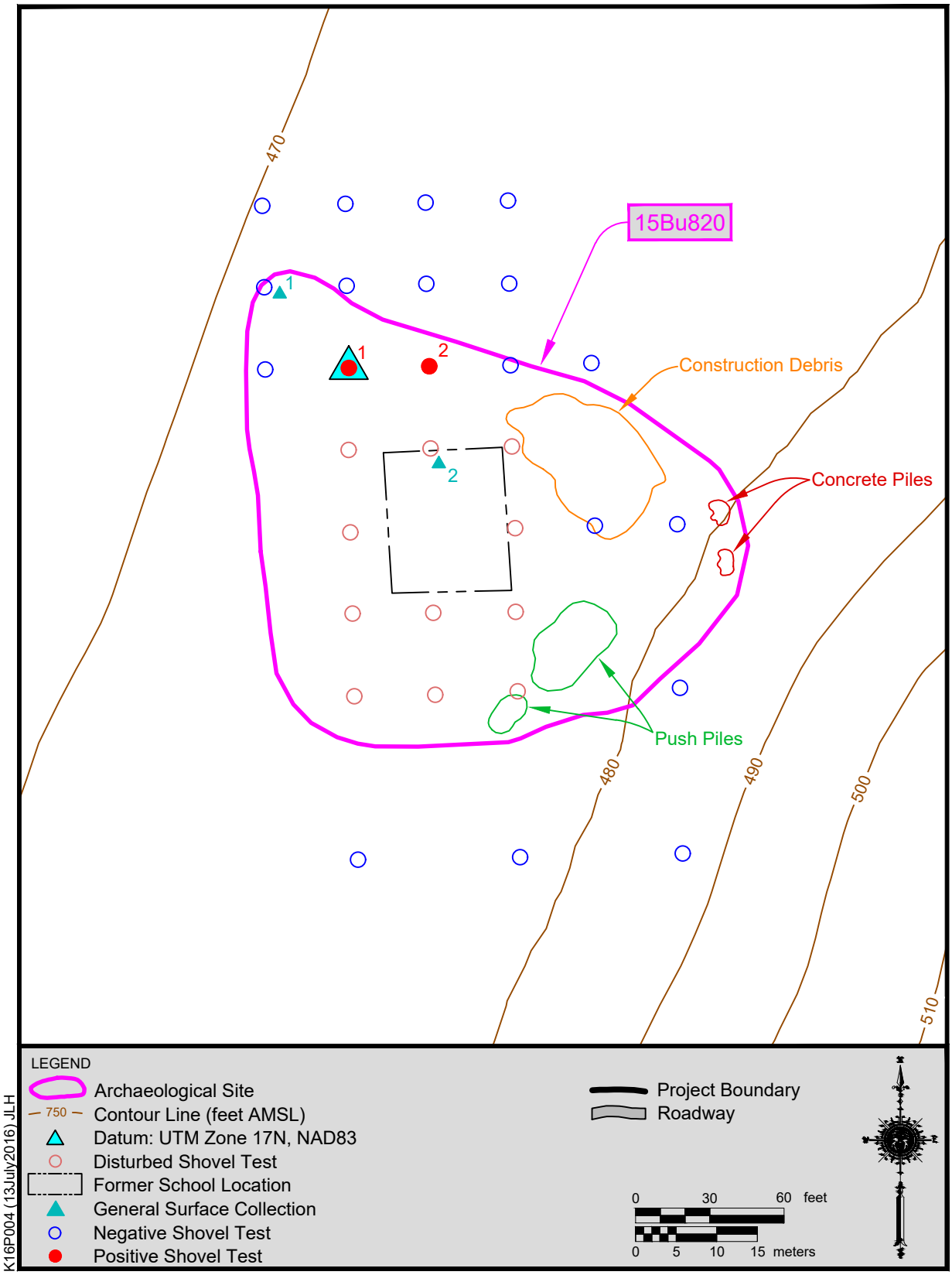

Figure 17. Schematic plan map of Site 15Bu820.

