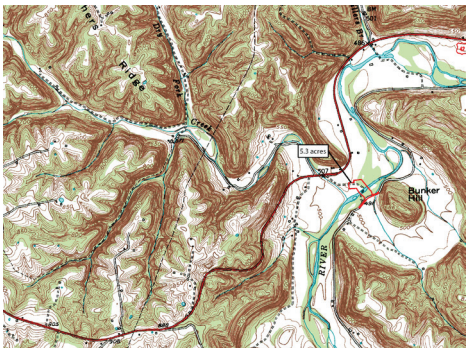
Phase I Archaeological Site Detection Survey in Support of a Proposed Bridge Replacement over the Little Kentucky River on KY 2871 (KYTC Item No. 5-1075)

Trimble County, Kentucky



November 2015

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CULTURAL RESOURCES CONSULTING

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Prepared for:
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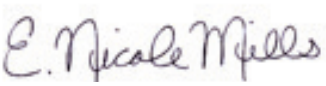
Charlotte, North Carolina

Lead Agency:
Kentucky Transportation Cabinet

Prepared by:



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Management Summary

A Phase I intensive archaeological survey was conducted on September 24 and 25, 2015 in support of the proposed bridge replacement project designated Kentucky Transportation Cabinet (KYTC) Item No. 5-1075. The subject bridge crosses the Little Kentucky River on KY 2871, approximately 150 feet northwest of KY 1335. The Area of Potential Effect (APE) for this proposed project, as defined by project mapping supplied by Strand Associates, Inc. and KYTC, encompasses approximately 5.3 acres and is located on the floodplain of the Little Kentucky River and along KY 2871. Excluding stream channels, paved areas, and drainage ditches, the Archaeological Survey Area (ASA) within the APE encompasses approximately 3.6 acres.

This archaeological survey was conducted on behalf of KYTC through a subcontract with Strand Associates, Inc. of Louisville, Kentucky. The objective of the project was to identify and document archaeological sites in accordance with Section 106 of the National Historic Preservation Act and evaluate their eligibility for inclusion on the National Register of Historic Places (NRHP). In addition, fieldwork and reporting specifications outlined by the Kentucky Heritage Council (KHC) guided this investigation (Sanders 2006).

No archaeological materials were recovered during the course of the Phase I intensive archaeological survey of the ASA, and no new or previously recorded archaeological sites were documented within the APE. Therefore, the proposed bridge replacement will not affect archaeological sites listed on or eligible for listing on the NRHP. It is recommended that no additional archaeological investigations are warranted prior to the proposed bridge replacement project designated KYTC Item No. 5-1075.

Table of Contents

List of Figures

List of Tables

1.0 Introduction and Methods

1.1 Project Description

A Phase I archaeological survey was conducted on September 24 and 25, 2015 in support of the proposed bridge replacement project designated Kentucky Transportation Cabinet (KYTC) Item No. 5-1075. Background research for this project was conducted at the Office of State Archaeology (OSA) and was initiated on September 22, 2015. Fieldwork was directed by L. Michael Creswell, RPA, with the assistance of Christopher C. Lankford. Ms. E. Nicole Mills is the author of this report and served as Principal Investigator for this project.

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The subject bridge crosses the Little Kentucky River on KY 2871, approximately 150 feet northwest of KY 1335 (Figures 1.1 and 1.2). The Area of Potential Effect (APE) for this proposed project, as defined by project mapping supplied by Strand Associates and KYTC, encompasses approximately 5.3 acres and is located on the floodplain of the Little Kentucky River and along KY 2871. Stream channels and paved areas were omitted from this survey to create an Archaeological Survey Area (ASA) within the APE. The ASA for this survey encompasses approximately 3.6 acres. At the time of survey, the APE is vegetated in stands of hardwoods (along the banks of the Little Kentucky River) and agricultural fields (Figures 1.3 and 1.4).

No archaeological materials were recovered during the course of this survey and no new or previously recorded archaeological sites were documented within the APE. Therefore the proposed bridge replacement will not affect archaeological sites listed on or eligible for listing on the NRHP. It is recommended that no additional archaeological investigations are warranted in advance of the proposed bridge replacement project designated KYTC Item No. 5-1075.

1.2 Report Organization

This report is organized into four numbered chapters and follows the KHC format guidelines for reporting when no cultural resources are identified (Sanders 2006:41). Chapter 1 provides an overview of the archaeological investigations, summarizes administrative details, and briefly mentions the findings and recommendations of this investigation. Chapter 2 presents the results of background/archival research and summarizes the results of a literature review carried out at the OSA. Chapter 3 provides a detailed description of the field methods employed during this survey. The final chapter, Chapter 4, includes a discussion of the survey results and recommendations.

1.3 Acknowledgments

Brockington appreciates the opportunity to support Strand Associates, Inc., the KYTC, OSA, and KHC. The author would also like to thank the support staff of Brockington, through whose hard work this project was accomplished. Staff members who assisted with this project include Christy W. Pritchard (RPA), Andrew Scarr, and Jon Strother.

