BALL STATE UNIVERSITY

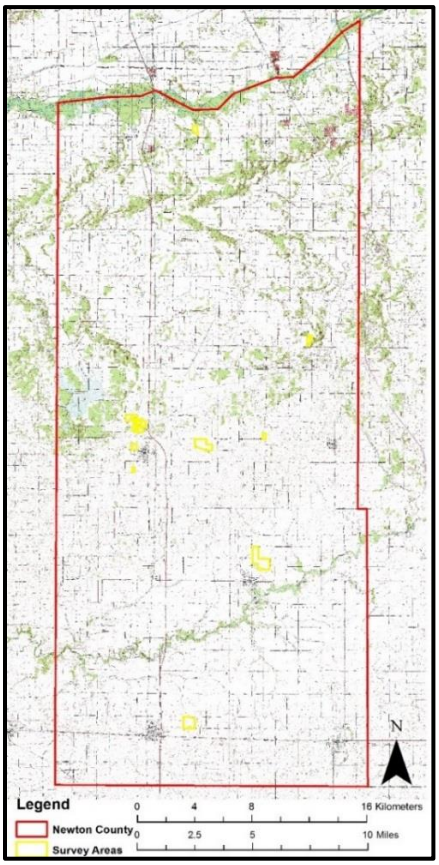
LEARNING IN ACTION: STUDENT CENTERED RESEARCH

LEARN. WORK. DISCOVER.

APPLIED ANTHROPOLOGY LABORATORIES

An Archaeological Survey of Newton County: Enhancement of a Data Deficient Region, Part III

Grant # 18-16FFY-04



By: Abby L. Clark, Christine Thompson, Matthew P. Purtill, and Kevin C. Nolan
Principal Investigators: Christine Thompson and Kevin C. Nolan
Reports of Investigation 98, Volume 1
May 2017

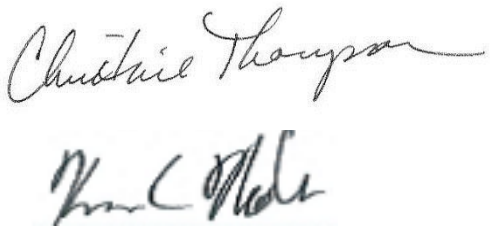
Applied Anthropology Laboratories, Department of Anthropology
Ball State University, Muncie, IN 47306-0439
Phone: 765-285-5328 Fax: 765-285-2163
Web Address: http://www.bsu.edu/aal

An Archaeological Survey of Newton County: Enhancement of a Data Deficient Region, Part III

Grant # 18-16FFY-04

By:
Abby L. Clark, Christine Thompson, Matthew P. Purtill, and Kevin C. Nolan

Christine Thompson and Kevin C. Nolan
Principal Investigators



Reports of Investigation 98
Volume 1
May 2017

Applied Anthropology Laboratories, Department of Anthropology
Ball State University, Muncie, IN 47306-0439
Phone: 765-285-5328 Fax: 765-285-2163
Web Address: http://www.bsu.edu/aal

ACKNOWLEDGEMENT OF STATE AND FEDERAL ASSISTANCE

This project has been funded in part by a grant from the U.S. Department of the Interior, National Park Service's Historic Preservation Fund administered by the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology. The project received federal financial assistance for the identification, protection, and/or rehabilitation of historic properties and cultural resources in the State of Indiana. However, the contents and opinions contained in this publication do not necessarily reflect the views or policies of the U.S. Department of the Interior, nor does the mention of trade names or commercial products constitute endorsement or recommendation by the U.S. Department of the Interior. Under Title VI of the Civil Rights Act of 1964 and Section 504 of the Rehabilitation Act of 1973, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, or disability in its federally assisted programs. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire further information, please write to: Office of Equal Opportunity, National Park Service, 1201 Eye Street, NW (2740), Washington, DC 20005.

Acknowledgements

This project was a shared effort of numerous people. I am indebted to the following individuals for their assistance in completing this project.

I would like to thank the Division of Historic Preservation and Archaeology (DHPA) and Ball State University for making this project possible. This project was funded in part by a Department of the Interior grant administered by the DHPA, Indiana Department of Natural Resources. Thanks to DHPA staff Malia Vanaman and Wade Tharp for their assistance in this project. Matching funds for this project were furnished by Ball State University. Thanks to Chad Paskiewicz, Matt Moore, and Ann Sheller in Sponsored Projects Administration at Ball State for managing the accounting for this project. Thank you to Christine Thompson for beginning the research for this project and writing the proposal. Thanks to the Department of Anthropology for support and assistance throughout this project.

The project could not have been completed without access to agricultural fields in Newton County. I would especially like to thank the following landowners: [redacted] for granting us permission to survey their land. I appreciate your interest in this project. Thank you to [redacted] for allowing us to include his artifact collection in this report.

The field work and laboratory processing was completed by AAL Senior Archaeologist Kevin C. Nolan, AAL Archaeologist Christine Thompson, AAL Administrative Assistant and Archaeologist Amber Yuellig, the author and the following Ball State students: Nora Hillard, Justin Fleetwood-Goolsby, Bryan Mitchell, Amanda Balough, Jessica Clark, Sneha Chavali, Sean Smith, Kevin Zoll, Charity Munro, Lindsey Cron, Connor McCoy, Tyler Reinholt, Silas Chapman, Sydney Green, Henry Easley, Lily Tucker, Michael Smith, Kaylee Ellrod, Chyan Gilaspy and Kiya Mullins.

Thanks to the Benton County Historical Society for hosting our presentation in May. It was well attended and we appreciate their help.

I would like to thank Amber Yuellig for organizing field crews and ordering supplies. I would especially like to thank Christine Thompson, Kevin C. Nolan, and Matt Purtill for their help and guidance in all aspects of this project. Without their organization, leadership, archaeological and accounting skills, I would have been unable to perform the tasks required.

Abby L. Clark

Abstract

The Applied Anthropology Laboratories (AAL) at Ball State University conducted a data enhancement project for archaeological resources in Newton County, Indiana for a FY2016 Historic Preservation Fund Grant (Grant #18-16FFY-04). This Historic Preservation Fund grant project investigated the archaeological resources of Newton County, Indiana with a focus on the two central townships, Beaver and Jackson, and under-represented ecological communities within Newton County based on FY2014 and FY2015 surveys. A total of 932.27 acres (377.27 hectares) of agricultural land were surveyed, which includes 5.63 acres of resurveyed area, and 110 new archaeological sites were recorded. The survey recovered 103 prehistoric artifacts and 4,063 historic artifacts from nine parcels of land within Newton County. No human remains were discovered as a result of this grant project. Cultural periods that are represented in the artifact assemblage include precontact era Middle Archaic, Middle-Late Archaic, Late Archaic, and Late Woodland components, in addition to Historic components. The average site density recorded for the project area for precontact sites was one site per 24.53 acres and for Historic sites was one site per 10.02 acres.

Table of Contents

Table of Figures

Table of Tables

Introduction

The Applied Anthropology Laboratories (AAL) at Ball State University was awarded a FY2016 Historic Preservation Fund Grant to survey portions of Newton County, Indiana. The project involved a pedestrian survey of 932.27 acres of agricultural land, which includes 5.63 acres of resurveyed area. The main goals of the project were to increase the site data base, refine the cultural chronology for the county, examine evidence for Euro-American settlement, resolve inconsistencies in the SHAARD database, and provide updated information for collector reported sites in SHAARD. Specifically, we hope to add to the understanding of the various prehistoric cultural periods of the county and how exploitation of the unique local environment changed over time. Newton County had 377 archaeological sites recorded in the State Historic Architecture and Archaeological Research Database (Division of Historic Preservation and Archaeology 2007) database prior to the start of this survey. This investigation focused on the central townships, Beaver and Jackson, and under-represented ecological communities in Newton County based on our FY2014 and FY2015 HPF grant surveys. This investigation builds upon the FY2014 Historic Preservation Fund Grant (Grant #18-14-FFY-03) which included survey areas in the southern portion of Newton County and along the Iroquois River and the FY2015 Historic Preservation Fund Grant (Grant#18-15-FFY-05) which included survey areas in the northern portion of Newton County and along the Kankakee River.

The following research questions, while not exhaustive, guided this project.

1. What is the cultural chronology for Newton County?
    a. Is the prevalence of Upper Mississippian among collector reported sites a result of bias, or representation of real pattern in pre-contact use of the Grand Prairie Region?

2. What are the densities and distributions of archaeological sites within the county?
    a. Are there patterns in the use of various ecologies through time?
    b. Can this survey inform our knowledge of landscape change?
    c. How does this compare to utilization of similar and different environments within the Northern Moraine and Lake region and Till Plains region?

3. What is the settlement pattern for Euro-American people in Newton County?

4. What is the average site density within the county?

Background

Environmental Setting

To provide a framework for interpreting the data collected during this project, a review of the natural and cultural setting was undertaken. The background information presented in this report includes environmental and archaeological information concerning Newton County, Indiana.

Location

The project area is located in Newton County (Figure 1), which has an area of 258,080 acres (104,441.3 hectares) (Barnes and Osterholz 1998:1). For the proposed research, we targeted areas within the two central townships of Newton County, Beaver and Jackson, and ecological communities under-represented in the previous HPF FY2014 (Leeuwrik et al. 2015) and FY2015 (Leeuwrik et al. 2016) surveys (Figure 2 and Figure 3).

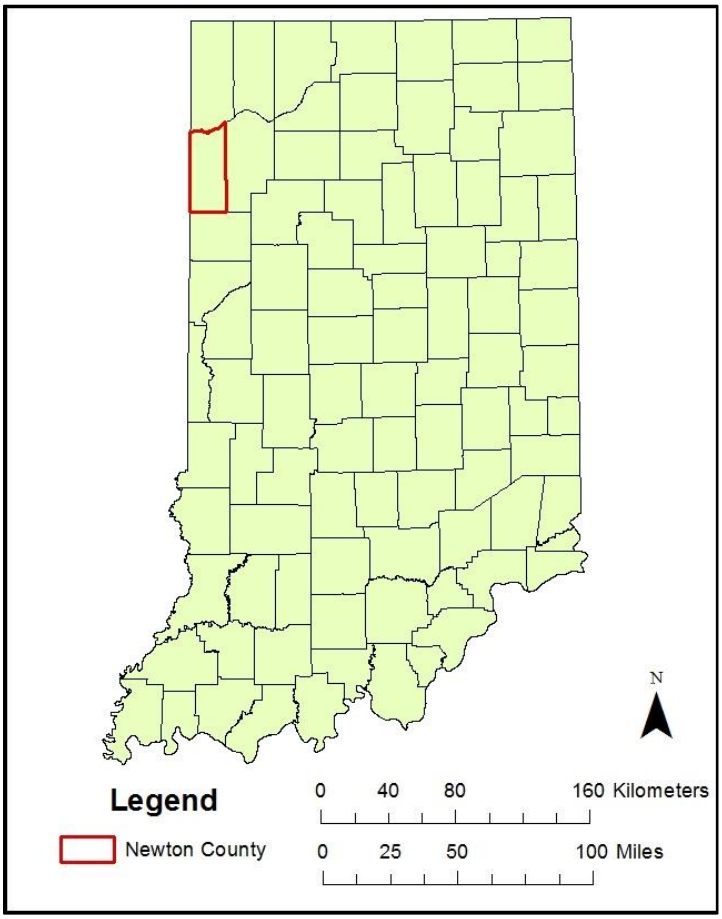


Figure 1: Newton County within the state of Indiana (based on Yellowmap World Atlas 2015).

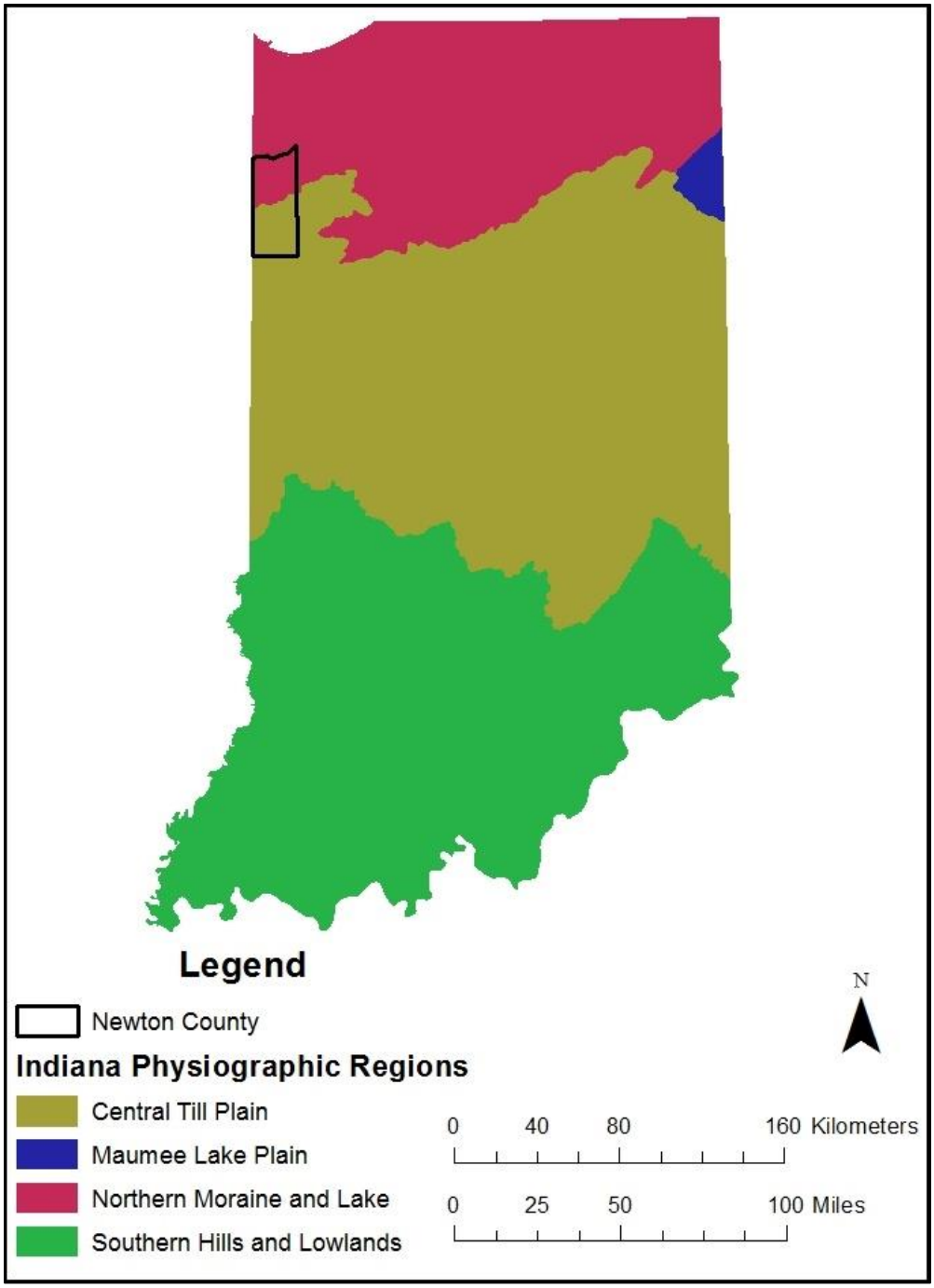


Figure 2: Newton County within the Northern Moraine and Lake Region (based on Gray and Sowder 2002).

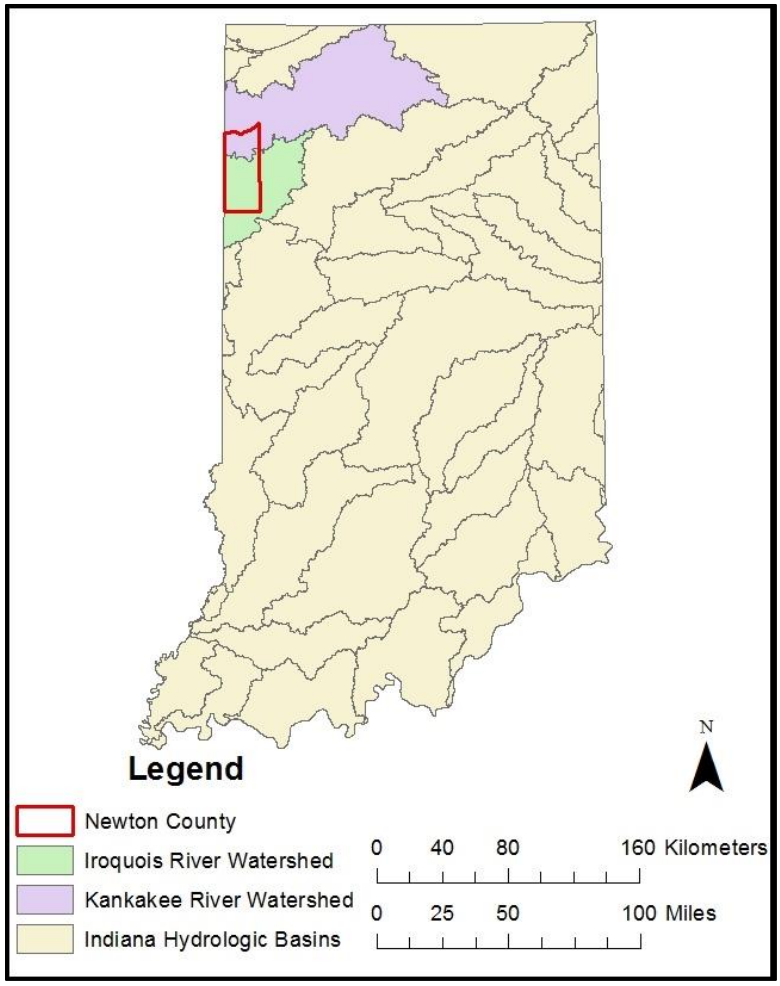


Figure 3: Newton County within the Iroquois and Kankakee River Watersheds (based on IndianaMAP 2015).

Geology

The structural framework of Indiana is divided into three general areas: the Illinois and the Michigan Basins which are separated by the Cincinnati Arch and its branches of the Findlay and Kankakee Arches (Gutshick 1966:9). Newton County is located within the broad region of uplift known as the Cincinnati Arch (Schneider 1966:41).

The Cincinnati Arch can then be divided further into smaller bedrock physiographic units. The project area is within the Rensselaer Plateau which occupies all of Newton County (Schneider 1966:54). This bedrock unit is described as physiographically distinct from other physiographic belts found in more southern regions of Indiana (Schneider 1966:55). Attica, Liston Creek, Kenneth are the documented bedrock cherts in the region around Newton County (Figure 4).

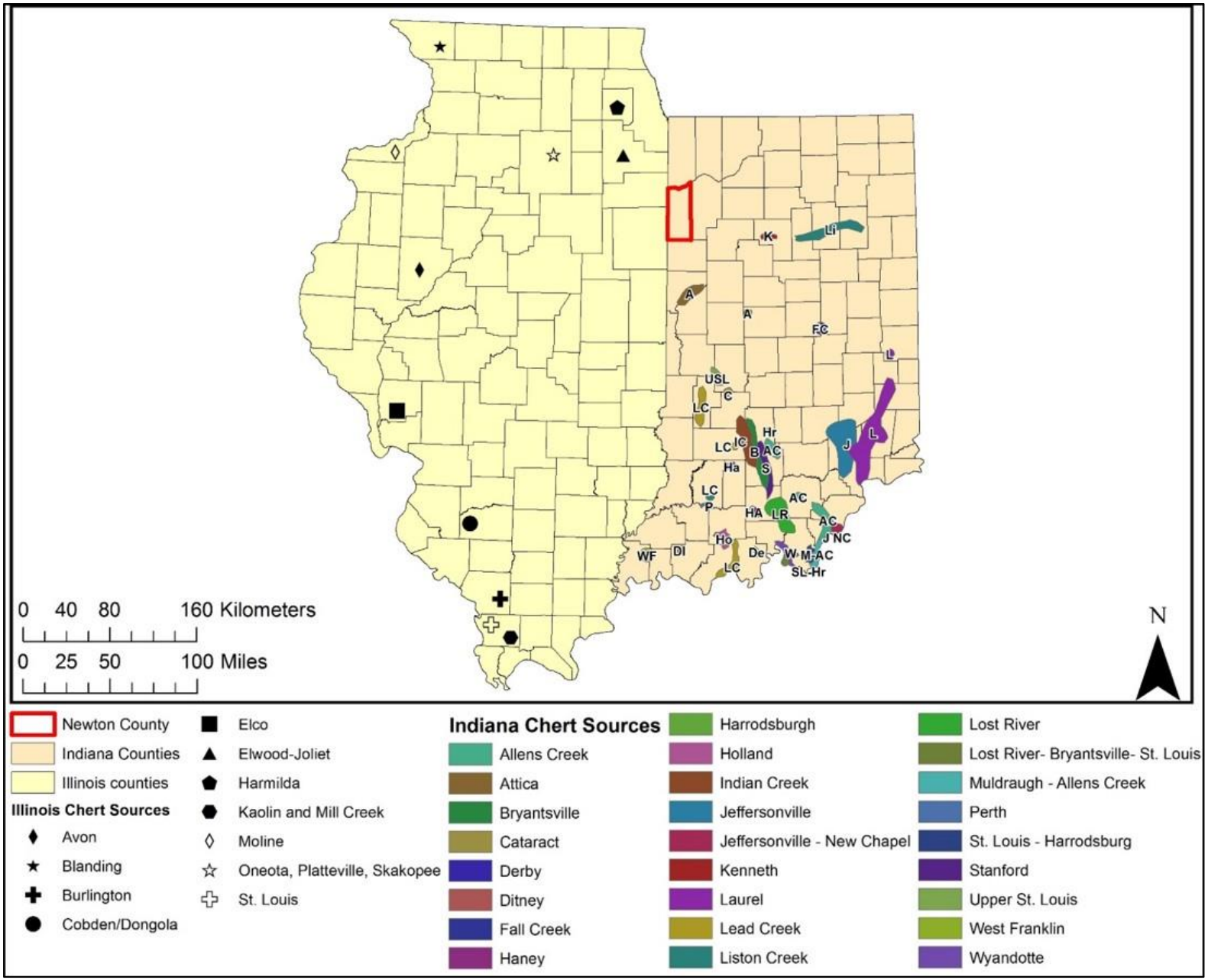


Figure 4: Chert outcrop locations in Indiana and Illinois (digitized by Brad Painter from Cantin 2008; from DeRegnaucourt and Georgiady 1998).

Stratigraphically, Attica chert (Figure 5) is a member of the Muldraugh Formation of the Borden Group of the Mississippian Period (Cantin 2008:15). Also known as "Wabash Green" and "Independence", Attica chert is described as being blue-green in color with blue-grey streaks, bands and mottles (Cantin 2008:11-12). When heat treated, Attica chert takes on a purple color with pinkish bands and streaks (Cantin 2008:12). Texture is variable, ranging from fine-medium to medium coarse; luster is generally usually dull to slightly glossy (Cantin 2008:12). Fossil inclusions are rare with the exception of microscopic sponge spicules; however crystalline vugs have been encountered (Cantin 2008:12). Temporally, Attica chert is found in all cultural periods in Indiana however little use is documented for Woodland and Mississippian periods in Indiana (Cantin 2008:13).

Figure 5: Example of Attica Chert from the Ball State University AAL Chert Collection (photo by Ball State University).

Liston Creek chert (Figure 6) is both a nodular and bedded chert found in Liston Creek limestone which is a member of the Wabash Formation, Niagara Series, of the Silurian System (Cantin 2008:54). Liston Creek chert is always grey in color, but the shade of grey varies from very light to medium grey. As it weathers, Liston Creek chert can develop tan or brown patches. All these variations in color can occur within one sample. Textures of Liston Creek chert can be coarse to medium fine. Small calcitic or siliceous speckles are found within this chert type. These specks are most likely small fossils; however, the spots are too small to be determined as such. Liston Creek chert was used heavily by prehistoric groups (Cantin 2008:55).

Figure 6: Example of Liston Creek Chert from the Ball State University AAL Chert Collections (photo by Ball State University).

Kenneth chert (Figure 7) is a bedded chert found in Kenneth limestone which is a member of the Salina Formation of the Silurian System (Cantin 2008:46). Kenneth chert is known to be white to light grey in color, with light to dark grey and, or brownish-grey patches. These color variations can all be present within one sample. When weathered, Kenneth chert's appearance and texture become chalky white. Fossils are found within Kenneth chert, however the fossils are mostly "siliceous blobs" (Cantin 2008:47). Information on the usage of Kenneth chert is limited. Cantin (2008:48) notes that Kenneth chert should be archaeologically found throughout the Tipton Till Plain region.

Figure 7: Example of Kenneth Chert from the Ball State University AAL Chert Collection (photo by Ball State University).

The close proximity of Newton County to Illinois chert sources (Figure 4) has led to several types being encountered during the FY2014, FY2015, and FY2016 HPF surveys. The closest chert outcrops are Harmilda and Elwood-Joliet located in DuPage and Will Counties respectively. Closely related to Elwood-Joliet chert are Blanding and Burlington cherts, which overlap in several classificatory properties along with Glacial Till chert (Stelle and Duggan 2003). The Blanding chert outcrop is located in Jo Davies County and Burlington chert outcrop is in Jackson County.

Blanding chert (Figure 8) is a medium to medium-fine texture Mississippian Period chert that is dull in luster and naturally occurs in northwestern Illinois. Blanding chert can range from white to gray in color with pale yellowish, brown, or orangish streaks and faint banding (Stelle and Duggan 2003). Heat treatment of Blanding chert can cause the color to move to pink tones

and the luster becomes more satin-like. Fossil fragments of sponge spicules, corals, and crinoid columnals are found frequently in the contrasting colors (Stelle and Duggan 2003).