Investigation Methods

The site was investigated through screened shovel testing (see Figure 17). Eighteen shovel tests were excavated within the site boundaries, only two of which contained cultural materials. Shovel testing was conducted at 10 m (33 ft) intervals. Artifacts identified in shovel tests were collected by provenience and stratigraphic zone. The majority of the shovel tests exhibited disturbed soil profiles that were probably associated with removal of the schoolhouse.

General surface collection was conducted in two areas within the project boundaries where cultural materials were observed on the ground surface. One area was in the wooded area where shovel tests contained cultural materials, and the other was in the former structure location, where several pieces of plate glass were observed. Modern materials were also observed across the site area, including plastic and glass beverage containers and other trash, but this material was not collected.

Depositional Context

Otwell series silt loam was mapped for the site. The observed soil profiles typically consisted of an A horizon of dark grayish brown (10YR 4/2) silty clay loam with a few coal fragments to between 15 and 20 cm (6 and 8 in) bgs (Zone I), followed by a subsoil brown (10YR 5.3) silty clay to clay (Zone II) (Figure 18). In the area that formerly contained the structure, the profile consisted only of subsoil at the ground surface or immediately below gravel. The observed soils within the wooded area were consistent with the mapped series. Cultural materials were recovered only from the ground surface and from the topsoil at the site. There was no evidence for the presence of intact, sub-plow zone features, midden, cultural deposits, or structural remains within the project boundaries at Site 15Bu820.

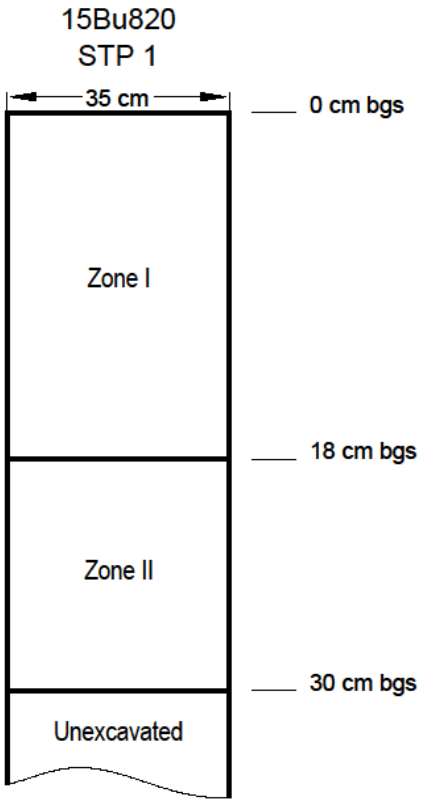

Figure 18. Representative soil profile for Site 15Bu820.

Artifacts

Cultural materials recovered from Site 15Bu820 consisted of architectural, domestic, and other artifacts (Table 5). Architectural materials consisted only of plate glass (manufactured after 1917) and window glass (1883–1898). The lack of other architectural materials is not surprising, as the building was moved from the site location circa 2014.

Domestic materials consisted of a single ceramic sherd, container glass, glass tableware, and a portion of a beverage can. The ceramic artifact was an undecorated body sherd from a whiteware vessel that was manufactured after 1830. All of the container glass was ABM and consisted of clear, light green, amber, and aqua sherds from various vessel types consisting of beer bottles, a jelly jar, a soda/mineral bottle, and a liquor/wine bottle. The majority of the vessels were manufactured generally after 1903; two beer bottle sherds were manufactured after 1940.

Table 5. Artifacts Recovered from Site 15Bu820.