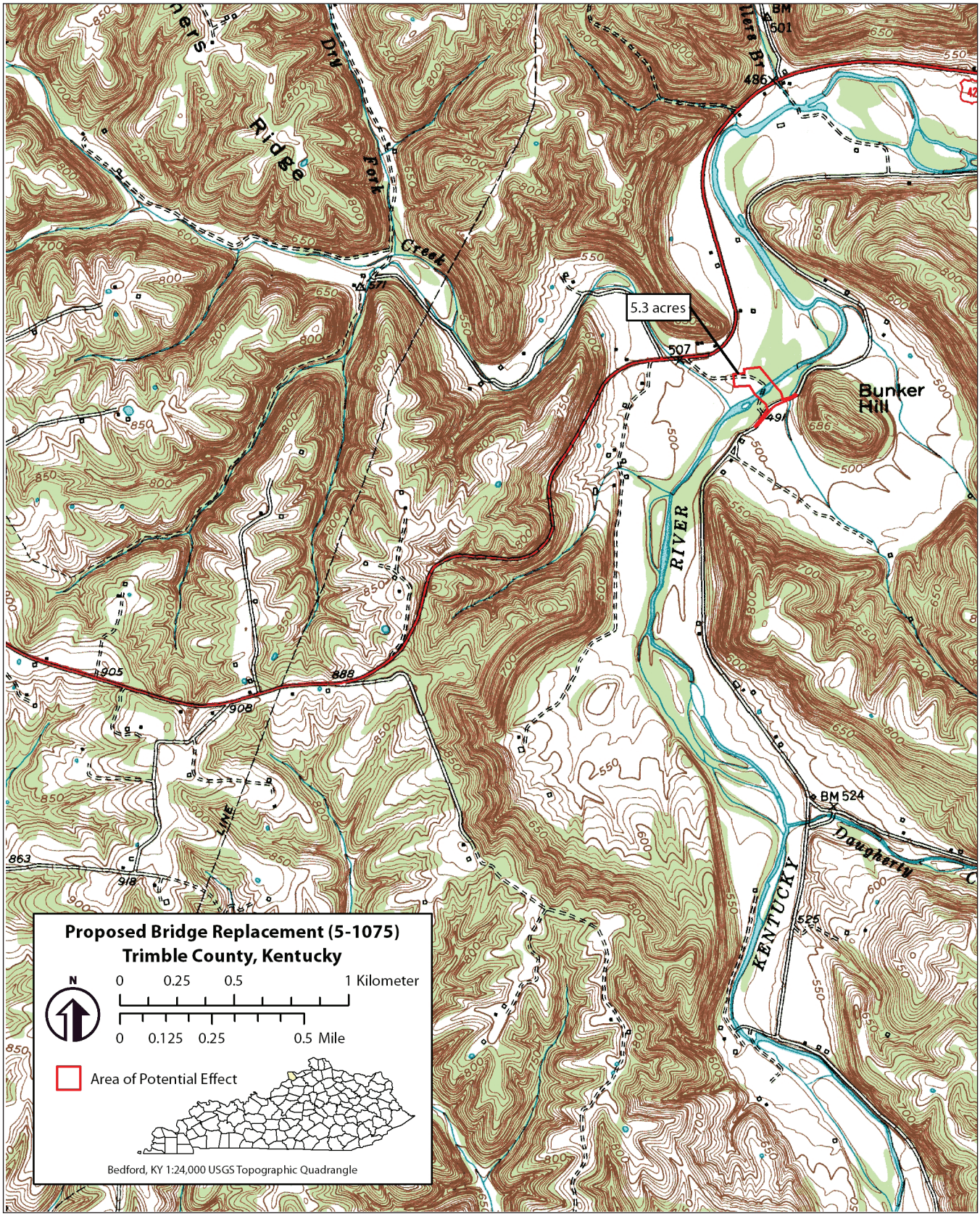

Figure 1.1 Location of proposed bridge replacement designated KYTC Item No. 5-1075, as shown on the *Bedford*, *KY* USGS Topographic Quadrangle.