Figure 8: Example of Blanding Chert (Stelle and Duggan 2003).

Burlington chert (Figure 9) is a bedded Mississippian Period chert derived from the Burlington Limestone Formation occurring in the west-central region of southern Illinois (Koldehoff 1985:12). Burlington chert commonly has a base color of white to gray to tan with a waxy luster and can occasionally be mottled or banded (Stelle and Duggan 2003). Heat treatment of Burlington chert is frequently encountered and changes the base to a pure white or very light pink color. Fossils present in Burlington chert can include sponge spicules, brachiopods, bryozoans, corals, and crinoid columnals (Stelle and Duggan 2003). Due to the medium to fine texture and the enhanced flaking properties from heat treatment, Burlington chert was often selected for biface production (Koldehoff 1985:12; Stelle and Duggan 2003).

Figure 9: Example of Burlington from the Ball State University AAL Chert Collection (photo by Ball State University).

Elwood-Joliet (Figure 10) chert is a medium texture Mississippian Period chert that is dull in luster and is naturally occurring in northeastern Illinois. Elwood-Joliet chert white to gray in color and contains small iron pyrite structural inclusions (Stelle and Duggan 2003). Fossil inclusions present are sponge spicules, brachiopods, bryozoans, and crinoid columnals. Other inclusions present in Ellwood-Joliet chert are druse and limestone, which can make the chert appear sugary under magnification (Stelle and Duggan 2003). Heat treatment effects on color and luster of Elwood-Joliet chert is unknown.

Figure 10: Example of Elwood-Joliet Chert (Stelle and Duggan 2003).

Harmilda chert (Figure 11) is a Silurian chert that is a member of the Silurian System occurring in DuPage County, Illinois. The luster of Harmilda chert ranges from dull to waxy corresponding to the variable texture with semi-translucent regions being fine to medium grained and waxy, while the opaque regions are medium to course grained and dull (Stelle and Duggan 2003). Few fossils are present in Harmilda chert, sponge spicule inclusions can be found in the semi-translucent regions and crinoid casts can be found in the opaque regions. Heat treatment causes Harmilda chert to turn a red or reddish brown color and the luster is enhanced weakly (Stelle and Duggan 2003). Harmilda chert tends to overlap visually with Kenneth chert from Indiana.

Figure 11: Example of Harmilda Chert (Stelle and Duggan 2003).

Glacial History

Modern Indiana has been shaped by the cumulative effects of repeated glacial, and inter-glacial, stages starting some 2.6 million years ago at the beginning of the Pleistocene (Fullerton 1986; Shurig 1970:6). The glaciers were formed in the upland east area near the Hudson Bay and spread out across the North American continent, reaching its farthest point in the Wabash and Ohio Valleys – south of the 38th parallel – farther than anywhere else in the Northern Hemisphere during the Pleistocene Epoch (Wayne 1966:21). Each new glacial advance transported tons of glacial drift that reshaped the surface of Indiana. The current homogenous appearance of Indiana's central region is misleading because underneath the surface lies a blending of bedrock and glacial drift that indicates its volatile glacial past.

Evidence of glacial events that occurred prior to ~240,000 years ago are difficult to identify across the midcontinent, including Indiana. These earliest glacial events collectively are referred to as the Pre-Illinoian Stage (e.g., Fullerton 1986). During this time, regional hydrological systems underwent drastic alteration under the influence of the various ice sheets. The modern Ohio River drainage, which formed around 300,000 years ago, is the amalgamation of portions of various ancestral drainage reaches including the Teays, Steubenville, Manchester, and Marietta rivers (among others) (Hansen 1995; Ray 1974; Shurig 1970). Pre-Illinoian glaciation was also responsible for some of the deepest valley-cutting processes during the Pleistocene and deposits of glacial drift as deep as 75 to 100 feet can be found throughout parts of northern and central Indiana (Wayne 1966:32).

Interglacial events, characterized by warming climates and retreating glaciers, represent a time of intensive erosional and depositional processes that shaped the landscape and led to deep soil development. Following Pre-Illinoian glacial advances, the Yarmouth interglacial occurred and lasted ~200,000 years (Melhorn 1997:18).

At ~240,000 years ago, glaciers began to advance once again during the Illinoian Stage (Fullerton 1986; Wayne 1966:32). These glaciers advanced farther south into the Northern Hemisphere than any previous stage. The terminal glacier margin fluctuated at least three times from its origin in the Lake Michigan Lowland to just south of the 38th parallel (Wayne 1966:33). Each fluctuation resulted in the deposition of till and outwash sediments that are distinguishable based on degree of oxidation and mineral and biogenic composition. Between 140,000 and 90,000 years ago, the Sangamon interglacial has been identified in Indiana which separates the Illinoian and Wisconsin glacial events (Wayne 1966:34). The most recent glaciation, the Wisconsin Stage, began its encroachment into Indiana from the northeast 90,000 years ago and produced various deposits including the Trafalgar Formation (Wayne 1966:34). The glacier was approximately 1,700 feet thick in certain areas (Wayne 1966:27).

Portions of southern and central Newton County contain deposits associated with the Cartersburg Till Member (Figure 12), which is part of the Trafalgar Formation (Wayne 1966:26). The Trafalgar Formation is primarily composed of massive calcareous conglomeritic mudstones (a compact but poorly cemented sandy-silty matrix) with scattered beds of gravel, sand and silt (Wayne 1963:45).

Unconsolidated sediments overlie the Trafalgar Formation in some areas and were deposited extraglacially as the Atherton Formation (Wayne 1963:31, 1966:26). These sediments of gravel, sand, silt, and clay were derived primarily from glacial outwash and were sorted and deposited by meltwater currents, wind action or in the quiet waters of glacial lakes (Wayne 1963:31, 1966:26). Most of the Atherton Formation sediments in the project area in the northern portion of the county would belong to the outwash that drained to the Kankakee Basin and Aeolian dune facies (Wayne 1966:26; see Figure 12). The movement of glacial ice through the Lake Michigan and Kankakee basins deposited more till which eventually formed the Valparaiso

Moraine and the melt created Lake Chicago (Wayne 1966:36). Stable dunes were created by the formation and recession of Lake Chicago into present-day Lake Michigan The remaining portion of central to southern Newton County is characterized by lacustrine facies and Paleozoic rocks. This facies consists of stratified fine- to coarse-grained sediments which were deposited in sheets by glacial meltwater current in valley fill (Wayne 1963:32).

Physiography

Gray (2000) and Gray and Sowder (2002) map the northern half of Newton County as within the Kankakee Drainageways of the Northern Moraine and Lake Region, whereas the southern half of the county is mapped within the Iroquois Till Plains of the Central Till Plain Region (see also Schneider 1966) (Figure 13). Newton County is generally level and covered by mantles of heterogeneous, stratified and unstratified, glacial drift of variable thickness (Barnes and Osterholz 1998:3). The county is characterized by low meandering Aeolian-glaciofluvial sand dunes or ridges located within seasonally, and annually, wetlands or marshes (Wayne and Zumberge 1983). Dunes tend to be of low relief with most being less than 1.5 m in height. Much of the existing topography within the county has been modified over the past 12,000 years by prevailing westerly winds (Schneider 1966:52). The county landscape is dissected by the Iroquois, Tippecanoe, and Kankakee Rivers (Schneider 1966:52). Poorly drained soils, combined with the low lying topography, contributed to the formation of the Beaver Lake and other wetlands which covered much of the county until its draining, in the mid-19th thru early 20th, centuries for agricultural purposes (Barnes and Osterholz 1998:1).

Soils

The majority of soils found in Newton County are a product of either glacial or fluvial parent materials. Glacial till sediments typically have clayey to silty textures and contain particles of sand and gravel sizes with sharp corners not eroded by water. Glaciofluvial, or outwash, deposits range from silty to gravelly textures depending on the water source that carries them. The more recent fluvial deposits found on flood plains and river terraces are dominated by loamy textures. Lacustrine sediments are deposited from glacial meltwater tend to have clayey textures (Barnes and Osterholz 1998).

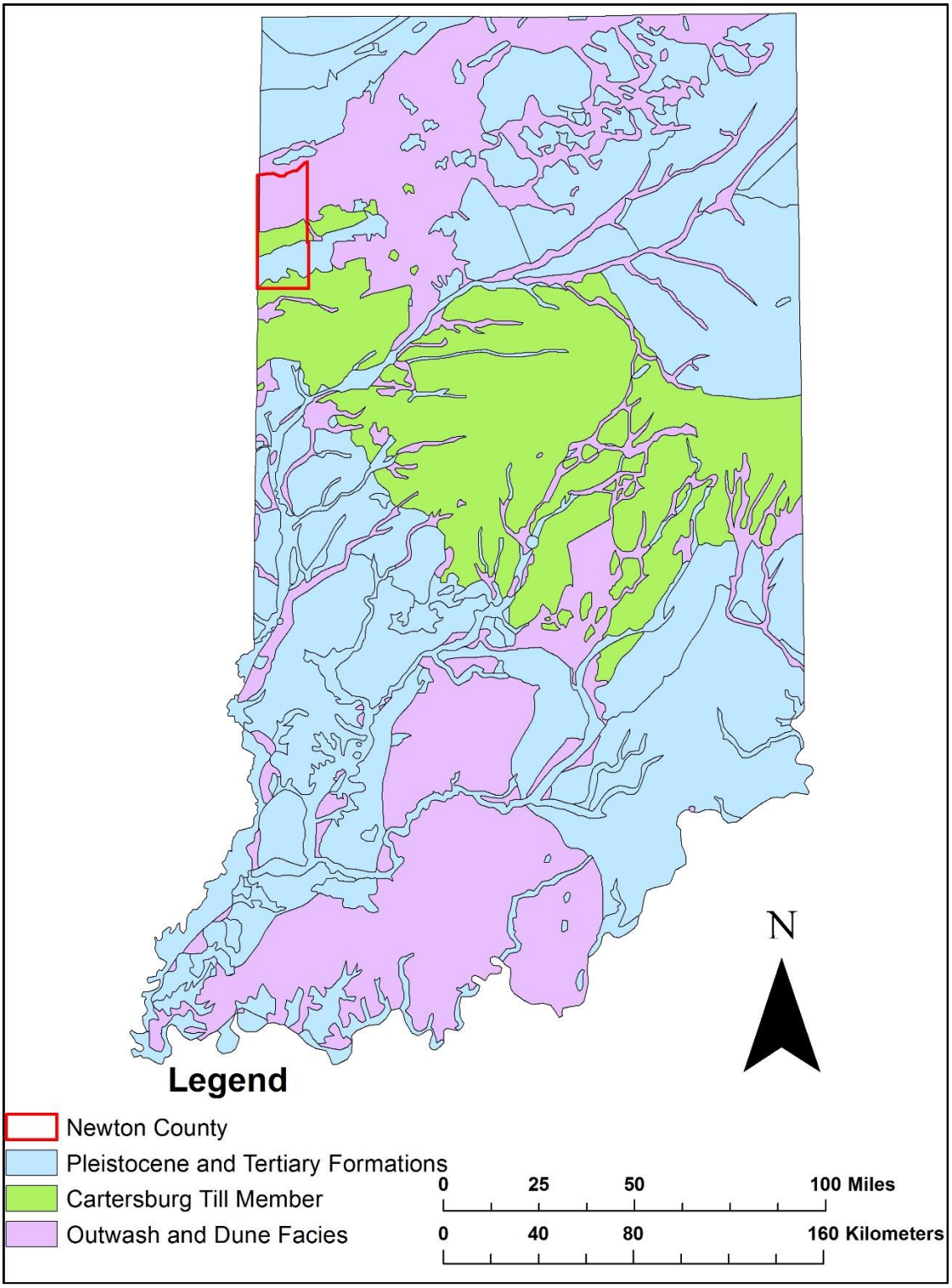


Figure 12: Location of Newton County, the Pleistocene and Tertiary Formations, Cartersburg Till Member, and Outwash and Dune Facies (based on Wayne 1966:26).

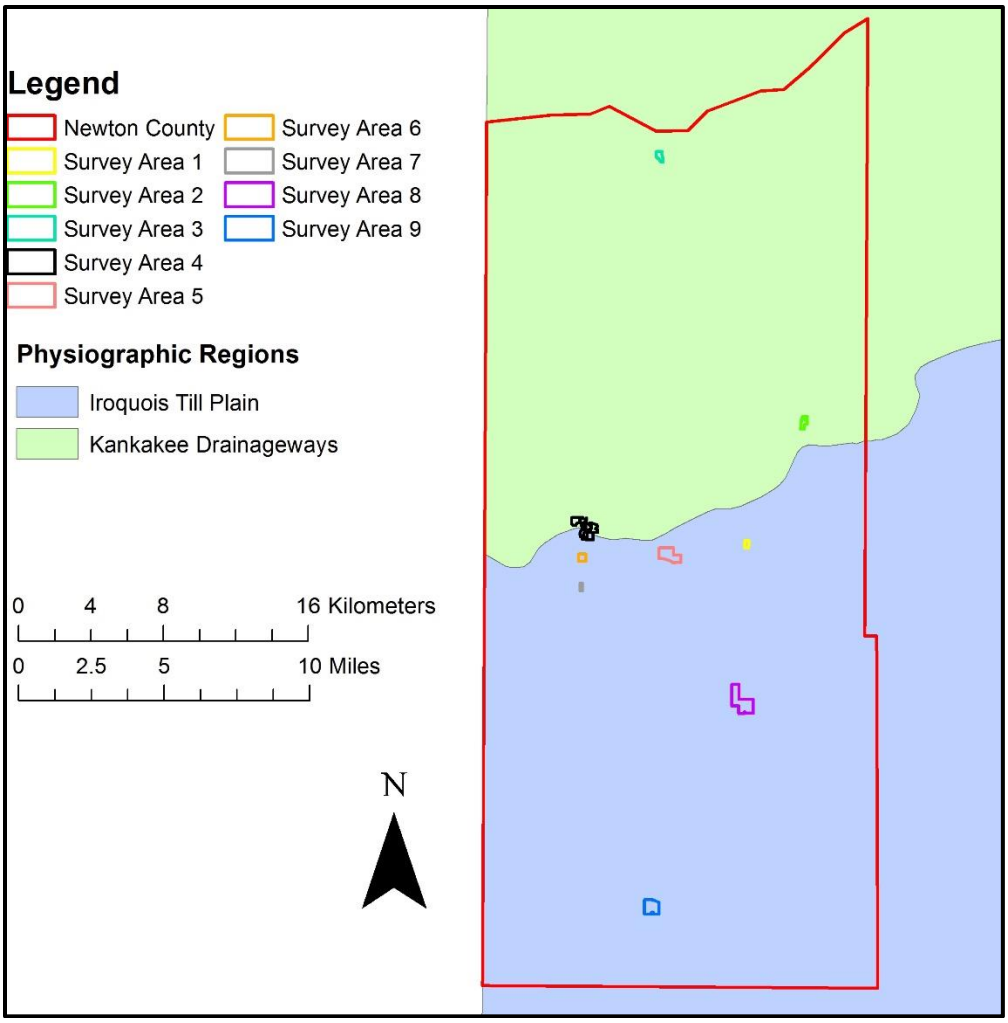


Figure 13: Physiographic divisions and survey areas in Newton County (based on Gray and Sowder 2002)

There are 12 soil associations mapped within Newton County (Table 1). Soils on floodplains (Craigmile-Prochaska and Sawabash-Comfrey, consistent with Craigmille-Suman-Prochaska and Sawmill-Lawson-Genesee in STATSGO) (USDA/NRCS 2002) represent a small percentage of the county. Associations with outwash plains (Oakville-Morocco-Brems and Selma-Darroch-Foresman, consistent with Coloma-Spinks-Oshtemo and Swygert-Bryce-Chatsworth in STATSGO) also account for a small percentage of Newton County. Associations on lake plains and outwash plains or lake bed landforms (Montgomery-Strole-Simonin, Toto-Ackerman-Adrian, Granby-Maumee-Zadog and Conrad-Zaborosky-Kentland consistent with Swygert-Bryce-Chatsworth, Houghton-Adrian-Carlisle, Granby-Zadog-Maumee, Kentland-Conrad-Zaborosky in STATSGO) account for the second largest percentage in Newton County. The largest percentage of soil associations in Newton County form ground or recessional moraine landforms (Swygert-Bryce-Swygert, Barry-Sumava-Octagon, Selma, Till Substratum-

Barce-Gilboa, Selma, Till Substratum-Darroch, Till Substratum-Foresman, Till Substratum consistent with Montgomery-Strole-Lenawee, Barry-Sumava-Octagon, Saybrook-Drummer-Parr, Saybrook-Drummer-Parr in STATSGO) (Barnes and Osterholz 1998:9-16). In 2002 the USDA revised their soil associations when producing STATSGO (USDA/NRCS 2002). There were 13 original soil associations and they are shown in Figure 14.

The locations of the FY2016 HPF survey areas show large scale variability in their soil associations. The nine survey areas (SA) are located within six separate soil associations with two SAs located within two soil associations. A small portion of SA 3 is located within the Granby-Zadog-Maumee association, which has landforms consisting of outwash plains or lake plains. Survey Areas 1, 5, 6, and 7 are located within the Barry-Sumava-Octagon association, which has landforms consisting of moraines. Survey Areas 2, majority of SA 3, and approximately half of SA 4 are located within the Coloma-Spinks-Oshtemo association, which has landforms consisting of outwash plains or lake plains. The other half of SA 4 is located within the Gilford-Maumee-Sparta association, which consists of outwash plains or flood plains. Survey Area 8 is located within the Swygert-Bryce-Chatsworth association, which consists of ground moraines or lake plains. Survey Area 9 is located within the Saybrook-Drummer-Parr association, which has landforms consisting of ground moraines or outwash plains (STATSGO; USDA/NRCS 2002).

Within Newton County, soils are classified into one of five soil orders and ten suborders (Figure 15)(USDA/NRCS 2015a). The most common orders within the county are Mollisols (72.1%) and Entisols (18.4%). The remaining orders include Alfisols (6%), Histosols (1.1%), and Inceptisols (2%). Mollisols are thick, organic-rich soils that are naturally fertile and common throughout the Great Plains and Prairie regions (USDA/NRCS 2015b:381). The Mollisols are then further classified as Typic Udic (32.3%) and Aquic Mollisols (39.8%). The wet, or Aquic, Mollisols consist entirely of the suborder Aquolls, which have a seasonal high water table within the upper 50 centimeters of the soil profile (USDA/NRCS 2015b:391). Aquolls are commonly encountered in the glaciated areas of the Midwest, and primarily have been artificially drained and converted to agricultural land. The remainder of the Mollisols present in Newton County represent the suborder Udolls which are more or less freely drained soils that were formed in deposits from the late-Pleistocene or Holocene periods (USDA/NRCS 2015b:420). The majority of these soils have been converted to agricultural fields where mainly soybeans and corn are cultivated. The vegetation supported previously would have been tall grass prairies and occasionally a boreal forest (USDA/NRCS 2015b:420).

Table 1: Soil Associations in Newton County (Barnes and Osterholz 1998)

Association	Description	Landforms	% of County
Barry-Sumava-Octagon	Very deep, nearly level to moderately sloping, poorly drained to well drained, moderately coarse textured soils that formed in glacial till or in loamy outwash over glacial till	Outwash plains or moraines	17%
Conrad-Zaborosky-Kentland	Very deep, nearly level or gently sloping, very poorly drained or somewhat poorly drained, coarse textured soils that formed in sandy sediments or in organic material over sandy sediment	Lake beds or lake plains	4%
Craigmile-Prochaska	Very deep, nearly level, very poorly drained, medium and coarse textured soils that formed in loamy alluvium over sandy alluvium.	Floodplains	2%
Granby-Maumee-Zadog	Very deep, nearly level, very poorly drained, coarse textured soils that formed in sandy sediments	Outwash plains or lake plains	22%
Montgomery-Strole-Simonin	Very deep, nearly level to strongly sloping, very poorly drained to moderately well drained, moderate fine or coarse textured soils that formed in lacustrine sediments or in sandy and loamy outwash over lacustrine sediments	Lake plains	5%
Oakville-Morocco-Brems	Very deep, strongly sloping nearly level, well drained to somewhat poorly drained, coarse textured soils that formed in sandy sediments	Outwash plain	17%
Sawabash-Comfrey	Very deep, nearly level, very poorly drained, moderately fine or medium textured soils that formed in silty and loamy alluvium or in loamy alluvium.	Floodplains	1%
Toto-Ackerman-Adrian	Very deep, nearly level, very poorly drained soils that formed in organic material over marl, coprogenous earth, and sandy sediments in organic material over coprogenous earth and sandy sediments, or in organic deposits over sandy sediments	Lake plains and outwash plains	2%
Selma-Darroch-Foresman	Very deep, nearly level or gently sloping, poorly drained to moderately well drained, medium textured soils that formed in loamy outwash or in silty and loamy sediments	Outwash plains	9%
Selma, Till Substratum-Barce-Gilboa	Very deep, nearly level or gently sloping, poorly drained to moderately well drained, moderately fine or medium textured soils that formed in loamy outwash over glacial till or in silty and loamy outwash over glacial till	Ground Moraines	5%
Selma, Till Substratum-Darroch, Till Substratum-Foresman, Till Substratum	Very deep, nearly level or gently sloping, poorly drained to moderately well drained, moderately fine or medium textured soils that formed in loamy outwash over glacial till	Ground moraines	14%
Swygert-Bryce-Swygert	Very deep, nearly level to strongly sloping, poorly drained to moderately well drained, medium or moderately fine textured soils that formed in glacial till	Recessional moraines	2%

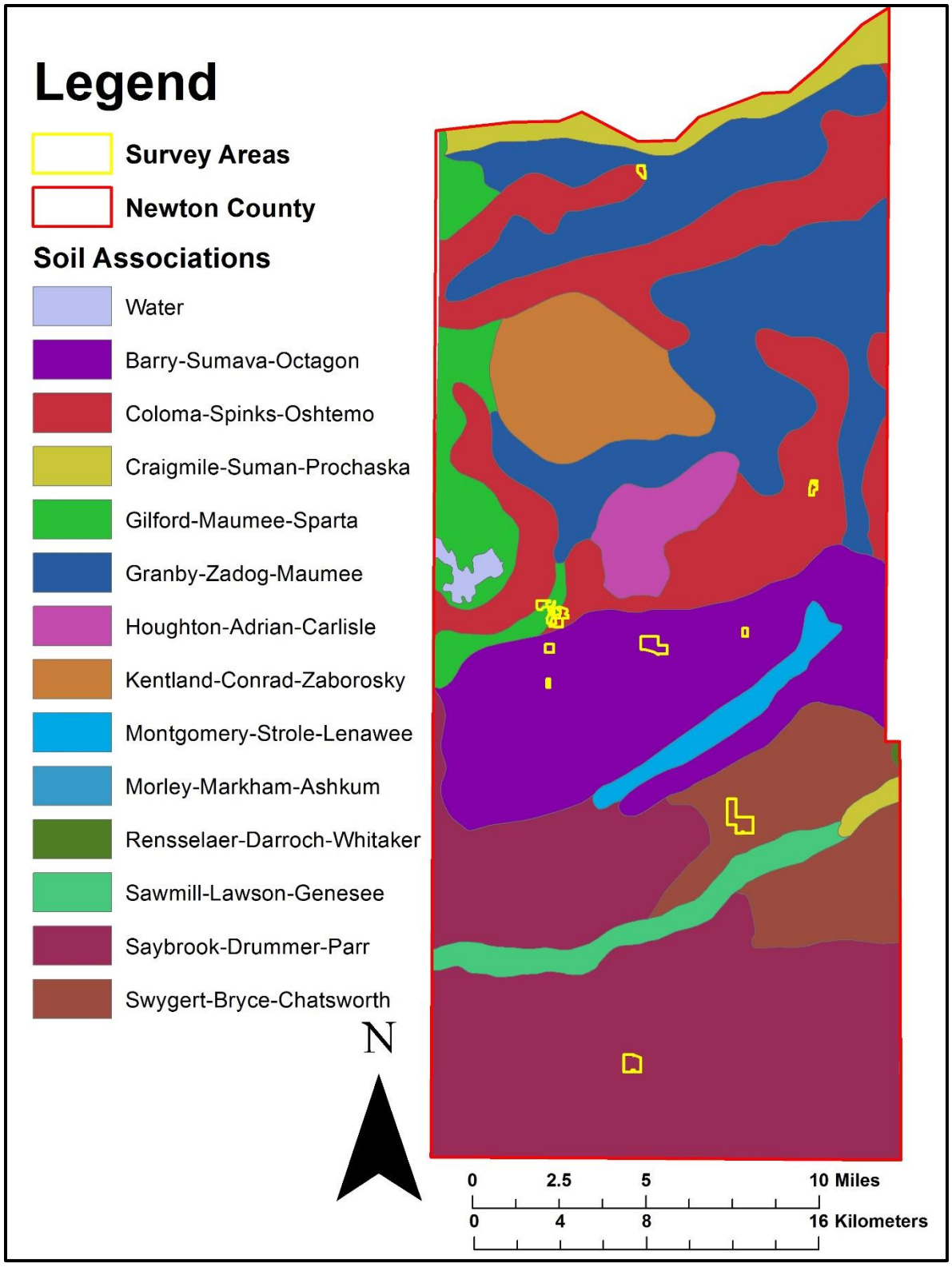


Figure 14: Soil Associations in Newton County (based on terminology in STATSGO, USDA/NRCS 2002).

