



TRANSPORTATION CABINET

Frankfort, Kentucky 40622
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August 16, 2011

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Governor

Michael W. Hancock, P.E.
Secretary

Mr. Lindy Casebier,
Acting Executive Director and
State Historic Preservation Officer
300 Washington Street
Frankfort, KY 40601

SUBJECT: *Phase I Archaeological Survey of the Spot Improvements Along US 31E in
Larue County, Kentucky.*
By Kiristien Bright.
Larue County, Kentucky
KYTC Item Number 4-8504

Dear Mr. Casebier,

The Kentucky Transportation Cabinet is submitting for your staff's concurrent review one copy of the subject report. This report presents the results of Phase I survey. This is a state funded transportation project, but it has impacts to the Abraham Lincoln Boyhood Home National Park and to areas that require US Army Corps of Engineers permits. Two new sites and five isolated finds were recorded, and the boundaries of a previously reported site were expanded. No additional work is being recommended. The consultant has also sent a separate copy of the report to the National Park Service for review.

We would like to meet with your staff to discuss this report by September 9, 2011. Should you have any questions, please contact Carl Shields of my staff at (502) 564-7250.

Very truly yours,

David M. Waldner, P.E., Director
Division of Environmental Analysis

DMW/crs
enclosure

c: Carl Shields
Scott Schurman
Joseph Ferguson (District 8) w\enclosure
Archaeology Files



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**PHASE I ARCHAEOLOGICAL SURVEY OF
SPOT IMPROVEMENTS ALONG US 31E
IN LARUE COUNTY, KENTUCKY**

(KYTC ITEM NO. 4-8504)

UK-PAR PROJECT No. 11-06


**KENTUCKY OFFICE OF STATE ARCHAEOLOGY
PROJECT REGISTRATION NUMBER FY11-6852**

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27 July 2011



ABSTRACT

At the request of the Kentucky Transportation Cabinet (KYTC), archaeologists from the University of Kentucky Program for Archaeological Research (UK-PAR) performed a Phase 1 survey of proposed improvements along US Highway 31E in Larue County, Kentucky. The purpose of this work was to identify archaeological resources and to assess their potential eligibility for listing on the National Register of Historic Places (NRHP). The project covered a distance of about 2.5 miles (4.02 km) northeast of Hodgenville, but the improvements were not continuous over this entire length. Three improvements involved realignment of curves: 1) Devers Curve near the southwest end of the project area, 2) Boyhood Home Curve near the middle of the project area, and 3) Enlows Curve toward the northeast end of the project area. Other improvements involved drainage diversions and culvert placements in scattered spot locations along the project corridor. The archaeological survey covered a total area of about 2.61 acres (1.06 ha), all of which was investigated through shovel testing.

As a result of this investigation, two newly identified prehistoric archaeological sites (15LU52 and 15LU53) and five isolated finds (IF1-IF5) were recorded, along with an addition to previously reported 15LU50 at the Abraham Lincoln Boyhood Home National Park.

The addition to 15LU50 is a moderately dense lithic scatter from the entrance to the Abraham Lincoln Boyhood Home National Park. Site 15LU50 (National Park Service ASMIS site number ABLI-2) had been previously documented by extensive survey and testing projects conducted by the National Park Service in an effort to locate archaeological or structural evidence of the Abraham Lincoln boyhood home. No archaeological evidence of the Lincoln residence has been found, but an extensive lithic scatter with some early 19th century artifacts (15LU50) was defined. The current survey covered a narrow strip of ground between the areas of previous investigations, and as expected, prehistoric material was found. Six of seven shovel tests were positive, defining an additional site area of about 1800 meters², all of which is contained within the previously defined boundaries of 15LU50. No 19th century artifacts were recovered that would provide archaeological evidence of the Lincoln occupation of this tract. None of the 29 prehistoric artifacts temporally diagnostic, and no intact A horizon deposits or prehistoric features were located. The overall research potential of this portion of 15LU50 is low, and this portion of the site is not considered to have significance in terms of its NRHP eligibility status. No additional archaeological work is recommended for the part of 15LU50 that will be impacted by proposed construction.

Site 15LU52 is a low-density lithic scatter along the Enlows Curve survey segment. Ten temporally nondiagnostic prehistoric lithic artifacts were recovered from two shovel tests, with a total site area of 200 meters². The site may continue to the south outside the survey corridor. All artifacts were found in the plow zone. Due to the low artifact density, lack of temporally diagnostic materials, and absence of intact deposits, 15LU52 is not considered eligible for listing on the NRHP. No additional archaeological work is recommended for the site.

Site 15LU53 is a low-density lithic scatter at the west end of the Devers Curve segment. Eight temporally nondiagnostic debitage were recovered from two positive shovel tests, making a total site area of 200 meters². The site may continue to the west outside the survey corridor. All materials were found in the plow zone without any indication of intact midden or features below plow zone. The research potential for 15LU53 is low, and due to the low artifact density, lack of temporally diagnostic materials, and absence of intact deposits, 15LU53 is not considered eligible for listing on the NRHP. No additional archaeological work is recommended for the site.

Isolated Finds 1 through 5 produced a total of eight prehistoric nondiagnostic debitage and four potentially modern glass fragments. All are expressed as isolated positive shovel tests, and none are considered to be archaeological sites. The low artifact density, lack of subsurface features or intact deposits, and absence of temporally sensitive material indicate minimal research potential, and no additional work is recommended at any of these locations.

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CHAPTER 1

INTRODUCTION

At the request of the Kentucky Transportation Cabinet (KYTC), archaeologists from the University of Kentucky Program for Archaeological Research (UK-PAR) performed a Phase 1 survey of proposed improvements along US Highway 31E in Larue County, Kentucky (Figure 1.1). The purpose of this work was to identify any archaeological resources within the proposed project area and to assess their potential eligibility for nomination to the National Register of Historic Places (NRHP). The project covered a distance of about 2.5 miles (4.02 km) northeast of Hodgenville, however, the improvements were not continuous over this entire length. Three of the improvements involved realignment of three curves: 1) Devers Curve near the southwest end of the project area, 2) Boyhood Home Curve near the middle of the project area, and 3) Enlows Curve toward the northeast end of the project area. These curve locations are referred to here as survey segments. Other improvements involved drainage diversions and culvert placements in scattered spot locations distributed along the project corridor. The archaeological survey area covered a total area of approximately 2.61 acres (1.06 ha) distributed among these segments and spot locations.

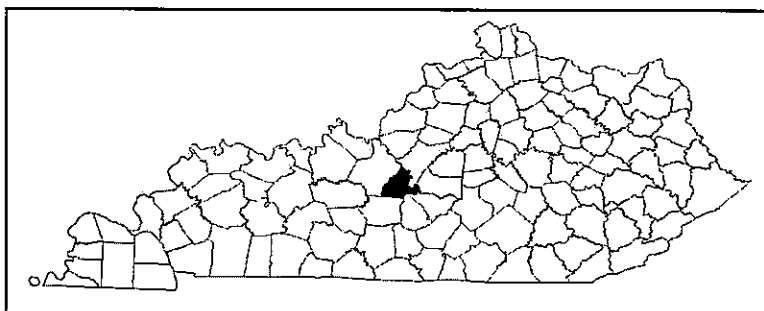


Figure 1.1. Location of Larue County, Kentucky.

The survey was conducted in compliance with provisions of the National Historic Preservation Act of 1966 (as amended), the National Environmental Policy Act of 1969, Procedures of the Advisory Council on Historic Preservation, Executive Order 11593 (Protection and Enhancement of the Cultural Environment), and the Kentucky Heritage Council's *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports* (Sanders 2001). The project was carried out under the supervision of UK-PAR director Dr. Steven Ahler. Field work was directed by Steven Ahler and Bruce Manzano, with field assistance from Jeff Young, Jason Hodge, and Allison Esterle. Field work was conducted on 13 June 2011 and required 46 person-hours to complete. Kiristen Bright is the primary author for the technical report, and Jeff Young conducted the background research on previous archaeological projects and wrote Chapters 2 and 3. Hayward Wilkerson contributed to the graphic presentation of the report. Kiristen Bright analyzed all lithic artifacts.

PROJECT AREA DESCRIPTION

The project area is located within the dissected northeastern edge of the Western Pennyroyal physiographic region, a subdivision of the Mississippian Plateau. This area is characterized by strongly developed karst topography with numerous sinkholes, springs, and streams providing relief. The project area is primarily on the USGS 7.5' Hodgenville, KY (1953, photorevised 1987) topographic quadrangle, with a small number of the spot drainage improvement locations on the adjacent Howardstown, KY (1953, photorevised 1987) 7.5' topographic map (Figure 1.2). Most of the project area is owned by KYTC, but, two small portions of Devers Curve segment and the Boyhood Home Curve segment lie within the boundaries of the Abraham Lincoln Boyhood Home, and these areas are owned by the National Park Service.

All of the survey segments and the spot improvement locations are within the Knob Creek valley (see

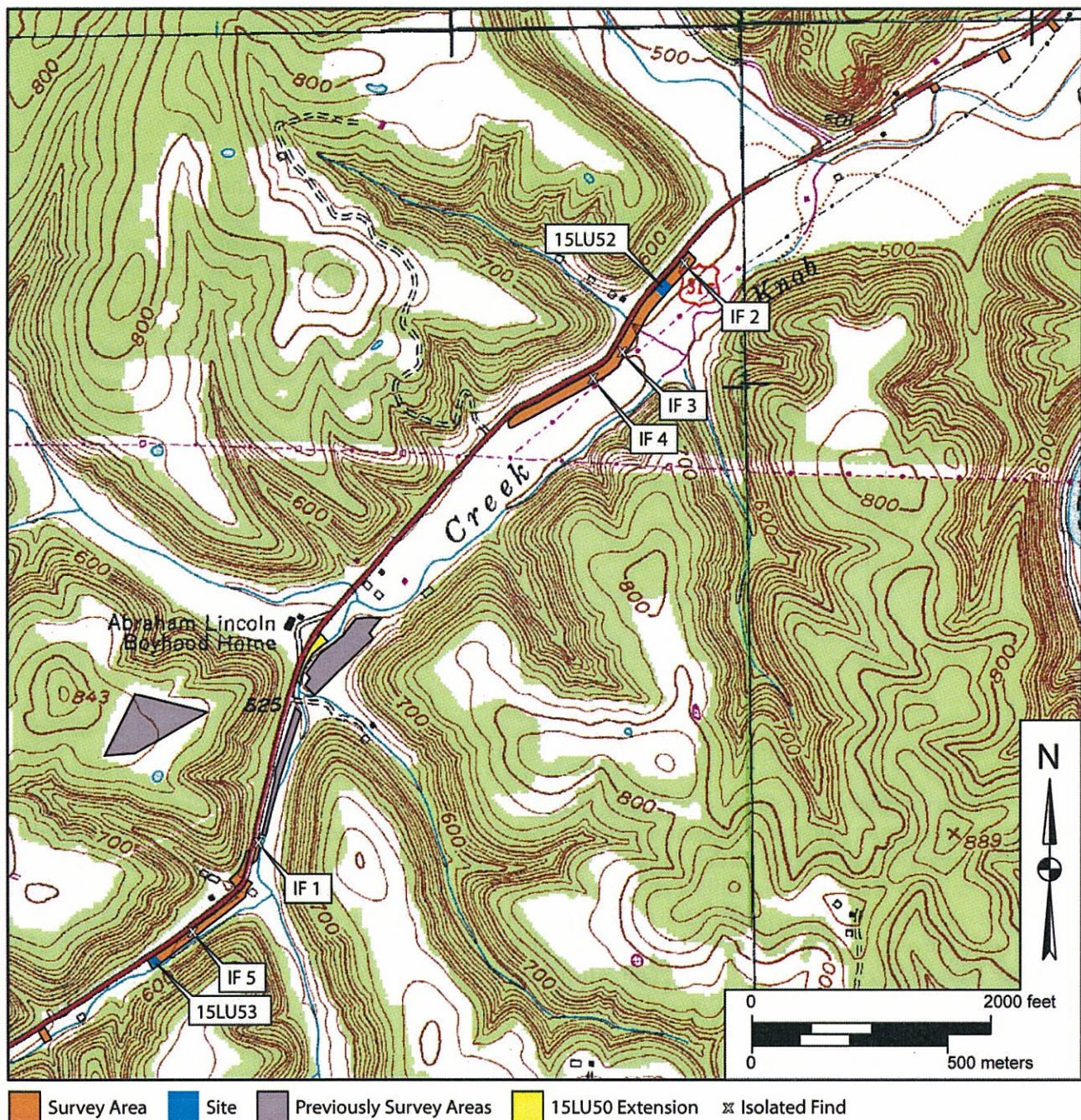


Figure 1.2. Survey Segments and Spot Improvement Locations Shown on the USGS Hodgenville, KY (1953, photorevised 1987) and Howardstown, KY (1953, photorevised 1987) 7.5' Topographic Quadrangle Maps. Also shown are the locations of sites and isolated finds.

Figure 1.2). Knob Creek itself flows southwest to northeast, running generally parallel to and between 20 and 200 meters southeast of US 31E. Because the project area is within an alluvial valley, there was some potential for encountering buried cultural deposits in terrace or flood plain landforms. Consequently deep bucket auger tests were used to sample for buried archaeological resources. The majority of the project area is covered by agricultural pastureland, but parts of the Devers Curve segment are forested. All survey segments have less than 10 percent visibility, so archaeological survey was conducted using systematic shovel testing supplemented with opportunistic deep auger testing. Shovel tests were placed at 20-meter intervals,

with bracketing shovel tests placed at 20-meter intervals around selected positive tests do help define site boundaries.

Almost all of the curve realignments and spot improvement locations involved acquisition of new right-of-way sections that were less than 60 feet (ca. 18 meters) wide, which permitted shovel testing to be done in a single transect of shovel tests in almost all locations. The Devers Curve segment is about 490 meters long and at most 18 meters wide, covering an estimated area of about 1.1 acre (0.45 ha). The Boyhood Home Curve segment is about 167 meters long and is very narrow, with a maximum width of new ROW of only 20 feet; it covers a total area of about 0.13 acres (0.05 ha). Portions of the Devers Curve segment and all of the Boyhood Home Curve segment (about 0.22 acres total) are on property owned by the National Park Service. The Enlows Curve segment is about 540 meters long with an average width of about 9 meters; it covers an area of about 1.31 acres (0.53 ha). The spot drainage improvements collectively measure about 0.09 acres (0.03 ha); each is about 20 feet wide and between 20 and 70 feet long.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

As a result of this Phase I archaeological investigation, two newly identified archaeological sites and five isolated finds (IF) were recorded, along with artifacts that are part of an addition to previously reported 15LU50 at the Abraham Lincoln Boyhood Home National Park. One site, 15LU52, was located within the Enlows Curve segment near the northeast end of the project area, while the other site 15LU53, was found in the Devers Curve segment near the southwest end of the project area. Of the isolated finds, IF2, IF3, and IF4 were found within the Enlows Curve segment, while IF 1 and IF5 were in the Devers Curve segment. Locations of these finds are shown on Figure 1.2.

The addition to 15LU50 (NPS ASMIS site number ABLI-2, but referred to in this report as 15LU50) is expressed as a moderately dense lithic scatter on the southeastern side of US 31E across from the entrance to the Abraham Lincoln Boyhood Home or Knob Creek National Park. This site is within the Boyhood Home segment (Figure 1.2). Portions of this site had been previously documented by extensive survey and testing projects conducted by the National Park Service (Lawson et al. 2006, 2010) in an effort to locate specific archaeological or structural remains of the Abraham Lincoln boyhood home. These efforts included excavation of more than 330 shovel tests, hand-excavation of more than 20 1-x-1-meter test units, magnetic gradiometer survey, and ground-penetrating radar survey of more than 1.0 ha of surface area, as well as limited backhoe trench excavations. No archaeological evidence of the Lincoln structure has been found in spite of these efforts, but the survey did identify an extensive prehistoric archaeological site—15LU50—that occupies the entirety of the small tributary valley where the Lincoln cabin is placed, as well as portions of the Knob Creek valley southeast of Knob Creek itself. The current survey effort was carried out in a narrow strip of ground between the southeastern right-of-way of US 31E and Knob Creek, an area that had not been covered in the earlier efforts. Because portions of 15LU50 had been identified both to the northwest (across US 31E) and to the southeast (across Knob Creek), we fully expected that this segment of the current project area would also contain evidence of prehistoric occupation, and that this would be included as part of the previously reported 15LU50. This proved to be the case. Six of seven shovel tests excavated along this survey segment were positive for prehistoric materials, defining an area about 170 meters long (east-west) and 10 meters wide (north-south), that filled the gap between the two previous investigation efforts. Cultural materials, therefore, cover an area of about 1800 meters², but all of this is contained within the boundaries of the previously reported site area. No historic artifacts were recovered that could be related to an early 19th century occupation, and the current survey effort apparently also failed to document structural or archaeological evidence of the Lincoln occupation of this tract. In addition, none of the 29 prehistoric artifacts recovered in this survey were temporally diagnostic, and no intact midden (A horizon) deposits or prehistoric features were located. The overall research potential of this portion of 15LU50 is low, and this portion of the site is not considered to be eligible for listing on the NRHP. No additional archaeological work is recommended for that portion of 15LU50 that will be impacted by the proposed construction along the Boyhood Home segment of the project area.