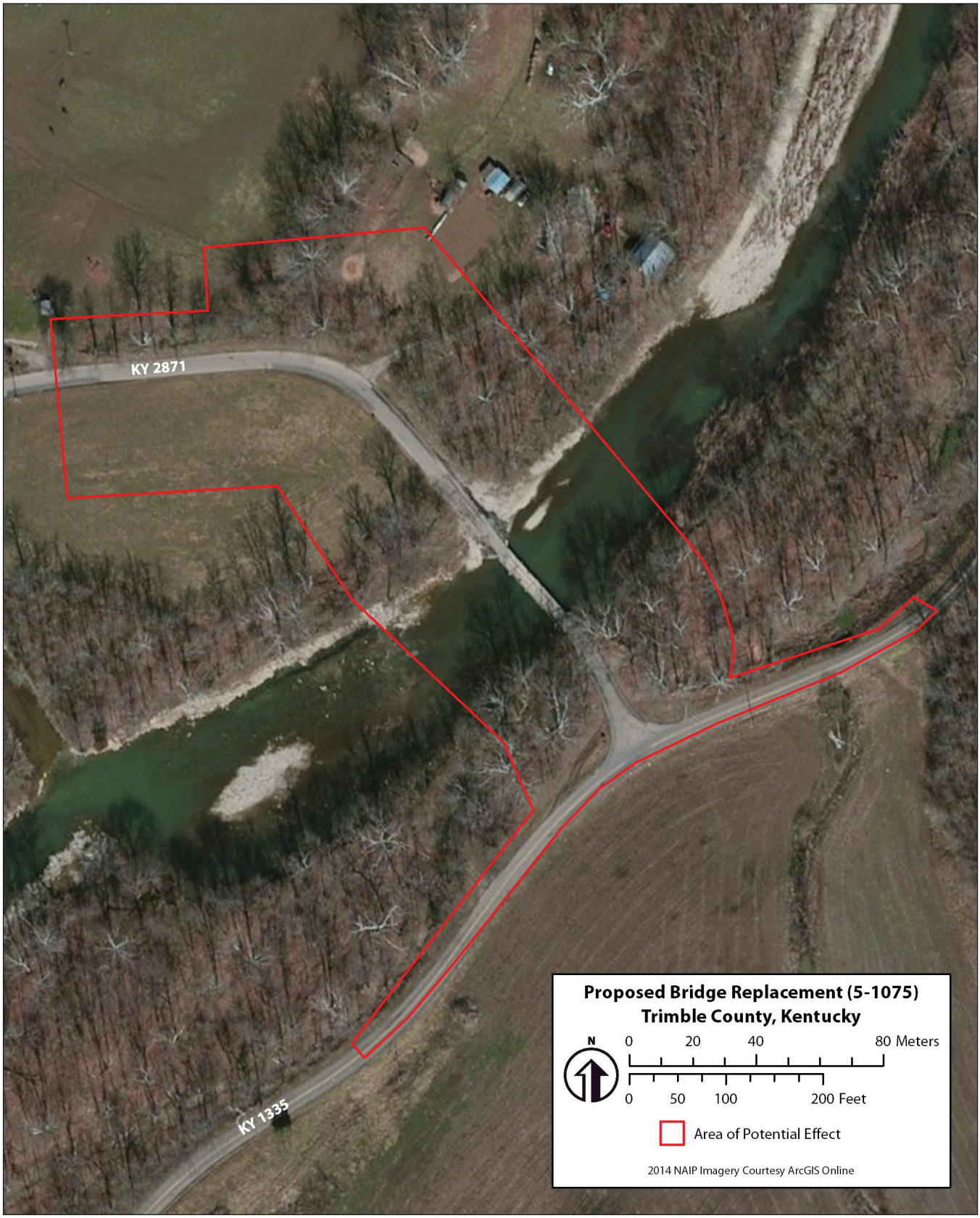

Figure 1.2 2014 NAIP aerial imagery depicting the location of proposed bridge replacement designated KYTC Item No. 5-1075.

Figure 1.3 General Overview of APE, east side of the Little Kentucky River and north of KY1335, facing east.

Figure 1.4 General Overview of APE, east side of the Little Kentucky River and south of KY2871, facing west.

2.0 Background Research

Background research for this project was conducted at the OSA and initiated on September 22, 2015. Additionally, the online archives of KYTC and the USGS online Historical Topographic Map Collection were searched.

2.1 Previous Archaeological Research

Data obtained from the OSA indicates that three previously recorded archaeological sites are located within a two kilometer buffer of the subject bridge replacement APE. These sites, recorded as 15TM2, 15TM3, and 15TM5, do not fall within the APE as currently defined. No previous archaeological surveys have been conducted within two kilometers of the APE.

It is currently unknown when the three sites within the two kilometer buffer were recorded; however, given that they were recorded in an obsolete site card format, it is likely that they were recorded prior to the 1970s (Nancy O'Malley, Personal Communication 2015). No report is associated with these sites, thus the only information available was compiled from the OSA GIS data and the site cards themselves. Table 2.1 includes data for these sites taken from the OSA GIS dataset.

Sites 15TM2, 15TM3, and 15TM5 are described as a prehistoric "village," an "Indian fortification," and a "burial field," respectively. Lithic artifacts were observed at all three sites; however, it is unclear if these materials were collected. Site 15TM5 is listed "partially excavated," but it is unknown if this refers to looting activities or a professional investigation(s). To date, no NRHP eligibility recommendations have been made for these sites.

2.2 Historic Mapping

Three historic maps illustrating the APE were identified during background research. These maps were collected from the online archives of KYTC (http://transportation.ky.gov/Planning/Pages/Historical-Maps.aspx) and the USGS online Historical Topographic Map Collection (http://geonames.usgs.gov/apex/f?p=262:1:0::NO:RP::).

The three historic maps consulted during this investigation include general highway maps and one USGS topographic quadrangle. County transportation maps from 1942 and 1955 illustrate roads in the general area; however, no other man-made features (e.g. buildings) fall within the APE on these maps (Figure 2.1 and 2.2). Similarly, no man-made features are illustrated within the APE on a 1953 USGS topographic quadrangle (Figure 2.3). These maps do, however, illustrate that the alignment of KY 2871 lying south of the Little Kentucky River was shifted east sometime after 1955.

2.3 Additional Data Sources

Limited data pertaining to the subject bridge replacement was obtained from KYTC's Bridge Data Miner (http://maps.kytc.ky.gov/bridge/). This database indicates that the subject bridge (ID: 112B00029N) was constructed in 1970 and is currently considered "structurally deficient."

As stated above, the historic maps identified for the APE illustrate that the alignment for KY 2871 has been shifted east. This presumably occurred in 1970 when the existing bridge was constructed. No plans pertaining to KY 2871 or the subject bridge were identified in the KYTC online project archives (http://maps.kytc.ky.gov/photolog/?config=ProjectArchives).

Table 2.1 Archaeological site data obtained from OSA GIS data.