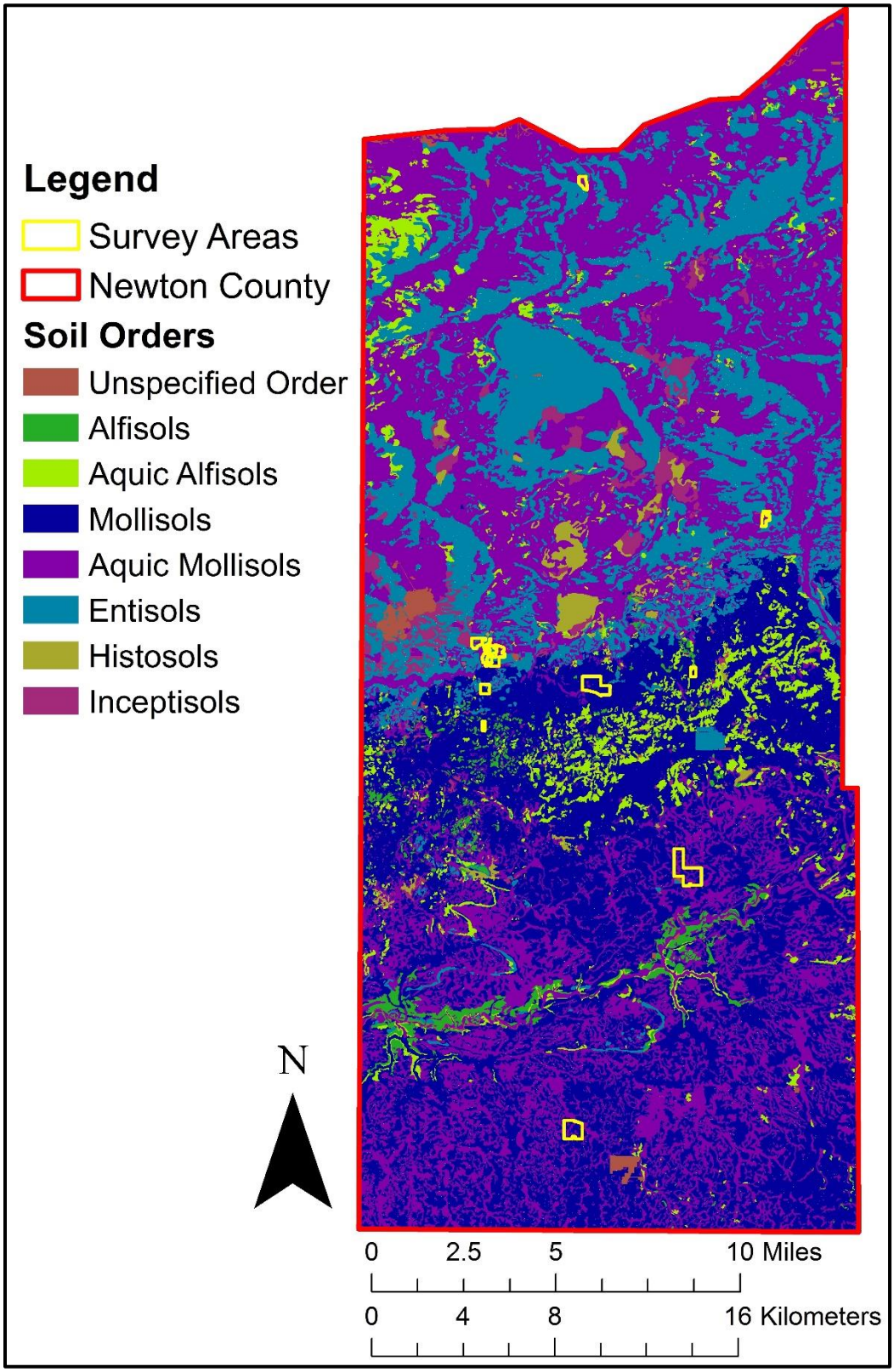


Figure 15: Soil orders located within Newton County (USDA/NRCS 2015a).

Water Resources

Precipitation is the primary source of surface water for Newton County (Hale 1966:92). Eight to 20 percent of precipitation becomes surface water as it collects in rivers, streams, lakes, and reservoirs (Bechert and Heckard 1966:100). The flow or "discharge" of rivers fluctuates greatly throughout seasons and over years. The maximum discharge is experienced during the late winter and early spring. Melt water from snow and increased precipitation at this time increases the discharge so much that at times flooding becomes a serious concern. Minimum discharge occurs during the summer and fall due to the effects of evapotranspiration with roughly two-thirds of precipitation lost due to this process. In contrast, maximum use of water also occurs during the summer and fall resulting in occasional drought (Hale 1966:94-95). In a landscape characterized by extensive wetlands, such as that found in prehistoric Newton County, these seasonal and annual precipitation fluctuations could have drastically influenced the size and location of habitable area (Surface-Evans et al., 2005; Surface-Evans 2015).

The remaining eight to 16 percent of precipitation percolates through the aeration zone of soil and rock until it reaches the water table where it becomes ground water (Bechert and Heckard 1966:100). Ground water moves laterally until it reaches a lower elevation. Eventually ground water will become surface water when it reaches an outlet (Bechert and Heckard 1966:110).

The Kankakee River, which lies in northwestern Indiana and northeastern Illinois is the major water source running through Newton County. However, there is also the Iroquois River and Beaver Creek, both tributaries of the Kankakee River, as well as numerous smaller streams and creeks. Both the Kankakee and the Iroquois Rivers ultimately flow westward into Illinois. The Kankakee River has a shallow gradient of only five inches per mile making the river very sluggish and prone to flooding. Historically the Kankakee River had shallow standing water covering about five miles on either side of the banks for about nine months out of the year prior to its draining (Meyer 1935:364). The glacial outwash of the Kankakee is described as a "nearly level relief with low meandering sand dunes or ridges that occur irregularly" (Barnes and Osterholz 1998:3).

The Iroquois River is shallow, slow-moving tributary to the Kankakee River that winds through neighboring Jasper County, across southern Newton County, and into northeastern Illinois. The Iroquois River flows west-southwest for approximately 94 miles through prairies and narrow woodlands due to excessive draining of what once was swampland.

Currently, Newton County has only one major lake, J.C. Murphy Lake, which was constructed in 1951 as a flood control reservoir and a storage location for the county water supply (Barnes and Osterholz 1998:4; Hale 1966:96-97). Located south of the Kankakee in McClellan Township, the manmade Lake Ditch drainage ditch was constructed in the 1850s to

drain Beaver Lake into the Kankakee River in order to create more agricultural land (Heistand 1951:9). The draining was completed in 1894 (Taylor 2009:12).

Water resources are extremely important to both prehistoric and historic human habitation patterns. Newton County's multiple water, and especially wetland, resources would have been valuable to prehistoric and historic populations. The structure of surface water, streams, and fluctuating wetlands would have provided a unique structure and set of opportunities for the occupants of Newton County.

Climate

The modern climate of Indiana is described as a humid, mesothermal-microthermal, continental climate (Newman 1966:171; see also Eichenlaub 1979; Woods et al. 2003). This refers to Indiana's generally humid climate with cold winters and warm summers (Newman 1966:171). In northern Indiana specifically, the climate is microthermal and includes cooler temperatures similar to those farther north and east (Newman 1966:171). Eichenlaub (1979) places this portion of the state within the Great Lakes climate region with the attendant influence of the lake on temperatures and precipitation. Further, Eichenlaub (1979:194, Figure 53) classifies the county as humid continental (*Dfb*) following the Köppen Climate Classification System. This climate is described as containing cold and dry winters and mild and moist summers (see also Schaal 1966:166). Newton County is characterized by a coefficient of continentality of approximately 44-45 (Eichenlaub 1979:Figure 56) which is a measure of the strong influence of Lake Michigan on local climate. Without Lake Michigan, northern Indiana would be much colder during the summer months due to the moisture in the air retaining heat, but the proximity to the lake also means that surface winds in the area are higher comparatively to other areas of Indiana (Schaal 1966:169).

Average rainfall for Newton County is 37.32 inches a year while average snowfall is 28.3 inches a year (Barnes and Osterholz 1998:4-5; see also Woods et al. 2003). The mean minimum January temperature is between 18 to 20 degrees Fahrenheit while the mean maximum January temperature is between 34 to 38 degrees Fahrenheit (Schaal 1966:162). Summer temperatures vary accordingly with intense heat, the mean minimum July temperature is 62 to 64 degrees Fahrenheit and the mean maximum July temperature is between 86 to 90 degrees Fahrenheit (Schaal 1966:162; see also Eichenlaub 1979).

Newton County is entirely within the Central Corn Belt Plains (CCBP) Level III Ecoregion 54 (Woods et al. 2003). Northern Newton County falls primarily within the Level IV ecoregion 54d, the Kankakee Sand Area, while the northern most reaches fall within 54c, the Kankakee Marsh (Figure 16). Southern Newton County is entirely within Level 54a, the Illinois/Indiana Prairies (IIP). The majority of the survey areas fall within ecoregions 54a with three falling within ecoregion 54d. Ecoregions 54c and 54d experience up to 23 more frost free days compared to ecoregion 54a, which averages about 160 to 170 frost free days (Woods et al.

2003). Mollisols, primarily Aquolls, dominate the CCBP in both the Kankakee Marsh and Sand Areas (54c and 54d).

Minor climatic properties may be influenced by natural features within the landscapes, creating variably hospitable small scale climatic zones. These features would have affected prehistoric and historic utilization of the local environment and created small scale preferential or detrimental climactic conditions. Newman (1966:174-176) refers to these areas as "meso-climates" and states that they are mainly caused by changes in wind patterns as a result of natural landforms such as major river valleys, the shore area around large lakes, high plateau areas and springs. These meso-climates, though very difficult to describe retroactively, may have played a part in the habitation patterns among prehistoric peoples.

The modern climate of Indiana is not an accurate reflection of the climate over the last 12,000 years. As other archaeologists have noted (e.g. King 1993:236), the reconstruction of paleo-climates has been hampered by ambiguous climatic data that have been used to support conflicting interpretations. Climatic change has been documented and can be discussed in generally accepted terms.

Biotic Communities

Flora

As the climate shifted in Indiana after the end of the Pleistocene, so did the plant species. Figure 17 presents the transformation of the vegetative sequence constructed by Shane and adapted by Don Cochran (Cochran and Buehrig 1985:9, after Shane 1976; see also Bond et al. 2001; Shane et al. 2001) to reflect the general changes that took place within the region since the retreat of the glacial ice. Shane (1976, Shane et al. 2001) discusses regional changes within the Ohio Valley that have broad scale implications for the U.S. Midwest and Great Lakes regions. The trends identified were a relatively rapid and dramatic change in vegetation from open parkland to closed forest was the result of a rapid acceleration in the rate of warming (Whitehead 1997:105). Figure 17 is a regional generalization and does not cover the project area specifically. It should be emphasized that vegetation varied greatly over time and space, and the introduction and extinction of species across Indiana produced a forest with mixed vegetation (Whitehead 1997:105). Vegetative responses to the expansion of prairie and the drying of the climate have not been universally recorded in sediments for the Great Lakes Region, but it has been found in Indiana and Illinois (Holloway and Bryant 1985:236-237).

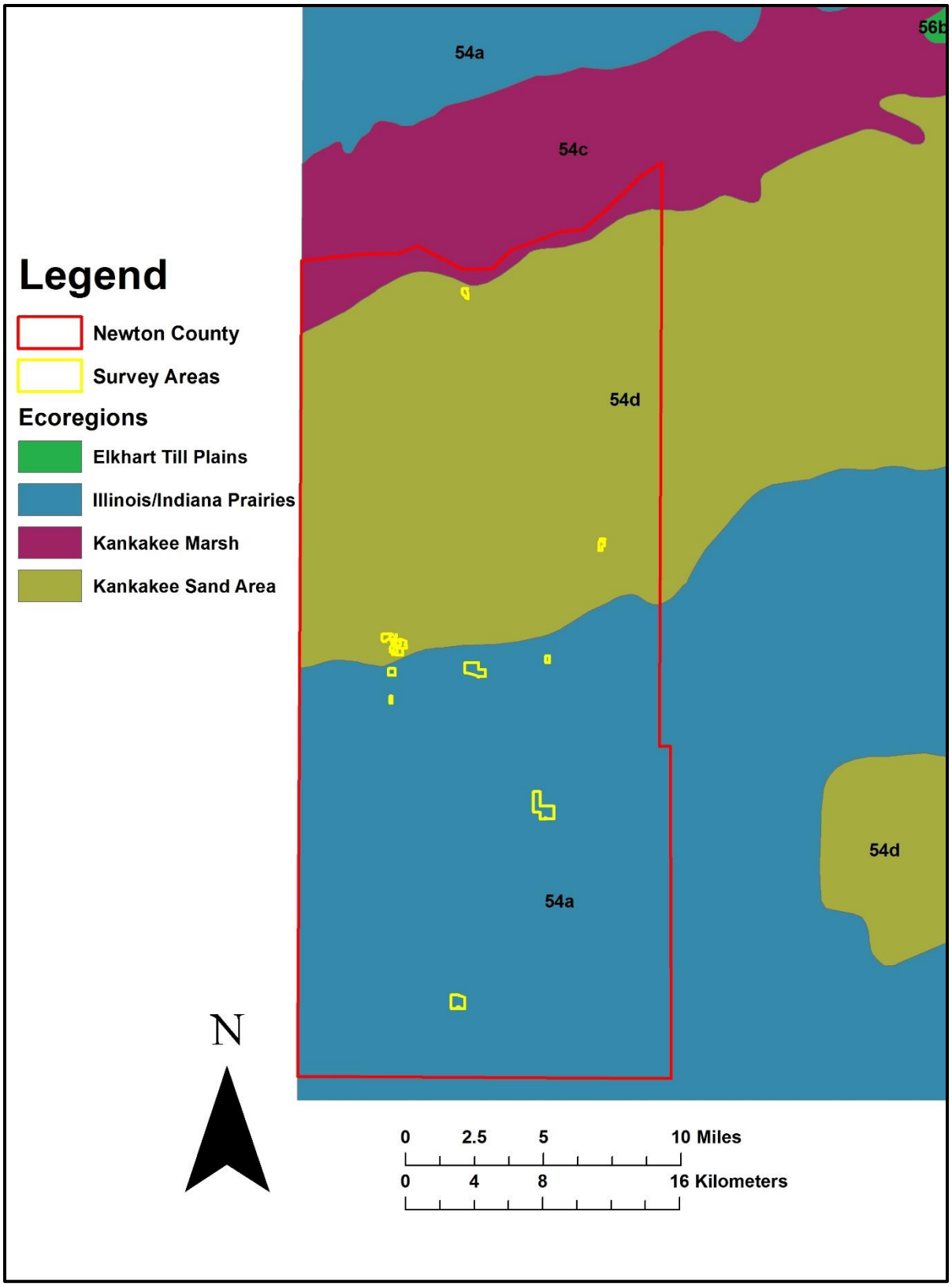


Figure 16: Level IV Ecoregions (Woods et al. 2003) for Northwest Indiana.

Utilizing historic documents, more detailed descriptions of the vegetation in northern Indiana can be given. These historic forest descriptions should be representative of the deciduous vegetation that occurred at least as far back as the Woodland Period. Newton County is known to have had prairies in the southern portion of the county and wetlands in the north (Taylor 2009:12). Petty and Jackson's (1966) study of the pre-Euro-American settlement vegetation of Indiana in 1816 shows Newton County as predominantly wetlands with some pockets of oak-hickory forest and two tongues of dry prairie associations (Figure 18). However, oak-hickory forests also are found to be in balance and intertwined with beech-maple and western mesophytic forests (Petty and Jackson 1966:285-286). These forest communities are adapted to the topographic and edaphic variations throughout Indiana and thrive at their locations (Petty and Jackson 1966:286). During the time of European immigration to the Americas, oak-hickory was slowly being replaced by other competing associations like beech and maple. However, white oak was highly valued by the new settlers, which allowed oak-hickory to survive (Petty and Jackson 1966:287). All of the survey areas for the current project are distributed throughout the wetlands and dry prairie vegetative regions of the county (see Figure 18).

The understories (layer of vegetation beneath the canopy) within oak-hickory forests are generally less developed in comparison to other forest communities. Maple and beech tree reproduction can occur within the understory of mature oak-hickory stands, and along with this reproduction within the understories, only one or two other species will be found (Petty and Jackson 1966:287). Species like hop hornbeam, blue beech, service berry or dogwood are found within the understory. Shrub species commonly found within oak-hickory forest are blueberry, huckleberry, snowberry and nannyberry. Herbs within oak-hickory communities include pussy-toes, common cinquefoil, wild licorice, tick clover, blue phlox, waterleaf, bloodroot, Joe-pye-weed, woodland asters, goldenrods, wild geranium and bellwort. These herbs are most prominent during late summer and autumn (Petty and Jackson 1966:287-288).

The historic Prairie Peninsula of northwest Indiana once covered 13 percent of the Indiana landscape. More recently, prairie lands predominantly are found in designated low maintenance areas such as settlement-era cemeteries, and along highways and railroads. While prairie lands often appear to be simple grasslands, they are a complex system of plants and animals. The development of prairies played a large part in the fertility of both Indiana and the United States as a whole. The species of plants that constituted the historic prairies were a mix of both northern and southern species. Due to different growth rates and seasonal variation, prairies provided year-round resources and fertile soils (Petty and Jackson 1966:288-289). There were three survey areas and part of another survey area in the dry prairie area within central Newton County (see Figure 18). The boundaries of the dry prairies and wetlands undoubtedly has fluctuated in the past.

<table>
<tr><td>A.D. 2000</td><td rowspan="2">Historic</td><td rowspan="8">Deciduous Forest</td></tr>
<tr><td rowspan="2">A.D. 1000</td></tr>
<tr><td rowspan="2">Late Woodland</td></tr>
<tr><td rowspan="2">0</td></tr>
<tr><td>Middle Woodland</td></tr>
<tr><td>1000 B.C.</td><td>Early Woodland</td></tr>
<tr><td>2000 B.C.</td><td rowspan="2">Late Archaic</td></tr>
<tr><td>3000 B.C.</td></tr>
<tr><td>4000 B.C.</td><td rowspan="3">Middle Archaic</td><td rowspan="2">Prairies and Open Vegetation</td></tr>
<tr><td>5000 B.C.</td></tr>
<tr><td>6000 B.C.</td><td rowspan="3">Deciduous Forest</td></tr>
<tr><td>7000 B.C.</td><td rowspan="3">Early Archaic / Late Paleoindian</td></tr>
<tr><td>8000 B.C.</td></tr>
<tr><td>9000 B.C.</td><td rowspan="2">Pine Maximum</td></tr>
<tr><td>10000 B.C.</td><td rowspan="9">Early Paleoindian</td><td rowspan="2">Conifer-Deciduous Woodland</td></tr>
<tr><td>11000 B.C.</td></tr>
<tr><td>12000 B.C.</td><td rowspan="2">Boreal Forest</td></tr>
<tr><td rowspan="2">13000 B.C.</td><td>Park Tundra</td></tr>
<tr><td>Tundra or Open Areas</td></tr>
<tr><td>14000 B.C.</td><td>Periglacial Zone</td></tr>
<tr><td>15000 B.C.</td><td>Wisconsin Ice</td></tr>
</table>

Figure 17: Vegetation Sequence of Central Indiana (Cochran and Buehrig 1985:9, after Shane 1976).

In Indiana, wetland vegetative communities are advantageous for humans because of the wildlife and the plant life they house (Meyers 1997:69). Indiana wetlands display the highest diversity of life among local habitats, including providing refuge for many endangered species. Wetland areas include swamps, bogs, fens, marshes, seep springs, sloughs, bottomlands, potholes, wet meadows or prairies, and most areas are situated along the margins of lakes, reservoirs, rivers and streams. Wetlands offer ways for humans to control water-based resources and indeed the resource of water itself. Wetland communities are decreasing within Indiana, but they can still be found within places like Newton County (Meyers 1997:67). Beaver Lake within Newton County was a diverse and seemingly inexhaustible wetland resource to both native people and Euro-American settlers before it was drained in from the 1850s to 1894 (Heistand 1951:10; Taylor 2009:12). Prehistorically, wetlands would have been economically important,

and potentially attracted people from atypical distances seasonally (Surface-Evans 2015). The fluctuations of surface moisture seasonally and through the centuries would have exerted a great influence on prehistoric activity distributions.

Beaver Lake and the Kankakee Marsh, surrounding the Kankakee River across northern Indiana and parts of Illinois, were areas of natural resources favored by both prehistoric and historic peoples (e.g., Surface-Evans 2015). The first historically recorded population to utilize the marsh regions in northern Newton County were the Potawatomi, then French fur traders, and lastly Euro-American farmers and settlers before draining (Meyer 1935:366). Throughout its use, Beaver Lake and the Kankakee Marsh have transitioned from a largely unmodified landscape with thousands of acres of swamps, marshes, and sand islands to vast tracts of agricultural land used to raise livestock and grow cereals (Meyer 1935:366-368). The native vegetation of the Kankakee Marsh is separated into three formations including: the river swamp, the marsh, and the upland. Each of these formations has distinct native cover, but also can overlap in the case of the swamp and marsh (Meyer 1935:365).

The river swamp native vegetation consisted of extraordinarily sized timber (Meyer 1935:365). Tree stands up to three miles in width bordered the course of the Kankakee River. Trees up to two to four feet in diameter are known and the dominant species included ash, elm, maple, oak, and birch trees (Meyer 1935:365). The marsh landscape was dominated by rank sedges, grasses, wild hay fields, and wild rice (Meyer 1935:365-366). This flora was interrupted sparsely by pin oak swamp timber outliers and other associated tree species. Occasional ponds or lakes contained lily pads, cattails, reeds, and flags (Meyer 1935:366). Within the marshes were seasonal plants that provided seasonal huckleberries and cranberries. Draining of the marshes led to the disappearance of wild rice and marsh hay except in poorly drained pastures lands (Meyer 1935:365-366).

The uplands consisted mainly of sand dunes and other “islands” that rose above the shallow waters of the marsh and swamp areas by up to 35 feet (Meyer 1935:366). There are some remnants of these islands throughout the area. This region was marked by thin herb or moss ground covering because of the high soil acidity. Other vegetation that was present in the upland area included thin strands of medium-sized trees or scrub that were made up of mainly white oak and black oak (Meyer 1935:366). The vegetation, though limited, was utilized by humans and animals alike as a food source. The fruits and nuts that were available seasonally included blueberries, blackberries, dwarf huckleberries, dewberries, and hazelnuts (Meyer 1935:366).

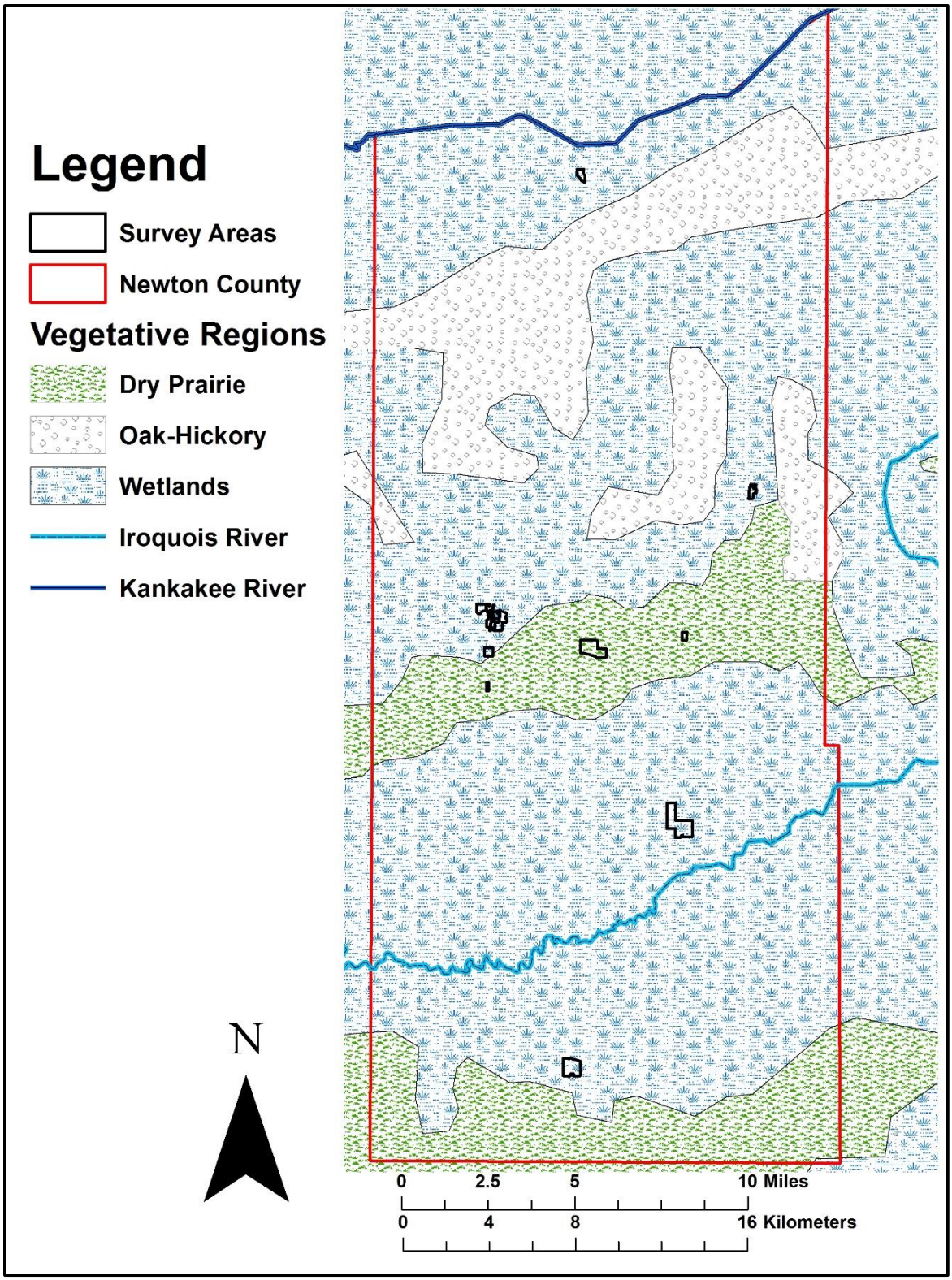


Figure 18: Pre-Euro-American Settlement Vegetation (after Petty and Jackson 1966).