Site 15LU52 is a low-density lithic scatter identified on the southeastern side of US 31E along the eastern or Enlows Curve segment of the project area (Figure 1.2). The area was covered in pasture with no surface visibility. Based on shovel testing, cultural materials covered an area measuring approximately 20 meters east-west and 10 meters north-south (200 meters²), with only two adjacent positive shovel tests defining the site area. The western and eastern boundaries of 15LU52 are confidently defined by the limits of the artifact scatter, but the northern and southern boundaries extend outside the narrow survey corridor that defines this project area segment. Any portion of this site extending to the north would be severely disturbed by construction of US 31E, and a drainage ditch runs near the site, further compromising its integrity. Site 15LU52 yielded a total of 10 prehistoric artifacts (8 debitage, one rough biface, and one core), but no temporally diagnostic artifacts were recovered. All artifacts were found in the plow zone of a pasture and former agricultural field. Due to the low artifact density, lack of temporally diagnostic materials, and absence of intact deposits, 15LU52 is not considered eligible for listing on the National Register of Historic Places (NRHP). No additional archaeological work is recommended for the site.

Site 15LU53 is a low-density lithic scatter identified at the western end of the Devers Curve segment of the project area, just southeast of US 31E (Figure 1.2). Shovel testing encountered a gravelly silt loam plow zone with a gravelly silty clay loam subsoil, with no potential for buried cultural deposits. Based on the presence of two adjacent positive shovel tests, the site is defined as an area measuring approximately 20 meters east-west and 10 meters north-south (200 meters²). The western site boundary is not confidently defined and the site may extend outside the survey segment. The eastern site boundary is defined by negative shovel test locations, and construction of US 31E would have truncated 15LU53 on the north side. Knob Creek defines the southern site boundary. Site 15LU53 produced a total of eight lithic debitage, and none were temporally diagnostic. Furthermore, all materials were found in the plow zone without any indication of intact midden or features below plow zone. The research potential for 15LU53 is considered to be low. Due to the low artifact density, lack of temporally diagnostic materials, and absence of intact deposits, 15LU53 is not considered eligible for listing on the National Register of Historic Places (NRHP). No additional archaeological work is recommended for the site.

Isolated Find 1 consisted of one flake recovered from a single positive shovel test near the northern end of the Devers Curve segment. Bracketing shovel tests at 10-meter intervals did not produce artifacts. The low artifact density, lack of any subsurface features or intact deposits, and absence of temporally sensitive material indicate minimal research potential for IF 1. This location is not an archaeological site nor is it considered eligible for listing on the NRHP. UK-PAR recommends no additional work at this location.

Isolated Find 2 consisted of two flakes recovered from the plow zone in a single shovel test at the northern end of the Enlows Curve segment. Bracketing shovel tests at 10-meter intervals did not produce artifacts. The low artifact density, lack of any subsurface features or intact deposits, and absence of temporally sensitive material indicate minimal research potential for IF 2. This location is not an archaeological site, nor is it considered eligible for listing on the NRHP. UK-PAR recommends no additional work at this location.

Isolated Find 3 consisted of one flake found in the plow zone of a single positive shovel test in the western half of the Enlows Curve segment. Bracketing shovel tests at 10-meter intervals did not produce artifacts. The low artifact density, lack of any subsurface features or intact deposits, and absence of temporally sensitive material indicate minimal research potential for IF 3. This location is not an archaeological site nor is it considered eligible for listing on the NRHP. UK-PAR recommends no additional work at this location.

Isolated Find 4 consisted of two flakes from the plow zone of a single shovel test in the western half of the Enlows Curve segment, about 100 meters from Isolated Find 3. Bracketing shovel tests at 10-meter intervals did not produce artifacts. The low artifact density, lack of any subsurface features or intact deposits, and absence of temporally sensitive material indicate minimal research potential for IF 4. This location is not

an archaeological site nor is it considered eligible for listing on the NRHP. UK-PAR recommends no additional work at this location.

Isolated Find 5 consisted of two flakes from a single positive shovel test located near the middle of the Devers Curve segment. Bracketing shovel tests at 10-meter intervals did not produce artifacts. The low artifact density, lack of any subsurface features or intact deposits, and absence of temporally sensitive material indicate minimal research potential for IF 5. This location is not an archaeological site nor is it considered eligible for listing on the NRHP. UK-PAR recommends no additional work at this location.

CHAPTER 2

ENVIRONMENTAL SETTING

This chapter provides information concerning the physiography, geology, soils, climate, flora, and fauna in the project area. The effects of human habitation on the environmental setting of the project area are presented when possible.

PHYSIOGRAPHY

The project area is situated on the border of the Knobs and the Outer Bluegrass physiographic regions in the Salt River Management Area of Kentucky. Specifically, the project area is located primarily on the USGS 7.5' Hodgenville topographic quadrangle (see Figure 1.2). Larue County is a karst environment characterized by a heavily dissected Mississippian-age limestone plateau that is part of the Borden Formation. Much of Larue County exhibits deeply entrenched streams with high ridges and narrow valleys (Arms et al 1979). The county elevations range between 750 ft AMSL in the western county boundary to 1020 ft AMSL in the northeast (McGrain and Currens 1978).

GEOLOGY

The project area is entirely within a Quaternary period alluvial formation, the terrace and flood plain system of Knob Creek. The formation consists of unconsolidated silt and clay mixed with lower amounts of sand and gravel. The gravel consists of chert and silicified limestone.

The Mississippian-age Borden formation of the Meramec Series, which is 230 to 370 feet thick, underlies the project area, but it not chert-bearing. The project area has three chert-bearing formations: Harrodsburg Limestone is 20 to 45 feet thick and lies immediately above the Borden Formation. Moore (1968) describes Harrodsburg as coarse to very coarse-grained in texture and ranging in color from light gray to yellowish gray. The Harrodsburg Limestone formation is overlain by Salem Limestone, which is about 30 to 180 feet thick. The Salem Limestone formation, in which chert deposits are present, but very sparse, is found on the crest of the hills surrounding the project area (Moore 1968). Koldehoff describes Salem chert as grainy in texture with color ranging from light brown and light gray to medium brown and yellowish brown. Salem chert may occur as nodules or in bedded lenses (Koldehoff 1985). St. Louis Limestone is the uppermost chert-bearing formation in the vicinity, and it is exposed southwest of the project area on the higher-elevation portions of the Mississippian Plateau. St. Louis chert is a nodular or tabular high-quality chert that is opaque and light gray to medium-dark-gray.

SOILS

Soils in the project area belong to the Sensabaugh soil association, which is a minor soil association that is found adjacent to stream channels. Sensabaugh silt loam is found on the flood plains and terraces with slopes between 0 and 2 percent. A typical profile consists of brown silt loam approximately 8 inches thick overlying brown gravelly silt loam subsoil 19 inches thick. The parent material is a fine loamy alluvium (Arms et al. 1979).

CLIMATE

Larue County is considered temperate and humid. Since the arrival of the first people in the region more than 11,000 years ago, climatic conditions have changed substantially. Pleistocene glacial advances had

ended by this time, and the glaciers were retreating, which is associated with the onset of generally warmer and drier conditions in the general project area. Retreat of the glaciers also promoted the replacement of the pine-spruce-fir floral communities with oak and hardwood species previously found in lower elevations and more southerly latitudes. A cooling trend with increased precipitation began about 5,000 years ago, following a warming and drying trend associated with the Hypsithermal period of the mid-Holocene from about 8,500 to 5,000 years ago (Delcourt and Delcourt 1981, 1985; Martin 1958).

The present climate of Larue County, Kentucky is temperate and humid. Summers are hot and humid with an average temperature of 76° F (Arms et al. 1979). Winters are moderately cold with an average temperature of 37° F (Arms et al. 1979). The county receives fairly heavy rainfall throughout the year and accumulates, on average, 47 inches per year (Arms et al. 1979). However, 24 inches, or 51 percent of this rainfall occurs between the months of April and September.

FLORA

Larue County lies within the Western Mesophytic Forest region (Braun 2001). The most common trees are yellow poplar, white oak, shortleaf pine, and Virginia pine. Today the principle cultivated crop is corn, followed by tobacco and soybeans (Arms et.al 1979).

FAUNA

At the time of their initial arrival in the region, prehistoric hunters found many large mammals in Kentucky. These megafauna, as well as some smaller-bodied animals, have since become extinct. Some of these animals, such as sloth, horse, deer, moose, musk-ox, bison, mastodon, mammoth, peccary, and tapir, may have been important sources of food for the earliest human inhabitants of the region.

Although species composition changed at the end of the Pleistocene, large populations of game continued to thrive in Larue County through succeeding millennia. Pioneer records most frequently mention animals that were important to humans as both sources of food and tool and clothing materials, including bear, white-tailed deer, raccoon, opossum, squirrel, turkey, quail, rabbit, coyote, skunk, woodchuck, and numerous species of fish, turtles, and various invertebrates. In addition to animals mentioned as food and raw materials resources, several predator species are mentioned as threats to human and livestock well-being. These species often include bear, panther, rattlesnake, wolves, and foxes (Webb and Funkhouser 1928:300-303). The region supports many of those species that have been historically documented, with only the larger carnivores extirpated by historic activities.

CHAPTER 3

BACKGROUND RESEARCH AND SURVEY PREDICTIONS

This chapter summarizes regional prehistory for central Kentucky and provides basic information on the history of Larue County. Previous archaeological research conducted within a 2-km buffer of the project area and the results of a historic map review are also presented. This background research is used to construct survey predictions for the current project.

PREHISTORIC CONTEXT

The prehistoric cultural chronology of the eastern United States is divided into a series of periods that broadly correspond to major shifts in subsistence and procurement strategies, social organization, and settlement patterns. These periods are linked to distinct material culture styles, especially in projectile point morphology and in later times, ceramic vessel form and decoration. The periods presented below form a general framework for discussing the prehistoric chronology of the study area. These periods are referred to in this report to place the materials recovered into the broad contexts of Kentucky's past.

PALEOINDIAN PERIOD

The Paleoindian period (more than 10,000 years ago) is the earliest period for which there is undisputed evidence of human occupation in Kentucky. The earliest arrival of humans to the area was closely tied to the retreat of Pleistocene glaciers. The exact date of these earliest inhabitants' arrival in Kentucky is unclear, but based upon evidence from elsewhere in the New World, it can be inferred that the Paleoindian tradition was present in Kentucky by at least 11,500 years ago. Older occupations may be present, but as yet there is no indisputable evidence to support this position. Very little is known about the Paleoindian period in Kentucky because few Paleoindian sites have been intensively investigated. For this reason, little is known about foodways, raw material procurement, settlement patterns, or social organization. In the western United States and further to the east and north, Paleoindians have been characterized as small nomadic groups of large-game hunters (Tankersley 1996: 73).

This traditional picture of Paleoindian culture emphasizes highly mobile bands whose existence was dependent upon large game animals, including mastodon. This image is beginning to change as new data increase our understanding of regional and temporal Paleoindian adaptations. Current thought on Paleoindian cultures outlines a process of colonizing migrations during the Early Paleoindian period (prior to 11,000 years ago), initial regional adaptations and settling processes during the Middle Paleoindian period (ca. 11,000 to 10,500 years ago), and subsequent regionalization and adaptations to the emerging Holocene environment during the Late Paleoindian period (ca 10,500 to 10,000 years ago). This process resulted in an increased emphasis on local chert, plant, animal, and other resources through time, which helped diversify the tool kit and hunter/gatherer subsistence strategies of Paleoindians. The emerging picture of Paleoindian lifeways suggests small, mobile hunter/gatherer bands exploiting locally available resources over relatively large territories (Anderson and Gillam 2000; Tankersley 1996: 77-81).

The Paleoindian tool kit is well adapted to the hunter/gatherer lifeways, consisting primarily of projectile points, knives, and scrapers utilized in the procurement and processing of animal resources. In addition to the stone tools, this tool kit likely included a variety of, bone, ivory, antler, wood, and fiber plant tools. The diversity of the tool kit increased through time, likely as a result of changes in subsistence strategies. Chipped stone knives and scrapers manufactured primarily from prismatic blades derived from prepared polyhedral cores are the most common tools associated with the Early Paleoindian period. However, the most diagnostic Early Paleoindian tool is the long, lanceolate-shaped, fluted Clovis or Clovis-like projectile point. During the Middle Paleoindian period, core and blade technology was replaced by bifacial

lithic reduction, and spurred end scrapers became common. Diagnostic tools include small Clovis variants and Cumberland projectile points. Late Paleoindian projectile points are stylistically diverse, consisting of Agate Basin, Dalton, Quad, Beaver Lake, and Hardaway Side Notched forms (Tankersley 1996: 77-81).

ARCHAIC PERIOD

The Archaic period saw increasing regional specialization of cultural groups in the Eastern United States and an increase in the diversity of stone tool assemblages. Based partly on these changes, the Archaic period is divided into three subperiods designated as Early, Middle, and Late Archaic.

During the Early Archaic (10,000 to 8,000 years ago), many of the modern species of fauna appeared in Kentucky. This was due in part to a shift from boreal forest to an eastern deciduous hardwood forest (Jefferies 1990; Niquette and Henderson 1984). Subsistence procurement activities shifted from hunting larger game to focus on deer and smaller mammals, and the collection of nuts and other plant foods probably increased as well. The Early Archaic period can be seen as a continuation of many of the Paleoindian hunter/gatherer lifeways. With the exception of changes in projectile point morphology, the Early Archaic tool kit closely resembles that of the Late Paleoindian subperiod. It has been suggested that Early Archaic populations lived in small, highly mobile groups, much like their Paleoindian predecessors (Jefferies 1990: 150-151). The absence of midden accumulation and substantial features, such as hearths and posts, indicates that most sites were short-term occupations.

The Middle Archaic (8,000 to 5,000 years ago) saw further regional differentiation in stone tool assemblages, subsistence, and settlement patterns. By the start of the Middle Archaic, the forest environment had shifted from the earlier boreal forest to deciduous communities similar to those seen today. Plant communities began to further differentiate near the onset of the Hypsithermal Interval (ca. 8,500 years ago), with an increase in grasses and herbs evident in pollen records from the Midwest (King and Allen 1977). The Middle Archaic cultural period is seen as generally coincident with the warmer and drier mid-Holocene Hypsithermal Interval. During the Middle Archaic, a number of specialized tools appeared that suggest the exploitation of previously unused resources and the development of new processing techniques. In particular, there was an increase in the use of ground stone tools associated with plant food processing. By the end of the Middle Archaic, the presence of deep, rich midden deposits suggests that some sites were occupied for long periods of time (Jefferies 1990:151).

The Late Archaic (5,000 to 3,000 years ago) witnessed the continuation of Middle Archaic trends and also included some important changes. In some portions of Kentucky, there is a marked increase in the number and size of sites, suggesting population increase or aggregation and more permanent settlements (Jefferies 1990). Research in eastern Kentucky rock shelters indicates that by the Late Archaic people had begun to cultivate plants, specifically a set of starchy- and oily-seeded native plants such as chenopod or lambsquarters (*Chenopodium berlandieri*), marshelder (*Iva annua*), and erect knotweed (*Polygonum erectum*) (Cowan 1985:229-230; Ison 1988). Squash (*Cucurbita* sp.) was also present during this time, although it remains unclear if it was an introduced tropical plant or a native cucurbit (Heiser 1989). Most researchers believe that, despite the presence of cultivated plants, Late Archaic subsistence was based primarily on wild resources.

WOODLAND PERIOD

Ceramic vessels, which mark the beginning of the Woodland period, first appeared in Kentucky around 3,000 years ago (Railey 1990:249). The appearance of ceramics may be linked to shifts in subsistence procurement and settlement systems, but in many ways, the cultural boundary between the Archaic and the Woodland periods is indistinct. During the Woodland period, domesticated plants, specifically the same starchy- and oily-seeded plants utilized during the Late Archaic period, became gradually more important for

subsistence. Settlements became larger and more permanent, and societies became more politically complex. The Woodland period is divided into three sub-periods—Early (3,000 to 2,200 years ago), Middle (2,200 to 1,500 years ago), and Late (1,500 to 1,000 years ago).