Site Number	15TM002	15TM003	15TM005
Temporal Affiliation	Prehistoric; undifferentiated	Prehistoric; undifferentiated	Prehistoric; undifferentiated
Site Type	open habitation w/o mounds	undetermined	cemetery
Site Condition	not recorded	not recorded	disturbed, % unknown (vandalism)
Landform/Locality	floodplain	upland	knoll
Site Area (m^2)	34,416	34,204	143,618
Elevation (ft)	not recorded	not recorded	680
Slope (%)	not recorded	not recorded	11-25
Aspect	not recorded	not recorded	Northwest
Drainage	Eastern Ohio River	Eastern Ohio River	Eastern Ohio River
Closest Water Source	permanent stream	not recorded	permanent stream
NRHP Eligibility	not recorded	not recorded	not recorded

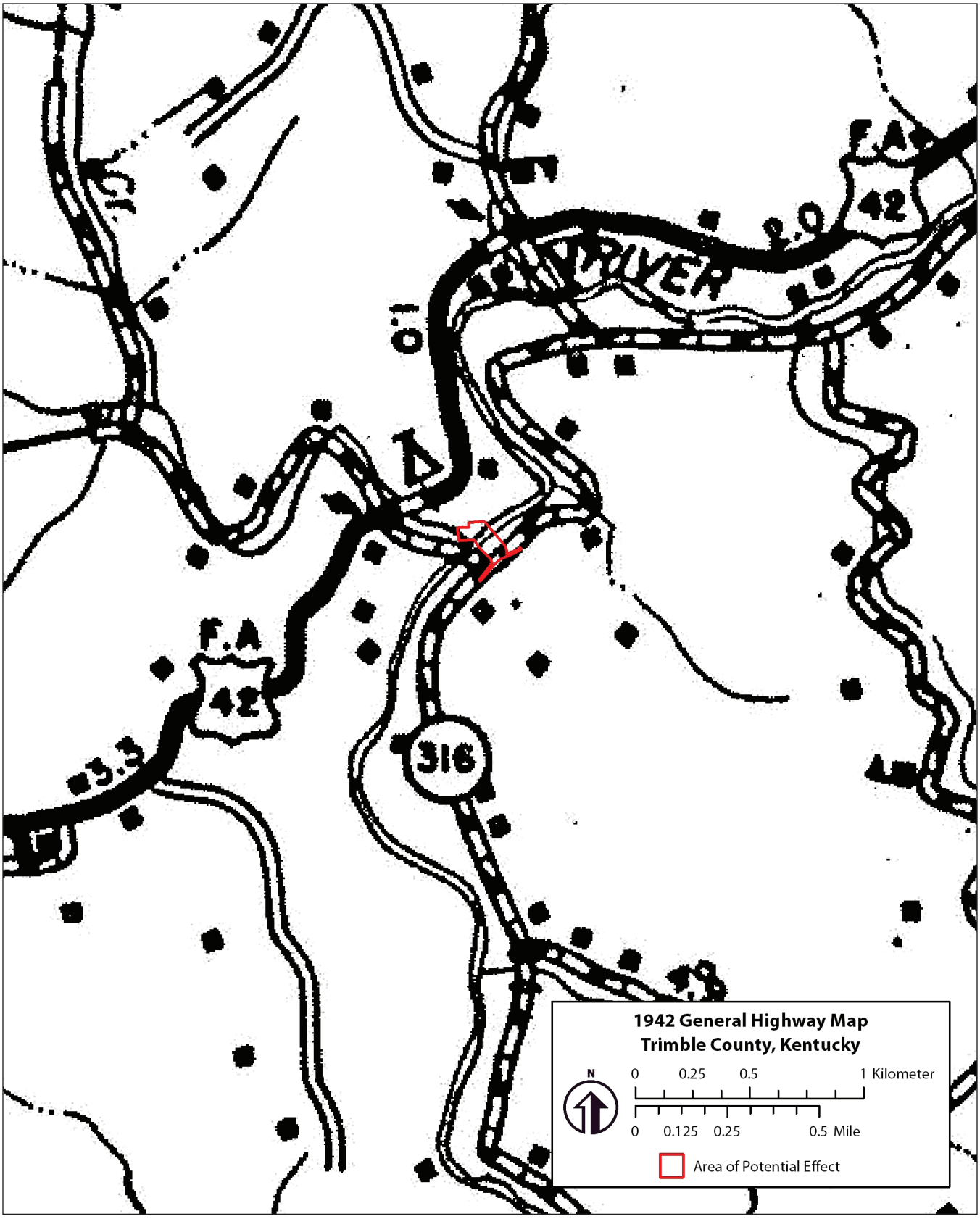

Figure 2.1 Location of proposed bridge replacement designated KYTC Item No. 5-1075, as shown on a 1942 General Highway map of Trimble County, Kentucky.