Unit	Zone	Depth	Group	Class/Type	N =
GSC 1	Surf	0–0 Surface	Domestic	Ceramic	1
STP 1	I	0–18 cm bgs	Domestic	ABM, beverage can	16
STP 1	I	0–18 cm bgs	Architecture	Plate glass	1
STP 1	I	0–18 cm bgs	Arms	Rimfire cartridge	1
STP 1	I	0–18 cm bgs	Maint/sub	File	1
STP 2	I	0–17 cm bgs	Domestic	ABM, glass tableware	17
STP 2	I	0–17 cm bgs	Unidentified	Metal	1
STP 2	I	0–17 cm bgs	Furnishing	Lamp chimney glass	1
STP 2	I	0–17 cm bgs	Architecture	Window glass, plate glass	5
GSC 2	Surf	0–0 Surface	Architecture	Window glass	1
				Total	45

Two pink glass tableware sherds, probably from a single vessel, were identified as Depression glass and were manufactured after 1920. The final domestic item was a ring-pull tab from a beverage can that was manufactured between 1965 and 1985.

Other items in the assemblage consisted of a lamp chimney glass sherd that was manufactured between 1854 and 1940, a metal tool (file) (unknown manufacture dates), a .22 long rimfire cartridge that was manufactured after 1871, and one unidentified aluminum item.

The historic artifacts from Site 15Bu820 had an average date range of 1902–1962, and the mean was 1932. The site was the location of an African-American schoolhouse that was constructed circa 1916 and used as such through circa 1956; after that date, the building was used as a residence for an unknown period. The dominance of the architectural and domestic group artifacts supports the use of the site as a domestic residence, and some of the items may be associated with the use of the structure as a school, but none of the artifacts specifically point to schoolhouse activities (such as with the presence of writing implements and erasers, for example). The only architectural items recovered were window glass and plate glass, and while the window glass suggested an earlier date for the occupation of the site, only a few sherds were recovered and cannot be used reliably for dating purposes. Several of the artifacts, such as the .22-caliber cartridge and liquor/beer bottle fragments likely do not coincide with the use of the structure as a school, but this is ultimately unknown. The presence of lamp chimney glass does suggest that the school used oil lamps for lighting, and the ceramic sherd, glass tableware, and some of the other ABM glass could have been used by the students or teachers. Unfortunately, based on the paucity of items collected, little more can be said about the former activities of the schoolhouse or residence based solely on the cultural materials.

Features

No remnants of the original residence were identified within the project boundaries, but this was not surprising because the main building had been removed and relocated to Shepherdsville (Figure 19). No intact structural remains or features were identified within the project boundaries at Site 15Bu820.

Archival Research

The earliest deed identified for the property containing Site 15Bu820 dated to November 1, 1899, when William and Sara Ann Buckman sold a property measuring approximately 12 ha (30 acres) to Seymour Bowman (the given name and surname of this individual varied throughout archival records) (Bullitt County Deed Book [BCDB] 35:65). William and Sara Ann Buckman had received the property from H. F. Buckman on September 8, 1898. In the 1880 census for Bullitt County, William Buckman was listed as a 46-year-old farmer. Residing in his household was his 32-year-old wife, Sara A., and their five children between the ages of 1

Figure 19. Relocated African-American schoolhouse on Bullitt County Public Schools property in Shepherdsville, looking northeast.

and 14 years old (United States Bureau of the Census [USBC] 1880). It is unclear where the family was residing when the 1880 census was recorded, and they were not found in the 1900 census.

In the 1880 census for Pike County, Missouri, Seymour Bowman (Beauman) was listed as a 55-year-old African-American farm laborer who was residing in a household headed by a man who was born in Ireland (USBC 1880). Also in the household were a Baptist minister and his family (all listed as white), along with another African-American farm laborer and an African-American domestic servant, neither of which appeared to have been related to Bowman (USBC 1880). Seymour Bowman was married at the time the 1880 census was recorded, but his wife and children were residing in Bullitt County. The 1880 census for Shepherdsville listed Mary Bowman as a 40-year-old head of household, and residing with her were six of her children: 20-year-old son, Aaron (a blacksmith), 16-year-old daughter, Sallie; 6-year-old daughter, Mollie; 5-year-old sons, R.F and L.A. (possibly twins); and 2-year-old daughter, Letitia. Listed at the end of the record was Seymour Bowman; he may have been listed at the end of this household because his primary residence at the time was in Missouri. Mary Bowman and all of her children were listed as mulatto; Seymour Bowman was listed as black (USBC 1880).