Fauna

A range of animal species lived in Indiana during the late Pleistocene and Holocene. Various Pleistocene fauna are known from Indiana including bison, giant beaver, caribou, Virginia deer, dire wolf, wapiti, horse, mammoth, mastodon, musk-ox, peccary, sloth and perhaps moose (Lyon 1936; Moodie 1929). Recent investigations have expanded this list to include moose, caribou, black bear, giant short-face bear, giant tortoise, white-tailed deer, Canada goose, armadillo, jaguar, sabertooth tiger and camel (Richards and Whitaker 1997:156). By at least 10,000 years ago, many of the larger mammalian species went extinct for reasons that are still debated.

In 1816, an estimated 66 mammalian species were present in Indiana (Mumford 1966:475). Some of the common mammals found in Indiana include opossum, eastern cottontail, eastern chipmunk, white-tailed deer, beaver, deer mouse, white-footed mouse, meadow vole, pine vole, muskrat, southern bog lemming, Norway rat, coyote, red fox, gray fox, raccoon, long-tailed weasel, various species of squirrels, mice and shrews. Twelve species are listed as extinct in Indiana including bison, wapiti, porcupine, gray wolf, red wolf, black bear, fisher, eastern spotted skunk, wolverine, river otter, mountain lion and lynx (Mumford 1966:475).

Historic sources also report a large variety of other fauna in Indiana. Webster (1966:455-473) identifies 366 species of birds. A total of 177 fish was identified in the state (Gammon and Gerking 1966:401-425). Approximately 200 species of mollusks and 400 species of crustaceans occurred in Indiana waters. Approximately 82 species of amphibians and snakes have been identified (Milton 1966:426-451). These can be subdivided into 19 species of salamanders, two species of toads, 11 species of frogs, six types of lizards, some 30 types of snakes, and 14 turtle varieties (Milton 1966:426-451).

The Kankakee Marsh and Beaver Lake regions of northern Newton County contain a variety of flora and fauna species and were heavily utilized by both prehistoric and historic populations as hunting and trapping grounds (Meyer 1935:367-373; Surface-Evans 2015). Animals that would have been present could have included those native to wetlands and oak-hickory forests. Beavers and muskrats were prized within the wetland region of Newton County (Meyer 1935:370; Mumford 1966:481). The muskrats from the Kankakee region provided a substantial amount of the furs available on the market during the earlier days of trapping. White-tail deer, found in both upland and wetlands habitats, were hunted heavily until the 1850s (Mumford 1966:486). Ducks and other waterfowl would flock to the marshes and swamps of Newton County, thus making them prime targets for hunters of the past, and even today at hunting resorts located along the Kankakee (Meyer 1935:374-375).

Summary

As the ecological and natural setting of the project area changed and evolved over the last several thousand years, human settlement also would have changed. Settlement and use of resources within the project area would have been influenced by potential plant and animal resources and, conversely, may have influenced changes in flora and fauna (Delcourt and Delcourt 1991:87-89). The diversity of habitats that existed in the project area would have attracted prehistoric populations for the wide variety of natural resources available as food, water sources, and raw materials in the production of tools, clothing, adornment and shelter.

The environmental diversity of the northern region of Newton County during prehistoric times and into the mid-1800s has led to the area being compared to the Everglades in Florida (For Goodness Sake Productions 2012). The thousands of acres of fertile marshland contained in Newton County were a constant source of food, shelter, and other resources for seasonal and permanent occupants. Called "God's renewable pantry" prior to dredging and draining, the vegetation-rich marshes and swamps, mixed with upland sand dunes and islands, were a wildlife haven filled with muskrats, beavers, deer, and many other species of fauna prized for their pelts and meat (For Goodness Sake Productions 2012). Variety and population size were key factors in selecting northern Newton County as a hunting and trapping treasure trove by both prehistoric and historic populations.

Archaeological Background

In this section, the archaeological background of Newton County is reviewed. The background information was analyzed for data relevant to an understanding of archeological resources expected to be found during this investigation both in terms of site types and densities, as well as the history of the landscape. A new records review was conducted at DHPA by Kevin C. Nolan on July 5, 2016, the results of which are added to the previous FY2014 and FY2015 HPF grant research in Newton County (Leeuwrik et al. 2015; Leeuwrik et al. 2016). The results of this review are presented in Table 2 which provides the references for previous investigations including past surveys. Following Swihart and Nolan's (2013, 2014) procedure, the results are segregated by civil townships, which are shown in Table 2. The Positive column indicates the number of surveys that encountered artifacts and reported any sites. The S/P column is a ratio of the number of surveys conducted by the number of surveys that were positive. The P/S column is a ratio of the number of positive surveys to total surveys. These ratios give an approximate index of the average density of the archaeological sites in the county and in each civil township. The results show that on average sites are encountered in about one of every 3.1 surveys in Newton County with an average positive density of 0.40. Prior to the current survey, 371 cultural components contained within 343 archaeological sites had been recorded in Newton County

(Volume 2, Appendix A). Summaries of site components and recovered projectile points are presented in Table 3, Table 4, and Table 5.

The information in Table 2 shows the number of investigations by townships within Newton County. The central portion of the county, especially Jackson (n=4) and Washington (n=4) townships, continue to be characterized by a low frequency of investigation. In contrast, both the northern portions of the county, e.g., Lincoln (n=24) and Lake (n=14), and the southern portions of the county, e.g., Grant (n=15) and Jefferson (n=15), have been investigated at a higher rate. The high volume of surveys conducted in Lincoln Township reflects the expansion of Roselawn (on the border of Newton and Jasper Counties) as a tourist destination. The irregular distribution between townships likely is the result of uneven population density and development across the county. With such low numbers of investigations in certain areas such as Jackson and Washington townships it is difficult to gauge true archaeological densities in some parts of the county. Based on data in Table 2: Summary of Previous Investigations in Newton County, site densities are higher in Beaver, Jackson, McClellan, and Washington townships, although these values can be misleading given the low number of surveys conducted in several townships (e.g., Jackson).

In 2014, Ball State University was awarded a FY2014 Historic Preservation Fund Grant to conduct surveys in the southern portion of Newton County with a focus on the Iroquois River. The townships that were targeted include Washington, Iroquois, Jefferson, Grant, Beaver, and Jackson. The addition of eight survey areas from the FY2014 HPF Grant and additional survey areas from the most recent records check conducted effected the average S/P ratio by lowering it from sites encountered every 3.33 surveys to an average of 2.9 surveys. The P/S ratio was also raised from a positive density of 0.29 to 0.34 between FY2014 to FY2015. This may indicate that the previous CRM surveys do not adequately characterize the true density of the archaeological record at the county level.

With a current ratio of one positive survey for every 3.12 CRM projects and HPF grant project survey areas (Table 2), Newton County exhibits a slightly elevated abundance of archaeological resources compared to an S/P ratio of 2.8, 2.7, and 1.94 for Jasper, Dearborn, and Hamilton Counties, respectively (Macleod et al. 2015; Swihart and Nolan 2013, 2014). This elevated S/P ratio for Newton appears to reflect increased attention paid to the county through the FY2014 and FY2015 Historic Preservation Fund grants by AAL (Leeuwrik et al. 2015, Leeuwrik et al., 2016). Although these grants have improved what is known for Newtown County, survey intensity still lags behind other Indiana counties like Hamilton in central Indiana, Dearborn in southern Indiana, and Montgomery in west central Indiana (Macleod et al. 2015; Murray et al. 2011; Swihart and Nolan 2013:Table 3, 2014:Table 2).

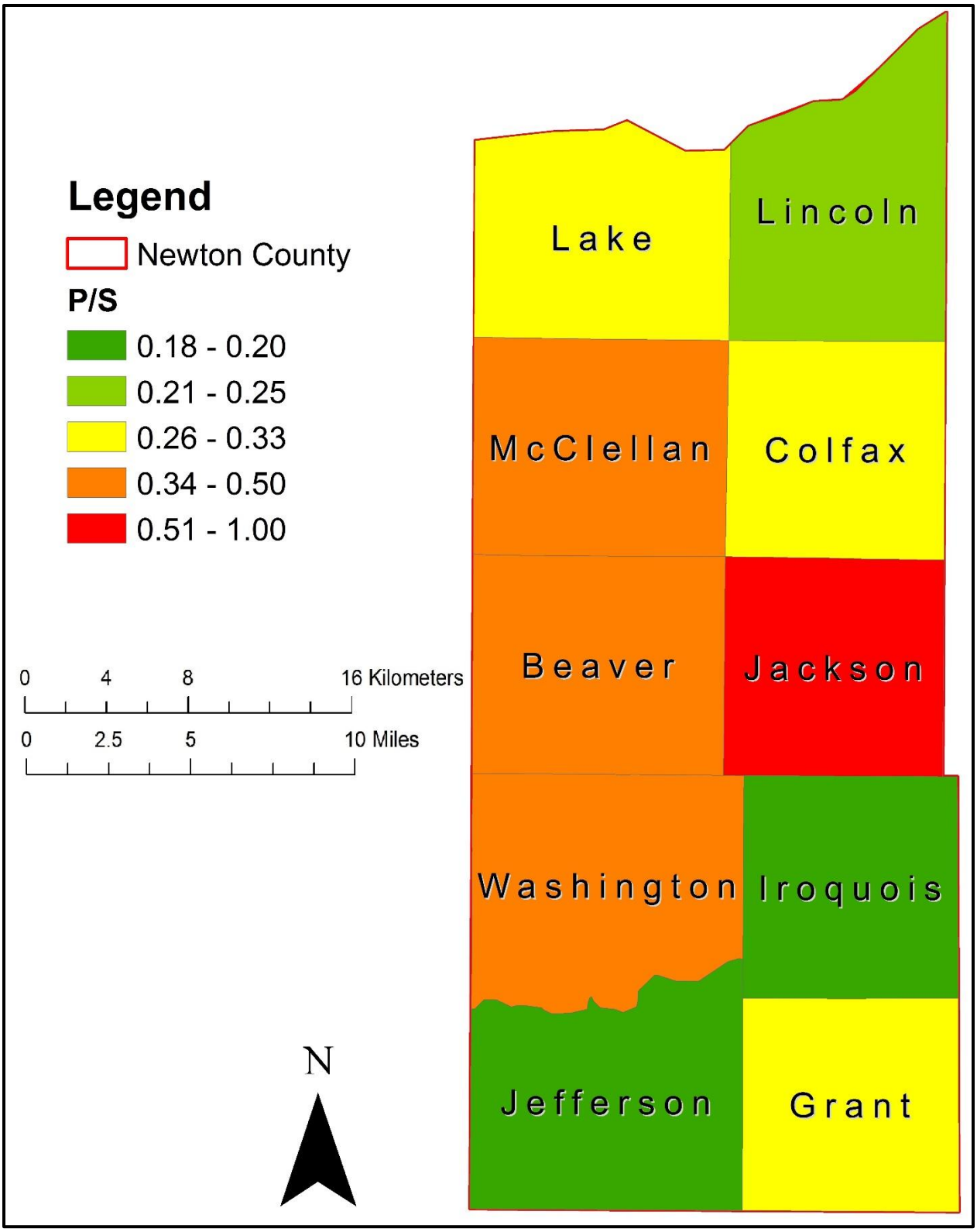


Figure 19: Ratio of positive surveys to total surveys within the Civil Townships in Newton County.

Table 2: Summary of Previous Investigations in Newton County

Civil Township	Count	Positive	S/P	P/S	References
Beaver	10	4	2.5	0.40	(Brammer 1995; Conover 1985a; Coon 2012a, 2012b; King 2007; Leeuwrik et al. 2016; McAlpine 2004; Westermeier 1997; Zoll and King 2010; Zunker 2001)
Colfax	10	3	3.3	0.30	(Adderley 2002; Bennett 2016; Keene 2010; Pace 1987; Parsell 2012; Plunkett 2015, 2016; Stillwell 2001, 2004, 2010b)
Grant	15	5	3.0	0.33	(Beard 1991; Conover 1985b; Cree 1991; Holycross 2001; King 2010a, 2010b; Leeuwrik et al. 2015; Stafford 1988; Stillwell 2002, 2005, 2010a; Wappenstein 1999; Zoll 1991; Zunker and Nagle 2002) *Leeuwrik et al. 2015 includes two survey areas.
Iroquois	11	2	5.5	0.18	(Burkett 1993; Cochran and Cox 1977; Conover 1983; Coon 2008; Helmkamp and Kanne 2001; Holycross 1997; Hutchinson 1986; King and Zoll 2009; Leeuwrik et al. 2015; Stillwell 2000) *Leeuwrik et al. 2015 includes two survey areas.
Jackson	4	4	1.0	1.00	(Leeuwrik et al. 2015; Leeuwrik et al. 2016) *Leeuwrik et al. 2016 includes three survey areas
Jefferson	15	3	5.0	0.20	(Adderley 1996; Cochran 2006; Conover 1986a, 1986b; Coon 2016; DeRegaucourt 1982; Helmkamp and Coon 1999; King 2010c; Leeuwrik et al. 2015; Miller 2006, 2014; Pace 1984; Rourke-Jordan 1979; Stillwell 2015; Wepler 1978)
Lake	14	4	3.5	0.29	(Bellis 1979, 1984; Bellis et al. 1979; Coon 2010; Craig 2015a, 2015b; Donaldson 2013; Evans 1990; King 2009; Leeuwrik et al. 2016; Lumbis 1984; Moffatt 2010; Stillwell 2006; Waters 1999)
Lincoln	24	6	4.0	0.25	(Angst 1998; Beard 1994; Bellis et al. 1979; Bennett 2000; Black 2005; Black and Miller 2003; Conover 1986c; DeRegnaucourt 1976; Fabyan 1979, 1982; Greenhouse et al. 2000, 2001a; Greenlee 2007; Helmkamp 2000; Leeuwrik et al. 2016; McCord 2004; Rosenberg 2004; Settle and Parsell 2016; Stafford 1987; Stillwell 1999, 2006; Tomak 1984, West 1988) *Leeuwrik et al. 2016 includes two survey areas
McClellan	10	4	2.5	0.40	(Anslinger 1993; Beazley and Bazzill 2013; Cantin 1995; Conover 1985a; Greenhouse et al. 2001b; Keene and Hayes 2005; Leeuwrik et al. 2016; Moffatt 2009; Mangold 2003) *Leeuwrik et al. 2016 includes two survey areas
Washington	4	2	2.0	0.50	(Greenhouse et al. 2001c; Leeuwrik et al. 2015; Stillwell 2013) *Leeuwrik et al. 2015 includes two survey areas.
Unknown	2	1	2.0	0.50	(Fabyan ca. 1976-1979; White et al. 2007)
Total	**119**	**38**	**-**	**-**	
Average	**10.8**	**3.45**	**3.12**	**0.40**	

Table 3: Site Components Recorded Within Newton County (Division of Historic Preservation & Archaeology 2016)
***bold period headings include all sub-periods**

Component	No.	Number of Multicomponent sites included in total
Unidentified Prehistoric	**152**	**42 Multicomponent**
Paleoindian	**0**	
Archaic	**12**	**6 Multicomponent**
Early Archaic	3	2 Multicomponent
Middle Archaic	1	1 Multicomponent
Late Archaic	7	2 Multicomponent
Unknown Archaic	1	1 Multicomponent
Woodland	**45**	**32 Multicomponent**
Early Woodland	4	4 Multicomponent
Middle Woodland	4	4 Multicomponent
Late Woodland/Late Prehistoric	10	6 Multicomponent
Unknown Woodland	27	18 Multicomponent
Mississippian	**2**	
Protohistoric/Contact	**5**	**2 Multicomponent**
Historic	**155**	**25 Multicomponent**
Unknown	**25**	

Table 4: Previously Documented Points Within Newton County (Prior to Survey)

Cultural Period	Projectile Point Types
Paleoindian	
Early Archaic	Palmer, Charleston Corner Notched, Rice Lobed, MacCorkle Stemmed, Kanawha Stemmed, St. Albans Side Notched, Thebes, Kirk Corner-Notched
Early-Middle Archaic	Graham Cave Side Notched
Late Archaic	Matanzas, Table Rock Stemmed, Riverton, Merom Cluster, Brewerton Eared-notched, Brewerton Side-notched, Matanzas Side notched, Matanzas Cluster, Bottleneck Stemmed
Terminal Late Archaic	Genesee Cluster
Early Woodland	Adena Stemmed, Motley Stemmed
Middle Woodland	Affinis Snyder, Snyders
Late Woodland/ Late Prehistoric/Mississippian	Madison, Unclassified Side Notched, Unclassified Corner Notched, Unclassified Flared Stem, Triangular Cluster

Table 5: Site Types Recorded Within Newton County
(Data from SHAARD, CRM and research reports prior to survey)

Prehistoric Types	No.	Historic Types	No.
Burial	3	Agricultural Field	5
Lithic Scatter	131	Agricultural Outbuilding	1
Ceramics	1	Cabin	3
Habitation	1	Historic Scatter	55
Camp	1	Farmstead	1
Mound	1	Wigwam	3
Prehistoric Scatter	1	Isolated Find	38
Village	1		
Isolated Find	84		
Unknown	6		

Although the first federally mandated survey within Newton County did not take place until 1976 in Lincoln Township, prehistoric archaeological sites have been known in the county since at least the 1950s (DeRegnaucourt 1976; Heistand 1951). Many of these sites are poorly documented and their exact locations remain in question. Some sites, however, have been field verified through more recent investigations (e.g., Keene and Hayes 2005). Many of the sites from Heistand's book have been added to SHAARD along with very brief descriptions of the artifacts encountered by the collectors or by the author himself.

Over the past 40 years, investigations predominantly have been surface surveys and only a small percentage of identified sites have been tested or excavated. Perhaps the most extensive archaeological work undertaken in the general area was a Phase II survey was conducted in 2004 as part of a Section 106 grant within a 390 acre area of the Kankakee Marsh in Lake County, immediately north of Newton County (Surface-Evans et al. 2005; Surface-Evans 2015). Subsurface testing was done on five sites found during previous Phase I survey (Kullen and Greby 2003). This project included 13 hand excavation units, mechanical excavation of 34 trenches, geophysical survey of three 20m x 20m grids, and pedestrian survey of the western portion of site 12-La-91 (Surface-Evans et al. 2005:258). In this excavation, Surface-Evans found significant cultural deposits in all five sites and recommended either avoidance or Phase III mitigation. Contained in the cultural deposits were lithic artifacts such as flakes, bifaces, groundstone tools, and prehistoric ceramics. Diagnostic artifacts were attributed to the Early to Late Archaic, Middle Woodland, Late Woodland, and Upper Mississippian cultural periods (Surface-Evans et al. 2005:261-263).

Surface-Evans's project was a Section 106 Phase II National Register of Historic Places (NRHP) evaluation focused on increasing the understanding of the archaeology of the wetlands of northwestern Indiana. Previous archaeological work in this region often has done under salvage conditions and often has resulted in poor data quality (Surface-Evans et al. 2005:263). A similar dearth of archaeological information applies to Newton County; especially in the Kankakee Marsh region. Both Newtown and Lake counties have undergone little economic development which has led to a limited understanding of the nature and trajectory of prehistoric use of these areas. Surface-Evans claims that the reason for this neglect is the tendency for archaeologists to group wetlands into a homogenous category which does not allow for adequate examination of potential wetland adaptations (Surface-Evans 2015:186). Within these wetland areas are various eolian-fluvial dunes which provide elevated, dry, landforms. Evidence of substantial dune use in the Kankakee Marsh dates as far back as the Late Archaic where groups utilized these landforms as hunting camps. Beginning in the Middle Woodland period, use of dunes transition to semi-permanent seasonal camps. Based on artifact inventories and density of Middle Woodland features at sites 12-La-526 and 12-La-84, Middle Woodland groups were utilizing the marshes more intensively and focusing on hickory nut extraction (Surface-Evans 2015:180-182).

More permanent seasonal use of the Kankakee Marsh continued to develop through the Late Woodland and Upper Mississippian periods, which is supported through the prevalence of features associated with those culture periods, including substantial numbers of post molds (Surface-Evans 2015:185-186). Similarities in wetland adaptations and settlement patterns have been noted between the Kankakee Marsh and Beaver Lake in McClellan Township before historic draining activities. Prior to draining, inlets, islands, and knobs around the lake's shoreline were a preferred place for prehistoric campgrounds where a diverse range of plants and animal species could have been exploited (Heistand 1951:36). The unique environmental and biotic qualities of Beaver Lake and the Kankakee Marsh made such locations attractive to prehistoric populations occupying northwestern Indiana and northeastern Illinois.

The majority of the investigations listed in Table 2: Summary of Previous Investigations in Newton County are smaller surveys or records checks that documented little, to no, cultural material. Several larger Phase Ia surveys have been conducted within the county, however, and the results of this work are summarized here. In 2003, the Indiana Division of Historic Preservation and Archaeology conducted surveys at J.C. Murphy Lake and the Willow Slough Fish and Wildlife area prior to the re-contouring of a few eroding sand islands. Nine new sites (12-N-20 to 12-N-28) were documented during three reconnaissance surveys of the targeted islands (Mangold 2003:1). During surveys 201 artifacts were recovered from nine sites including ceramic sherds, lithic debitage, projectile points, faunal fragments, and a Lincoln cent (Mangold 2003:3-12). The ceramic sherds consisted mainly of grit or shell-tempering with one Havana Dentate Stamped sherd (12-N-20), which indicates Upper Mississippian, Middle Woodland, and Late Woodland occupations, respectively (Mangold 2003:2). Three diagnostic projectile points were recovered which include a Middle Woodland Snyders point (12-N-24), a Late Archaic Riverton point (12-N-24), and a Late Archaic Brewerton point (12-N-25) (Mangold 2003:8-9). One other diagnostic lithic was a Middle Woodland lamellar blade of unknown chert (12-N-24). The DHPA found that sites 12-N-20 to 12-N-23 and 12-N-28 would not be affected by the proposed re-contouring. Of those sites affected by the re-contouring, 12-N-26 and 12-N-27 were not found eligible for NRHP status and no further work was recommended (Mangold 2003:13). Sites 12-N-24 and 12-N-25 were found to be potentially eligible for the NRHP and additional work was recommended if re-contouring would have adverse effects on site integrity (Mangold 2003:13).

A Phase Ia investigation of 505 acres of land was conducted by Archaeological Research, Inc. in 2005 within McClellan Township (Keene and Hayes 2005). Their field methods consisted of a combination of pedestrian survey and shovel testing. Within the project areas were two previously recorded sites (12-N-218, 12-N-219) located upon two sandy rises that use to be islands within Beaver Lake prior to drainage (Keene and Hayes 2005:24). This investigation did not recover any archaeological materials or encounter any new sites (Keene and Hayes 2005:23-25).

In 2006, approximately 60 acres was surveyed for the Kentland Municipal Airport in Jefferson Township. This survey was carried out by Archaeological Resources Management Service of Ball State University. This survey identified two previously undocumented sites (12-N-29, 12-N-30). Site 12-N-29 consisted of an undiagnostic isolated flake of an unidentified chert (Cochran 2006:3). Site 12-N-30 consisted of an undiagnostic isolated flake consistent with Attica chert (Cochran 2006:4). Neither site was recommended for further study or archaeological assessment.

In 2014, the AAL conducted a Phase Ia survey of eight survey areas in the southern portion of Newton County as part of FY2014 Historic Preservation Fund grant (Grant #18-14-FFY-03) (Leeuwrik et al. 2015). Approximately 902 acres were surveyed, 1,329 artifacts collected, and 89 previously unrecorded sites were documented. The strongest cultural presence of prehistoric occupation was Late Archaic, followed by a possible Middle Woodland component, then other unidentified Prehistoric periods. The Historic period made up the vast majority of the artifact assemblage accounting for 1,274 artifacts collected. In addition to the field surveys, two collector visits were made by archaeologist Kevin C. Nolan, Colin Macleod, and Erin Steinwachs, which supplied information pertaining to unrepresented artifact classes and probable site types within Newton County and neighboring Jasper County.

In 2015, the AAL conducted a Phase Ia survey of nine survey areas in the northern portion of Newton County as part of FY2015 Historic Preservation Fund grant (Grant #18-15FFY-05) (Leeuwrik et al. 2016). Approximately 856 acres were surveyed, 2,286 artifacts collected, and 83 previously unrecorded sites were documented. The strongest presence of prehistoric occupation recorded was Late Archaic, followed by infrequent Early Archaic, Late Archaic/Early Woodland, Late Woodland/Late Prehistoric, Late Prehistoric, and unidentified Prehistoric periods. The Historic period accounts for majority of collected artifacts as 1,761 artifacts were recovered.