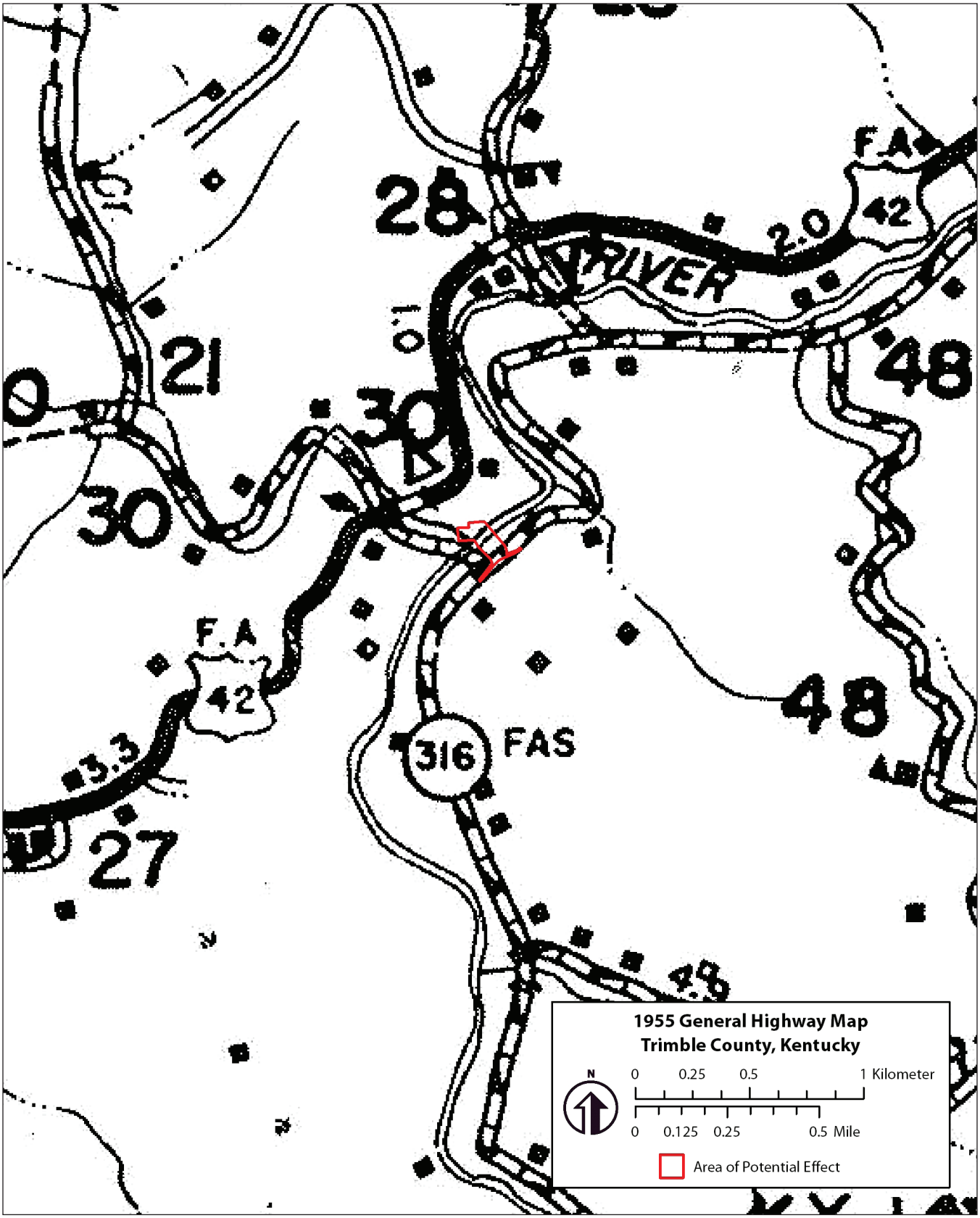

Figure 2.2 Location of proposed bridge replacement designated KYTC Item No. 5-1075, as shown on a 1955 General Highway map of Trimble County, Kentucky.