In the 1900 census for Bullitt County, Seymour Bowman (Bauman) was listed as a 76-year-old Virginia-born farmer who owned a farm. Residing with him was his 66-year-old wife of 48 years, Mary, who was also born in Virginia. She was listed as having given birth to 14 children, but only 7 were living. Two of their children were residing in their household: 45-year-old son and blacksmith, Aaron (born in Mississippi), and 28-year-old son and farm laborer, Richard (born in Kentucky). Also in the household was a 10-year-old boarder named William Livens (farm laborer who was born in Kentucky). All individuals in the household were listed as black (USBC 1900).

The Bowman family was not found in the 1910 census for Bullitt County. Seymour Bowman died prior to 1913 (possibly between 1900 and 1910). According to her death certificate, Mary Bowman died in 1913 from heart failure. Her death certificate listed her

place of birth as Huntsville, Alabama, and her mother was Charlotte Watkins (her father was unknown). Her burial place was listed only as "home place"; it is unclear where this cemetery was located, but it may have been on the overall 12 ha (30 acre) tract originally purchased by Seymour Bowman in 1899. Based on her place and date of birth (i.e., Alabama in 1833), Mary Bowman may have been born into slavery. Her son, Aaron, was born in Mississippi in 1855, and he may also have been born into slavery; other children of Mary Bowman may also have been slaves, along with her husband, Seymour Bowman.

A .10 ha (.25 acre) tract was transferred from what appeared to have been the heirs of Seymour and Mary Bowman to the Bullitt County Board of Education on May 16, 1916 (Bullitt County Deed Book [BCDB] 45:491). The cost of the property was not included in the deed. The property was to be used for the construction of a school for African-American children from first through eighth grades.

According to Strange (2015), J.R. Ball was awarded a contract to build the school for a cost of $327.00. The school consisted of two rooms that were heated by a coal and wood-burning stove. Two outhouses were located to the rear (east) of the building (one for girls and one for boys), and a well was located to the front (west) of the building. The schoolhouse had no indoor plumbing during its use for educational purposes (Strange 2015). In 1954, the U.S. Supreme Court handed down the decision to end school segregation, and the Bowman Valley School was closed circa 1956.

The Bullitt County Board of Education sold the property to C.F. Roberts on April 12, 1962 (BCDB 103:24). According to Strange (2015), the schoolhouse was then converted into a residence, and it was rented to tenants for many years. The .10 ha (.25 acre) property was transferred from the Roberts family to James and Patricia Rice on April 15, 2001, for $12,000 (BCDB 528:310), and it was transferred to Electron Properties, who presently own the property, on August 26, 2010 (BCDB 765:541).

In summary, the property containing Site 15Bu820 was owned by the Buckman family by 1898, but was transferred to the African-American Bowman family in 1899. The heirs of Seymour and Mary Bowman transferred the .10 ha (.25 acre) land parcel to the Bullitt County Board of Education in 1916 for the construction of a schoolhouse that would serve the local African-American population.

Summary and National Register Evaluation

Site 15Bu820 consisted of a historic building that functioned as an African-American schoolhouse between circa 1916 and 1956, and which was reportedly later used for residential purposes. During its use as a school, the building reportedly did not have indoor plumbing, and there were two outhouses to the rear (east) of the building, and water was collected from a well to the front (west) of the building. No evidence of the outhouses was identified during the current survey, and it is possible the outhouses were outside the project boundaries. No evidence of the well was identified, but it may have been within the project boundaries. At least some of the artifacts were probably associated with use of the building as a schoolhouse, but others may have been related to the more recent use as a residence.