In the Early Woodland, conoidal vessels with roughened exterior surfaces are found in Kentucky; vessels also may have cord-marked or fabric-impressed interiors (Railey 1990:249). Early Woodland stone tool assemblages are distinguished from earlier Archaic period assemblages by the presence of several morphologically distinct notched and stemmed point types.

An important aspect of some Early Woodlands societies was an increased emphasis on mortuary facilities, such as burial mounds and related ceremonial sites. These structures and their associated behaviors may have been linked to increasing differences in social status, regional coherence of social and labor organization, and the development of group and territorial boundaries (Clay 1991).

Toward the end of the Early Woodland period, corn probably made its first appearance in the region, based on data from Tennessee (Chapman and Crites 1987). Throughout the Woodland period, corn appears in only small amounts in archaeological collections. It was probably not important to the diet, but it may have had ritual and ceremonial uses. The appearance of corn, even in small amounts, represents the first certain introduction of tropical cultigens from Mexico, via the southwestern United States or the Caribbean (Fritz 1988; Riley et al. 1990).

The Middle Woodland period saw elaboration in mortuary ritual in many portions of the Midwest and Southeast. The Adena and Hopewell traditions of the Ohio Valley are represented by some of the most spectacular sites known in the region. Utilitarian ceramic vessels typically had cord-marked or fabric-impressed exterior surfaces, but many vessel types associated with non-utilitarian usage had distinctive and highly elaborated decorative patterns. Middle Woodland projectile points are clearly related to triangular lanceolate types of the Copena and McFarland cultures of Tennessee (Faulkner 1969; Kline et al. 1982; Railey 1990:251). Middle Woodland mortuary and long-term habitation sites typically produce evidence that these groups participated in a system of long-distance exchange termed the Hopewell Interaction Sphere (Caldwell 1964; Seaman 1986). Artifacts made of copper, mica, obsidian, and specific high-quality chert raw material types attest to the geographic range and complexity of this exchange system.

By the early Late Woodland (ca 1,500 to 1,200 years ago), the elaborate mortuary sites associated with the Middle Woodland Hopewell tradition were abandoned in Kentucky. Ceramic vessels bore little or no decoration beyond simple surface roughening. These material changes may represent changes in household organization, community social organization, community social organization, or patterns of interaction among households and communities (Braun 2001; Braun and Plog 1982). Most assemblages of artifacts lack the decorated ceramics and exotic items indicative of the broad Hopewellian Interaction Sphere (Railey 1990:256).

The construction of elaborate burial mounds and stone or earth enclosures had apparently ceased in Kentucky by about 1,500 years ago, although some mounds were still constructed in the early part of the Late Woodland. Most ceramic vessels are subconoidal, with flattened lips and rims. Seasonal dispersal of local groups seems to have been the prevalent settlement pattern through most of Kentucky (Railey 1990:256). However, a large amount of regional variability existed across the state. In the eastern and central Kentucky regions, the local manifestation of early Late Woodland cultural practices is termed the Newtown Phase. This phase is characterized by limestone-tempered, cord-marked ceramics that often have a distinctive vessel shape that includes a shoulder area with a distinct angularity. Projectile points diagnostic of this phase fall generally into the Lowe cluster (Justice 1987), and are distinguished by the presence of broad, shallow side notches or expanding stemmed bases of medium size. Newtown Phase settlement systems include larger semi-permanent sites that sometimes have a distinctive ring-shaped midden. Other site types that are part of the Newtown settlement system include short-term hunting camps, specialized resource extraction locations, and seasonal camps (Railey 1990).

The terminal Late Woodland (ca 1,200 to 1,000 years ago) exhibits much greater variety in terms of ceramic decoration and styles, subsistence strategies, and possible levels of social organization (Railey 1990:257). The introduction of the bow and arrow caused a change in the technological organization of lithic reduction strategies and possibly in the economic organization of households and communities. Small triangular projectile points begin to occur during this time period (Railey 1990:257). Corn became an increasingly important crop during the terminal Late Woodland time period.

LATE PREHISTORIC PERIOD

The Late Prehistoric period dates from about 1,100 to 300 years ago (Lewis 1990). During this time, large, permanently settled villages began to appear in many parts of the state, and large earthen mounds were again constructed that served both as mortuary facilities and as platforms for residences of higher-status individuals.

The Late Prehistoric period in Kentucky is distinguished by two different cultural traditions — Mississippian and Fort Ancient. Mississippian peoples occupied western Kentucky, as well as portions of extreme southern and southeastern Kentucky, and are closer culturally to the Late Prehistoric inhabitants of the southeastern United States. The Fort Ancient culture flourished in northern, central, and eastern Kentucky, and is linked more closely to portions of southeastern Ohio and western West Virginia. Sites in the Salt River Management Area have the potential to be classified as Mississippian or Fort Ancient sites (Pollack 2008). However, due to the lack of Fort Ancient research in this region, we will focus on the Mississippian tradition here.

The Mississippian tradition (300 to 1,100 years ago) is a unit of general cultural similarity across many different regions. Mississippian farmers cultivated maize, beans, and squash; hunted wild fauna; and gathered many wild plant resources to supplement the cultivated diet. The Mississippian cultural tradition is distinguished by social and settlement hierarchies which are archaeologically visible by the remains of planned administrative centers consisting of featured plazas flanked by substructure mounds (Pollack 2008). However, sites identified as large villages, small villages, hamlets, farmsteads, and cemeteries have also been classified as Mississippian (Pollack 2008). Mississippian society has been characterized as a chiefdom.

In Kentucky, the final segment of the prehistoric era is known as the Contact Period. It begins when the first indirect effects of European presence were felt by Native American cultures in the area (ca. AD 1540), and continues to the signing of the Greenville Treaty in 1795 (Henderson et al. 1986:1). During this period, Europeans traded goods such as firearms, metal tools, trinkets and cloth, first indirectly and after the 1730s directly to the indigenous inhabitants (Henderson et al. 1986:2). In return, native peoples provided the Europeans with information about the expanding frontier environment that was important for survival, such as aboriginal hunting methods, the uses of native materials for shelters and canoes, and the uses of native plants for nourishment and medicinal cures (Henderson et al. 1986:2).

European households that moved to the Ohio Valley and Kentucky invaded the territories of the Chickasaw and Shawnee (Schenian and Mocas 1993). The Shawnee, who struggled with early Kentucky settlers more than any other tribe, probably numbered no more than three or four thousand by 1750 (Harrison and Klotter 1997). Many Shawnee and other indigenous groups left Kentucky by the end of the 1700s. Those who remained were absorbed into the culture of the new Commonwealth of Kentucky, although some kept alive the memories of their traditional ways of life.

HISTORIC CONTEXT

Kentucky's settlement was achieved amidst conflicting Native American land claims and the

tumultuous events of the Revolutionary War as the American colonies strove to become independent. Following early exploration by hunters from the east in the 1760s, active settlement of the Kentucky frontier began in the 1770s (McBride and McBride 1996). The beginning of the Revolutionary War created a dangerous climate for settlement in Kentucky because many Native American groups in the Ohio Valley allied with the British and viewed the settlers as interlopers. Kentucky settlers responded to dangers of warfare by building defensive residences called "stations" in which several families typically lived (O'Malley 1987). The men also were members of loosely organized militia units that were responsible for patrolling the frontier for evidence of impending Indian attacks, defending the settlements when attacks occurred, and participating in retaliatory raids against Indian villages north of the Ohio River.

Larue County was formed on March 4th, 1843 and named in honor of an early settler, John Larue. White settler first came to the area in the early 1780s, many from Harrodsburg. The first settlement was established in 1781 by Phillip Phillips. Originally named Fort Phillips, this site is located close to modern day Hodgenville.

The most famous resident of Larue County is Abraham Lincoln who was born at the Sinking Springs farm near Hodgenville on 12 February 1809. His birthplace is now a national park. A few years after his birth, Lincoln's family moved to a nearby 230 acre farm in the Knob Creek valley. However, the Lincoln family only lived at this location for about five years, from 1811 to 1816. This area is also now maintained as the Lincoln Boyhood Home National Park.

During the Civil War, the confederate army under General Braxton Bragg marched through Larue County in 1862 on its way to Louisville. Today the county remains largely agrarian with a small industrial base (Bryant 1992). Although it is not part of Larue County, the Knob Creek distillery is approximately 20 miles south of the Abraham Lincoln Boyhood Home.

PREFIELD RESEARCH AND SURVEY PREDICTIONS

In order to assess the archaeological potential of the project area, a search of several databases was made to determine the extent of previous research both within and near the project area. The complete collection of archaeological reports for Larue County at the Office of the State Archaeology (OSA), the State Historic Preservation Comprehensive Plan Reports No. 1 and No. 3 (Pollack 1990, 2008), and portions of the collections of microfiche, reports, and curated collections at the University of Kentucky were examined to locate references to previous archaeological work within and near the project area.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

The GIS database at the Kentucky Office of State Archaeology was checked for information about previous surveys conducted and sites recorded within two kilometers of the current project area (OSA Project Registration Number FY11-6852, conducted on 25 June 2011). This search listed one survey that had been carried out within that 2-km radius, which documented a total of 3 archaeological sites. Additionally, two surveys conducted by the Southeastern Archaeological Center did not appear in the OSA records. Results of each are discussed below.

Ronald Deiss performed a reconnaissance of 1.14 miles within the right of way of proposed improvements to US Highway 31E. Three previously unknown archaeological sites were recorded, of which two are located within the 2 km radius of the current projects (15LU38 and 15LU39). The third previously unrecorded site, 15LU40, is a historical site determined not to be significant based on National Register of Historical Places (NHRP) criteria. A combination of surface surveillance and shovel testing was used to survey the proposed ROW (Deiss 1987).

Site 15LU38 measured 90 m by 21 m (1,890 m²). It is a low density oval-shaped lithic scatter located in a plowed field. A total of 56 chipped stone artifacts were recovered through surface reconnaissance and three 1x1 m test units. The artifact assemblage includes bifaces (n=2), a blade (n=1), flakes (n=50), and shatter (n=3). All major phases of tool reduction were identified. Furthermore, the chert used to make these artifacts could not be attributed to any local geological formation. The lithic assemblage displays an emphasis on secondary flakes (n=16) and interior flakes (n=14), and intermediate-stage production is indicative of short-term occupation and expedient lithic tool use. No temporally or culturally diagnostic artifacts were recovered. Moreover, shovel testing did not reveal any evidence of intact archaeological deposits. Therefore, the investigators concluded that 15LU38 had little potential to contain intact archaeological deposits and did not warrant further investigation.

Site 15LU39 measured 15 m by 15 m (30 m²). The area once had a tenet house built in the early twentieth century. The structure had been razed by a later owner, and the artifacts recovered (machine made twentieth century glass, nineteenth and twentieth century ceramics, and undated metal) support the chronology supplied by interviews with former owners. A total of 30 artifacts were collected from one positive shovel test (a total of 53 shovel tests were dug, but only Shovel Test 50 yielded artifacts). The time period and common place nature of the tenet house rendered the site ineligible for listing on the NRHP.

In October and November of 2004, the National Park Service Southeast Archaeological Center (SEAC) conducted an archaeological and geophysical survey of the Abraham Lincoln Boyhood Home Site (15LU50, NPS ASMIS site designation ABLI-2), located in the small tributary valley that feeds Knob Creek near the center of the current project area. The project area covered a total of 6.1 ha. The primary research goal of the investigation was to identify cultural features and artifacts associated with the Lincoln family's occupation of this farmstead between about 1811 and 1816. The field methods employed for the project included shovel testing, excavation units, and ground penetrating radar (GPR) survey, and work was largely confined to the tributary valley northwest of US 31E. Historic artifacts dating to the same period as the Lincoln family residency were found in 23 of the 250 shovel tests excavated within the tributary valley. The survey did not yield any features or artifacts relating specifically to the Lincoln family. The GPR survey covered approximately 10,000 square meters divided into 14 grids following the natural landscape. The GPR data did not clearly identify evidence of historic foundations or the old Louisville and Nashville railroad bed. A single test unit was placed within the reconstructed Lincoln boyhood cabin to determine if the cabin placement corresponded to the original location of the Lincoln cabin. Three 10-centimeter levels were excavated before encountering subsoil. No cultural features were identified; only one nail fragment was recovered (Lawson et al. 2006).

A large prehistoric component of 15LU50 was identified in the cultivated fields surrounding the Boyhood Home Site and extending up northwest up the unnamed tributary valley. A majority of the shovel tests contained lithic debitage, but several fragmentary projectile points were recovered demonstrating episodic occupation over a long period of time. Two test units were excavated in the flood plain. One test unit identified an artifact-bearing stratum beneath the plow zone. The second test unit exposed a gravel bar containing lithic debitage. No prehistoric features were identified. The limits of the prehistoric occupation extended beyond the project boundaries.

SEAC also conducted a second investigation in close proximity to the Abraham Lincoln Boyhood Home Site (15LU50/ABLI-2) in 2008. This project expanded the survey area initiated in 2004 to search for evidence of the Lincoln occupation or house site on the east side of US 31E. A combination of shovel testing at 20-meter intervals, test unit excavation, GPR survey, and backhoe trenching was used in this investigation. A total of 88 shovel tests were completed on the flood plain. The areas around positive shovel tests containing historical artifacts dating to the Lincoln family's residence (1811-1816) were then subjected to GPR survey in the hopes of finding evidence of structural features. No such features were located (Lawson et al. 2010).

HISTORICAL RESOURCES

Little map information is recorded for central Kentucky before the mid-1700s when surveying companies sought out land west of the Cumberland Gap. In 1802 George Lindsey received a patent of 230 acres along Knob Creek in modern Larue County at the base of the Muldraugh escarpment (Brown 1998, referenced in Lawson et al. 2010). Part of this tract was later to be occupied by the Lincoln family.

Thomas Lincoln and his family leased 30 acres of property along the Nashville-Louisville Turnpike from George Lindsey starting in 1811. Thomas Lincoln erected a small cabin facing the turnpike, which followed the general course of the present-day US 31E highway, and cleared enough land for three agricultural fields. The Lincoln family moved to the Knob Creek location from a nearby farm, Sinking Springs, where Thomas Lincoln was embroiled in a legal dispute over the property. In 1816, Thomas Lincoln lost the legal battle over the Sinking Spring property and decided to move the family to Indiana (Brown 1998, referenced in Lawson et al. 2010).

A reconstructed single-pen cabin was placed on the Abraham Lincoln Boyhood Home Site in 1931, with the location of the cabin based on the recollections of a local informant. The cabin is constructed of logs thought to be from a contemporary cabin that was on the neighboring Gollaher family property. Presently, evidence does not exist to confirm or disprove the proposed location of the Lincoln family cabin (Lawson et al. 2008). The property passed through many hands in the intervening years but was officially passed to the National Park Service on November 6, 2001 and became the Abraham Lincoln Boyhood Home National Historic Site.

ARCHAEOLOGICAL RESOURCE POTENTIAL AND SURVEY PREDICTIONS

Based on the background research described above, the potential to identify prehistoric and historic sites within the current survey area was considered high. Previous archaeological investigations in the area have primarily recorded open habitations without mounds, and the survey segments are in close proximity to 15LU38, which was identified as an Archaic site, and the historic site 15LU39. Furthermore, based on the extensive prehistoric component at 15LU50, additional prehistoric open habitation sites without mounds were considered likely in the 15LU50 addition.

CHAPTER 4

FIELD AND LABORATORY METHODS

This chapter discusses the field and laboratory methods used in the current archaeological investigation of proposed spot improvements and curve relocations along US 31E in Larue County, Kentucky. The purpose of this work was to identify any archaeological resources within the proposed project area and to assess their potential eligibility for nomination to the National Register of Historic Places (NRHP). Natural and cultural indicators of archaeological resources include landform features, structural remains, particular species or patterns of vegetation, and concentrations of historic or prehistoric artifacts. The first section provides a description of field survey methods used to locate and assess the cultural resources within the project area. The second section presents a discussion of laboratory and analytical methods used to assess the materials recovered from each site and isolated find located in the field survey.

FIELD METHODS

The project area covered a total distance of about 2.5 miles (4.02 km) along a section of US Highway 31E northeast of Hodgenville, Kentucky. However, the improvements were not continuous over this entire length. Three linear sections of new right-of-way were acquired for realignment of three curves. Devers Curve is near the southwest end of the project area, the Boyhood Home Curve is near the middle of the project area, and Enlows Curve is located near the northeast end of the project area. Other improvements involved drainage diversions and culvert placements in scattered spot locations distributed along the project corridor. The archaeological survey area covered a total area of approximately 2.61 acres (1.06 ha) distributed among these segments and spot locations. The project area can be found primarily on the USGS 7.5' Hodgenville, KY (1953, photorevised 1987) topographic quadrangle, with a small number of the spot drainage improvement locations on the adjacent Howardstown, KY (1953, photorevised 1987) 7.5' topographic map (Figure 1.2). Most of the project area is owned by KYTC, but, two small portions of Devers Curve segment and the Boyhood Home Curve segment lie within the boundaries of the Abraham Lincoln Boyhood Home, which is owned by the National Park Service.