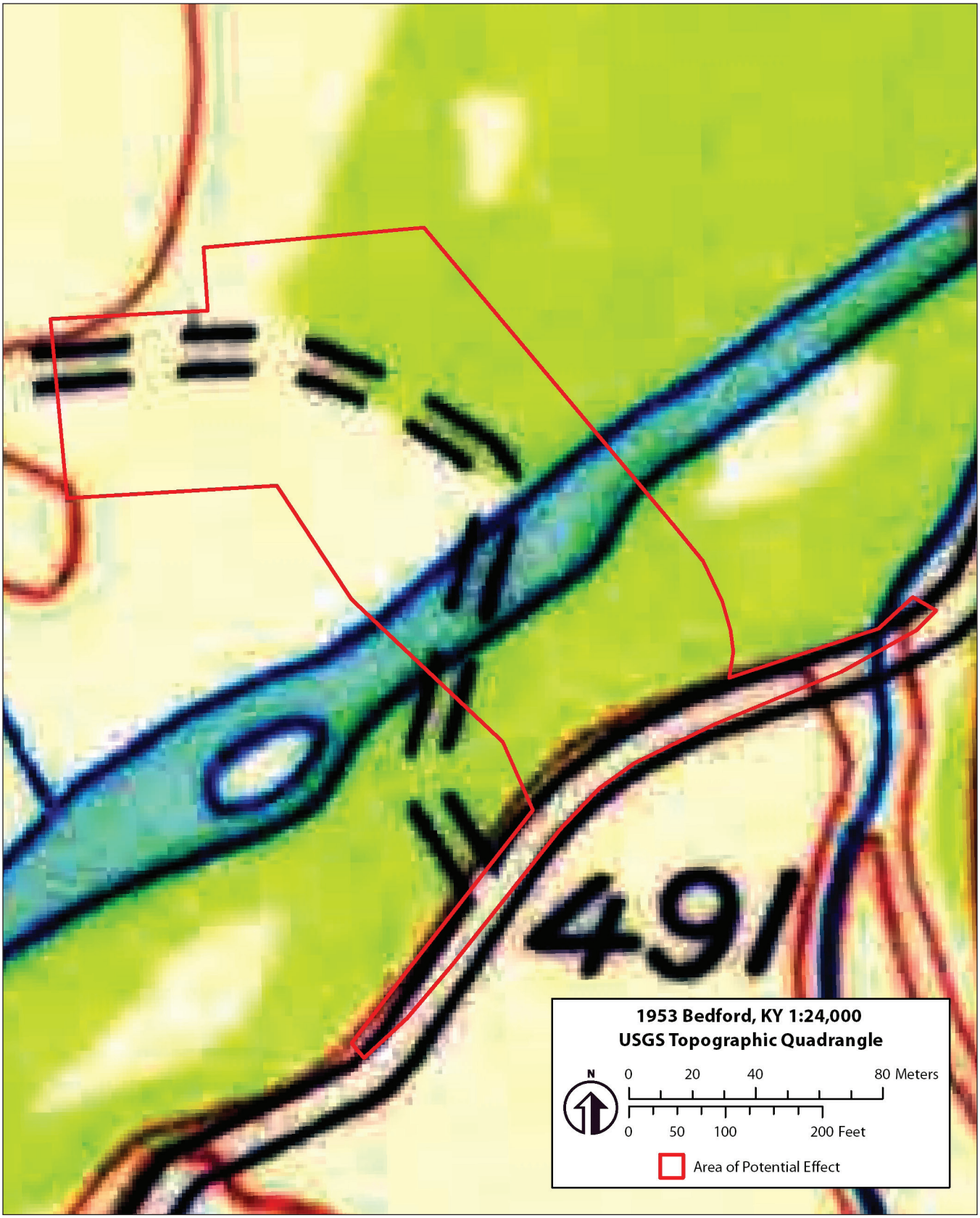

Figure 2.3 Location of proposed bridge replacement designated KYTC Item No. 5-1075, as shown on the 1953 *Bedford, KY* USGS Topographic Quadrangle.

3.0 Methods of Investigation

The research design presented below is intended for use in reconnaissance level archaeological investigations. The primary purpose of such investigations is to identify any cultural resources that may be affected by the proposed activities. The results of this investigation are being coordinated with KYTC.

3.1 Pre-Field Planning

The location and boundary of the APE was provided to Brockington by Strand Associates, Inc. and KYTC as electronic maps. These maps were georeferenced, and the APE was digitized into a GIS shapefile using ArcGIS 10.3.1. The APE was then graphically represented on the appropriate USGS 7.5' quadrangle. The APE and pre-plotted shovel/auger tests were loaded onto a Trimble GeoXH GPS for use during the field investigations. Additionally, historic mapping relevant to the APE was examined (See Chapter 2); however, no historic structures or features illustrated on these maps are located within the APE.

3.2 Survey Methods

As proposed, archaeological survey methods employed during this investigation primarily involved the excavation of shovel/auger tests on a 20 meter (m) grid. In total, the APE is estimated to encompass 5.3 acres. Stream channels and paved areas were excluded from the APE to create an Archaeological Survey Area (ASA) within the APE measuring approximately 3.6 acres.

Portions of the APE that cross terrain with good surface visibility (i.e., plowed/cultivated fields) or are characterized by steep slopes (creek banks or slopes in excess of 15 degrees) were subjected to pedestrian survey. This entailed a walking, visual inspection of the ground surface to identify historic and prehistoric artifacts. Portions of the APE that are located on relatively flat terrain with poor surface visibility were shovel tested. This survey method requires the excavation of screened shovel tests measuring at least 35 centimeters in diameter at an interval of 20 meters. Care was taken to maintain a consistent diameter from top to bottom of each shovel test. Excavated soils were screened through ¼-inch hardware cloth. No artifacts were recovered during this investigation. A record of each shovel test loci was generated using shovel test forms that include information on content (i.e., absence of artifacts) and context (e.g., soil color and texture descriptions, depth of definable soil levels).

As initially proposed, it was estimated that nearly all of the 3.6 acre ASA would require shovel testing constituting of approximately 32 shovel tests. Given the alluvial setting, it was anticipated that the majority of the proposed shovel tests would require hand excavation to 50 centimeters below surface. Additionally, it was proposed that up to 16 of the 32 shovel tests would first be hand excavated to 50 centimeters below surface and then auger tested. Auger testing was not to exceed 1.5 m below surface. The auger tests (spaced no more than 50 m apart) were excavated on alluvial landforms in order to determine the nature and extent of Holocene alluvium and the potential for the presence of significant deeply buried archaeological sites.

3.3 GIS/Spatial Analysis

All geographic data was created, processed, and analyzed using ArcGIS 10.3.1. Aerial imagery was primarily acquired through ESRI's GIS Servers online (http://services.arcgisonline.com); specifically World Imagery, ESRI Imagery World 2D, and USA Topo Maps. As discussed in chapter 2, historic maps of the area were acquired from the KYTC and USGS. These maps were imported into ArcGIS 10.3.1 and georeferenced. Additional natural and cultural data (e.g., elevation, soil, geology, and roads) was acquired from the Kentucky Geography Network (http://kygeonet.ky.gov/) and the USDA Geospatial Data Gateway (https://gdg.sc.egov.usda.gov/).

All excavation locations were pre-plotted using ArcGIS 10.3.1 and loaded into a handheld Trimble GeoXH GPS. During fieldwork, each excavation location was navigated to using the GPS. GIS data for this project was created, edited, and analyzed using Universal Transverse Mercator (UTM) coordinate system, North American Datum 1983 (NAD83), zone 16 North.

4.0 Findings, Conclusions and Recommendations

4.1 Current Investigation Results

An intensive field survey was conducted on September 24 and 25, 2015. The entire APE encompasses approximately 5.3 acres and is located on the floodplain of the Little Kentucky River and along KY 2871. Stream channels and paved areas were excluded from this survey to create an ASA within the APE, measuring approximately 3.6 acres in size.

Vegetation within the APE consists of stands of mixed hardwoods (primarily long the banks of the Little Kentucky River) and agricultural fields. Thus, vegetation cover within the APE precluded the use of visual reconnaissance methods. A total of 32 loci were initially proposed within the ASA. Additionally, 16 of the proposed 32 shovel test loci were to be first shovel tested to 50 centimeters below surface (cmbs) and then auger tested to a maximum depth of 1.5 m below surface.