In addition to the field surveys, one collector visit was made by archaeologist Kevin C. Nolan and graduate student Jamie Leeuwrik, which supplied information pertaining to the unrepresented artifact classes and probable site types within Newton County. In December of 2015, Nolan and Leeuwrik visited [redacted] to examine his private collection. According to [redacted], his collection came from agricultural fields and wooded areas on his property in Lincoln Township, some of which were investigated through Phase Ia survey of Survey Area 7 as part of FY2015 HPF grant in Newton County. The collection contained 95 diagnostic points with intact bases, 55 undiagnostic bifaces and flake tools, and 7 groundstone tools. All artifacts were organized, analyzed, and scanned where possible. The diagnostic collection exhibited a relatively even split between side notched (29.47%), stemmed (29.47%), and triangular (21.05%) styles. Side notched points suggest a possible strong Middle Archaic and Middle Woodland presence; whereas the triangular points suggest Late Woodland/Late

Prehistoric period occupations. The information collected from the [redacted] collection was consistent in some aspects to the [redacted] collection investigated during the FY2014 HPF grant in Newton County (Leeuwrik et. al. 2015:177-183). Such as, the high proportion of side notched points and stemmed points and Paleoindian projectile points types accounting for less than two percent of the collection in both the [redacted] and [redacted] collections. However, the most prolific periods of use indicated by the [redacted] collection do not match the official record from SHAARD, specifically the abundance of side-notched and stemmed points (i.e., Middle Archaic and Terminal Archaic/Early Woodland). Despite demonstrating a preference for Mississippian chert, the [redacted] collection also differs from the [redacted] collection by having a stronger overall Silurian chert representation (Leeuwrik et. al. 2015:177-183).

Recently, McCord and Cochran (2015:A253-255) reported on the number of mounds and earthwork sites in Newton County. Based on a literature review (e.g., Heistand 1951) and records check, they report nine possible sites containing either mounds (n=6) or earthworks (n=3). Five of these sites have not been assigned state site numbers assigned and the remaining sites include 12-N-97, 12-N-101, 12-N-180, 12-N-188, and 12-N-216. Of these, only one site (12-N-97) has been investigated, or field verified, to any degree. They observe that mounds tend to be located close to water, especially along the Kankakee River.

In summary, Newton County and the Kankakee marsh region has been extensively used beginning in the Late Archaic period continuing up through Upper Mississippian and even into the Historic period. Based on data contained in Table 3, Historic period sites (n=155) are most common in the county. Regarding prehistoric components, Woodland period sites are most common (n=45) followed by Archaic (n=12), Mississippian (n=2), and Protohistoric/Contact (n=5). According to McCord and Cochran (2015), several additional potential Woodland earthwork sites are known for the county, but have not been field verified or assigned trinomial site numbers. Although no Paleoindian sites are currently reported in the SHAARD database, White et al. (2007:279), based on collector information, reports two county sites (12-N-31 and 34) as containing Paleoindian material. As of this writing, it appears that site forms for these two resources have not been submitted to the Indiana Division of Historic Preservation & Archaeology.

What is slowly emerging from these data is that resource exploitation and settlement types evolved to fit the needs of prehistoric populations throughout time. Primary land use has been shown to reflect hunting camps and food collection and processing (Mangold 2009; Meyer 1935:367; Surface-Evans 2015:186). The abundance of natural resources in the marsh regions encouraged exploitation, and the upland islands and dunes provided favorable areas for settlement. The natural vegetation for the swamps and uplands were able to be collected and utilized as food sources without horticulture or in supplement to horticulture at other seasonal settlements (Meyer 1935:365-366). The prevalence of projectile points from multiple cultural

periods suggests that hunting was a popular activity which occurred in the marsh regions. The high amount of wildlife present provided ample sources of protein, which was even true into the historic period and today. Settlement in the area was more restricted to the upland regions and typically was seasonal, but people in later culture periods shifted to more permanent settlements as the hunter-gatherer subsistence lifestyle gave way to mixed subsistence strategies (Meyer 1935:367-368; Surface-Evans 2015:186). The presence of abundant features, such as post molds, hearths, and pits, also suggest some level of intensity in occupation during certain time periods (Surface-Evans 2015).

Culture History

In Newton County, sites and site components indicate that Native Americans inhabited the region from the Paleoindian period through the Historic period. Given the above described environmental background we can expect highly variable density of artifacts over space due to the interrupted distribution of habitable areas interspersed with wetlands (see also Surface-Evans 2015), and a variable distribution through time as moisture levels fluctuated during the Late Pleistocene through Holocene.

The majority of sites documented in Newton County are of unknown cultural affiliations. Of the known periods of occupation, the most frequently identified has been Historic (n=155), followed by Unidentified Woodland (n=27), and Late Woodland (n=12) (Division of Historic Preservation and Archaeology 2007). The prevalence of historic sites is to be expected as historic occupations typically display better preservation and a larger footprint than most prehistoric sites. The most dominant prehistoric sites being of Unidentified Woodland and Late Woodland cultural affiliation is distinct from neighboring counties (e.g., Macleod et al. 2015); however, this may not be representative of the true archaeological record due to low numbers of observations and limited extent of investigation. The absence of documented sites in SHAARD, low number of Paleoindian points recorded by Dorwin (1966:Figure 1), and low frequency of Paleoindian through Early Archaic points recorded by White et al. (2007) also is consistent with the low frequency of sites within the Midwest region (Shott 2004:208).

Paleoindian (~10,000 - 8,000 B.C.) culture in northern Indiana dates to the end of the Pleistocene, approximately 12,000 years ago ((Jones and Johnson 2008:2; Smith et al. 2009:21; Swartz 1981:4; White et al. 2007). Although considerable debate exists on the potential for pre-Clovis populations in the America (e.g., Bonnichsen et al. 2005), evidence currently is lacking for these early groups in Indiana. In northern Indiana, Paleoindian sites generally occur as small surface scatters that suggest small family bands. Debate continues as to subsistence strategies employed (e.g., Grayson and Meltzer 2003:588; Waguespack and Surovell 2003:348), but it seems likely that these early groups followed migrating herds and hunted large game such as Pleistocene megafauna in addition to limited hunting of smaller game and foraging of plant

resources. Artifacts include fluted Clovis/Gainey points, un-fluted Agate Basin, Hi-Lo, Holcombe, Plainview and Dalton points (Justice 1987). There are no previously documented Paleoindian sites in the SHAARD database for Newton County (Division of Historic Preservation and Archaeology 2007), but Dorwin (1966) and White et al. (2007) both report two sites for the county from local collections. AAL also identified two Paleoindian points in the [redacted] collection, one from the [redacted] collection, and 15 from the Vohlken collection (Leeuwrik et al. 2015; Leeuwrik et al. 2016; Macleod et al. 2015). Although the exact provenience of these collections is questionable, collectively they indicate that Paleoindians were present on the landscape in northern Indiana.

In the Early Archaic (ca. 8,000-6,000 B.C.) the warming climate caused changes in the ecology forcing local inhabitants to adapt their livelihood to the changes in the environment. The changing climate caused changes in the flora and fauna of the region (Shane 1976; Shane et al. 2001; Smith 1986:71). This offered more varieties of plant life and brought about the last extinctions of mega fauna which had begun to die off during the Paleoindian period (Grayson and Meltzer 2003:588). Sites in northern Indiana continue to be small but are distributed across the entire landscape (Munson 1986:280). Technological changes in tools and techniques occurred during this time including new hafting techniques and ground stone tools (Smith 1986:72). Three Early Archaic sites have been documented in Newton County (12-N-129, 12-N-153, and 12-N-312) (Division of Historic Preservation and Archaeology 2007; Leeuwrik et al. 2016:94).

During the Middle Archaic (ca. 6,000-3,000 B.C.) the climate continued to become increasingly warmer and drier, bringing more variety and stability for food resources. The climatic oscillation known as the Hypisthermal or Holocene Climatic Optimum (e.g., Robertson 2011:183) roughly coincides with the Middle Archaic time period. Although many have associated the Hypisthermal with a general warming trend, Lurie et al. (2009:756) have argued that its effects were minimal as permanent and seasonal wetlands were a major resource base for Archaic groups. Stone tools became more diversified in this era and side notched points appear along with ground stone tools (Stafford and Cantin 2009:299). One Middle Archaic site has been documented in Newton County (12-N-129), a situation mirrored in other data-deficient counties (see Miller et al. 2012) (Division of Historic Preservation and Archaeology 2007). As represented by the [redacted] collection from Newton County, the presence of side-notched points indicates the potential presence of Middle Archaic occupations in northwestern Indiana and more specifically the Beaver Lake region (Leeuwrik et al. 2015:114). In neighboring Ohio, Purtill (2009:578-584) has argued for a substantial decrease in Native American populations during the Middle Archaic based on a reduction in projectile point frequencies and radiocarbon dates.

During the Late Archaic (ca. 3,000-1,000 B.C.) the climate stabilized and the environment assumed a deciduous forest composition. Late Archaic sites are distributed broadly and are generally multicomponent (Miller 1941:60; Smith et al. 2009:22). The primary use of the Kankakee Marsh region during the Late Archaic has been shown to be seasonal and occupants

practiced hunting and resource extraction activities (Surface-Evans 2015; White et al. 2007). Some cultivation of native plants is indicated in regional datasets (e.g., Fritz 1999; Purtill 2009:586-587; Smith and Yarnell 2009:22). Pestles, axes, adzes, celts, bannerstones, gorgets and other ground stone artifacts are common in this period (Miller 1941:58; Stafford and Cantin 2009). Matanzas points make up the majority of Late Archaic points found in assemblages in Indiana (Stafford and Cantin 2009:305), but a wide variety of stemmed and notched forms have been documented (e.g., Justice 1987). Burials of the Late Archaic period in Indiana are the most represented of all Archaic subdivisions. Grave offerings typically are found to be segregated based on age and sex, although grave goods are typically not found with infant burials (Stafford and Cantin 2009:308). Seven Late Archaic sites have been recorded in Newton County (12-N-37, 12-N-75, 12-N-15, 12-N-284, 12-N-325, 12-N-327, and 12-N-354) (Division of Historic Preservation and Archaeology 2007; Leeuwrik et al. 2016). Point types recovered from Late Archaic sites include Matanzas, Table Rock Stemmed, Riverton, Merom Cluster, Brewerton Eared-notched, Brewerton Side-notched, Matanzas Side notched, Matanzas Cluster, and Bottleneck Stemmed. Also within the [redacted] collection, a strong Late Archaic presence is well represented by stemmed points.

The Terminal Late Archaic (ca. 1500-700 B.C) is characterized by an increase in horticultural practices at the expense of hunting and gathering activities and the adoption of fired-clay pottery into toolkits (Stafford and Cantin 2009). Terminal Late Archaic Sites in Indiana often are associated with the Riverton Culture (Winters 1969), though no Riverton sites have been confirmed in Newton County. This period is known for barbed points (Justice 1987) and for being the transitional period into the Early Woodland era. During this transitional time people were often found to be living on rivers and other major water sources. This period saw the initial growth of long-distance trade networks as exotic materials such as marine shell from the Gulf, exotic cherts from south-central Indiana, and native copper from the Upper Great Lakes, have been found from some Terminal Late Archaic sites (e.g., Winters 1968). The Terminal Late Archaic saw turmoil in the region and evidence from this period shows a marked increase in both ceremonial activity and cremation of the dead (Mensforth 2001:123; Pedde and Prufer 2001; White et al. 2007).

The Woodland period has been the most commonly recorded cultural affiliation within Newton County (see Table 3). The Early Woodland period (ca. 700-200 B.C.) is when pottery was widely produced in North America (Black 1936:287-189; Montet-White 1968:5). Among the earliest pottery types in Indiana is Marion Thick pottery which is thought to date to as early as 700 B.C. (Munson and Munson 2004). Hunting, gathering and some horticulture continued during this period (Caldwell 1971:370). The Adena culture is the most prominent cultural phenomena during this period and encompassed a region including Indiana, Kentucky, and Ohio. Many Adena sites also include burial mounds characterized by oval mounds, often with log tombs such as at the Nowlin Mound in southeastern Indiana (Black 1936:297; Ruby 1994). Four Early Woodland sites have been documented within Newton County (12-N-2, 12-N-101, 12-N-

108, and 12-N-215) (Division of Historic Preservation and Archaeology 2007). As mentioned above, McCord and Cochran (2015:A253-255) reported on nine possible mound/earthwork sites in Newton County, several of which may reflect Early Woodland features. The [redacted] and [redacted] collections has a well-documented presence of Early Woodland stemmed projectile points and ceramic sherds (Leeuwrik et al. 2015:116; Leeuwrik et al. 2016:181).

Middle Woodland period subsistence and settlement patterns (ca. 200 B.C.-600 A.D.) are roughly coeval with that of the Early Woodland within Indiana. Sites tend to be located in close proximity to a ponds, swamps, and drainage ways, and are relatively equally distributed across the landscape (Montet-White 1968:18-19). Hunting, gathering, and some horticulture were the main forms of subsistence during this period (Abrams 2009; Caldwell 1971:370; Montet-White 1968:18-19). Middle Woodland sites throughout the Kankakee and Beaver Lake regions have been shown to be very reliant on marsh-focused subsistence practices and strategies with a strong dependence on seasonal hickory nuts (Surface-Evans 2015). This period saw the rise of the Hopewell culture and extensive trade networks (Mangold 2009; Seeman 1979). Classic Hopewell mound sites and earthwork centers are better known for Ohio, Illinois, and east-central Indiana (McCord and Cochran 2008). Although evidence of maize introduction is known for the Midwest, no evidence of its use in Indiana have been identified (Hart 1999; Riley et al. 1994:496). Some have suggested that large Middle Woodland sites with extensive occupational debris may represent year-round occupations (e.g., Mann Site in Posey County, Indiana, as discussed by White et al. 2007:19), although the issue of site permanence is still debated. Extensive trade networks are also identifiable through exotic artifacts and botanical remains (Mangold 2009:198). Diagnostic artifacts found in the Middle Woodland include Snyder's, Lowe, Chesser, and Steuben points and lamellar bladelets (Justice 1987; Montet-White 1968:179). The Kankakee River area also is known to contain various Middle Woodland sites that have Havana-like traits (Kellar 1993) which suggest strong cultural ties to the west.

Within Newton County, four Middle Woodland Sites have been documented (12-N-2, 12-N-101, 12-N-102, and 12-N-108) (Division of Historic Preservation and Archaeology 2007). The [redacted] collection has a noted lack of projectile points associated with this cultural period, but several pottery sherds within the collection have decoration of a general Middle Woodland dentate design and several Hopewellian sherds with Rocker stamping and dentate Rocker stamping (Leeuwrik et al. 2015:115-116). The FY2014 HPF surveys in southern Newton County recovered a blade-like flake that indicated a possible Middle Woodland component. In contrast, the [redacted] collection shows several corner-notched points that likely reflect Middle Woodland styles such as Synders or Affinis Synders (Leeuwrik et al. 2016:182).

In the Late Woodland period (ca. 600-1200 A.D.), settlement systems fluctuated between large, nucleated villages early in the period, followed by a more dispersed settlement system in the middle, then back to nucleated villages by the end of the period. Technological innovations include adoption of the bow and arrow (Seeman 1992:44). The first true arrow points were

modifications of Middle Woodland side or corner notched points such as Jacks Reef and Raccoon Corner Notched (see Justice 1987). Maize was introduced as a more stable dietary constituent into the Late Woodland diet along with the continued consumption of other plant materials found in the earlier Woodland periods such as maygrass, goosefoot, and knotweed (Greenlee 2002:12). Domestic crops such as maize became increasingly important to subsistence during this period especially after 800 A.D. (Hart 1999:8; Shott 1993; Swartz 1981:59). In much of Indiana the Late Woodland period is synonymous with the Albee Phase (ca 800-1300 A.D.; see Redmond and Jones 2003; Redmond and McCullough 2000:652-662). While no Albee sites have been reported in Newton County the known distribution extends into Warren County and encompasses much of the nearby Wabash River watershed (Redmond and McCullough 2000:Figure 24.13). Albee occupations have yielded distinctive ceramics and Jacks Reef, Raccoon Notched, and Triangular Cluster projectile points. Ten Late Woodland sites have been found in Newton County (12-N-97, 12-N-98, 12-N-99, 12-N-102, 12-N-108, 12-N-125, 12-N-153, 12-N-155, 12-N-295, and 12-N-327) (Division of Historic Preservation and Archaeology 2007; Leeuwrick et al. 2016). Significant portions of both the [redacted] and [redacted] collections are triangular points which are associated with the Late Woodland/Late Prehistoric and Mississippian periods (Leeuwrik et al. 2015:116; Leeuwrik et al. 2016:177-184). This trend suggests a strong Late Woodland through Mississippian presence in northern Newton County, especially the Beaver Lake region which is consistent with surveys conducted by IPFW (Surface-Evans et al. 2005; Surface-Evans 2015:183-185).

After around ~1,100 A.D. Native American subsistence strategies focused more on full agriculture, especially the staples of corn, squash, and beans. Village sites show segregated activity in villages and triangular points are the most common projectile point style in local assemblages (Redmond and McCullough 2000:656). The Vincennes Culture of southwestern Indiana, and Fisher and Huber Cultures of northwestern Indiana can be considered indicative of post-Middle Woodland occupations, but also of Mississippian cultural affiliation (Redmond and McCullough 2000:643). Based on artifact styles alone, it is often difficult to designate an assemblage as Late Woodland or Mississippian and this has led several researchers to classify sites as Late Woodland/Mississippian in the SHAARD dataset. Four sites have been assigned to the Late Woodland/Mississippian unit for Newton County (12-N-98, 12-N-104, 12-N-118, and 12-N-224) (Division of Historic Preservation and Archaeology 2007).

The Mississippian period (ca. 1000-1650 AD) persisted into the era of European contact and marks a time of rapid cultural change and transition among Native American groups (Munson et al. 2006:7; Faulkner 1972:13). A few of the cultures that were prominent during this period are quite well known for their societal structures and shell tempered pottery. Mississippian era archaeological sites in western and southern Indiana are commonly found with several aspects that are considered “classic” Mississippian features like platform mounds, public and ceremonial architecture and plazas, nucleated villages that were near their agricultural fields,

enclosed settlements, cemeteries and societies with hierarchical social organizations (Benson et al. 2009:468-469; Redmond and McCullough 2000:648). Two sites of the Mississippian cultural affiliation have been discovered in Newton County (12-N-118 and 12-N-224) (Division of Historic Preservation and Archaeology 2007). In the [redacted] collection, the recovery of Mississippian shell tempered ceramic sherds, including a partial human effigy, suggests some level of Mississippian influence in northern Indiana (Leeuwrik et al. 2015).

The Protohistoric period (ca. 1500-1850 A.D.) is the transitional period as the first European settlers began to arrive in the Americas and have first contacts with the Native Americans. This period is characterized by indirect contact with Euro-Americans and the first written accounts of the area by external observers. As such, these types of sites often include both Native and European-derived materials. Though often not in direct contact, material goods, in addition to knowledge of Euro-American settlers had an influence on native life. Protohistoric sites are best identified when the site is undisturbed and contains both historic and prehistoric materials. This is evidence that these two cultures were in the location at the same period in time.

Three Native American groups of the Protohistoric period are documented in the areas around Newton County. The Miami, Wea, Kickapoo and Potawatomi groups were recorded to live in the north and northwest of the state, near Newton County (Heistand 1951:8). As a result of French fur trader activities, many of the groups in the Great Lakes region were subject to relocation into this portion of Indiana. The Kickapoo, Potawatomi, and Miami tribes were the most pervasive tribes in the prairies surrounding the Kankakee River (Callendar 1978:681; Callendar et al. 1978:656-657; Clifton 1978:725-726). They created small villages along the Iroquois River and hunted and trapped throughout the area and exploited its aquatic sources.

The result of contact with Euro-Americans was catastrophic for Native American groups as various epidemic diseases and conflicts associated with the fur trade led to large-scale abandonment of the region (Heistand 1951:8). In the early 1800's Native Americans inhabiting Indiana began to cede their land rights and were moved, often forcefully, to reservations within the state or out west. The largest western removal took place in 1838 and moved much of the local tribes to Kansas, including the Potawatomi in a federal government action known as the Potawatomi Trail of Death (Carmony 1998). This pattern continued until 1840 when all commonly held reserve lands had been ceded and Indiana was open for Euro-American Settlement (Heistand 1951:8-9; Taylor 2009:12).

Three Protohistoric sites have been documented within Newton County (12-N-98, 12-N-255, and 12-N-260) (Division of Historic Preservation and Archaeology 2007). Guernsey (1932) shows an "Old Potawatomi Village" between Beaver Creek and the Iroquois River. The General Land Office survey notes (1795-1840) also mapped three wigwams and one Native American field for Newton County (Maust and Cochran 1989).

The Historic period in Indiana can be assigned a starting year of 1840 although European settlers had been in Newton County since the early 1830's. Early settlers lived within the drainage corridors of the Iroquois and Kankakee rivers. Settlement of the whole county was slow due to the presence of wetlands in the north; however, in 1835 Newton County was organized. Later in 1839, Newton was combined with its eastern neighbor Jasper County due to low populations in both counties. The years of 1836 and 1837 saw the organization of Porter and Lake Counties, respectively, which took land north of the Kankakee River from Newton County (Ade 1911:55). In 1860, Newton County was reorganized as its own individual county (Taylor 2009:12). Expansion of people into Newton County grew more rapidly with the development of the railroads in the late nineteenth century. As more people came to the county the more drastically the landscape changed. Prairie lands were transformed into farmland and marsh lands were drained. Beaver Lake covered 16,000 acres with an additional marshland of 26,000 acres and was a major source of resources for the Native Americans who once populated the area (Heistand 1951:8-9). Beaver Lake was drained near the end of the Civil War to the north of Morocco through Lake Ditch and into the Kankakee River (Taylor 2009:12).

Before Beaver Lake (see Figure 19) was drained it contained a variety of resources for both Native Americans and European settlers. Beaver Lake was part of the larger Kankakee Marsh which encompassed over one million acres of wetlands prior to draining (Prince 1997:50). Wetlands contained an abundance of beaver, mink, deer, and other wildlife, as well as diversified floral communities (Ade 1911:41-42). These resources attracted French fur traders during the seventeenth century who claimed the region for New France and established trading posts (Drury 1955:3-4). Upon settlement in the nineteenth century, swampy land in northern Newton County in the vicinity of Beaver Lake was viewed as a deterrent to farming (Taylor 2009:12)

During early settlement, Beaver Lake also was known as a hub of criminal activity. During the nineteenth and early twentieth centuries, several of the "sand islands" were known to house horse thieves and counterfeiters. Bogus Island was named in reference to reported accounts of counterfeiting that occurred on the island. Such islands were desired for hidden activity due to their remoteness. Several contained hidden corduroy roads that represented the only means to access these islands. In 1858, a company named the Jasper Rangers was formed to deal with the rising crime rates in both Jasper and Newton Counties. This company was given the freedom to work outside of the law without repercussion in order to bring the bands of criminals to justice. The Jasper Rangers were successful in drastically reducing the crime rate, which increased rates of growth within the county and ultimately helped in the reformation of Newton as a separate county in 1860 (F.A. Battey & Co. 1883:639-641).

The first push towards draining Beaver Lake, and surrounding wetlands, came after passage of the federal Swamp Land Acts of 1849 and 1850. Initially all swamp and marsh lands were owned by the Federal Government, but that changed in the mid-nineteenth century

following a movement to deed all swamplands back to their respective states (F.A. Battey & Co. 1883:621). In Indiana, the passage of these acts resulted in transfer of ~1.2 million acres of wetland to the state. Major efforts to drain the marshes and create arable land were initiated as a means to generate revenue for the state. During 1853, Beaver Lake and considerable portions of the Kankakee Marsh were drained into the Kankakee River through various hand excavated ditches thus transforming the Beaver Lake area into usable farm land (Ade 1911:44-45)

As of 2009, Newton County has 613 historic structures recorded throughout the county (Taylor 2009). Historical records also suggest several potential cultural resources. For example, the General Land Office survey notes (1795-1840) mapped four historic agricultural fields and one cabin in Newton County (Maust and Cochran 1989). Other historic landmarks that are illustrated on Maps of Indiana Counties in 1876 (Andreas 1968) include 42 school houses, five churches, five cemeteries and 47 farm houses.