All of the survey segments and the spot improvement locations are within the Knob Creek valley (see Figure 1.2). Knob Creek itself flows southwest to northeast, running generally parallel to and between 20 and 200 meters southeast of US 31E. Because the project area is within an alluvial valley, there was some potential for encountering buried cultural deposits in terrace or flood plain landforms. Consequently deep bucket auger tests supplemented the shovel testing and sampled sediments for evidence of buried archaeological resources. There was no surface visibility, so shovel testing and auger testing were used to as field investigation techniques.

The entire project area was inspected visually for evidence of prior human use of the landscape (depressions for structures, structural footers/foundations, fences, roadways, anomalous vegetation, etc), and any areas of interest, including obviously disturbed areas, were mapped on scaled field drawings of the project area and project maps supplied by KYTC. The project area was confined entirely to the flat to slightly rolling terrace and flood plain landforms contained within the Knob Creek valley (Figure 4.1), so the presence of steep slopes was not a factor that affected survey methods.

Shovel tests were excavated in all three curve segments and at drainage improvement spot locations, at intervals of 20 meters. All shovel tests measured about 30 cm in diameter and were excavated to culturally sterile subsoil or gravelly subsoil that was generally impenetrable using shovel and auger tools. Shovel testing was conducted along linear transects running parallel to the center lines of proposed rights-of-way. Sediment from shovel tests was screened through 1/4-inch mesh to ensure standardized recovery of artifacts. When cultural materials were identified in shovel tests, bracketing shovel tests were excavated at 10-meter spacing east and west of positive tests to help delimit site boundaries. For most settings, the north and south



Figure 4.1. View of the Knob Creek Valley along the Enlows Curve Survey Segment (looking west).

brackets would fall outside the narrow corridor of the survey segment. Eighty-six shovel tests were excavated in the project area, including those placed along the regular 20-meter intervals and bracketing tests excavated at 10-meter intervals to help define boundaries of sites and isolated finds.

When originally proposed, the field conditions suggested the potential for encountering deeply buried prehistoric materials in the Knob Creek valley or on its terrace system. Soil maps of the project area indicated that the entire valley and project area was covered by Sensabaugh silt loam, which has silt loam extending as much as 27 inches, but which may be variable in depth. The underlying BC horizon of this soil type is a gravelly silt loam. Opportunistic auger tests were proposed, with at least one deep auger test in each of the major survey segments of the overall project area. These would extend to the top of the gravelly silt loam, below which we assumed a very low potential for containing intact cultural deposits of either historic or prehistoric age. In actuality, the gravelly silt loam that comprises subsoil was often encountered immediately below plow zone in shovel tests, and the gravelly sediment refused penetration by either shovel or auger. Consequently, only two auger tests were conducted within the project area, and one of these refused on gravelly sediment after only an additional 20 cm of subplow zone excavation.

LABORATORY METHODS

Artifacts were washed, catalogued, and analyzed at the laboratory facilities of UK-PAR in Lexington, Kentucky after completion of the field work. Following washing, artifacts were separated into major material classes (e.g., chipped stone debitage, modified chipped stone) for more detailed description, identification and analysis. Following analysis, an inventory was assembled using a standard descriptive typology for prehistoric artifacts. Prehistoric and historic artifacts were recovered during field work so the following discussion of analytical methods focuses on both artifact classifications.

PREHISTORIC ARTIFACTS

A total of 55 prehistoric artifacts were recovered from the project area, which comprises the majority of the artifacts recovered during the survey. Only chipped stone artifacts were recovered; no prehistoric ceramic or ground stone materials were found. Analysis of prehistoric lithic artifacts involved a typological classification of all chipped stone materials that focused on identifying the production trajectory and stage of reduction (Andrefsky 1998; Collins 1975; Odell 2003). Each piece of chipped stone debitage was identified to a specific typological category based on a set of morphological features (see definitions below). Modified chipped stone artifacts (tools) were also recovered, and analyses of this major material class included classification into morphological categories that also reflect the reduction stage of the tool.

In addition to morphological classification and assignment to reduction stages, the raw material type was identified for all chipped stone artifacts. Kiristen Bright analyzed the prehistoric lithic artifacts recovered from the project area, and these identifications and interpretations were verified by Steven Ahler. Chert raw material types were verified by Steven Ahler and Shawn Webb.

Debitage Categories

Analysis of debitage includes classification by reduction stage using definition criteria developed by, among others, Crabtree (1982), Flenniken (1987), and Collins (1975), and subsequently slightly modified for use in local contexts in Kentucky. In addition to flake type, the amount and type of cortex present on the dorsal surface of each flake was also recorded. Definitions for debitage flake types are provided below.

Primary Flakes

Also called decortication flakes, primary flakes represent the initial stage of lithic reduction. An obtuse platform with no lipping, a pronounced bulb of percussion, and a significant amount of cortex on the dorsal surface (more than 50 percent) typically characterize this flake type.

Secondary Flakes

Also called partial decortication flakes, secondary flakes are also considered to represent the initial stages of reduction that involve removal of cortex from cores and tool blanks and preparation of cores and blanks for subsequent thinning and shaping. Attributes of secondary flakes include an obtuse-angled or right-angled platform that shows no lipping on the ventral surface, a noticeable bulb of percussion, and presence of cortex on less than 50 percent of the dorsal surface (including the platform as part of the dorsal surface).

Interior Flakes

Interior flakes, sometimes referred to as tertiary flakes, exhibit 1) an identifiable platform, 2) a bulb of force on the ventral surface, and 3) no cortex on the dorsal surface and/or platform. These flakes are produced in intermediate stages of core or biface reduction. Large interior flakes may serve as blanks for production of tools, including small dart points, scrapers, or cutting tools.

Biface Thinning Flakes

Biface thinning flakes are flakes that have: 1) an identifiable platform, often with two or more distinct facets or surfaces, 2) a diffuse bulb of force on the ventral surface, 3) no cortex on the dorsal surface or platform, 4) a platform that forms an acute angle ($<90^\circ$) between the platform and the dorsal surface, and 5) a lip, or hook-like protrusion at the ventral edge of the platform.

Pressure Flakes

Pressure flakes are similar to biface thinning flakes, but the platform is often very diminutive and may exhibit crushing at the point of detachment. The bulb of force is a pinpoint location, and the small lip at the ventral edge of the platform is often discernable only by feel or with the aid of a hand lens for magnification. Other attributes of biface thinning flakes (faceted platform, acute angle between platform and dorsal surface,

and absence of cortex) are also applicable to pressure flakes. Not surprisingly, biface thinning flakes and pressure flakes often are distinguishable only by the smaller size of the latter. Because many platforms are crushed in the process of creating pressure flakes, they are often placed in the broken flake category. Biface thinning and pressure flakes may be grouped as late-stage reduction flakes.

Broken Flakes

Broken flakes or flake fragments are pieces of flakes that lack either an identifiable platform or a bulb of force. However, the specimen is still identifiable as a flake by its relative thinness, the presence of dorsal flake scars, and a smooth ventral surface. Broken flakes also lack cortex, and this suggests that many may have been produced later in the manufacturing process, in intermediate or late stages. Flake fragments that have cortex on the dorsal surface were placed into primary or secondary flake categories based on the amount of cortex visible, and were not included in the broken flake category.

Angular Shatter

Shatter is a fragment of chert that has been culturally modified but lacks attributes that would allow it to be classified into any other debitage category. Angular shatter can be produced at any stage of reduction but is more likely a by-product of early stages.

Modified Chipped Stone Tools

Lithic chipped stone artifacts that show evidence of modification, either through use or by intentional shaping of the item, are considered tools. This general class of chipped stone tools can be further divided into a variety of specific categories based on the morphology of the artifact, presence or absence of intentional shaping, and the degree to which the artifact has been modified. Specific artifact categories that commonly occur on prehistoric sites include unifacial tools of various shapes and functions, cores, and bifacial tools. In the present assemblages, a single biface and five cores were recovered.

Bifacial tools show flake removals from both major aspects of the specimen, resulting in a generally lenticular cross-section. Assessment of the degree of modification allows bifacial tools to be placed into various stages of reduction that reflect the degree of refinement of the tool and its placement along a reduction stage continuum (Collins 1975, Odell 2003, Whittaker 1994). Biface stages that are commonly recognized include rough bifaces that show only minimal bifacial work (also known as initial or Stage 1 bifaces), thick or Stage 2 bifaces that show the beginning of regularized shaping of the artifact, thin bifaces or Stage 3 bifaces that are fully thinned, and finished bifaces (projectile points and knives) which exhibit evidence of a hafting element. In the current survey, only thick/Stage 2 bifaces were recovered.

Stage 1 bifaces represent the earliest stage of biface reduction. Initial decortication as well as biface edging and shaping take place in this stage. Stage 1 bifaces generally retain some degree of cortex, but this is not always evident in fragmentary specimens. Flake scars are large and irregularly shaped, and platforms are evident at the margin. However, the removed flakes may not extend to the centerline. Later Stage 1 bifaces show more regularized and completely bifacial margins. It is not possible to define either distal or proximal ends at this stage. The biface is asymmetrical in profile and thick in cross-section.

Stage 2 biface reduction continues the processes of shaping and thinning a biface, which began with production of rough or Stage 1 bifaces. Stage 2 is typified by the complete absence of cortex from both faces of the biface. The purpose of this stage is to remove as many problem areas as possible while continually setting up platforms to shape and thin the biface. Early Stage 2 reduction has a slightly more even cross-section than Stage 1, and by late Stage 2, smaller flakes are evident around the margins. These smaller flake scars are typically thinner and longer than those found in Stage 1, and may extend to the centerline. It is not usually possible to tell the distal from the proximal ends during Stage 2. Viewed from the side, the edge is generally sinuous rather than straight, but there is generally lateral symmetry by Stage 2.

Stages 3 and 4 continue to refine and thin the biface, and finished bifaces generally include a haft element. However, no thin or finished bifaces were recovered in the current project.

Lithic Raw Material Types

The lithic raw materials were identified by comparison to the type collection at the William S. Webb Museum of Anthropology. Kiristen Bright provided the initial identifications, with verification and refinement provided by Steven Ahler and Shawn Webb. The project area is located within the Hodgenville, KY (1987) 7.5' USGS quadrangle. Examination of the geological map for this quadrangle helped determine the types of chert raw materials likely available to prehistoric inhabitants of the project areas. The Mississippian-age Borden formation of the Meramec Series, which is 230 to 370 feet thick, underlies the project area, but it non-chert bearing. The project area has three chert-bearing strata: Harrodsburg Limestone is 20 to 45 feet thick and lies immediately above the Borden Formation. Moore (1968) describes Harrodsburg as coarse to very coarse-grained in texture and ranging in color from light gray to yellowish gray. The Harrodsburg Limestone formation is overlain by Salem Limestone, which is about 30 to 180 feet thick. The Salem Limestone formation, in which chert deposits are present, but very sparse, is found on the crest of the hills surrounding the project area (Moore 1968). Koldehoff describes Salem chert as grainy in texture with color ranging from light brown and light gray to medium brown and yellowish brown. Salem chert may occur as nodules or in bedded lenses (Koldehoff 1985). St. Louis Limestone is the uppermost chert bearing stratum that underlies the project area, and it is exposed due to the down-cutting of streams. St. Louis is a nodular or tabular chert that is opaque and light gray to medium-dark-gray.

Finally, some chert materials were unidentified as to geological source. The unidentified status results from burning of the chert, which has severely altered the appearance and quality of the materials.

For all debitage types and tools that exhibit cortex (primary flakes, secondary flakes, and angular shatter), the type of cortex was also identified. Nodular cortex is identified by its thick, granular, and often chalky rind and is indicative of extraction of chert raw materials from a primary geologic source location. Water-worn cortex exhibits a thin, smooth, and often brown rind that has been smoothed by tumbling in streams. Water-worn cortex is indicative of extraction of chert raw material from secondary deposits such as gravel bars or ravines that are downstream from the primary source locations. A third type of cortex, designated subcortex, is very thin but is not water-worn. This type of cortex may be present along interior bedding planes and natural fracture zones of chert nodules or chunks. Its presence is not informative of exploitation of either primary or secondary chert sources.

HISTORIC ARTIFACTS

The historic artifact-coding scheme used by UK-PAR includes both functional and temporal dimensions. At the most general level, material is classified according to functional group, which for the present survey includes the Kitchen, Architecture, and Unassigned groups. Subsumed within groups are artifact classes including, for example within the Kitchen group, ceramic cooking/storage, ceramic tableware, and container glass. An additional descriptive level is provided that includes artifact-specific information such as glass color, vessel part, or maker's mark. Each artifact category is further recorded by count. The results of analysis are tabulated in a comprehensive inventory by context. The specific groups and classes recovered during the present survey are further described below.

Kitchen Group Glass

The Kitchen group is represented only by container glass of various types. Glass container body fragments, bases, and lips (finishes) are included in this category, though in the current assemblage, only body

fragments were recovered. These materials were sorted by color and by manufacturing type, when possible.

Until the bottle manufacturing process was fully automated, the addition of lips (finishes) was completed by applied tools, with the body reheated to ensure proper bonding of the glass. Rough applied-fused lips date from about 1840 to 1870, while smooth applied-fused lips (improved tool finishes) date from about 1870 to 1903 (Baughner-Perlin 1982:268-269). Machine-manufactured bottles date after 1903 when the Owens automated glass process was introduced (Deiss 1981). Machine-made bottles can be recognized by lips that have seams or bases that display suction scars. Earlier finish types lack seams. Standardized screw threads appeared after the introduction of machine-manufactured bottles and typically date from 1919 to the present (Deiss 1981:95).

Many of the colors found in container glass are the result of the addition of chemicals used over specific spans of time, but identification of color tints is subjective and the use of color as a temporal diagnostic is often of dubious value. True amethyst glass was produced c 1840s- 1880s. Clear glass that tints amethyst through solarization dates from about 1880 to 1914, the amethyst color in this case was produced by the addition of manganese (Society for Historical Archaeology 2011). Clear glass produced with a soda-lime formula superseded leaded glass by 1860 (Stelle 2001). Aqua glass, in shades ranging from blue to blue green to pale blue, is common from the 1820s to 1930s. Olive green and olive amber are most common in the 19th century (Society for Historical Archaeology 2011).

Sherds of container glass may be marked to identify a commercial product, a container manufacturer, or both. Some of these methods, such as embossing or silk-screening, are temporally diagnostic. Embossing on glass has a long period of use, beginning in the 1700s, with letters carved into a mold (Baughner-Perlin 1982). By the late 1850s, plate molds were developed for embossing, which increased the availability of embossed bottles (Baughner-Perlin 1982; Fike 1987:5; Pullin 1986:355). The advent of paper labeling led to a general decline in embossing by around 1920 (Fike 1987:5; Pullin 1986:355).

Architecture Group

Artifacts in this category are materials commonly used to construct buildings, as well as relatively permanent materials placed in structures to enhance their use. The most commonly recovered items in the architecture group are nails, window glass, and brick. The current architectural assemblage includes window glass.

At the turn of the 19th century, flat (window) glass was produced by one of three methods—crown, cylinder, or casting (Lorrain 1986:37). The crown technique involved the spinning of a mass of molten glass attached to the end of a metal rod, or pontil. The flat glass was allowed to cool and was then cut into the desired shape for windowpanes. Crown glass manufacture generally dates prior to about 1820 (Stelle 2001). Extending from about 1820 to 1920, the cylinder method of flat glass production was used. A mass of hot glass was formed into a cylinder by swinging the glass, and then it was cut down its long axis and reheated, forming a flat piece of glass (Stelle 2001). Straight distortion lines are characteristic of the cylinder method. Pane glass refers to flat glass typically less than 3 mm thick produced by the crown or cylinder methods. The production of flat glass by casting, known as plate glass, was achieved by rolling out the hot glass on a flat surface of sand, after which the flat glass was ground and polished. Typically plate glass measures more than 3 mm thick. The 1903 invention of the cylinder glass machine (Deiss 1981:85) made flat window glass more affordable. The 1903 cylinder glass machine was superseded by the continuous sheet process in 1917 (Deiss 1981:85). The coloration and thickness of window glass can be temporally informative, but a large sample is needed to produce an accurate date (Ball 1982; Moir 1987).

CURATION

All artifacts were prepared for curation according to the standards of the University of Kentucky's William S. Webb Museum of Anthropology (see 36 CFR Part 79 *Curation of Federally-Owned and Administered Archaeological Collections*). All artifacts were washed and placed in inert, labeled plastic bags. These bags were then placed in acid-free boxes for storage. A copy of this report and all field notes, artifacts, and photographs pertaining to this study are curated at the Webb Museum, where they are available for inspection by qualified researchers upon request.