Upon completion of fieldwork, a total of 28 loci were excavated within the ASA (Figure 4.1). Nineteen of the 28 loci were shovel tested to a maximum depth of 50 cmbs. Furthermore, nine of the loci were first hand excavated to 50 cmbs and then auger tested. In nearly all cases, the rocky nature of the soil prevented auger testing deeper than 80 cmbs. One auger test, however, was excavated to 135 cmbs before excavation ceased due to the presence of a rock impasse. Additional auger tests were proposed for the portion of the ASA lying on the north bank of the Little Kentucky River, north of the KY 2871. However, all loci located in this area were excavated to the maximum depth possible (given the presence of rock impasses) and averaged between 40 and 50 cmbs.

Finally, four loci within the ASA were not excavated due to their location within man-made ditches or the presence of bedrock at the ground surface. No archaeological materials or features were encountered during the execution of this survey. Figure 4.1 illustrates the placement of the survey grid, outlining the location of loci that were shovel tested, auger tested, or not excavated due to disturbances/presence of bedrock.

The APE contains four mapped soil units: Nolin silt loam (0 to 2 percent slopes, occasionally flooded [map label No]), Boonesboro silt loam (frequently flooded [map label Bo]), Elk silt loam (occasionally flooded, 0 to 2 percent slopes [map label EoA]), and Newark silt loam (0 to 2 percent slopes, frequently flooded [map label Ne]). Figure 4.2 illustrates the distribution of these soils units within the APE. Shovel tests were excavated within three of these units; Nolin, Boonesboro, and Elk. Table 4.1 presents average profile data collected from within these three soil units. The portion of the APE that contains Newark soils was not tested as part of the ASA due to the presence of an existing paved road (i.e., KY 1335).

Table 4.1 Soil data collected during the current survey (keyed to Figure 4-2).

Shovel Test ID	**A1**	**F5**	**I2**
Excavation Type	Auger test	Auger test	Auger Test
Mapped Unit	Nolin silt loam (No)	Boonesboro silt loam (Bo)	Elk silt loam (EoA)
Stratum I	0-26 cmbs, 10YR4/3 silt loam	0-38 cmbs, 10YR5/3 silt loam	0-31 cmbs, 10YR4/3 silt loam
Stratum II	26-62 cmbs, 10YR4/4 silt clay loam	38-81 cmbs, 10YR5/2 silt loam	31-110 cmbs, 10YR4/4 silt clay loam
Stratum II	n/a	n/a	110-135 cmbs, 10YR3/6 silt clay
Notes	Encountered rocky impasse at 62 cmbs	Encountered rocky impasse at 81 cmbs	Encountered rocky impasse at 135 cmbs

4.2 Conclusions and Recommendations

Brockington identified no archaeological resources within the APE during this investigation. As no archaeological sites were identified, the proposed bridge replacement project within the APE will have no adverse effects on archaeological resources. Additionally, Brockington recommends that additional archaeological investigations are not warranted in advance of the proposed bridge replacement project.