There was no evidence for the presence of intact, subsurface features, structural remains, midden, or cultural deposits at the site. Site 15Bu820 lacks archaeological integrity and has limited scientific research value. The portion of the site within the project boundaries is recommended as not eligible for the NRHP and no further archaeological work is recommended. If the project area changes, it is possible that additional archaeological work may be necessary.

Project Impacts

Site 15Bu820 is located near the southern intersection of KY 61 and Cooper Run Road. The portion of the site within the project boundaries lacks archaeological integrity and is recommended as not eligible for the NRHP.

VII. CONCLUSIONS, RECOMMENDATIONS, AND TREATMENT

Between May 3 and 5, and on June 15, 2016, CRA personnel conducted an archaeological survey of the proposed construction of a new I-65 interchange at mile point 114.4 in Bullitt County, Kentucky (Item No. 5-527.00). The investigation consisted of a pedestrian survey supplemented by screened shovel testing. The project area covered 55.3 ha (136.7 acres), the majority of which was surveyed. Access to one land parcel totaling 1.5 ha (3.8 acres) was denied by the landowner (Ms. Kathryn McCubbins) and was not surveyed.

The survey resulted in the identification of one historic archaeological site (15Bu820). Site 15Bu820 was a historic schoolhouse for African-American children that was built circa 1916, and which was used as a schoolhouse until circa 1956, with reported subsequent use as a residence. The school building was moved from Site 15Bu820 and reconstructed in Shepherdsville, Kentucky, circa 2014. The site location contained push piles of sediment and structural debris, and there was no evidence for the presence of intact subsurface features, midden, cultural deposits, or structural remains within the project boundaries. The portion of Site 15Bu820 that was within the project boundaries lacked archaeological integrity and is recommended as not eligible for the NRHP.

The property that was not surveyed during the current investigation must be subjected to an archaeological survey prior to construction in that area. In regard to the remainder of the project area, no archaeological sites listed in or eligible for the NRHP will be affected by the proposed construction activities. Therefore, archaeological clearance is recommended for the portions of the project area that were subjected to archaeological survey.

Note that a principal investigator or field investigator cannot grant clearance to a project. Although the decision to grant or withhold clearance is based, at least in part, on the recommendations made by the field investigator, clearance may be obtained only through an administrative decision made by the Federal Highway Administration and KYTC, Division of Environmental Analysis, in consultation with the State Historic Preservation Office (the KHC).

If any previously unrecorded archaeological materials are encountered during construction activities, the KHC should be notified immediately at (502) 564-6662. If human skeletal material is discovered, construction activities should cease, and the KHC, the local coroner, and the local law enforcement agency must be notified, as described in KRS 72.020.

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APPENDIX A. HISTORIC MATERIALS RECOVERED

Table A-1. Historic Materials Recovered.