CHAPTER 5

DESCRIPTION AND ANALYSIS OF MATERIALS RECOVERED

This chapter provides detailed descriptions and analyses of cultural materials recovered during the Phase I archaeological survey of the project area. The purpose of the materials recovered chapter is to present an overview of the temporal and functional classification of the artifacts recovered from the project, using the classification scheme discussed in the previous chapter, and to present substantive interpretations of these materials as they relate to the prehistoric or historic occupation of the sites identified during the survey.

PREHISTORIC ARTIFACTS

Fifty-five prehistoric artifacts were recovered during the survey. Of these 55 artifacts, 10 were modified items. Artifact types recovered consist of one biface fragment and the debitage that results from the production of stone tools.

LITHIC DEBITAGE

Prehistoric chipped stone debitage accounts for nearly all of the prehistoric assemblage from the project area (49 of 55 lithic artifacts, or 90.1 percent). The remaining artifacts are modified items. Utilized flakes are included in the debitage discussion because they can be assigned to specific reduction categories, but are also modified items which are discussed later. Of the 49 debitage artifacts recovered, 25 debitage were recovered from 15LU50 Addition, 8 were found at 15LU52, 8 were recovered from 15LU53, and a total of 8 debitage were recovered from the five combined isolated finds. The debitage densities for all sites are low, suggesting relatively short-term use of the areas. Debitage was analyzed with respect to flake types that are part of a biface reduction trajectory (see Chapter 4 for definitions). No debitage was observed that could be related to other lithic reduction industries, such as a bipolar, blade, or specialized tool production techniques.

Table 5.1 presents summary data on the flake types represented in the combined assemblages from the three sites and isolated finds. In composite, the most common debitage category is interior flakes ($n=14$) followed by secondary flakes ($n=12$) and broken flakes ($n=9$). The high number of interior flakes and broken flakes without cortex most probably reflect intermediate and later stages of lithic reduction. Although the sample is small, the relatively high proportions of primary, secondary, and interior flakes suggest that early and intermediate-stage reduction was more common within the survey segments than late stages of lithic reduction. This interpretation is consistent with the recovery of only one rough biface fragment and multiple cores, and the absence of biface thinning or pressure flakes, both of which are signatures of late-stage biface production or biface maintenance and resharpening. It is also consistent with the use of locally available chert, which would have been readily obtained from either primary outcrop or secondary stream lag deposits in close proximity to the survey segments. Finally, the high proportion of secondary flakes is consistent with the findings of the extensive survey efforts by the National Park Service at 15LU50 (Lawson et al. 2006, 2010) which documented an extensive prehistoric site that functioned mainly for early-stage lithic reduction activities.

Broken flakes without cortex ($n=9$) and shatter ($n=7$) are common, but these debitage classes cannot be assigned to a specific reduction stage. The debitage that can be placed into specific reduction stages ($n=33$) shows increasing proportions of flakes through the reduction sequence, then a complete absence of late-stage debitage. This type of debitage profile suggests an emphasis on early- and intermediate stages of reduction and also general reduction of cores to produce flake blanks or expediently utilized flakes. Early- and intermediated stages of reduction are supported by the presence of utilized flakes and several cores in the modified item assemblage, as well as a rough biface fragment. This combination of early-stage reduction and

Table 5.1. Summary of Flake Types and Lithic Raw Material Found in the Project Area. (*) Denotes a modified item.

Site	Raw Material	Primary	Secondary	Interior	Biface Thinning	Broken	Shatter	Rough Biface	Core	Total
15LU50 Ext.	Harrodsburg	0	5	3	0	0	1	0	1	10
	St. Louis	2	2	0	0	0	1	0	1	6
	Salem	1*	1	3	0	2	2	0	2	11
	Unidentified	1	1	0	0	0	0	0	0	2
	15LU50 Total	4	9	6	0	2	4	0	4	29
15LU52	Harrodsburg	1	1	1	0	0	0	0	0	3
	St. Louis	0	0	0	0	3*	0	1	1	5
	Salem	1	0	0	0	1	0	0	0	2
	Unidentified	0	0	0	0	0	0	0	0	0
	15LU52 Total	2	1	1	0	4	0	1	1	10
15LU53	Harrodsburg	0	0	2	0	0	1	0	0	3
	St. Louis	0	0	1	0	0	1	0	0	2
	Salem	1	1	0	0	0	1	0	0	3
	Unidentified	0	0	0	0	0	0	0	0	0
	15LU53 Total	1	1	3	0	0	3	0	0	8
Isolated Finds	Harrodsburg	0	0	1	0	1	0	0	0	2
	St. Louis	0	0	1	0	0	0	0	0	1
	Salem	0	1	2*	0	1	0	0	0	4
	Unidentified	0	0	0	0	1*	0	0	0	1
	IF Total	0	1	4	0	3	0	0	0	8
Grand Total		7	12	14	0	9	7	1	5	55

intermediate-stage production is indicative of short-term occupation and expedient lithic tool use for the project area as a whole, and this same pattern is reflected in each of the individual site assemblages (though the samples from individual sites are very small).

Assessment of differential use of raw material types is not really possible because all of the debitage items are made from locally available cherts (Harrodsburg, St. Louis, and Salem). These observations indicate exclusive use of locally available chert raw material, which is also consistent with short-term occupation of the sites and expedient lithic reduction. However, some differential use of raw materials might be expected on the basis of chert quality and knapping characteristics. St. Louis chert is arguably the highest quality chert of the three identified raw materials, but it is the least commonly represented (15 of 55 items, or 27.3 percent of lithic assemblage). Salem, which might be considered to have the lowest overall quality, is most commonly represented, with 20 items (36.4 percent). Harrodsburg chert is intermediate in representation with 17 items (30.9 percent). These observations suggest that there was little differentiation made among the available chert types by prehistoric inhabitants of the area. This again supports opportunistic and expedient use of available raw materials. Finally, of the 19 items with cortex present, none were identified as having water-worn cortex, though all of the materials were recovered from the Knob Creek alluvial deposits. This observation suggests either that chert was extracted directly from residual or outcrop locations, or that chert was not transported very far in the Knob Creek system before it was extracted and used by prehistoric inhabitants. Again, expedient use of locally available lithic raw materials is indicated.

In composite, the low density of debitage at all sites and the debitage profiles are consistent with low-intensity or episodic prehistoric use of the US 31E project area. Biface production and biface maintenance activities are not represented in the assemblage, though these activities are indicated by the presence one rough biface fragment. The absence of prehistoric pottery in the assemblage is consistent with low-intensity use of the project area. Short-term encampments that focused lithic activities on expedient use of locally available raw materials would account for these artifact density and debitage data.

MODIFIED CHIPPED STONE

Only 10 modified prehistoric chipped stone artifacts were recovered during the survey of the project

Table 5.2. Historic Artifacts Recovered during the Phase I Archaeological Survey of Spot Improvements along US 31E.

Artifact Group and Type	Number
Kitchen Group	
Clear container glass body sherd	8
Brown container glass body sherd	3
Olive container glass body sherd	1
Clear container finish (screw top)	1
Architecture Group	
Clear window glass	1
Historic Artifact Total	14

area. These include utilized flakes (n=4), a rough biface fragment (n=1), general cores (n=2), a tested core (n=1), and exhausted cores (n=2). All modified items were produced from locally available chert. The limited range of modified lithic items supports the interpretation of the debitage, which indicated short-term use of the sites, an emphasis on early and intermediate-stage lithic reduction, and expedient use of locally available chert raw materials. These interpretations are bolstered by the absence of ground stone or formally shaped unifaces or bifaces in the composite assemblage of modified items. None of the lithic modified items are temporally diagnostic.

SUMMARY OF PREHISTORIC MATERIALS

The debitage and modified items recovered from this survey indicate exclusive use of locally available chert during the prehistoric occupations of 15LU50, 15LU52, and 15LU53. Though the assemblages from 15LU52 and 15LU53 are very small, they are similar to the larger assemblage from 15LU50. At 15LU50, there is an emphasis on early- and intermediate-stage lithic reduction, while biface finishing and maintenance activities are not represented. Low artifact densities and the limited range of both debitage and tool classes suggests short-term occupation and expedient use of local chert raw materials. Temporally diagnostic artifacts were not recovered from the project area, so the period(s) of site occupation cannot be determined. Due to the low densities of artifacts, low diversity of tools, and absence of temporally diagnostic materials, the research potential for these sites is considered low.

HISTORIC ARTIFACTS

A total of 14 historic artifacts was recovered during the archaeological survey of US 31E (Table 5.2). The artifacts recovered are assigned to two specific functional groups, Architecture and Kitchen. Table 5.2 shows the composite artifact table for the project, organized by functional group and descriptive artifact type. As can be seen, the range of artifact types is minimal, and only one subclass of artifact is represented within each of the more general functional groups.

The Kitchen group is the better represented group with 13 of the 14 historic artifacts from the project area. All are container glass of various colors, and all were recovered from the Boyhood Home segment that sampled an additional portion of 15LU50. The nine clear and three brown container glass fragments most likely represent modern beer or liquor bottles. This is supported by the presence of an embossed label on one of the clear fragments, which is interpreted as part of the inscription "FEDERAL LAW FORBIDS THE SALE OR REUSE OF THIS BOTTLE". This inscription is found on screw-top liquor bottles made between 1935, when the law went into effect, and 1964 when the law was repealed (Parisian 2010). The single olive green fragment may also be modern, and it may represent a wind bottle fragment, based on color. One of the clear container fragments is the finish to a screw top bottle. Overall, the container glass assemblage suggests consumption of alcohol and discard of alcohol containers along the side of US 31E. While improvements can

be made to the curves along this roadway, an underlying problem represented by the alcohol containers may remain.

ARCHITECTURE GROUP

One fragment of window glass was recovered from a single shovel test in the Devers Curve segment. This is the single historic artifact assigned to the Architecture group. The fragment has a thickness of 2.68 mm. Though the sample of one fragment is not statistically significant, the fragment suggests a construction episode after 1920 when glass approximates its modern thickness (Moir 1987).

DISCUSSION

Ten of the 14 historic artifacts recovered from the survey of spot improvements along US 31E in Larue County, Kentucky, were found at the 15LU50 Addition along the Boyhood Home Curve segment. These materials have been assigned to the Architecture and Kitchen groups, but are most likely either modern or at least 20th century in age. In any event, none of these artifacts can be related to the early 19th century occupation of this locality by the Lincoln family. As such, they add little to our understanding of the scientific or historic importance of this site. The historic artifacts do not support a recommendation of any additional archaeological work within this portion of 15LU50.

CHAPTER 6

SURVEY RESULTS

This chapter reports the results of Phase I archaeological investigations of spot improvements along US 31E in Larue County, Kentucky. The survey was confined to portions of the flood plain of Knob Creek (Figures 1.2 and 4.1). Shovel testing was necessary due to poor surface visibility. In each of the survey segments, a single transect of shovel tests was sufficient to cover the proposed new right-of-way. Small areas where spot improvements were proposed, such as culverts and drainage ditches, were individually examined with at least one shovel test placed in each spot improvement location when terrain was level enough to require shovel testing.

Soil profiles varied only slightly between two general patterns exposed among the survey segments, and all are characteristic of flood plain soils in this locality. In general, the soil profile found at the northeastern segment (Enlows Curve) includes a single deep zone (approximately 50 cm) of dark yellowish brown silt loam plow zone that contained more gravel with depth (see Figure 6.1). The bottom of plow zone was often indistinct, but this could have been because of the dry soil conditions as well as the variable depth of the plow zone in the flood plain settings. The other typical soil profile is shown in Figure 6.2 (Shovel Test 102 in the southwestern Devers Curve segment). In this circumstance, two soil distinct soil zones are present. An upper, shallow light brown silt loam plow zone extends to approximately 15 cm below ground surface (varying between 8 and 20 cm depth), underlain by a yellowish brown silt loam which becomes more gravelly to a depth between 20 and 30 cm below ground surface. In the case of shovel tests with two zones, cultural material was found most often in the upper plow zone stratum, but there were no indications of features or midden extending below the plow zone at any site. In addition, the gravel content quickly increased, creating conditions impossible for continued excavation with either shovel or bucket auger.

As a result of this work, two previously unreported archaeological sites were documented, and five prehistoric isolated finds (IF) were also recorded. In the northeastern survey segment at Enlows Curve the crew documented 15LU52, IF1, and IF5. Site 15LU53, IF2, IF3, and IF4 were documented in the southwestern Devers Curve segment. In addition, a portion of a previously reported site, 15LU50, was sampled within the Boyhood Home Curve segment of the project area. These cultural resources are discussed individually below. None of the spot improvement locations produced any cultural material.

15LU50 (ABLI-2) ADDITION

The survey performed at 15LU50 (ABLI-2) filled a narrow gap between two areas previously investigated by archaeologists from the National Park Service Southeast Archaeological Center (SEAC, see Figures 1.2 and 6.3). This portion of 15LU50 is a moderately dense lithic scatter on the southeastern side of US 31E across from the entrance to the Abraham Lincoln Boyhood Home National Park. This site is within the Boyhood Home Curve segment of the overall project area (Figure 1.2). This site had been previously documented as a result of extensive survey and testing projects conducted by SEAC (Lawson et al. 2006, 2010). These projects were carried out to attempt to locate specific archaeological or structural remains of the Abraham Lincoln boyhood home. These combined efforts over two field project resulted in excavation of more than 330 shovel tests, hand-excavation of more than 20 1-x-1-meter test units, magnetic gradiometer survey, ground-penetrating radar survey of more than 1.0 ha of surface area, as well as limited backhoe trench excavations. No archaeological evidence of the Lincoln structure has been found in spite of these efforts, but the survey did identify an extensive prehistoric archaeological site—15LU50—that occupies the entirety of the small tributary valley where the Lincoln cabin was ostensibly located, as well as portions of the Knob Creek valley southeast of Knob Creek itself. In addition, these previous investigations did recover early 19th century artifacts, and the locations around these artifacts were intensively investigated to determine the location of the Lincoln family residence or associated structures. However, no such evidence could be located.

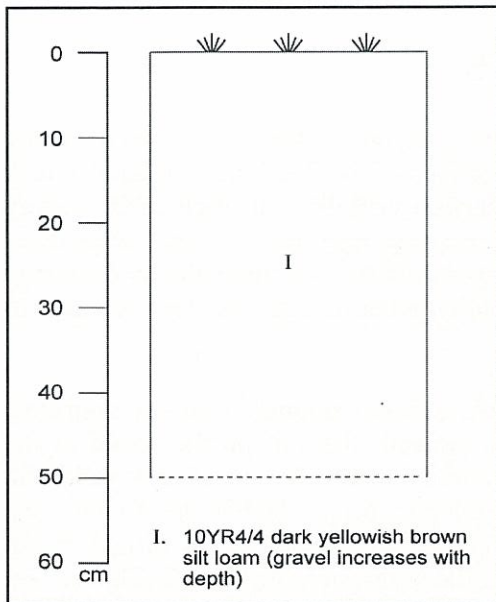


Figure 6.1. Typical Deep Shovel Test Profile within the Project Area (ST 18N10).