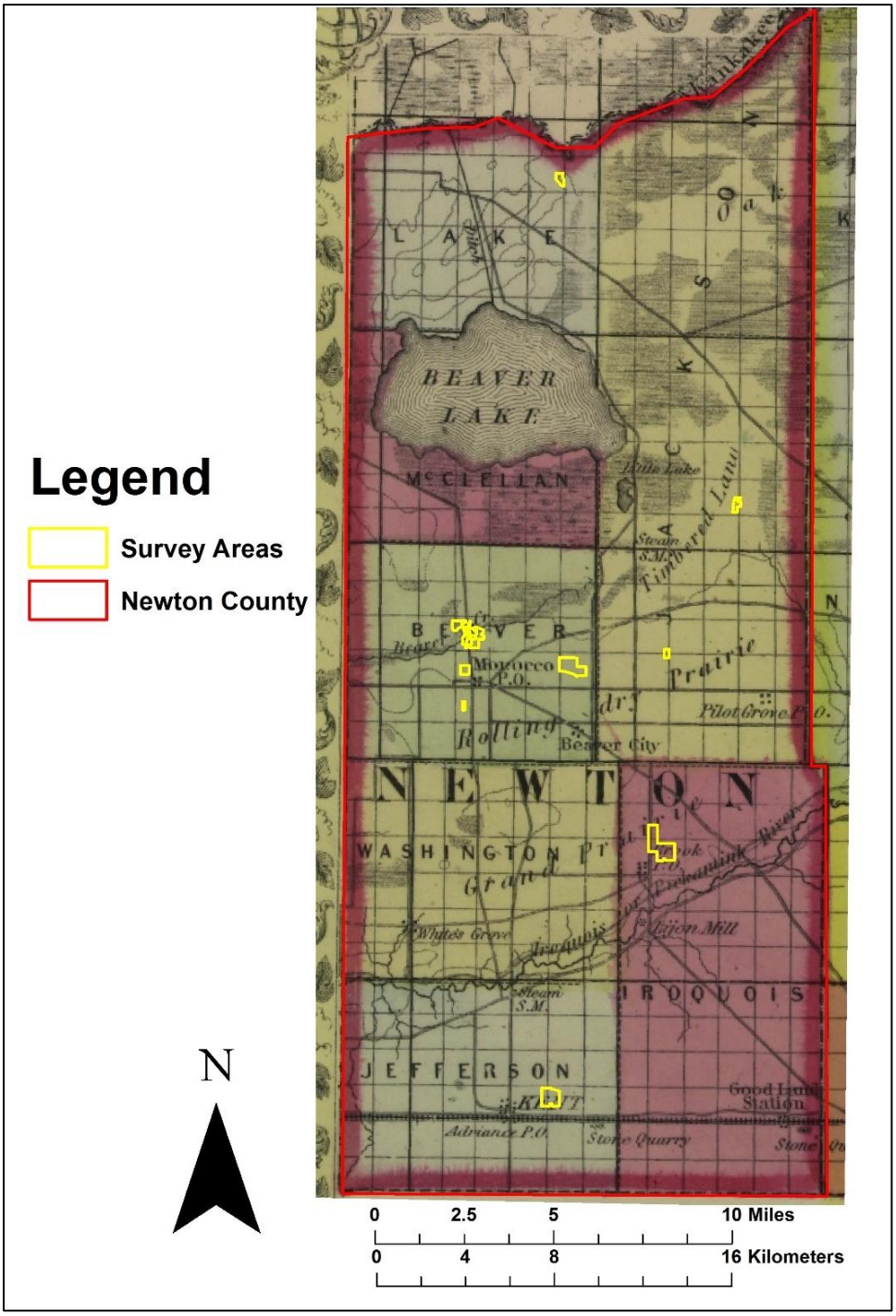


Figure 19: Location of Beaver Lake within Newton County in 1867 (Newton County Historical Society 2017).

Archaeological Survey

Introduction

Approximately 932.27 acres (377.27 hectares) of agricultural land, which includes 5.63 acres of resurveyed area, were surveyed through pedestrian transects during this project. The survey areas were located on moraines, outwash and lake plains, floodplains, and lake beds or lake plains. The survey documented 110 new archaeological sites and recovered 103 prehistoric artifacts and 4,063 historic artifacts. No human remains were discovered as a result of this grant project. The results are discussed by survey area below.

Methods

Field Survey

For this project, 900 acres of pedestrian survey were initially proposed. It was anticipated that by surveying 800 acres, approximately 100 to 150 new sites would be discovered to increase the existing site database. AAL planning projected that different landforms and environmental zones consisting of flood plain, moraines, and till plain would be systematically surveyed. Areas were selected for survey using topographic maps, aerial maps, soil information, historic sources and reconnaissance information. The survey was constructed to sample different regions within the project area, with an emphasis on the central portion of the county. Cultivated fields with optimal visibility were sought for survey. Ultimately, landowner permission and field visibility dictated the areas sampled by this survey which included 932.27 acres of moraines, outwash and lake plains, floodplains, and lake beds or lake plains.

This project was conducted by AAL archaeologists and student employees. Principal Investigators were AAL Archaeologist Christine Thompson and Senior Archaeologist Kevin C. Nolan. The field survey was conducted between September 4 and October 15, 2016. The field survey was conducted using pedestrian transects spaced at 10 meter intervals. The survey interval was reduced to 5 meters when artifacts were encountered. The areas surveyed by pedestrian transects had between 30 and 90 percent ground surface visibility. All artifacts within two meters of the first artifact encountered, except fire-cracked rock and brick, were collected, bagged and given a temporary transect and find numbers. Objects found farther than that within the same transect were given the same transect number and the next sequence number. If a site only consisted of one collection point, a 10 x 10 meter radial survey was conducted around the point. Each new radial find was assigned a new find number. If multiple artifacts were encountered along multiple transects, short transects were traversed at five meter intervals to refine the boundaries of the cluster. Fire-cracked rocks and bricks were counted in the field, but

were not collected. Find points were mapped with a Trimble GeoXT Series GPS with a minimum of 20 readings logged for each find spot. GPS data is imported from the Trimble to the GPS Pathfinder Office series 5.3 software for post-processing. The raw GPS data from each logging unit is consolidated and position corrected with the Differential Correction. This process consolidates all Trimble points into one data file (*.cor). The consolidated, corrected data file is then exported. In the Export Setup dialog box, all data export options, except Worst Vertical Precision ad Worst Horizon Precision, are selected for inclusion in the exported file attribute table. The Coordinate System is set for UTM NAD83 Zone 16N. The file is then exported and renamed to the appropriate survey area in ArcCatalog and can then be included in the project GIS.

The ESRI shapefiles are added into the ArcGIS map for analysis. Once ESRI shapefiles are added, 15 meters buffers are created around the points within each survey area using the Spatial Analyst buffer tool in ArcMap 10.4. The 15-meter buffers are used to define clusters of artifacts that constitute a 'site'. After sites are defined, we generate 5-meter buffers to define site extent and boundaries. These site boundaries are then used to compile site attributes such as site area, soils, and site density. Site area is calculated by using the calculate geometry function in ArcGIS. The site extent is applied to identify soil map units within the defined site boundaries. Site density is calculated by dividing the number of acres within a survey area to the number of sites located within that survey area.

Laboratory

All collected artifacts were taken to the AAL laboratory for processing, identification, analysis and temporary curation. Artifacts were cleaned, classified and catalogued. Definitions used for classifying prehistoric lithic materials are included in Volume 2, Appendix B. Diagnostic point types were classified and dated using standardized reference materials (Justice 1987). Metric attributes and raw material identifications were recorded in accordance with AAL standards (Volume 2, Appendix C). Lithic raw materials were identified by comparison with reference samples and published descriptions on file in the AAL laboratory (Cantin 2008; DeRegnaucourt and Georgiady 1998; Stelle and Duggan 2003). Their association was reported to geologic period, with the chert typology being reported as the type most consistent with the specimen. All prehistoric artifact and chert identifications were made microscopically at 10x or greater. Historic artifacts were identified and dated using published references (American Chemical Society 2016; Anderson 2006; Barber 1976; Berge 1980; Centerfire Shot Shells 2017; Cointrackers 2017; Farrar 2016; Godden 1964; Horn 2005; Intermountain Antiquities Computer System [IMACS] 1984, 1992, 2009; Indiana Department of Natural Resources 2016a, 2016b; Miller 2000; Ohio Department of Transportation [ODOT] 1991; Stelle 2001; Tod 1977; Whitten 2016). Notes, maps and photographs were reviewed and prepared for illustration and curation. State site numbers were obtained and a DHPA Sites and Structures Inventory form was entered in SHAARD for each site identified during the project.

BSU AAL Standard Lithic Identification Method

By Kevin C. Nolan, Mark A. Hill, and Colin L. Macleod

Chippable stone raw materials were identified in comparison with the AAL chert collections. All artifacts are compared macroscopically and microscopically with samples of known provenience from the AAL comparative chert collection. The comparative collection contains hundreds of samples of all of the known varieties of Indiana chert and several cherts from neighboring states. This provides an invaluable perspective on the variability within each defined category. Our method of raw material identification involves several steps.

The initial step involves the visual sorting of materials into groups based on broad categories of raw materials such as sedimentary rocks, igneous rocks, cherts, quartzites, orthoquartzites, chalcedonies, obsidian, and other metamorphic, sedimentary, and igneous categories (Kooyman 2000:37). As most of the raw materials in the Midwest consist of marine cherts, the next steps are often the key to material identification. Each artifact is macroscopically identified with probable match categories using hand samples and reference manuals (e.g., Cantin 2008, 2011). Attention is paid to luster, color, patterning, inclusions, translucency, and texture. Next, several samples from the probable match categories are collected and examined under magnification with a 57900-04 Boreal Zoom Stereo Microscope at 10x to 40x magnification. We microscopically compare matrix, color, texture, inclusions, luster, and other physical and visual characteristics of the unknown artifact to the known comparative collection samples from the probable match categories and Cantin's (2008, 2011) resources. This step is crucial in obtaining the most accurate identification possible as Cantin (2011:Slide 10) notes that "Macroscopic identification is sketchy at best… microscopic identification … is far more reliable." Further, Cantin (2008:2) notes that what he terms "microfabric" is perhaps the best way to differentiate chert types and varieties. Microfabric is a result of the genesis of the raw material including the process by which the rock was formed (metamorphic, igneous, sedimentary) and in particular, with the marine cherts of the Midwest, the source of silica, the environment in which the silica is precipitated, and the matrix within which this silica is deposited (Andrefsky 2005). Microfabric may include evidence of bedding, fossils present in the environment at the time of formation, or structures such as oolites, silicified worm burrows, and crystalline growths. As fossils and other structures will vary with the conditions and time in which these cryptocrystalline silicates were formed, they are often good visual indicators of raw material source.

The propensity for micro/cryptocrystalline silicates to be strongly influenced by formational and diagenetic processes indicates that identifications of chert material are most appropriately an assessment of the geological age of the material (Luedtke 1992). For this reason, specimens are identified to geologic age (period) which is, in turn, consistent with

specific geologic formations. Next, the more specific material "type", as described in the reference collection and Cantin (2008, 2011), is noted based on the consistency of the material with listed sources. The inconsistent nature, and often heterogeneous representation of many of the identifying features of micro- and cryptocrystalline silicates means that any one of these features is not enough to make a confident material association. A combination must therefore be employed in order to document evidence for the association of the material with a particular type, and by extension, source. This combination, particularly in small or anomalous samples can lead to association with multiple sources. This is particularly true of materials that share the same age and geographic location as they will have likely undergone comparable formational and diagenetic processes. Where the sample resembles multiple sources in our collection, such is noted. Our identifications to "type" are illustrative of method and not an indication of source.

Finally, we revisit Cantin's (2008:9) map of the known provenience of Indiana chert types to identify the most proximate sources (aside from the nearly ubiquitous gravel chert). Samples from the proximate source(s) are selected and compared microscopically to the unknown artifact. This final step is employed to ensure that we are able to rule out a proximate source from our identification. If the local variety cannot be ruled out, identification will favor the proximate source as most probable. However, location cannot be a primary criterion when attempting to identify the raw material of an artifact. Identifications are based on the best overall match of observed macroscopic and microscopic characteristics between known and unknown samples. If a clear match cannot be made, the material is categorized as unidentified.

Rocks of the same age and of the same or comparable formation may, and often do, have distributions outside of Indiana and can find their way into Indiana from these extra-locational sources. This occurs through glaciations, human mobility, or trade as a result of contact. For this reason, Cantin's (2008) work, while effective at identifying the known locations of primary chert sources in Indiana, cannot alone account for the diversity of materials found archaeologically in Indiana and it is important to note that AAL procedures do not presume the mechanism of transport. Cantin's information on chert is therefore supplemented with sources from surrounding states such as Illinois Michigan, Ohio, and Kentucky (DeRegnaucourt and Georgiady 1998; Stelle and Duggan 2003) which stand to have the greatest extra-local influence on lithic material types found in Indiana.

There is always the possibility of misclassification with visual identification; however, AAL procedures are the same, and replicable, for all projects. Inter-observer variability is unavoidable in the absence of discrete criteria for identification of unknowns with ideal categories. Our procedures attempt to limit the magnitude of these errors. Finally, it must be said that identifications made by these and similar procedures are provisional, and cannot definitively match an unknown to a known geological provenience. For more definitive results, geochemical methods such as Instrumental Neutron Activation Analysis, X-ray Florescence, or other methods

are required (Andrefsky 2005; Kooyman 2000). However, using the criteria and procedures detailed above, our identifications (and all visual identifications) should be taken as an assessment of the geological age and context of the raw material.

All materials recovered during this project are accessioned under AAL Accession number 16.115. Project materials are curated at Ball State University, Department of Anthropology. Landowners were given the choice of having artifacts returned to them or having artifacts curated at Ball State University (see Volume 2, Appendix D for listing). All artifacts returned to the landowners were classified, analyzed, and photographed per DHPA guidelines. In Volume 2, a DVD of these artifact photos is provided along with a catalog of all site materials. All artifacts not requested to be returned to the landowner were catalogued, labeled and curated at Ball State University and are available for future student education and research.

Collector Visit

In addition to field and laboratory investigations, we examined one private collection that reveals archaeological information and data beyond what has been recorded by professional investigations. [redacted], a landowner from Newton County, who has collected prehistoric artifacts on his farm for many years allowed us to view his personal collection. We surveyed [redacted] farm in central Newton County as a part of this FY2016 HPF Grant (Survey Area 4, 5, 6, and 7). We also documented and investigated [redacted] private artifact collection. The results of this analysis are presented in full in the Results section of this report.

When recording the private collections, the collection was examined initially in order to assess general artifact classes and raw material association. Once this was roughly determined, the artifacts were photographed in order to keep a record of the collection. These images were saved and analyzed later to determine each projectile point's base shape. A total of 93 points were analyzed and documented. Artifact photographs from the [redacted] Collection are presented in Volume 2, Appendix I. The resources afforded by this private collection will be essential to developing a fuller understanding of the content and location of Newton County's cultural resources.

Archaeological Survey Results

A total of nine survey areas were investigated as part of this grant project as shown in (Figure 20).

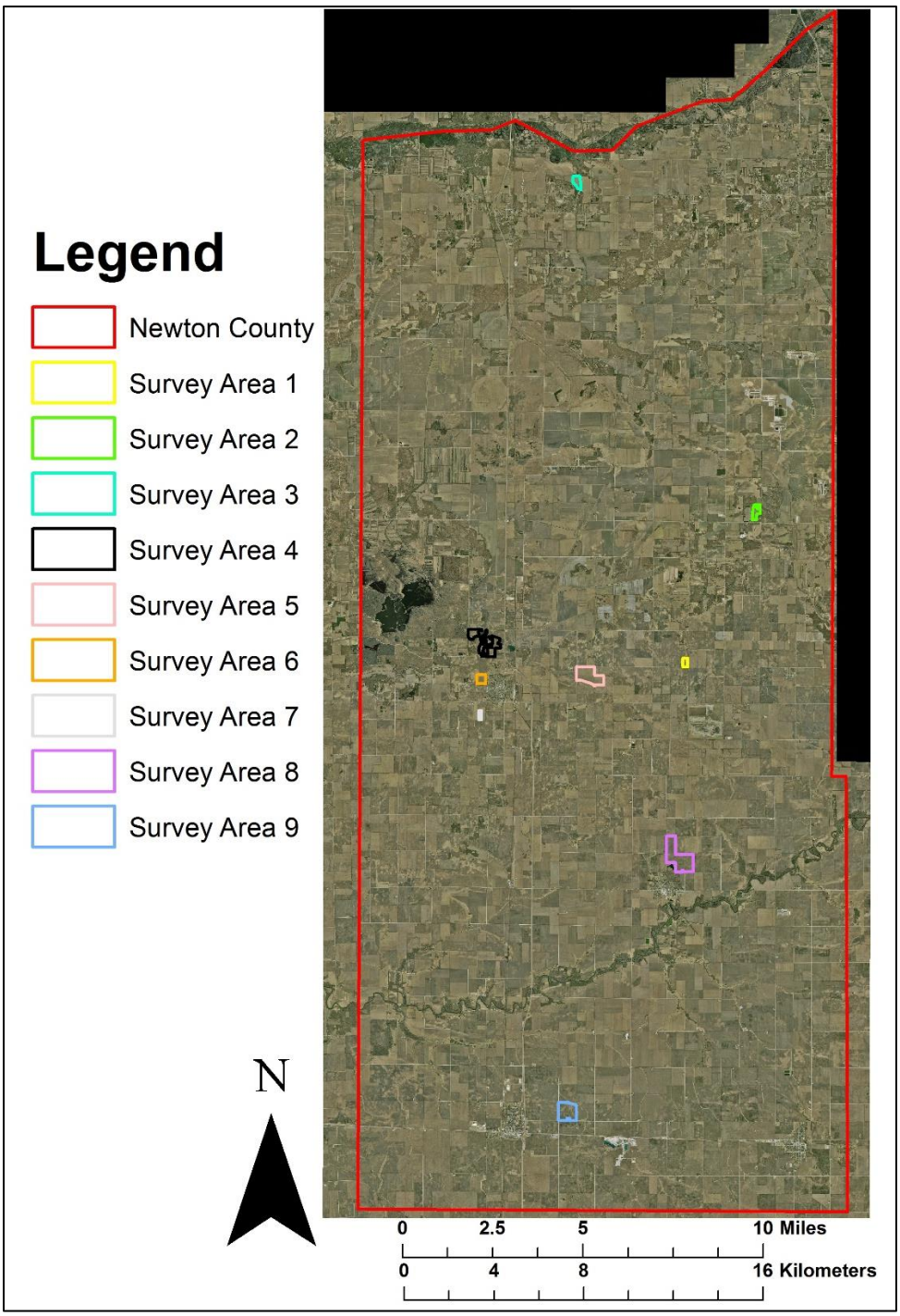


Figure 20: 2012 Aerial (Indiana Spatial Data Portal 2015) showing the location of the nine survey areas within Newton County.

Survey Area 1

Survey Area 1 was located in Jackson Township in [redacted] Township 29 North, Range 8 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Mount Ayr, Indiana Quadrangle (Figure 21 and Figure 22). The property was surveyed on September 4, 2016. Survey Area 1 was planted in corn that was still standing, approximately seven to nine feet tall. Ground surface visibility was approximately 70 to 90 percent with small amounts of corn debris and the corn stalks themselves being the only visual obstacle. A total of 22.43 acres were surveyed consisting of moraines. The area contained Ayrmount loamy fine sand (AzA), Barry-Gilford fine sandy loam (Bh), Nesius loamy fine sand (NsB), and Sumava-Ridgeville-Odell fine sandy loam (SxA) soils. No sites were encountered during the survey.

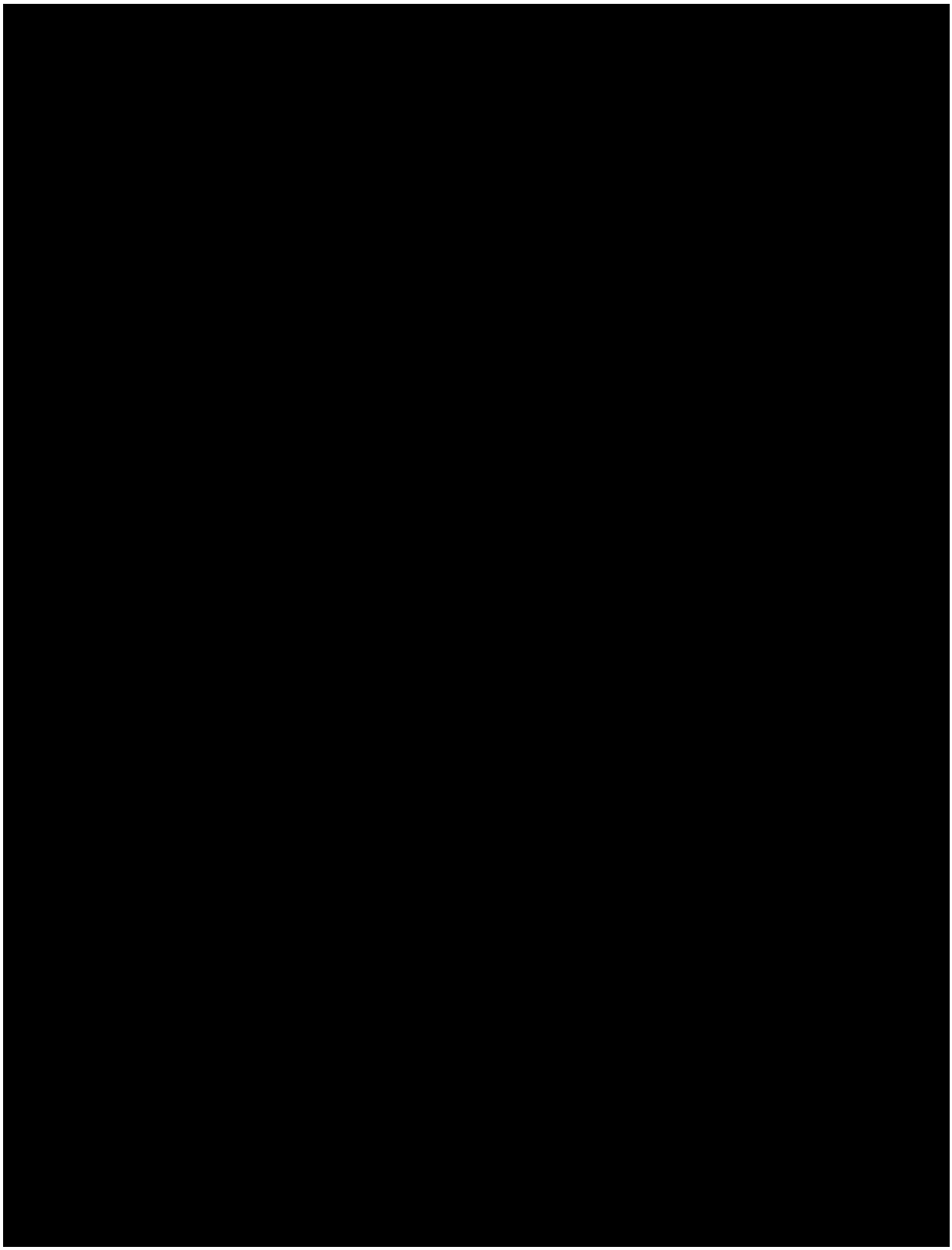


Figure 21: A portion of the map of Jackson Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 1. Note: Due to distortion in historical maps, the georeferenced location of SA1 is slightly off.

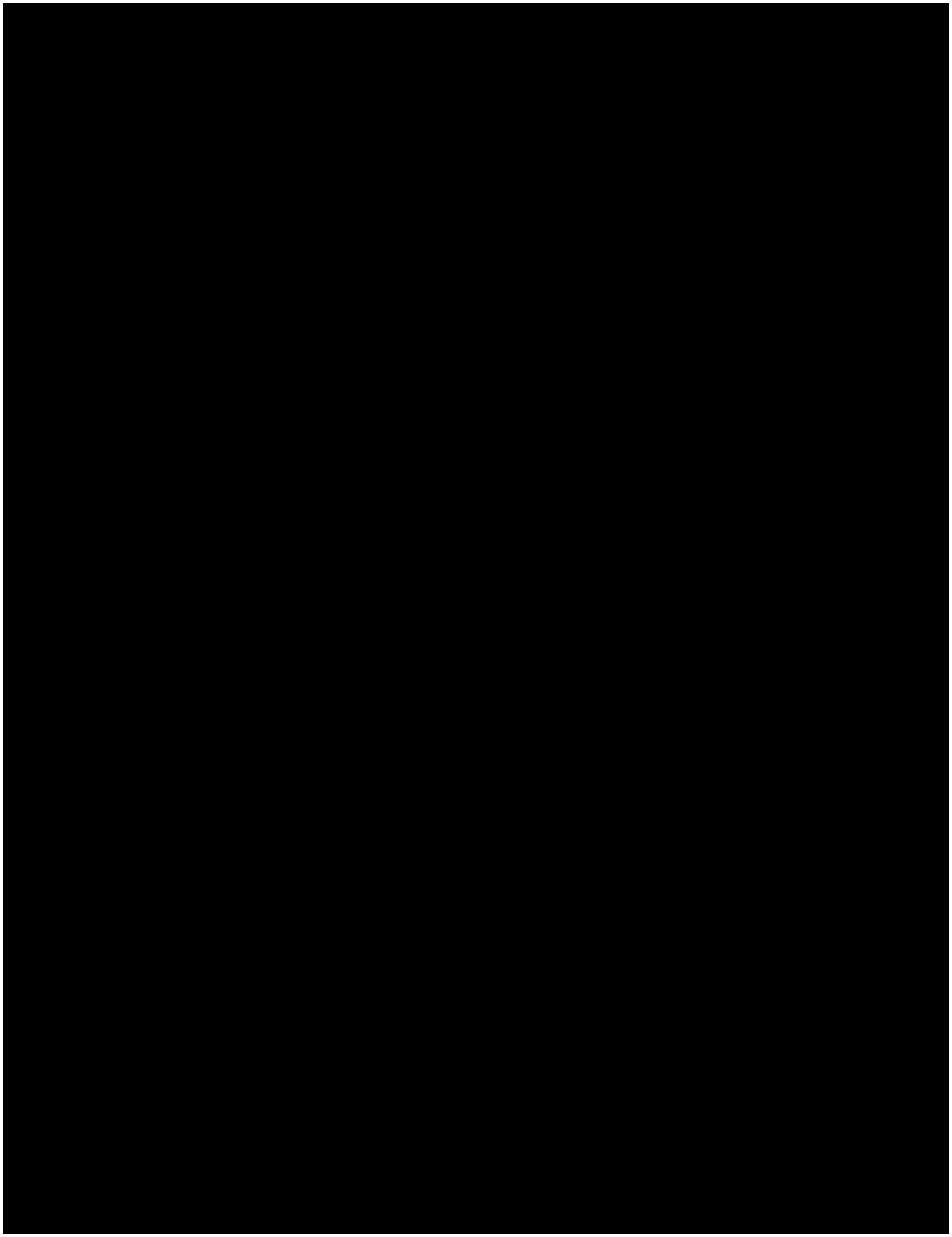


Figure 22: A portion of the USGS 7.5' Mount Ayr, Indiana Quadrangle showing the location of Survey Area 1.