Bag	Site	Unit #	Zone	Dep	Cat #	Group*	Class	Type	Attr 1a Def	Attr 1b Def	Attr 2a Def	Attr 2b Def	Attr 3b Def	Attr 4a Def	Burned	Count	Vessel Part	Vessel Type	Min Date	Max Date	References	Comments
1	15Bu820	GSC 1	Surf	0–0 Surface	1	D	Ceramics	Whiteware	Undecorated						FALSE	1	Body		1830		Majewski and O'Brien 1987:119	
2	15Bu820	STP 1	I	0–18 cm bgs	2	D	Container Glass	Automatic Bottle Machine		Clear glass					FALSE	1	Body		1903		Jones & Sullivan 1985; Lindsey 2015	
2	15Bu820	STP 1	I	0–18 cm bgs	3	D	Container Glass	Automatic Bottle Machine		Light green glass					FALSE	1	Body	Soda / Mineral water	1903		Jones & Sullivan 1985; Lindsey 2015	
2	15Bu820	STP 1	I	0–18 cm bgs	3	D	Container Glass	Automatic Bottle Machine	Cup bottom mold	Amber glass	Embossed				FALSE	1	Body with base	Beer bottle	1940		IMACS 1992	embossed "NO DEPOSIT"
2	15Bu820	STP 1	I	0–18 cm bgs	3	D	Container Glass	Automatic Bottle Machine		Amber glass					FALSE	12	Body	Beer bottle	1903		Jones & Sullivan 1985; Lindsey 2015	
2	15Bu820	STP 1	I	0–18 cm bgs	4	D	Beverage Cans	Aluminum, any type	Ring pull						FALSE	1			1965	1985	Busch 1981; Rock 1980, 1984, 1987	Beer can with "PREMIUM PILSNER" on the red & silver label; pull tab opening
2	15Bu820	STP 1	I	0–18 cm bgs	5	A	Flat Glass	Plate Glass							FALSE	1			1917		Roenke 1978	
2	15Bu820	STP 1	I	0–18 cm bgs	6	R	Projectiles	Rimfire Cartridge	.22 long						FALSE	1			1871		Ball 1997:121	Rem stamp
2	15Bu820	STP 1	I	0–18 cm bgs	7	M	General Tools	File							FALSE	1						corroded; only partial file
3	15Bu820	STP 2	I	0–17 cm bgs	8	D	Container Glass	Automatic Bottle Machine	Knurled/stippled base	Amber glass					FALSE	1	Body with base	Beer bottle	1940		Lindsey 2015	
3	15Bu820	STP 2	I	0–17 cm bgs	8	D	Container Glass	Automatic Bottle Machine		Amber glass					FALSE	3	Body		1903		Jones & Sullivan 1985; Lindsey 2015	
3	15Bu820	STP 2	I	0–17 cm bgs	8	D	Container Glass	Automatic Bottle Machine		Clear glass					FALSE	5	Body		1903		Jones & Sullivan 1985; Lindsey 2015	
3	15Bu820	STP 2	I	0–17 cm bgs	8	D	Container Glass	Automatic Bottle Machine		Clear glass				Bead	FALSE	2	Rim	Packer: jelly, meat, food tumbler	1903		Jones & Sullivan 1985; Lindsey 2015	
3	15Bu820	STP 2	I	0–17 cm bgs	8	D	Container Glass	Automatic Bottle Machine		Clear glass	Embossed				FALSE	3	Body		1903		Jones & Sullivan 1985; Lindsey 2015	embossed lines
3	15Bu820	STP 2	I	0–17 cm bgs	8	D	Container Glass	Automatic Bottle Machine		Aqua glass					FALSE	1	Body	Liquor/Wine	1903		Jones & Sullivan 1985; Lindsey 2015	
3	15Bu820	STP 2	I	0–17 cm bgs	9	D	Glass Tableware	Press mold: unleaded		Late pastel pink glass		Molded design/pattern	Depression glass		FALSE	2	Body		1920		Jones 2000:149	
3	15Bu820	STP 2	I	0–17 cm bgs	10	U	Metal	Aluminum	Metal	Item / part					FALSE	1						gold tag marked Imperial – Made in China
3	15Bu820	STP 2	I	0–17 cm bgs	11	F	Lighting	Lamp Chimney	Glass: clear		Plain				FALSE	1			1854	1940	Faulkner 2008; Pullin 1986:356	
3	15Bu820	STP 2	I	0–17 cm bgs	12	A	Flat Glass	Window Glass							FALSE	2			1883	1883	Moir 1987	
3	15Bu820	STP 2	I	0–17 cm bgs	12	A	Flat Glass	Window Glass							FALSE	1			1888	1888	Moir 1987	
3	15Bu820	STP 2	I	0–17 cm bgs	13	A	Flat Glass	Plate Glass							FALSE	2			1917		Roenke 1978	
4	15Bu820	GSC 2	Surf	0–0 Surface	14	A	Flat Glass	Window Glass							FALSE	1			1898	1898	Moir 1987	

** A: Architecture; D: Domestic; R: Arms; M: Maintenance and Subsistence; F: Furnishings; U: Unidentified*