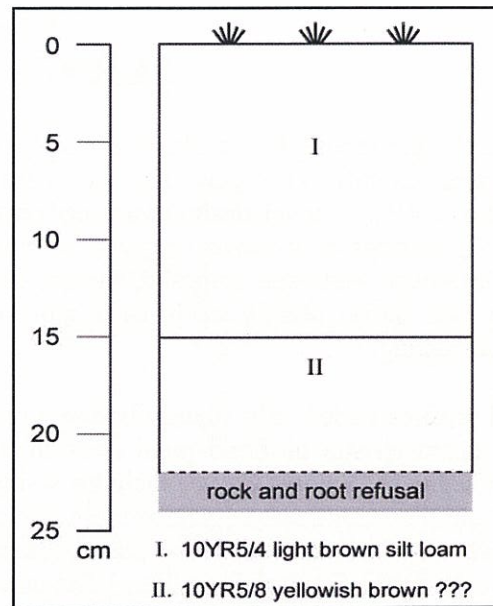


Figure 6.2. Typical Shallow and Very Gravelly Shovel Test Profile within the Project Area (ST 102)

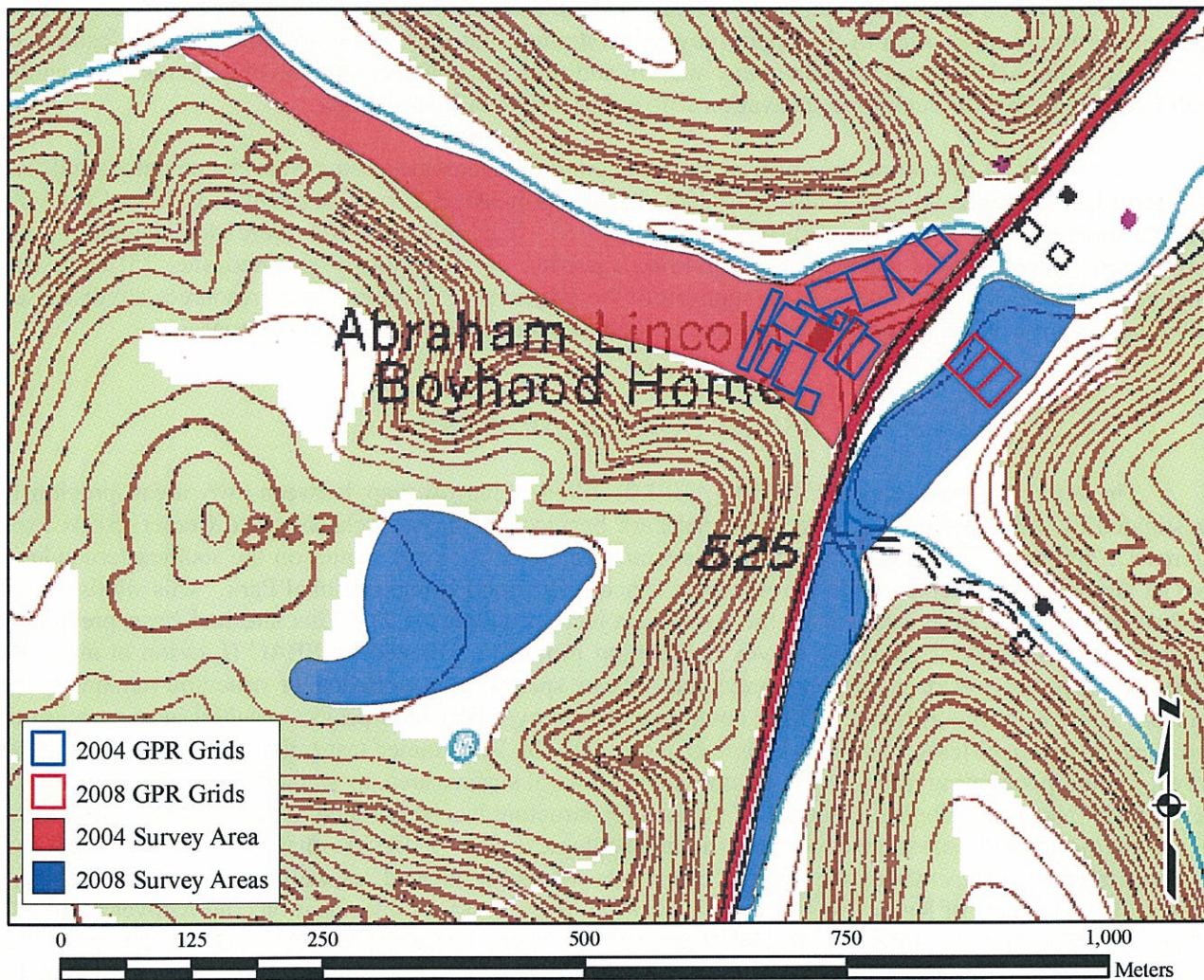


Figure 6.3. Previous Investigations at the Lincoln Boyhood Home Site, 15LU50 (from Lawson et al. 2010:43).

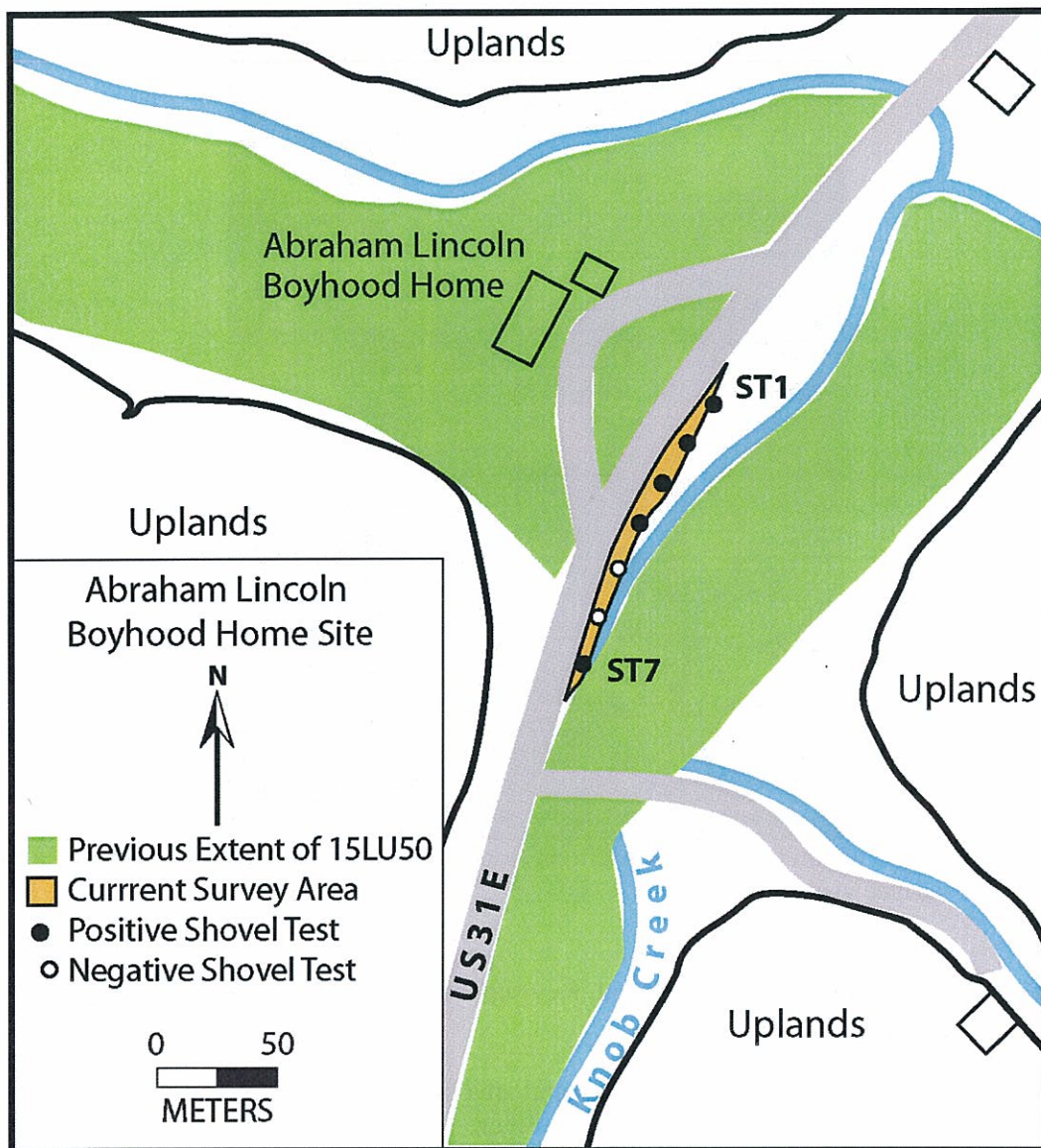


Figure 6.4. Detailed Site Map of the 15LU50 Addition.

The current survey effort was carried out in a narrow strip of ground between the southeastern right-of-way of US 31E and Knob Creek, an area that had not been covered in the earlier efforts (Figure 6.4). Because portions of 15LU50 had been identified both to the northwest (across US 31E) and to the southeast (across Knob Creek), we fully expected that this segment of the current project area would also contain evidence of prehistoric occupation, and that this would be included as part of the previously reported 15LU50. This proved to be the case. Five of seven shovel tests excavated along this survey segment were positive for prehistoric materials, defining an area about 170 meters long (northeast-southwest) but only about 10 meters wide (northwest-southeast), that filled part of the gap between two previous investigation efforts. Cultural materials thus cover an area of about 1800 meters², but all of this area is contained within the previously defined boundaries of the 15LU50 site area.

The 15LU50 Addition is a moderate-density lithic scatter identified to the southeast of the Abraham Lincoln Boyhood Home National Park entrance (Figure 6.4). Positive shovel tests were distributed along most of the length of the survey segment, with five of eight shovel tests being positive for either historic or prehistoric materials, or both (ST1, ST2, ST3, ST4, and ST7). Shovel Test 8 was not excavated as it was in the location of an existing culvert. Shovel Test 7 also produced fiberglass automobile body parts, and though



Figure 6.5. Shovel Test 1 within the 15LU50 Addition (looking west toward Lincoln Boyhood Home parking lot). Note the poor surface visibility.

these artifacts are not archaeologically significant, they support the need to improve the dangerous conditions along US 31E.

Cultural materials cover an area measuring and area of about 167 meters northeast-southwest and up to 20 meters northwest-southeast (about 1800 m²; see Figure 6.4). The site spans a grassy pasture along the southeast side of US 31E (Figure 6.5). The slope is less than 5 percent throughout the site (Figure 6.3), including the extensive portion of the Knob Creek and tributary valleys covered by 15LU50.. The southern, eastern, and western site boundaries are not defined by the current work, but 15LU50 is known from earlier investigations to extend in these directions. Any areas immediately to the northwest would have been disturbed by construction of US 31E, but 15LU50 has also been defined as extending much farther up the tributary valley to the northwest, for several hundred meters beyond US 31E.

Seven shovel tests were dug within the survey segment in a single transect parallel to and immediately adjacent to the southeast side of US 31E. Shovel tests were excavated at 20 meter intervals within the site area. In general, shovel tests displayed two soil zones (Figure 6.6). Level I, the plow zone, consisted of a grayish brown silty sand extending to a depth of about 10 cm below surface. Level II consists primarily of brownish yellow silt loam with chert and eroded limestone cobbles increasing with depth. Cultural materials were found in both Levels I and II. The shallow Level I indicates a high level of erosion, but the presence of artifacts in Level II indicates some potential for intact subsurface deposits.

A total of 39 artifacts, including 29 prehistoric chipped stone artifacts and 10 container glass fragments, were recovered through shovel testing of this portion of 15LU50 (Table 6.1). All of the lithic material is locally available, with Salem chert accounting for 37 percent of the lithic assemblage and Harrodsburg chert for another 31 percent. Because they are all locally available, lithic chert types are not identified by individual contexts in Table 6.1; see Chapter 5 for discussion of use of the various raw material

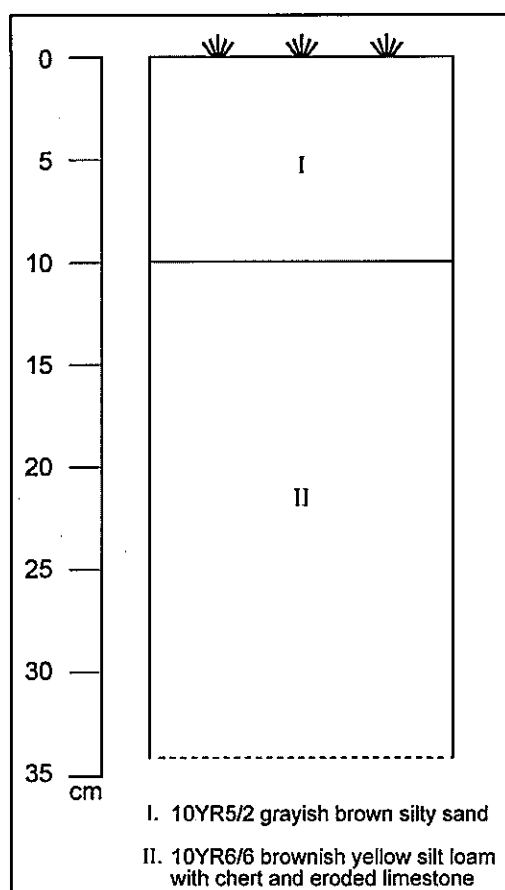


Figure 6.6. Typical Shovel Test Profile for the 15LU50 Addition (ST 1).

Table 6.1. Chipped Stone Artifacts from 15LU50 Addition. Debitage classes are separated by provenience. Because all lithic raw materials are locally available, raw material types are not differentiated by individual provenience; see Chapter 5 for discussion of raw material usage. Utilized flakes are indicated by an asterisk (*) in the cell.

Bag No.	Provenience	Primary Flake	Secondary Flake	Interior Flake	Biface Thinning Flake	Broken Flake	Shatter	Tested Core	General Core	Exhausted Core	Container Glass	Total
1	ST1	2	7	4			3	1	1	1	1	20
2	ST2		1									1
3	ST3	1*	1	1		1	1					5
4	ST4, 0-20 cm									1	7	8
5	ST4, 20-30 cm	1		1							1	3
6	ST7					1					1	2
	Total	4	9	6	0	2	4	1	1	2	10	39

types. Artifacts recovered included debitage and four cores (one tested, one general, and two exhausted cores), but none of these are temporally diagnostic. Artifacts were recovered from the entire length of the survey segment, but the artifact density is variable, with the large majority of prehistoric artifacts deriving from the north end in Shovel Test 1. The debitage profile, consisting mainly of secondary and interior flakes, indicates short-term episodes of site use, dominated by early and intermediate stages of lithic reduction. Long-term or generalized site use is not indicated. Ten container glass fragments were found in the 15LU50 Addition. None of these are temporally diagnostic, and all may be fragments of modern alcohol bottles.

Due to the lack of temporal diagnostics and the apparent absence of intact cultural midden or features



Figure 6.7. Shovel Test 18N10 at 15LU52 (looking southwest).

below plow zone, the addition of 15LU50 that will be affected by the proposed construction and curve realignment along US 31E is considered to have very low research potential. This part of 15LU50 is not considered to be eligible for listing on the NRHP under Criterion D, and no artifacts were recovered that would link this portion of the site to the early 19th century occupation of the site by the Lincoln family. No additional archaeological work is recommended for the portion of the site that has been investigated here.

15LU52

15LU52 is a low-density lithic scatter identified towards the northeast end of the Enlows Curve segment along US 31E; it is approximately 1.25 km northeast of the entrance to Abraham Lincoln's Boyhood Home and the 15LU50 Addition (see Figure 1.2). The site was located in a grassy pasture in the flood plain of Knob Creek (Figure 6.7). Poor visibility necessitated shovel testing, and a total of 20 shovel tests were dug at 20 meter intervals along the Enlow's Curve segment in a single transect parallel to the southeastern edge of US 31E. Two adjacent shovel tests in the northeastern half of the survey segment (ST18 and ST18N) define the boundaries of 15LU52 (Figure 6.8). The artifact scatter covers an area measuring 20 meters northeast-southwest and 10 meters northwest-southeast (200 square meters). The limits of the site were delineated by placing bracketing shovel tests northeast and southwest of the original positive shovel test. The southwestern and northeastern boundaries are confidently defined by the limits of cultural material, and US 31E defines the northwest edge of the site. The site may continue to the southeast outside the project area (Figure 6.8).

Shovel tests typically displayed a single deep stratum (Figure 6.9) of dark yellowish brown silt loam which extends to approximately 50 cm below surface and is interpreted as a plow zone that has been enhanced in thickness by downslope redeposition of sediment. This stratum becomes more gravelly with depth. The enhanced depth of this stratum and the lack of soil horizon sequences are characteristic of flood plain soils encountered along some portions of the Knob Creek flood plain. Attempts at extending the depth of shovel tests using a bucket auger failed after only a few centimeters due to the high gravel content.