Artifacts

No artifacts were encountered in Survey Area 1.

Sites

No archaeological sites were recorded in Survey Area 1 (Figure 23 and Figure 24).

Density

Survey Area 1 consisted of 22.43 acres of moraines. Within Survey Area 1, a density of 0 sites per 22.43 acres occurred and sites covered 0.00 percent of the surface area.

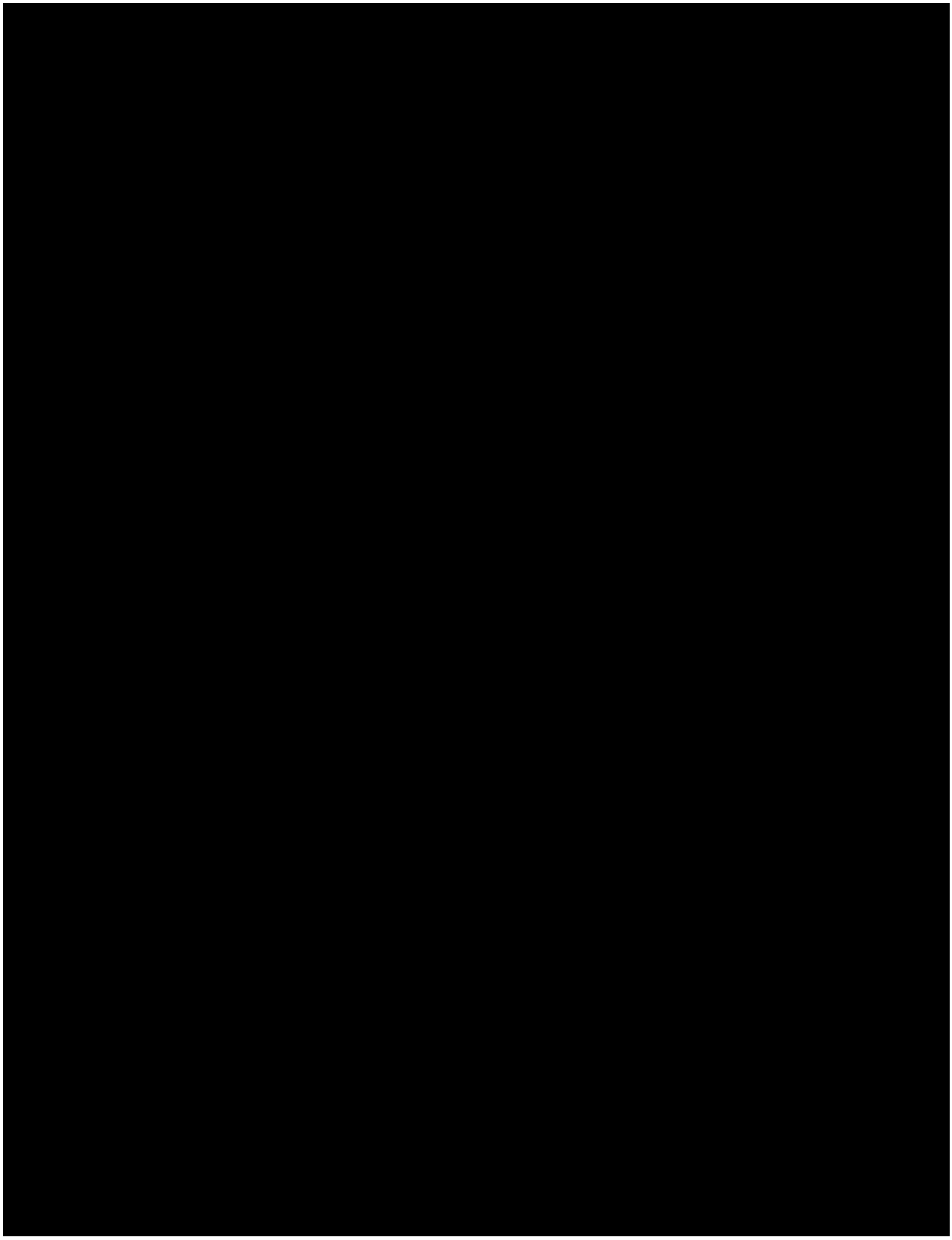


Figure 23: A portion of the USGS 7.5' Mount Ayr, Indiana Quadrangle showing the lack of sites in Survey Area 1.

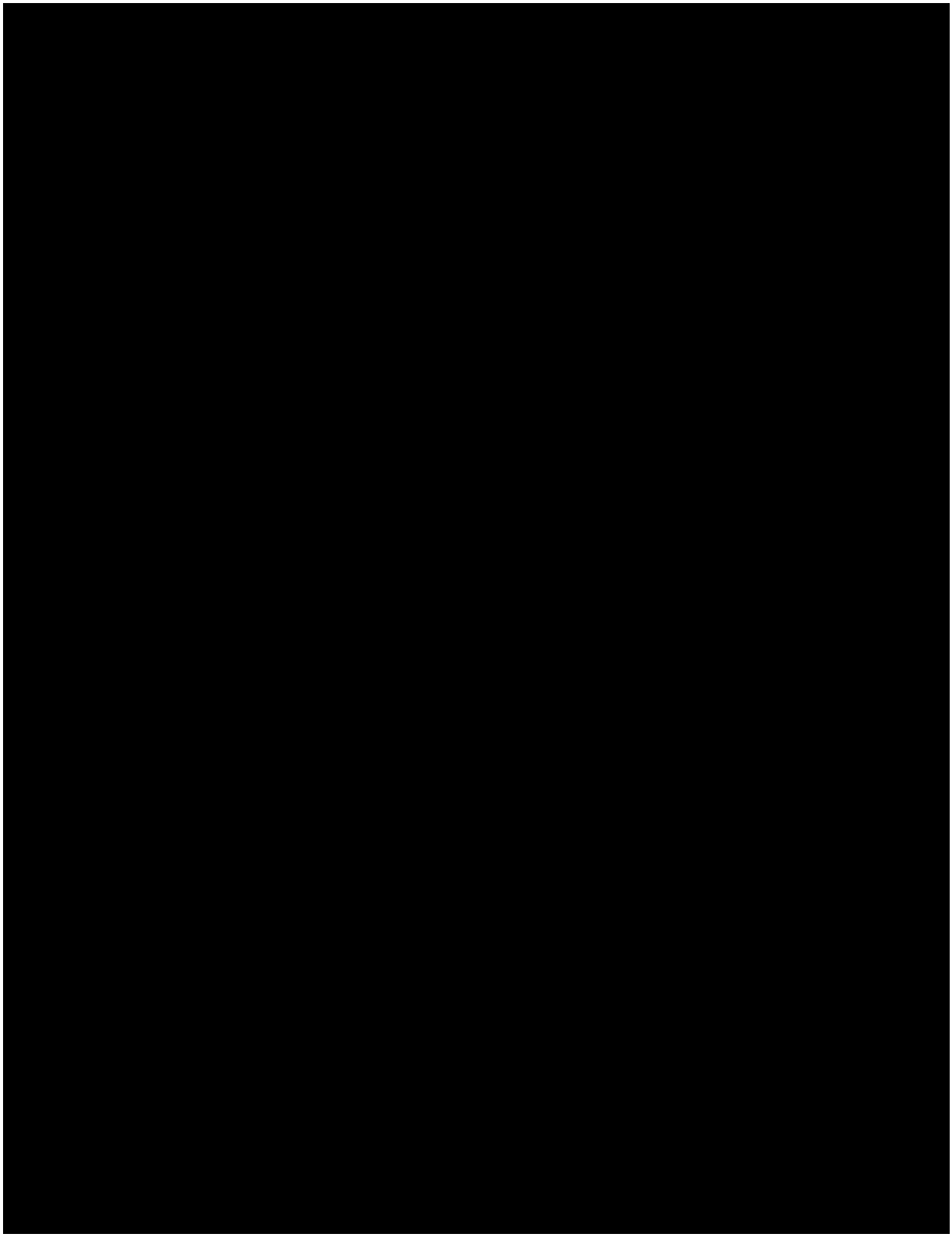


Figure 24: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the lack of sites in Survey Area 1.

Survey Area 2

Survey Area 2 was located in Colfax Township in [redacted] Township 30 North, Range 8 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Fair Oak, Indiana Quadrangle (Figure 25 and Figure 26). The property was surveyed on September 4, 2016. Survey Area 2 was planted in corn that was still standing, approximately seven to nine feet tall. Ground surface visibility was approximately 60 to 80 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. A total of 38.55 acres was surveyed consisting of outwash plains. The area contained Brems loamy sand (BmB), Granby loamy fine sand (Gt), Morocco loamy sand (MuA), and Oakville fine sand (ObB) soils. No sites were encountered during the survey.

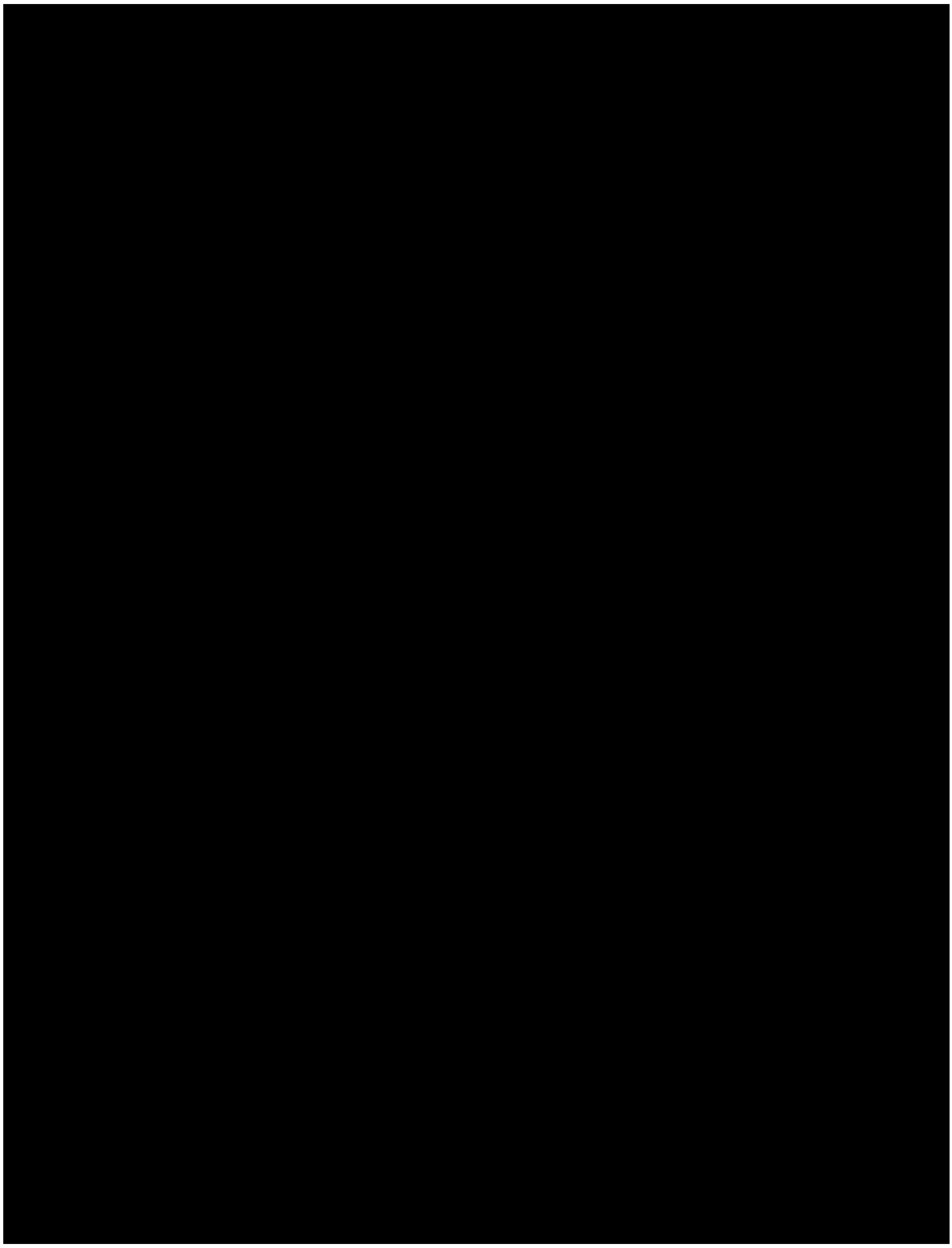


Figure 25: A portion of the map of Colfax Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 2. Note: Due to distortion in historical maps, the georeferenced location of SA2 is slightly off.

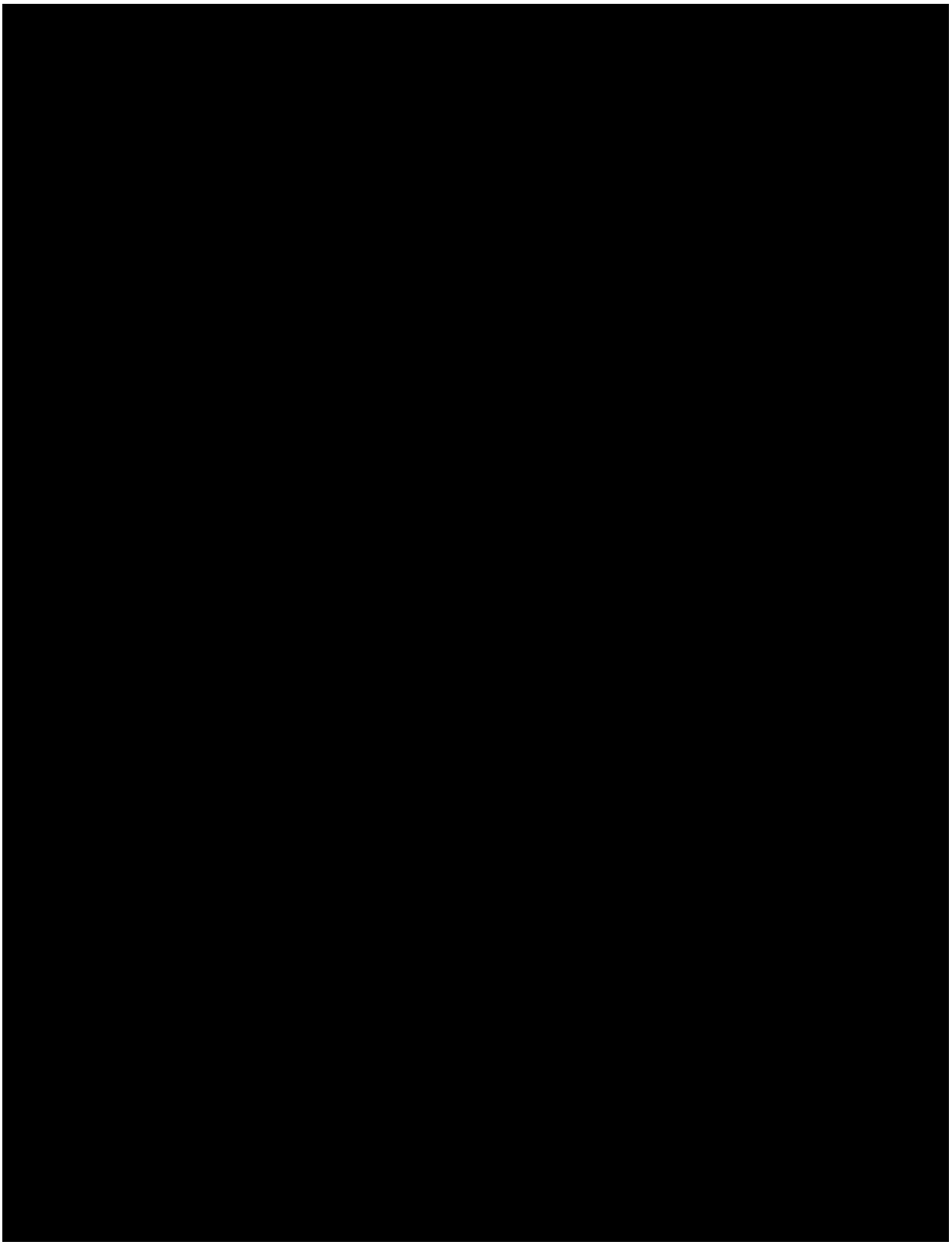


Figure 26: A portion of the USGS 7.5' Fair Oak, Indiana Quadrangle showing the location of Survey Area 2.

Artifacts

No artifacts were encountered Survey Area 2.

Sites

No archaeological sites were recorded in Survey Area 2 (Figure 27 and Figure 28).

Density

Survey Area 2 consisted of 38.55 acres of outwash plains. Within Survey Area 2, a density of 0 sites site per 38.55 acres occurred and sites covered 0.00 percent of the surface area.

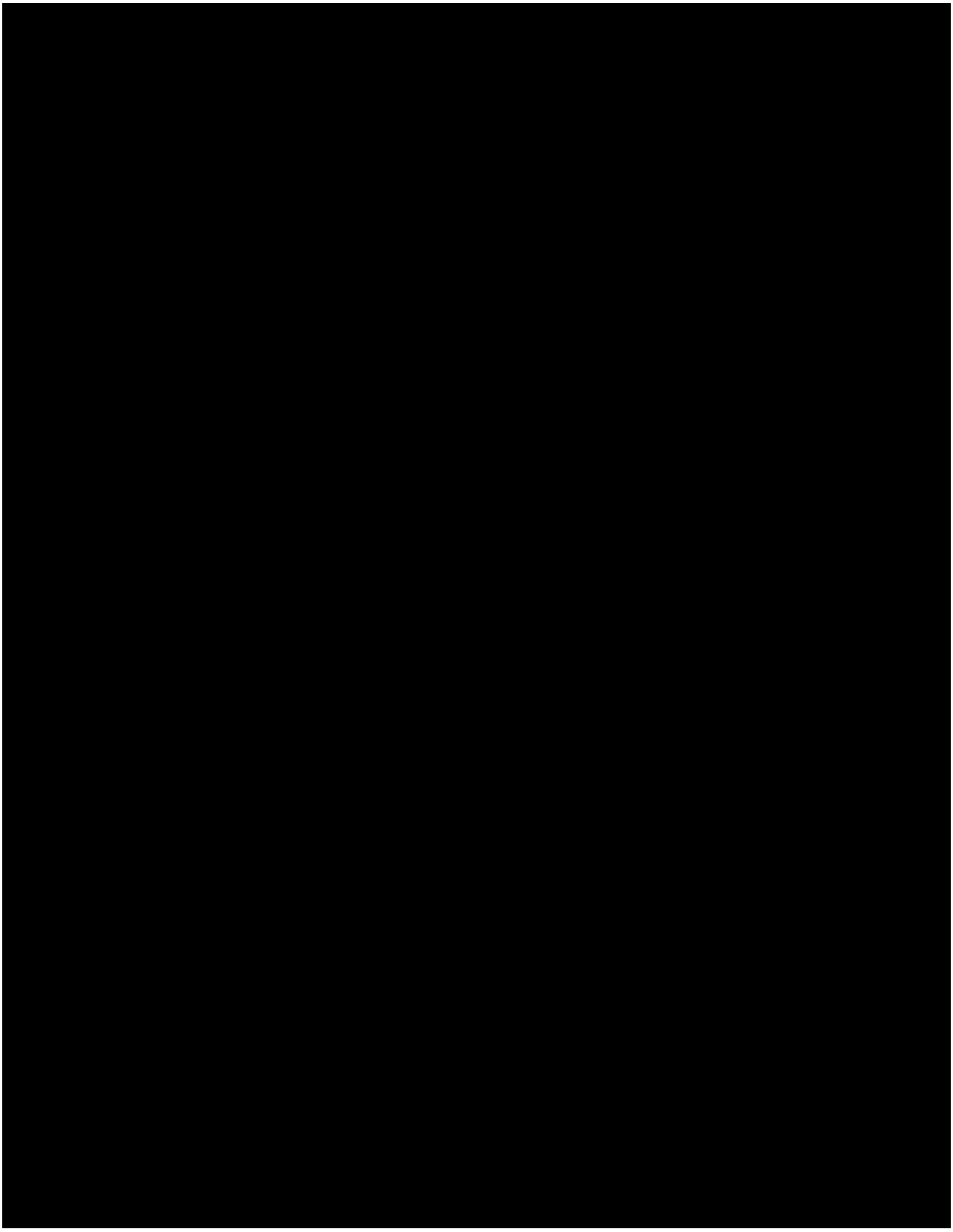


Figure 27: A portion of the USGS 7.5' Fair Oak, Indiana Quadrangle showing the lack of sites in Survey Area 2.

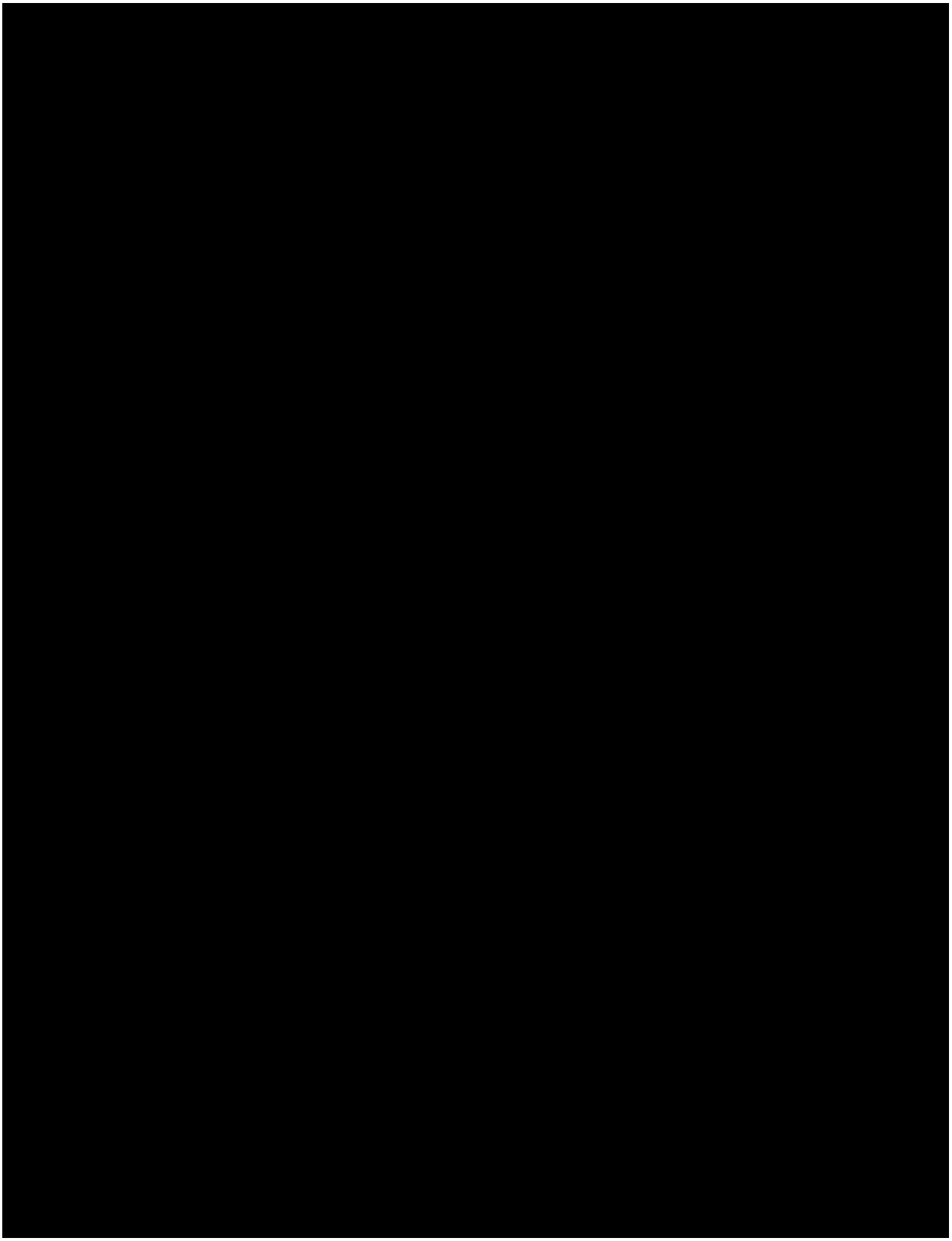


Figure 28: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the lack of sites in Survey Area 2.

Survey Area 3

Survey Area 3 was located in Lake Township in [redacted], Township 30 North, Range 9 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Schneider, Indiana Quadrangle (Figure 29 and Figure 30). The property was surveyed on September 4, 2016. Survey Area 3 was planted in corn that was still standing, approximately seven to nine feet tall. Ground surface visibility was approximately 70 to 90 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. A total of 37.53 acres was surveyed consisting of outwash plains. The area contained Morocco loamy sand (MuA) and Zadog-Ganby loamy sand (Zg) soils. No sites were encountered during the survey.

Survey Area 3 is located west of, and adjacent to, Survey Area 1 from the FY2015 Historic Preservation Grant (Figure 31) (Leeuwrik et. al. 2016).