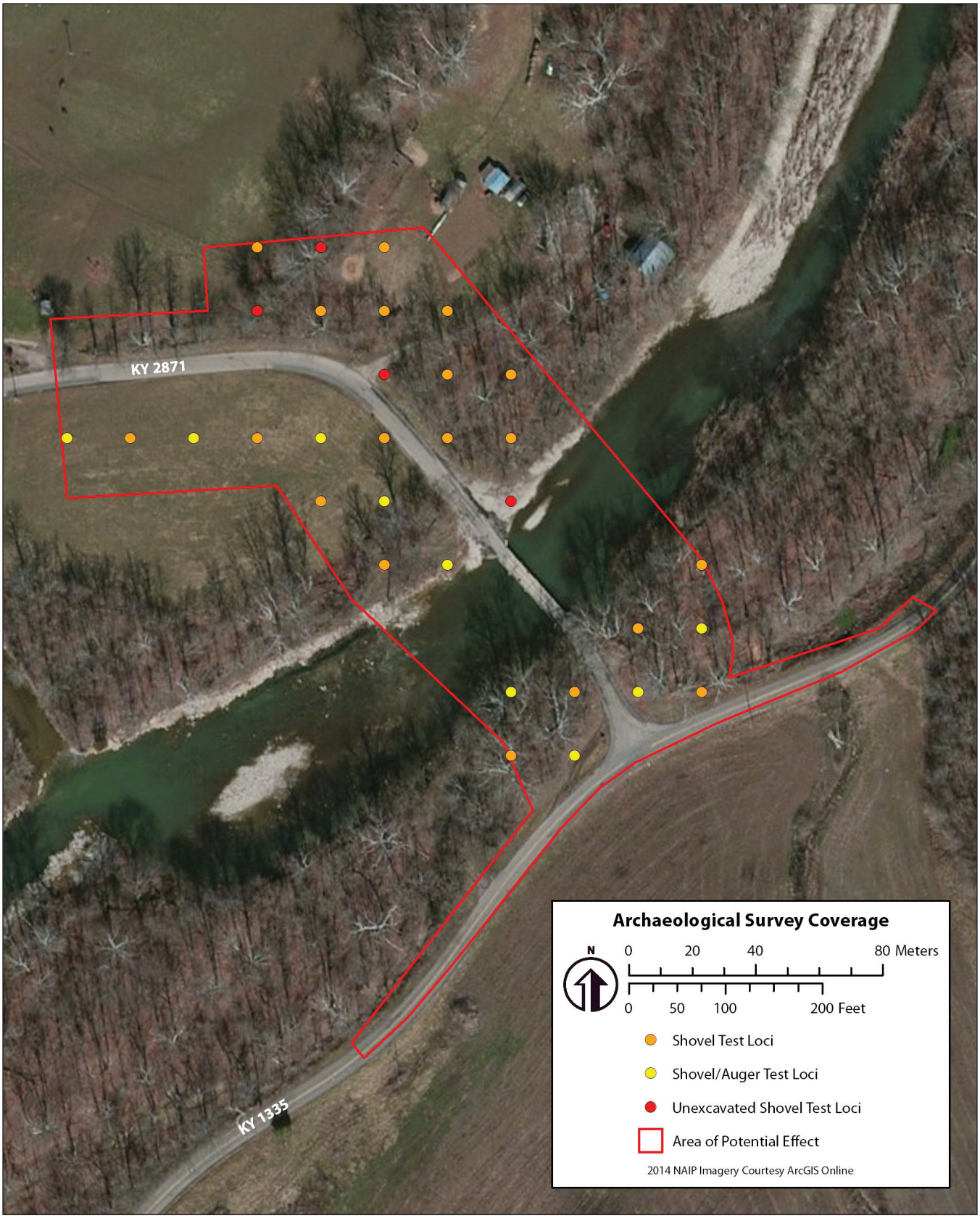

Figure 4.1 Archaeological Survey Results, Proposed Bridge Replacement Project (KYTC Item No. 5-1075) over the Little Kentucky River on KY 2871, Trimble County (as shown on 2014 NAIP imagery courtesy ArcGIS Online).

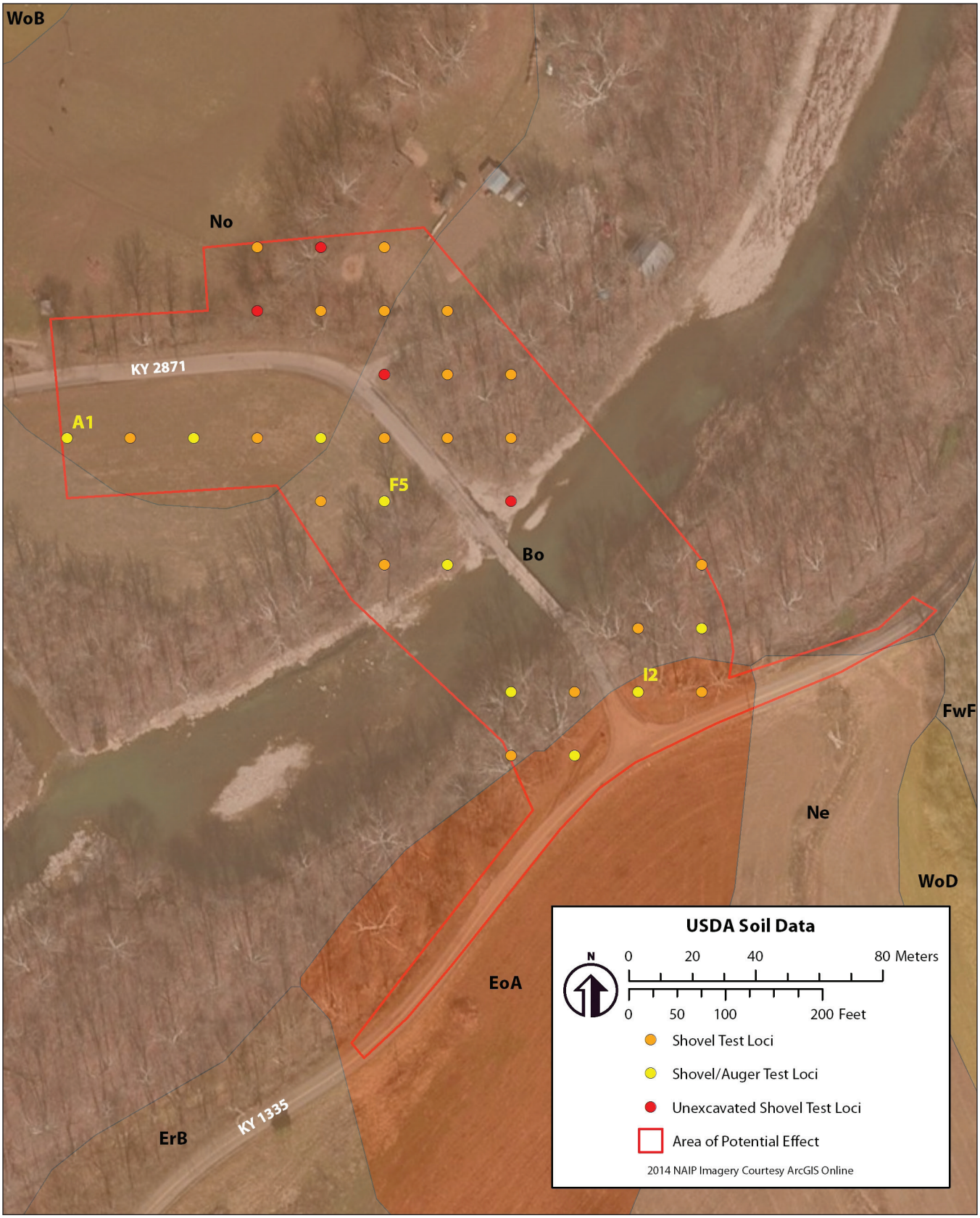

Figure 4.2 USDA Soil Data (as shown on 2014 NAIP imagery courtesy ArcGIS Online).

References Cited

Sanders, Thomas N.

2006 *Specifications for Conducting Fieldwork and Preparing Cultural Resource Assessment Reports*. Kentucky State Historic Preservation Office. Frankfort, KY.