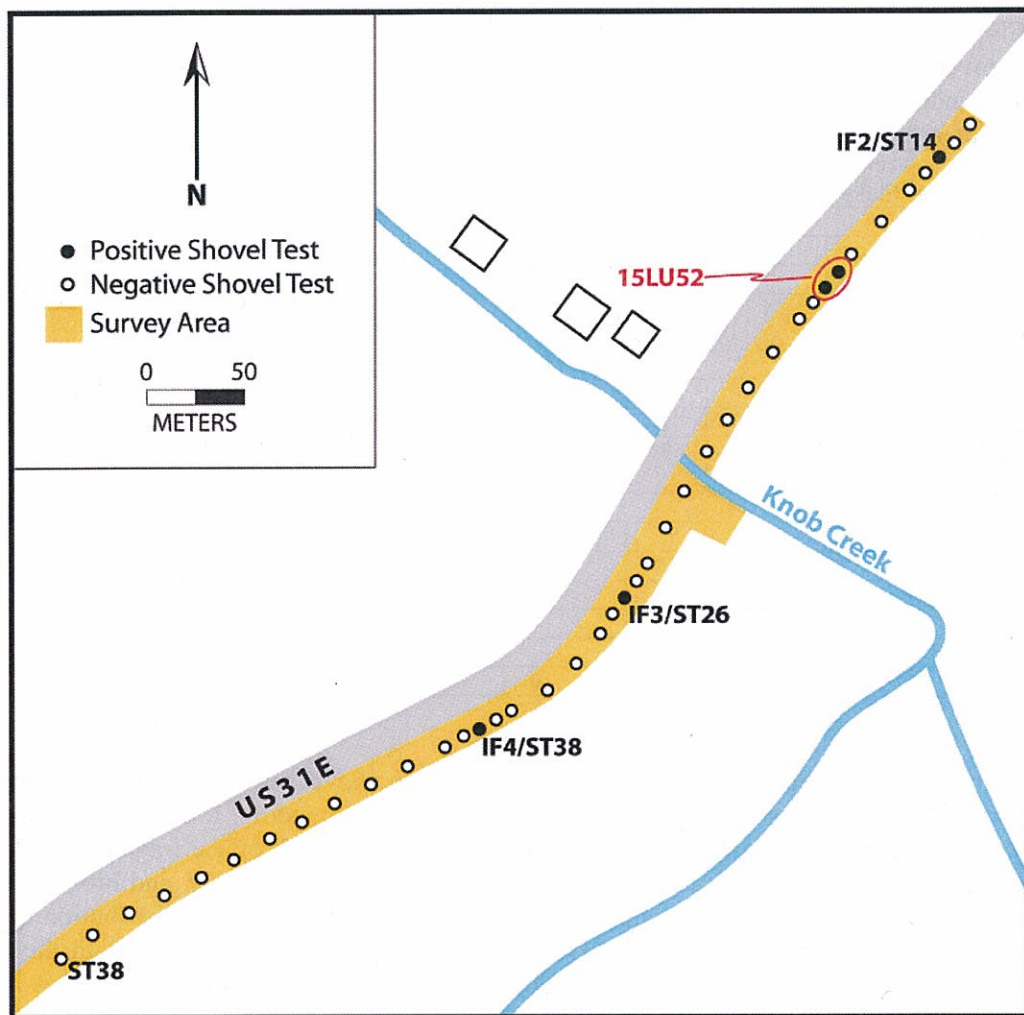


Figure 6.8. Detailed Site Plan for 15LU52 and the Enlows Curve Survey Segment.

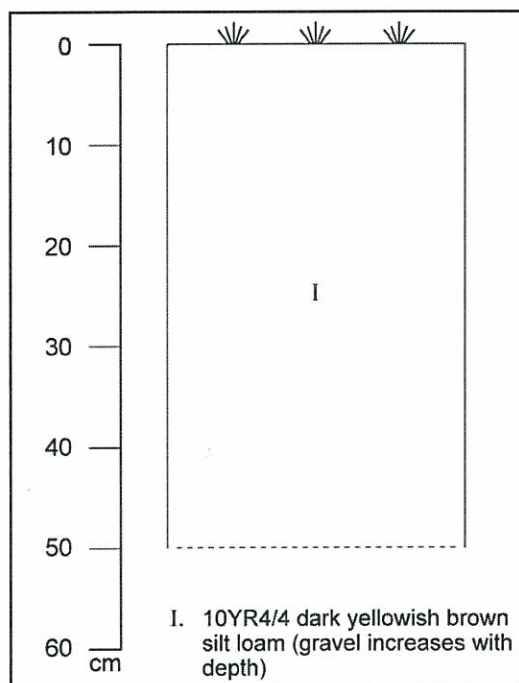


Figure 6.9. Typical Soil Profile for 15LU52 (ST 18N10).

Table 6.2. Chipped Stone Artifacts from 15LU52, 15LU53 and Isolated Finds 1-5. Debitage classes are separated by provenience. Because all lithic raw materials are locally available, raw material types are not differentiated by individual provenience; see Chapter 5 for discussion of raw material usage. Utilized flakes are indicated by an asterisk (*) in the cell.

Bag No.	Provenience	Primary Flake	Secondary Flake	Interior Flake	Biface Thinning Flake	Broken Flake	Shatter	Rough Biface	General Core	Historic Glass	Total
15LU52											
11	ST18					3		1	1		5
12	ST18N10	2	1	1		1*					5
	15LU52 Total	2	1	1		4		1	1		10
15LU53											
15	ST103		1	2			3				6
16	ST103W	1		1							2
	15LU53 Total	1	1	3			3				8
Isolated Finds											
9	ST12, IF1			1						4	5
10	ST14, IF2			1*		1					2
13	ST26, IF3		1								1
14	ST31, IF4					2					2
17	ST109, IF5			2*							2
	IF Total		1	4	0	3				4	12

A total of 10 prehistoric artifacts were recovered through shovel testing at 15LU52 (Table 6.2). St. Louis (5 items or 50 percent) was identified as the primary raw lithic material, followed by Harrodsburg (30 percent) and Salem (20 percent). Artifact types recovered include a rough biface fragment (n=1), a general core (n=1), primary flakes (n=2), a secondary flake (n=1), an interior flake (n=1), and broken flakes (n=4), one of which is utilized. No temporally diagnostic artifacts were recovered. The distribution of artifacts is confined to two shovel tests (ST 18 and ST18N10), and this small area is consistent with the overall low artifact density within 15LU52. The debitage profile, which mainly consists of broken flakes and primary flakes as well as a general core and a rough biface fragment, indicates one or more short-term episodes of site use in which early stage reduction was emphasized. Furthermore, due to the proximity of the site to Knob Creek (ca. 100 meters) it seems plausible that prehistoric peoples were retrieving chert nodules from Knob Creek for stone tool production and using this portion of the valley as a primary lithic reduction locus.

Due to the low density of artifacts, the lack of temporal diagnostics recovered, and the apparent absence of intact cultural midden or features below plow zone, 15LU52 is not considered eligible for listing on the NRHP. The research potential is considered to be very low, and no additional archaeological work is recommended for the site.

15LU53

Site 15LU53 is a low-density lithic scatter identified at the western end of the Devers Curve survey segment of the project area, approximately 900 meters southwest of the 15LU50 (Figures 1.2 and 6.10). The site was located within a grassy area at the edge of forest vegetation on the southeastern side of US 31 E (Figure 6.11).

Cultural material was initially identified in ST 103 at the southwest end of the survey segment, and bracketing shovel tests defined the site area. Cultural materials covered an area measuring only 20 meters northeast-southwest and 10 meters northwest-southeast (site area of 200 m²). The southeastern and northeastern boundaries are defined based on the recovery of artifacts in shovel testing or the presence of Knob Creek to the southeast, and the northern boundary is defined by US 31E. The site may extend farther to the southwest beyond the current project area boundaries (Figure 6.10).

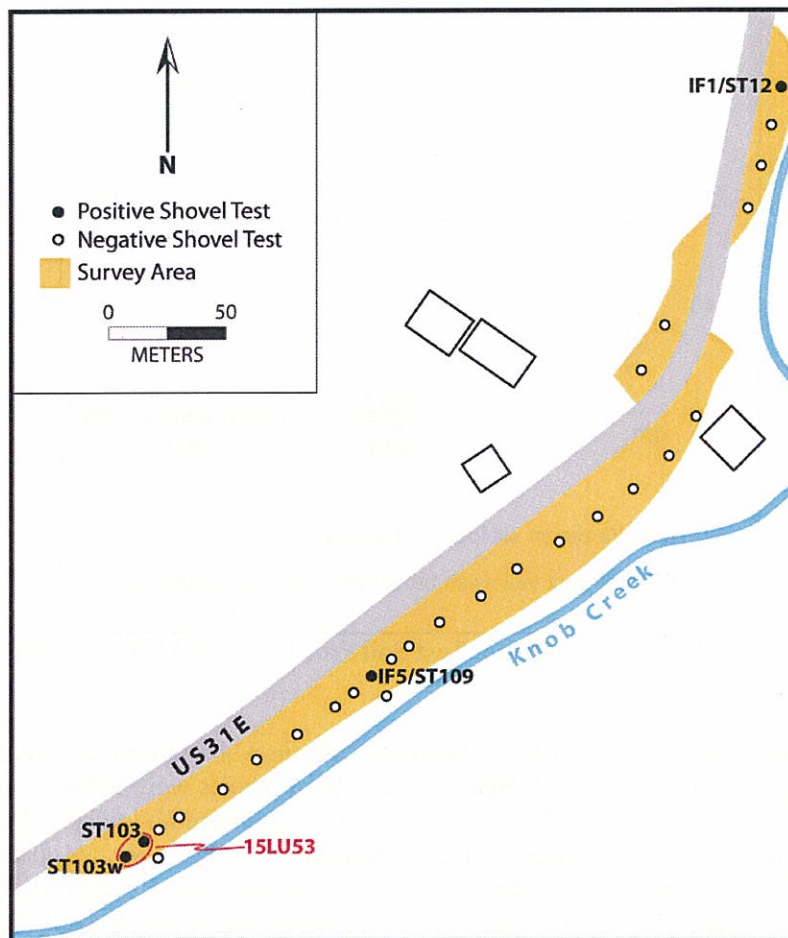


Figure 6.10. Detailed Map for the Devers Curve Survey Segment Showing 15LU53, IF1, and IF5.



Figure 6.11. Site 15LU53 in the Devers Curve Survey Segment (looking southwest). Crew member is at the location of ST 103S.

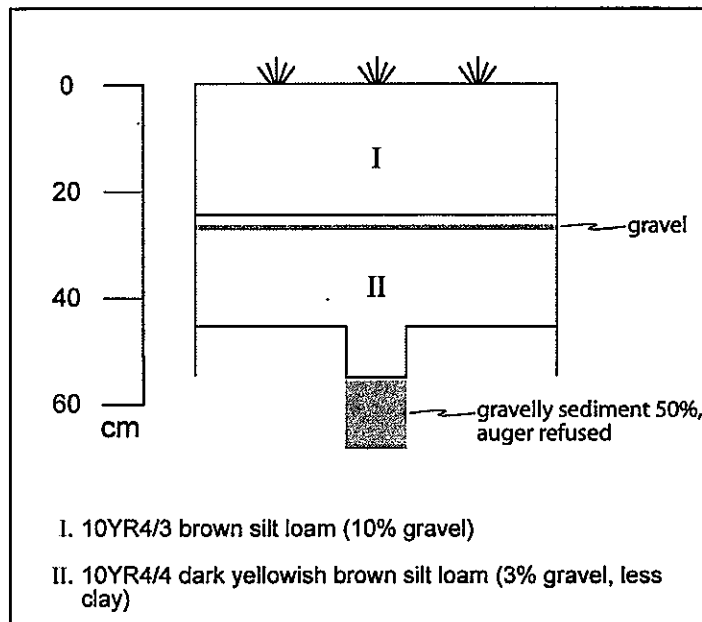


Figure 6.12. Typical Shovel Test Soil Profile for 15LU53 (ST 103).

Four shovel tests were dug within the general site area in a single transect parallel and immediately adjacent to the southeast side of the US 31E right-of-way. Shovel tests were initially excavated at 20-meter intervals within the site area. The limits of the site were further delineated by placing bracketing shovel tests ten meters northeast, southwest, and southeast of the initial positive shovel tests. A northeast bracket was not excavated since US 31E is directly north of the site. Two shovel tests (ST 103 and ST 103W) were positive. In general, shovel tests displayed two soil levels and eventually became too gravelly and prevented further excavation (Figure 6.12). Level I, the plow zone, is a shallow brown silt loam with 10 percent gravel extending to approximately 20 cm below ground surface, although the depth varied between 10 cm and 23 cm within the site area. Level II is a dark yellowish brown silt loam that became more gravelly with depth. An attempt was made to extend the depth of ST 103 in this flood plain setting using the bucket auger, but as Figure 6.11 shows, the auger only reached another 8 cm before refusal on gravel. Cultural materials were confined to the Level I plow zone, and there were no indications of features or midden extending below the plow zone. The shallow Level I and the absence of cultural materials in Level II seem to indicate a high level of erosion, and the proximity of the site to Knob Creek (20 meters) would support this scenario.

Eight prehistoric artifacts were recovered through shovel testing at 15LU53 (see Table 6.2). Harrodsburg and Salem cherts were identified as the primary raw lithic materials (3 items each, or 38 percent each). Artifact types recovered include a primary reduction flake (n=1), a secondary flake (n=1), interior flakes (n=3), and angular shatter (n=3). Artifacts recovered include only temporally nondiagnostic debitage. The distribution of cultural materials was confined to two shovel tests, and consisted mainly of interior flakes and angular shatter, which indicates one or more short-term episodes of site use, dominated by intermediate stages of lithic reduction. Long-term or generalized site use is not indicated.

Due to the low density of artifacts, the lack of temporal diagnostics recovered, and the apparent absence of intact cultural midden or features below plow zone, 15LU53 is not considered eligible for listing on the NRHP. No additional archaeological work is recommended for the site.

ISOLATED FINDS

Five prehistoric isolated finds (IF) were identified during the course of the survey. Two (IF1 and IF5) were located in the Devers Curve survey segment, while the other three (IF2, IF3, and IF4) were found in the

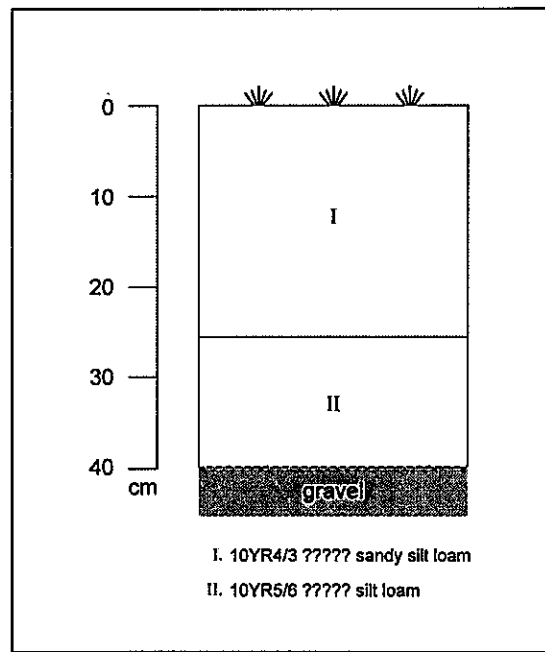


Figure 6.13. Soil Profile for IF 1 (Shovel Test 12).

Enlows Curve survey segment. No cultural materials in the form of sites or isolated finds were found in the small-area spot improvements that were scattered along the project area corridor. Individual isolated finds are discussed below.

ISOLATED FIND 1 (IF 1)

Isolated Find 1 is a single interior flake made from Salem chert recovered from ST12. Shovel Test 12 was placed next to Knob Creek on the flood plain along the southeastern side of US 31 E (Figure 6.10). The soil profile for IF 1 showed two distinct soil levels (Figure 6.13). Level I was a brown sandy silt loam plow zone that extended 26 cm below ground surface. Level II was a yellowish brown silt loam that extended to 40 cm below ground surface until gravel made excavation impossible. The flake was recovered from Level I.

Also recovered from this shovel test were four fragments of historic glass (three container glass and one modern window glass). One of the clear container glass fragments has a partial inscription admonishing against the reuse or resale of the bottle, a label placed on liquor bottles between 1935 and 1964 (Parisan 2010). The container glass may therefore also be modern. Recovery of relatively recent (and certainly 20th century) historic materials from this shovel test indicates that the context is mixed, and further reduces the research potential.

One additional shovel test placed 10 m southwest of ST 12 within the survey segment did not produce additional artifacts. The flood plain deposits here appear to be recently flooded and eroded. Due to the low density of artifacts, absence of temporally diagnostic artifacts and extremely low potential for preservation of intact cultural features or midden in this active flood plan setting, IF 1 is not considered to be eligible for listing on the NRHP. Therefore we recommend no further archaeological work for this location.

ISOLATED FIND 2 (IF 2)

Isolated Find 2 (IF 2) consists of a single utilized interior flake made from Salem chert and one broken flake of an unidentified chert type recovered from ST 14. Shovel test 14 was placed on a high terrace



Figure 6.14. Isolated Find 2 and ST 14 (looking south). Note higher terrace elevation of this locality, with Knob Creek in background.

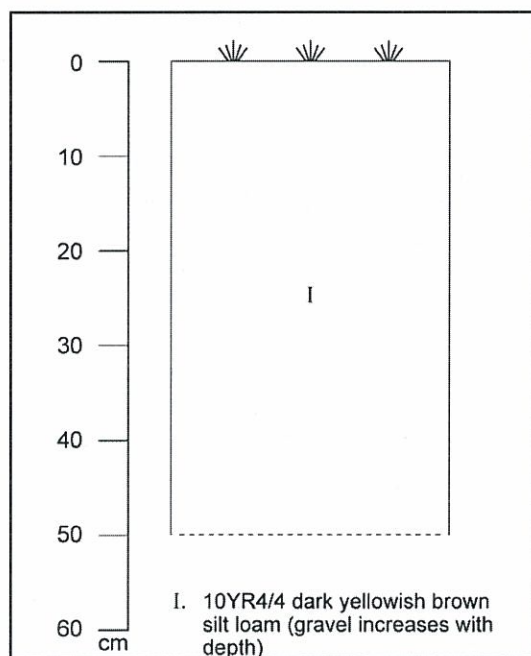


Figure 6.15. Soil Profile for IF 2 (Shovel Test 14).

segment of the Knob Creek valley (Figure 6.14) on the southeast side of US 31E near the northeastern end of the Enlows Curve survey segment (see Figure 6.8).

The soil profile for IF 2 (Figure 6.15) displayed only one stratum, a dark yellowish brown silt loam plow zone with an indefinite lower boundary. The shovel test extended 50 cm below ground surface. Additional shovel tests placed 10 m from ST 14 along the narrow survey segment corridor did not produce artifacts. Due to the low density of artifacts, absence of temporally diagnostic artifacts, and very low potential



Figure 6.16. Isolated Find 3 at Shovel Test 26 (looking southwest).

for preservation of intact cultural features or midden, IF 2 is not considered to be eligible for listing on the NRHP. Therefore we recommend no further archaeological work for this location.

ISOLATED FIND 3 (IF 3)

Isolated Find 3 consists of a single secondary flake made from Salem chert recovered from ST 26 in the Enlows Curve survey segment (see Figure 6.8). Shovel Test 26 was placed in the Knob Creek flood plain along the southeastern side of US 31E (Figure 6.16) in the western half of this survey segment.

The soil profile for IF 2 displayed two distinct levels (Figure 6.17). Level I was a dark yellowish brown silt loam plow zone that extended to 16 cm below surface. Level II was a brown loam with heavy gravel content that extended to 30 cm below ground surface, at which point additional excavation was refused on gravel.

Additional shovel tests placed 10 meters from ST 26 along the survey segment corridor did not produce artifacts. Due to the low density of artifacts, absence of temporally diagnostic artifacts and extremely low potential for preservation of intact cultural features or midden, IF 3 is not considered to be eligible for listing on the NRHP. Therefore we recommend no further archaeological work for this location.

ISOLATED FIND 4 (IF 4)

Isolated Find 4 consisted of two broken flakes, one made of Salem chert and the other made of Harrodsburg, recovered from ST 31 along the Enlows Curve survey segment on the southeast side of US 31E (see Figure 6.8). IF 4 is located in the western half of this survey segment, and it is positioned on a flood plain portion of the Knob Creek valley.

The soil profile for IF 4 displayed three soil strata (Figure 6.18). Stratum I was a dark grayish brown silt loam plow zone with one percent gravel that extended to 26 cm below surface. Stratum II was a very dark

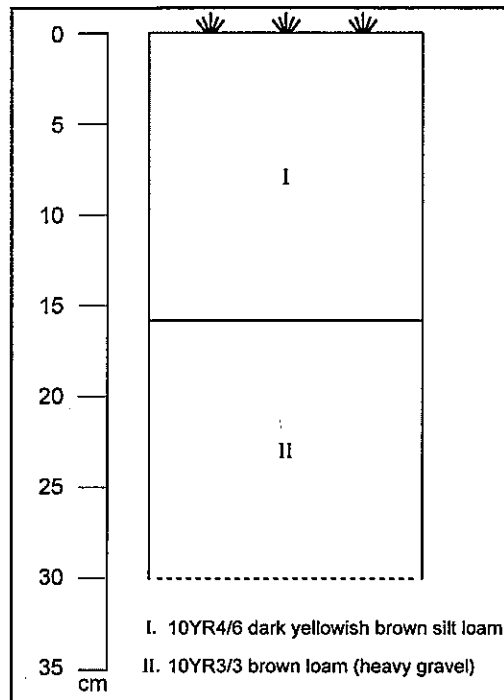


Figure 6.17. Soil Profile for IF 3 (Shovel Test 26).

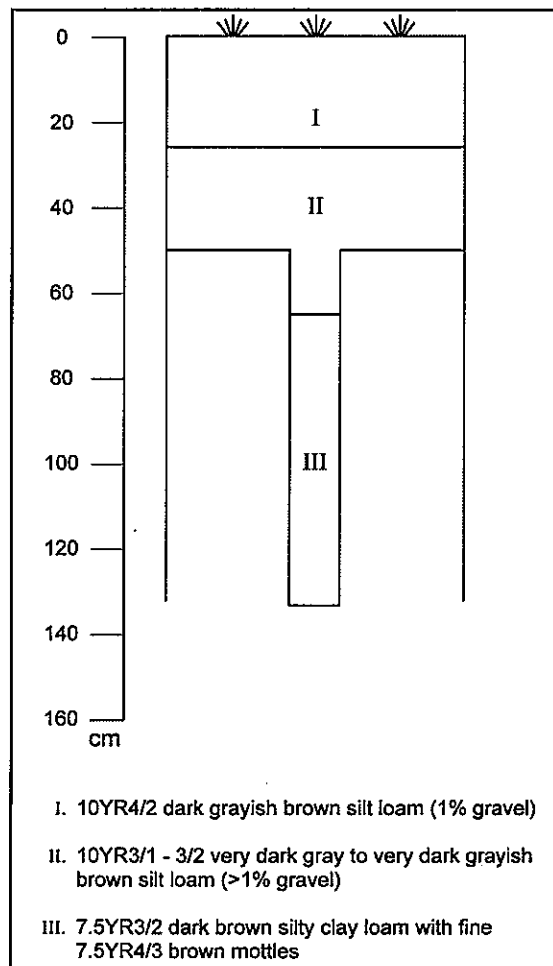


Figure 6.18. Soil Profile for Shovel Test/Auger Test 31 at Isolated Find 4.



Figure 6.19. Auger Testing in Progress at Isolated Find 4 (Shovel Test/Auger Test 31, looking southwest).

gray to very dark grayish brown silt loam with gradually increasing gravel content that extends to 65 cm below ground surface; this is interpreted as a buried A horizon that accumulated in a low swale in the Knob Creek flood plain. At 65 cm a bucket auger was used to extend the shovel test to 133 cm below surface (Figure 6.19). The resulting Stratum III displayed a dark brown silty clay loam mottled with a brown clay loam, and clay content increased with depth. The overall soil profile for ST/Auger Test 31 is interpreted as an accumulation of organic A horizon in a low-elevation flood plain swale in the Knob Creek valley. The prehistoric cultural material recovered from this test may be redeposited into this low-elevation position on the landscape, though the artifacts were not obviously rounded.

Additional shovel tests placed 10 meters from ST 31 within the survey corridor did not produce artifacts. Because the cultural material in ST 31 was recovered from the plow zone only, the bracketing shovel tests were not excavated more than 50 cm below surface, and no deep auger testing was done in the bracket locations.

Due to the low density of artifacts, absence of temporally diagnostic artifacts, potential for redeposition of cultural materials, and low potential for preservation of intact cultural features or midden, IF 4 is not considered to be eligible for listing on the NRHP. Therefore we recommend no further archaeological work for this location.

ISOLATED FIND 5 (IF 5)

Isolated Find 5 consists of one utilized interior flake made of Salem chert and one interior flake made of Harrodsburg chert, both of which were recovered from ST 109, which is located near the middle of the Devers Curve survey segment (Figure 6.10). The single positive shovel test was located in the Knob Creek flood plain on the southeast side of US 31E (Figure 6.20).

The soil profile for this positive shovel test displayed one soil stratum (Figure 6.21). This is a yellowish brown silt loam plow zone that extends to 13 cm below surface. Dense gravel deposits at the bottom of the plow zone refused further excavation.



Figure 6.20. Isolated Find 5 at Shovel Test 109 (looking west).

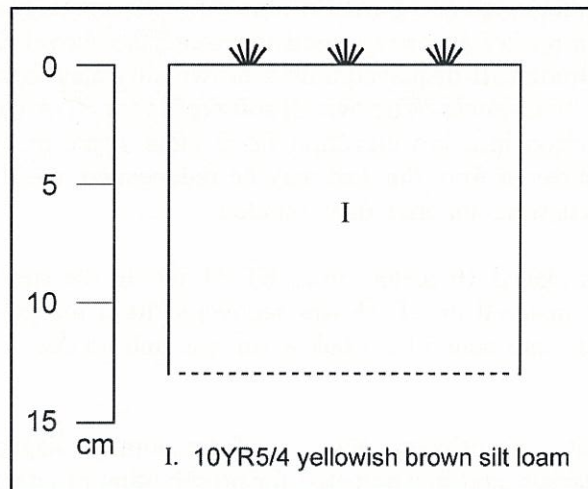


Figure 6.21. Soil Profile for Isolated Find (ST 109).

Additional shovel tests placed 10 meters from ST 109 within the survey segment boundaries and southeast toward Knob Creek did not produce artifacts. Due to the low density of artifacts, absence of temporally diagnostic artifacts and extremely low potential for preservation of intact cultural features or midden, IF 5 is not considered to be eligible for listing on the NRHP. Therefore we recommend no further archaeological work for this location.

SUMMARY OF ISOLATED FINDS

Due to the low density of artifacts, absence of temporally diagnostic artifacts, poor contexts at some locations, and low potential for preservation of intact cultural features or midden, None of the isolated finds documented in this survey are considered to have research potential. No further archaeological work is recommended at any of these locations.

CHAPTER 7

SUMMARY AND RECOMMENDATIONS

At the request of the Kentucky Transportation Cabinet (KYTC), archaeologists from the University of Kentucky Program for Archaeological Research (UK-PAR) performed a Phase 1 survey of proposed improvements along US Highway 31E in Larue County, Kentucky. The purpose of this work was to identify any archaeological resources within the proposed project area and to assess their potential eligibility for nomination to the National Register of Historic Places (NRHP). The project covered a distance of about 2.5 miles (4.02 km) northeast of Hodgenville, however, the improvements were not continuous over this entire length. Three of the improvements involved realignment of three curves: 1) Devers Curve near the southwest end of the project area, 2) Boyhood Home Curve near the middle of the project area, and 3) Enlows Curve toward the northeast end of the project area. These curve locations are referred to as survey segments. Other improvements involved drainage diversions and culvert placements in scattered spot locations distributed along the project corridor. The archaeological survey area covered a total area of approximately 2.61 acres (1.06 ha) distributed among these segments and spot locations. Almost all of the curve realignments and spot improvement locations involved acquisition of new right-of-way sections that were less than 60 feet (ca. 18 meters) wide, which permitted shovel testing to be done in a single transect of shovel tests in almost all locations.

As a result of this Phase I archaeological investigation, two newly identified archaeological sites and five isolated finds (IF) were recorded, along with artifacts that are part of an addition to previously reported 15LU50 (NPS ASMIS site number ABLI-2) at the Abraham Lincoln Boyhood Home National Park. One site, 15LU52, was located within the Enlows Curve segment near the northeast end of the project area, while the other site, 15LU53, was found in the Devers Curve segment near the southwest end of the project area. Of the isolated finds, IF2, IF3, and IF4 were found within the Enlows Curve segment, while IF 1 and IF5 were in the Devers Curve segment.

The addition to 15LU50 is expressed as a lithic scatter of variable but overall moderate density on the southeast side of US 31E, across from the entrance to the Abraham Lincoln Boyhood Home (or Knob Creek) National Park. This site is within the Boyhood Home segment. Portions of this site had been previously documented by extensive survey and testing projects conducted by the National Park Service (Lawson et al. 2006, 2010) in an effort to locate specific archaeological or structural remains of the Abraham Lincoln boyhood home. These efforts included excavation of more than several hundred shovel tests, hand-excavation of multiple test units, magnetic gradiometer and ground-penetrating radar survey of more than 1.0 ha of surface area, as well as limited backhoe trench excavations. No archaeological evidence of the Lincoln family structure has been found in spite of these efforts. These investigations did identify an extensive prehistoric archaeological site—15LU50—that occupies the entirety of the small tributary valley where the Lincoln cabin is placed, as well as portions of the Knob Creek valley to the southeast. These investigations also produced some early 19th century artifacts, but none could be specifically tied to the Lincoln family occupation of the site. The current survey effort was carried out in a narrow strip of ground between the southeastern right-of-way of US 31E and Knob Creek, an area that had not been covered in the earlier investigations. Because portions of 15LU50 had been identified both to the northwest (across US 31E) and to the southeast (across Knob Creek), we fully expected that this segment of the current project area would also contain evidence of prehistoric occupation, and that this would be included as part of the previously reported 15LU50.

This proved to be the case. Five of seven shovel tests excavated along this survey segment were positive for prehistoric materials, defining an area about 170 meters long (northeast-southwest) and 10 meters wide, that filled the gap between the two previous investigation areas. Cultural materials, therefore, cover an area of about 1800 meters², but all of this is contained within the boundaries of the previously reported site area. Container glass that is 20th century in age, and which is likely of modern manufacture, was recovered from four shovel tests, but no historic artifacts were recovered that could be related to an early 19th century

occupation. The current survey effort also failed to document structural or archaeological evidence of the Lincoln occupation of this tract. In addition, none of the 29 prehistoric artifacts recovered in this survey were temporally diagnostic, and no intact midden (A horizon) deposits or prehistoric features were located. The overall research potential of this portion of 15LU50 is low, and this portion of the site is not considered to be eligible for listing on the NRHP. Due to the lack of temporal diagnostics and the apparent absence of intact cultural midden or features below plow zone, the addition of 15LU50 that will be affected by the proposed construction and curve realignment along US 31E is considered to have very low research potential. This part of 15LU50 is not considered to be eligible for listing on the NRHP under Criterion D, and no artifacts were recovered that would link this portion of the site to the early 19th century occupation of the site by the Lincoln family. No additional archaeological work is recommended for the portion of 15LU50 that has been investigated here.

Site 15LU52 is a low-density lithic scatter identified on the southeastern side of US 31E along the eastern or Enlows Curve segment of the project area. Based on shovel testing, cultural materials covered an area measuring approximately 20 meters east-west and 10 meters north-south (200 meters²), with only two adjacent positive shovel tests defining the site area. The western and eastern boundaries of 15LU52 are defined by the limits of the artifact scatter, but the northern and southern boundaries extend outside the narrow survey corridor for the project. Any portion of this site extending to the north would be severely disturbed by construction of US 31E, and a drainage ditch runs near the site, further compromising its integrity. Site 15LU52 yielded a total of 10 prehistoric artifacts (8 debitage, one rough biface, and one core), but no temporally diagnostic artifacts were recovered. All artifacts were found in the plow zone of a pasture and former agricultural field. Due to the low artifact density, lack of temporally diagnostic materials, and absence of intact deposits, 15LU52 is not considered eligible for listing on the NRHP. No additional archaeological work is recommended for the site.

Site 15LU53 is a low-density lithic scatter identified at the western end of the western or Devers Curve segment of the project area. Shovel testing encountered a gravelly silt loam plow zone with a very gravelly silty clay loam subsoil, with no potential for buried cultural deposits. Based on the presence of two adjacent positive shovel tests, the site area measures approximately 20 meters east-west and 10 meters north-south (200 meters²). The western site boundary is not confidently defined and the site may extend outside the survey segment. The eastern site boundary is defined by negative shovel test locations, and construction of US 31E would have truncated 15LU53 on the north side. Knob Creek defines the southern boundary. Site 15LU53 produced a total of eight lithic debitage, and none were temporally diagnostic. All materials were found in the plow zone without any indication of intact midden or features below plow zone. The research potential for 15LU53 is considered to be low. Due to the low artifact density, lack of temporally diagnostic materials, and absence of intact deposits, 15LU53 is not considered eligible for listing on the NRHP. No additional archaeological work is recommended for the site.

Isolated Find 1 consisted of one flake recovered from a single positive shovel test near the northern end of the Devers Curve segment. Historic glass fragments that may be modern were also recovered, and the mixture of historic and prehistoric materials indicates that the stratigraphic integrity of the locality has been compromised. Isolated Find 2 consisted of two flakes recovered from the plow zone in a single shovel test at the northern end of the Enlows Curve segment. Isolated Find 3 consisted of one flake found in the plow zone of a single positive shovel test in the western half of the Enlows Curve segment. Isolated Find 4 consisted of two flakes from the plow zone of a single shovel test in the western half of the Enlows Curve segment, about 100 meters from Isolated Find 3. Isolated Find 5 consisted of two flakes from a single positive shovel test located near the middle of the Devers Curve segment. In all, eight prehistoric artifacts and four 20th century historic (possibly modern) artifacts were recovered from the five isolated finds identified in this survey. Bracketing shovel tests at 10-meter intervals around each of the isolated finds failed to produce additional artifacts, and all cultural materials appear to be confined to plow zones. The low artifact density, lack of any subsurface features or intact deposits, and absence of temporally sensitive material indicate minimal research potential for all of the isolated finds. Consequently, none of these locations were considered to be

archaeological sites, and none were considered eligible for listing on the NRHP. UK-PAR recommends no additional work at the locations of any of the isolated finds.

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