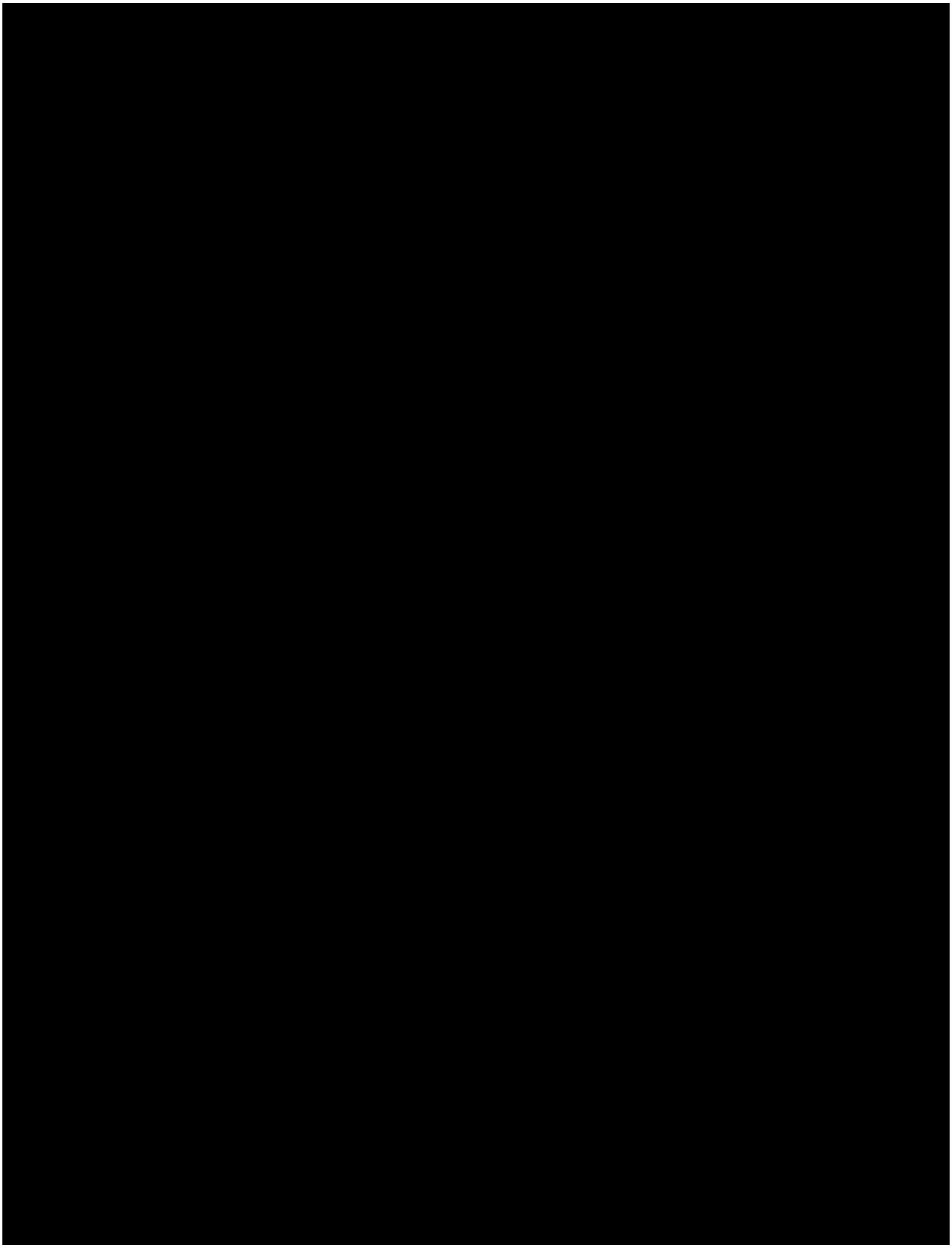


Figure 29: A portion of the map of Lake Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 3. Note: Due to distortion in historical maps, the georeferenced location of SA3 is slightly off.

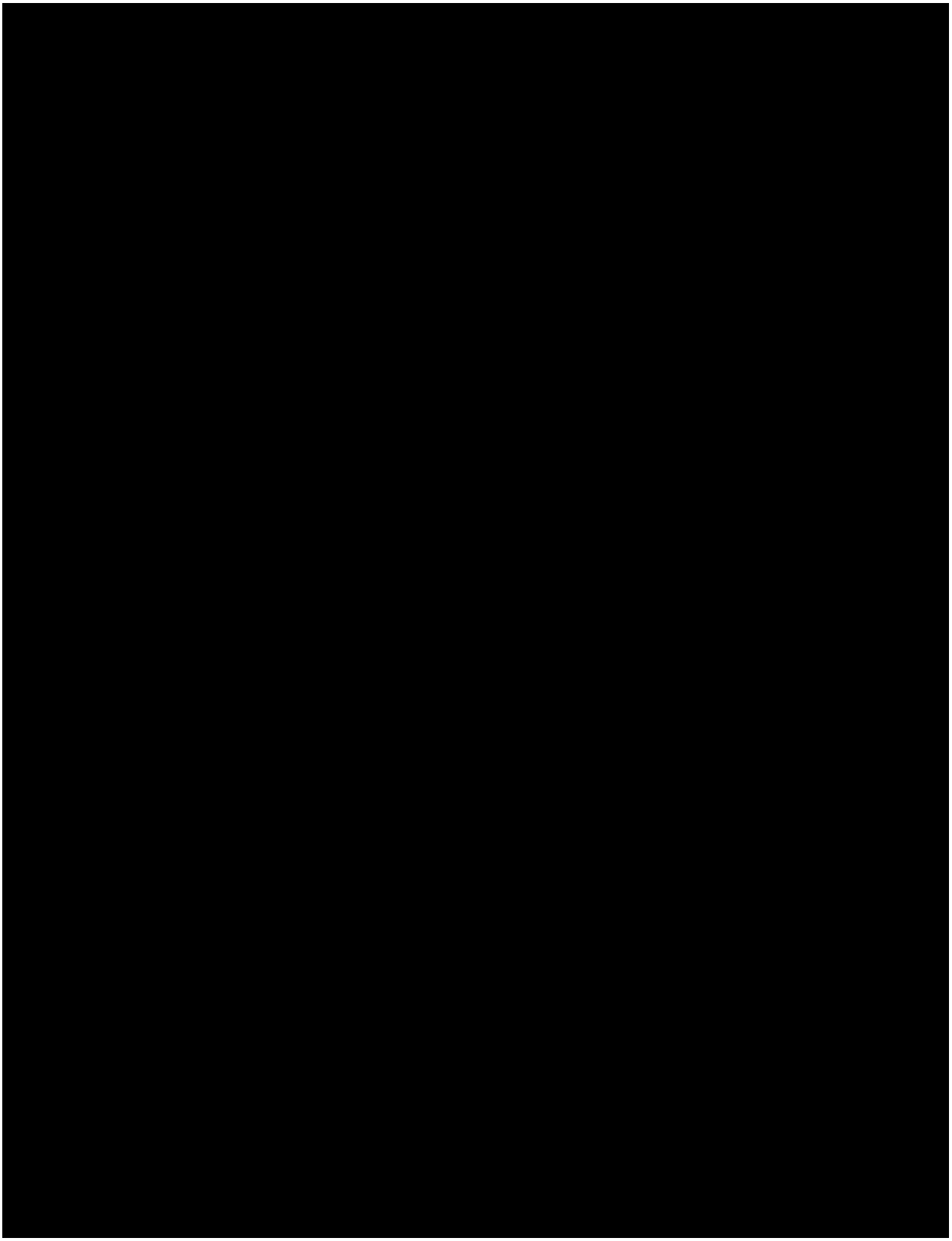


Figure 30: A portion of the USGS 7.5' Schneider, Indiana Quadrangle showing the location of Survey Area 3.

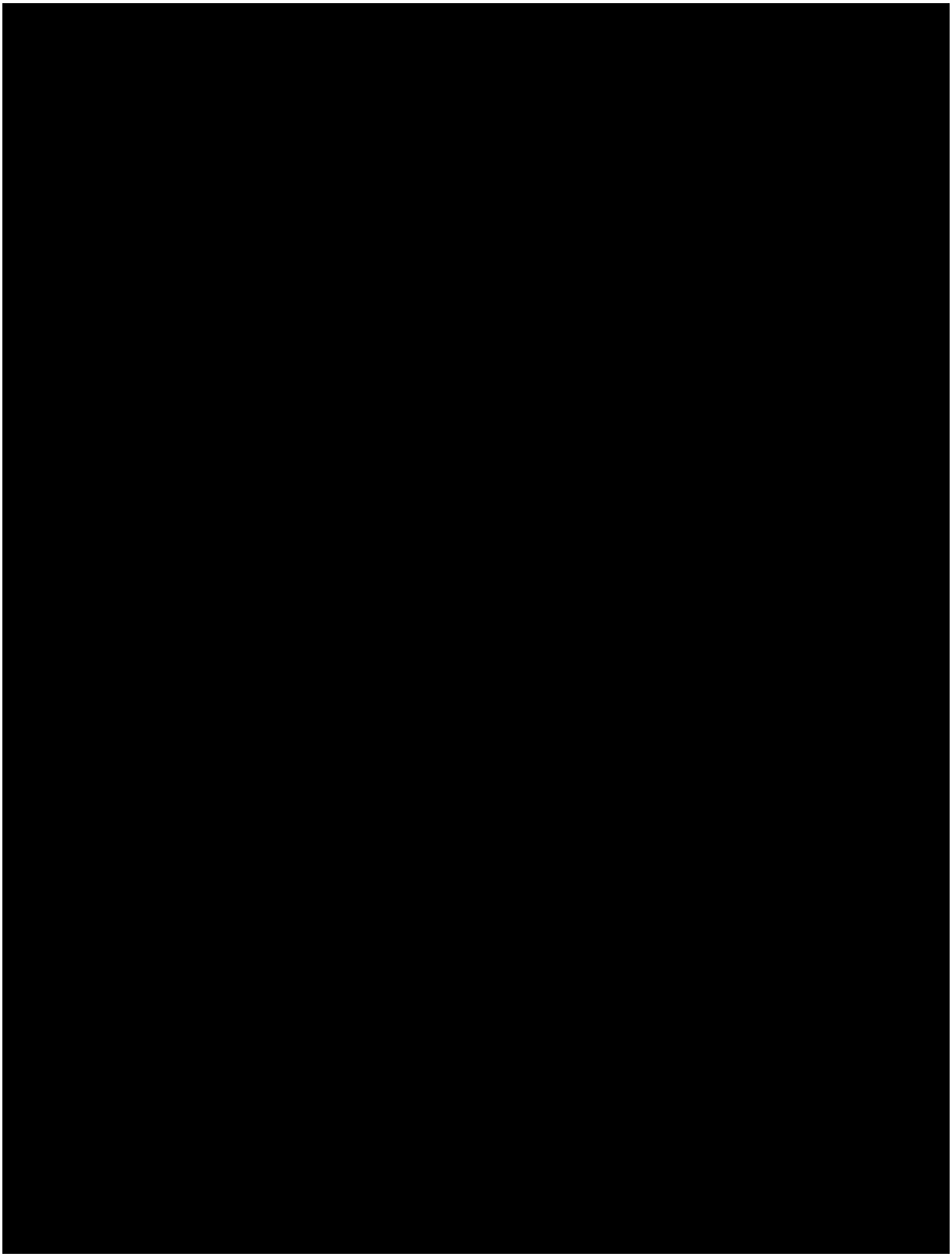


Figure 31: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of Survey Area 1 targeted by FY2015 Historic Preservation Grant conducted by Ball State University's Applied Anthropology Laboratories and Survey Area 3.

Artifacts

No artifacts were encountered in Survey Area 3.

Sites

No archaeological sites were recorded in Survey Area 3 (Figure 32 and Figure 33)

Density

Survey Area 3 consisted of 37.53 acres of outwash plains. Within Survey Area 3, a density of 0 sites per 37.53 acres occurred and sites covered 0.00 percent of the surface area.

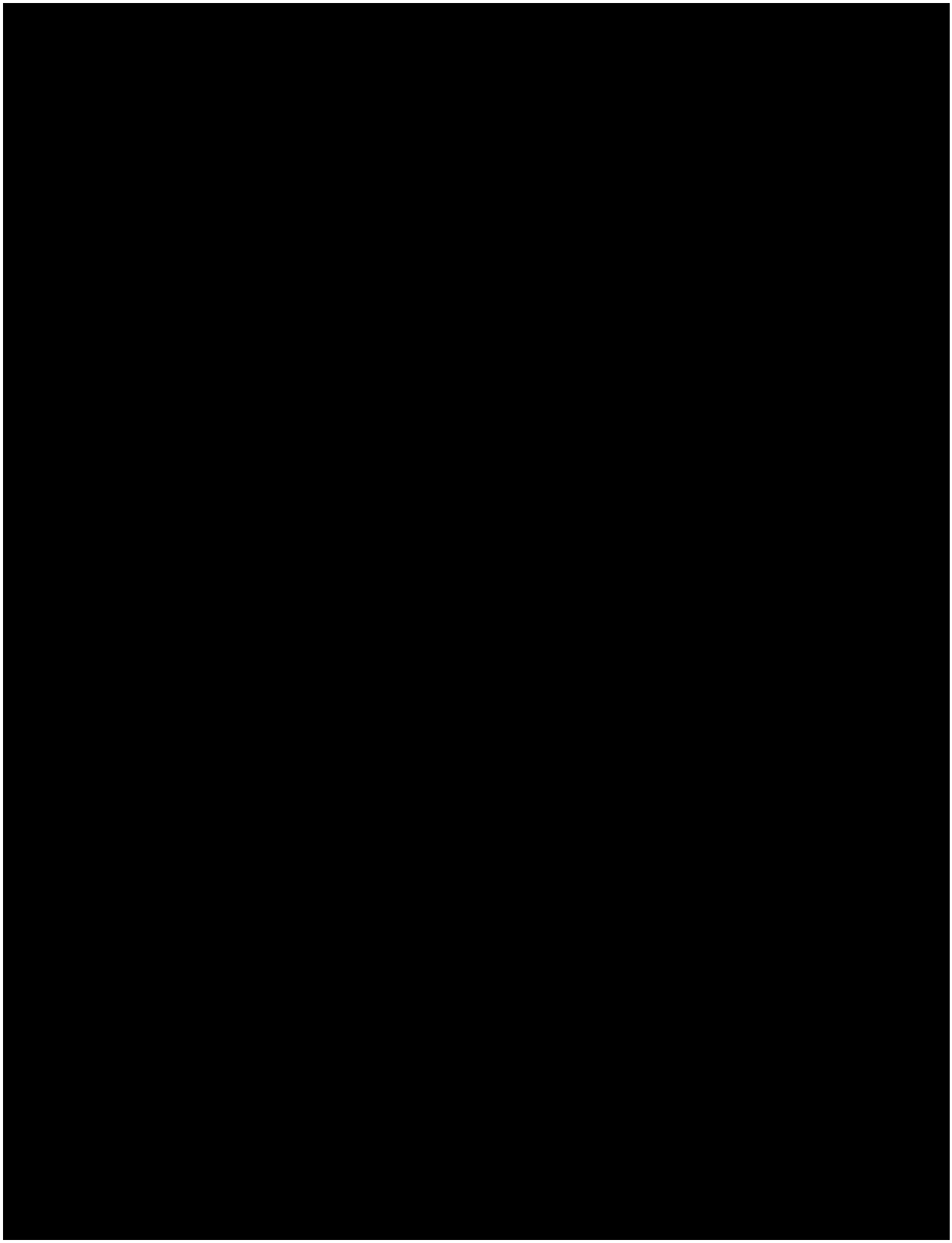


Figure 32: A portion of the USGS 7.5' Schneider, Indiana Quadrangle showing the lack of sites in Survey Area 3.

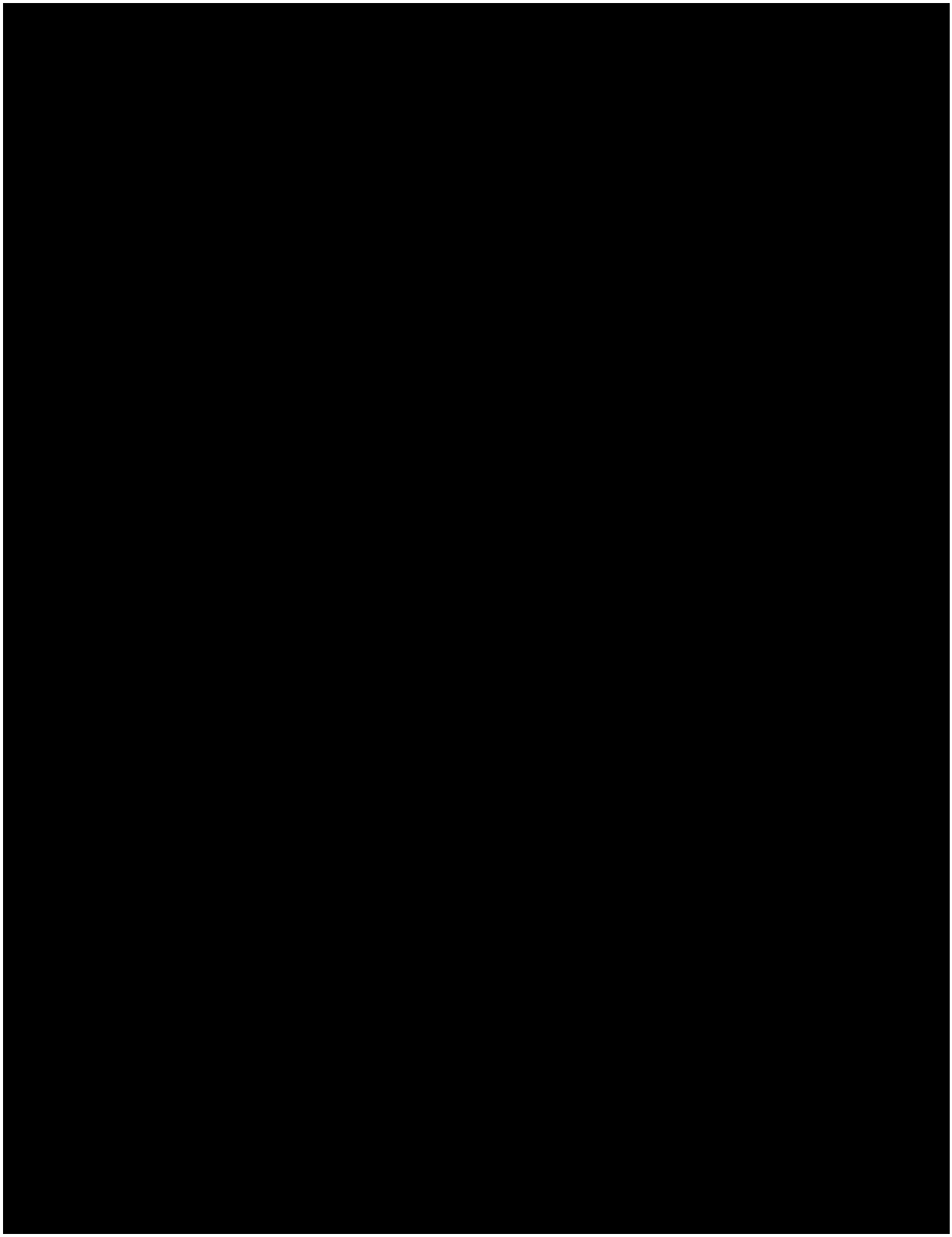


Figure 33: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the lack of sites in Survey Area 3.

Survey Area 4

Survey Area 4 was located in Beaver Township in [redacted], Township 29 North, Range 9 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Morocco, Indiana Quadrangle (Figure 34 and Figure 35). This property is separated into three parcels: A, B, and C which were surveyed on September 11, 17, and 18, 2016. Survey Area 4 was planted in corn that was still standing, approximately seven to nine feet tall. Ground surface visibility was approximately 70 to 90 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. A total of 182.85 acres was surveyed consisting of outwash plains and lake plains. The area consisted of Ayr loamy fine sand (AyB), Barry-Gilford fine sandy loam (Bh), Brems loamy sand (BmB), Gilford find sandy loam (Gf), Granby loamy fine sand (Gt), Morocco loamy sand (MuA), Oakville fine sand (OaB and ObB), Prochaska loamy sand (Pu), Sumava-Ridgeville-Odell fine sandy loam (SxA), and Wallkill loam (Wa) soils. Thirty-seven sites were encountered during the survey. The sites ranged in size from prehistoric isolated finds to a multicomponent site identified as a historic scatter and lithic scatter of 1,011 square meters (0.25 acres).

The landowner, [redacted], stopped by the survey area while the crew was surveying. He explained that a portion of Parcel A was deforested in the 1920s. [redacted] also pointed out the possible location where the custom butcher shop that his grandfather owned once stood (Figure 36). The location of the butcher shop was not located on any historic maps (Andreas 1968; Taylor 2007). [redacted] invited the crew to view and photography his collection of prehistoric artifacts that were found in Survey Area 4. The results of this visit are detailed in the Archaeological Survey Results – Collector Visit section.

Adjacent to Survey Area 4 is the location of the Archaeological Resources Management Service's 1997 survey of the Morocco Sewage Treatment Plant (Figure 36). The 1997 ARMS survey recorded one site (12-N-16) identified as an isolated prehistoric find containing a single unidentified prehistoric flake (Zoll and Westermeier 1997). One collector reported site (12-N-147) is located within Survey Area 4, and one collector reported site (12-N-205) is located near Survey Area 4 (Figure 36). It is unknown who reported sites 12-N-147 and 12-N-205 or when the sites were identified. Site 12-N-147 is a lithic scatter containing a Woodland component. Artifacts found at site 12-N-147 include grit-tempered sherds, flint chips, burnt rocks, and chipped slate (Division of Historic Preservation and Archaeology 2007). Site 12-N-205 is a lithic scatter. Artifacts found at site 12-N-205 include pottery sherds, a pointed copper awl measuring seven inches long, and several types of prehistoric points (Division of Historic Preservation and Archaeology 2007). Due to overlap of the 1997 ARMS survey and Survey Area 4 boundaries, the FY2016 HPF Newton Grant resurveyed 0.38 acres of the west side of the 1997 ARMS survey.

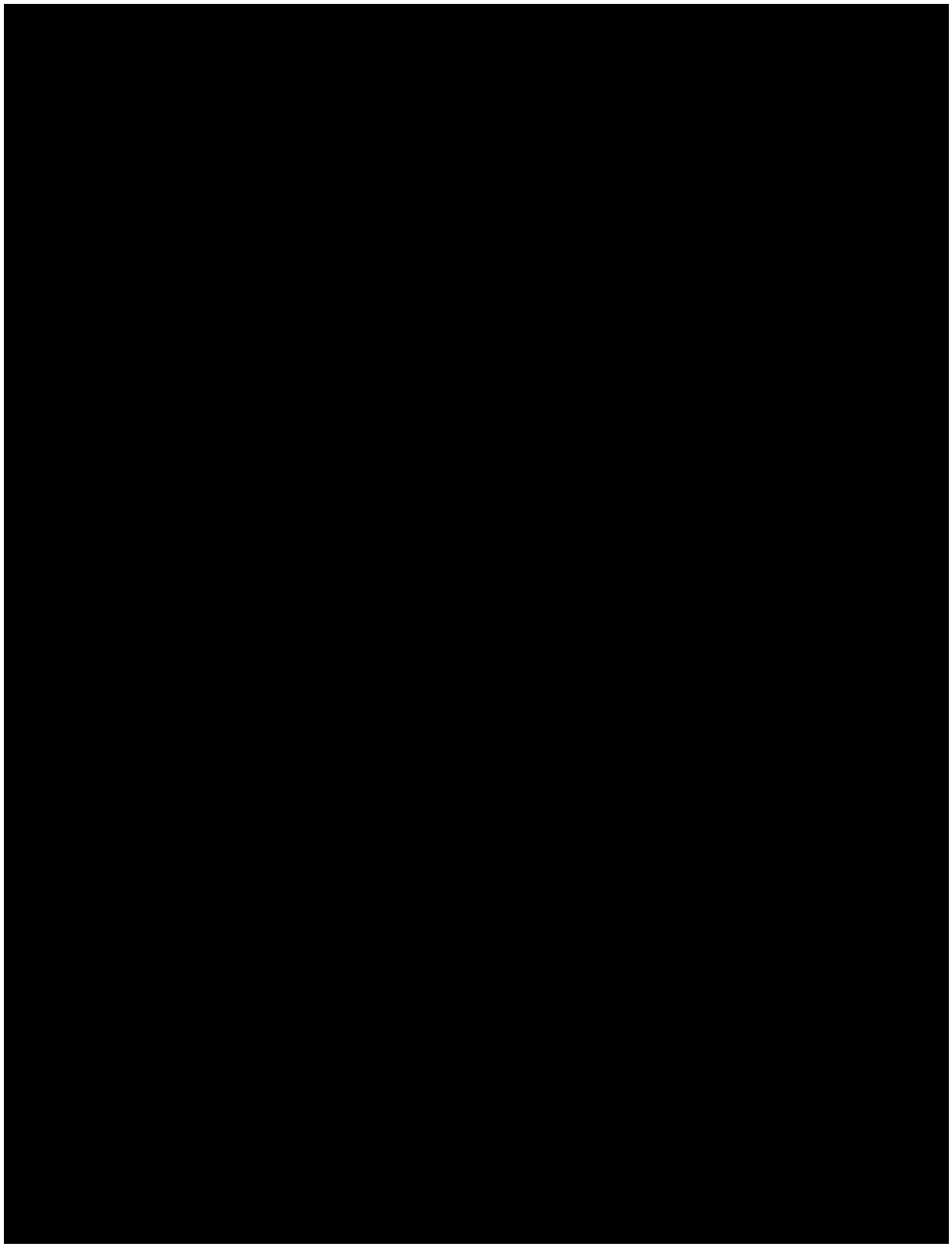


Figure 34: A portion of the map of Beaver Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Parcels A, B, and C in Survey Area 4. Note: Due to distortion in historical maps, the georeferenced location of SA4 is slightly off.

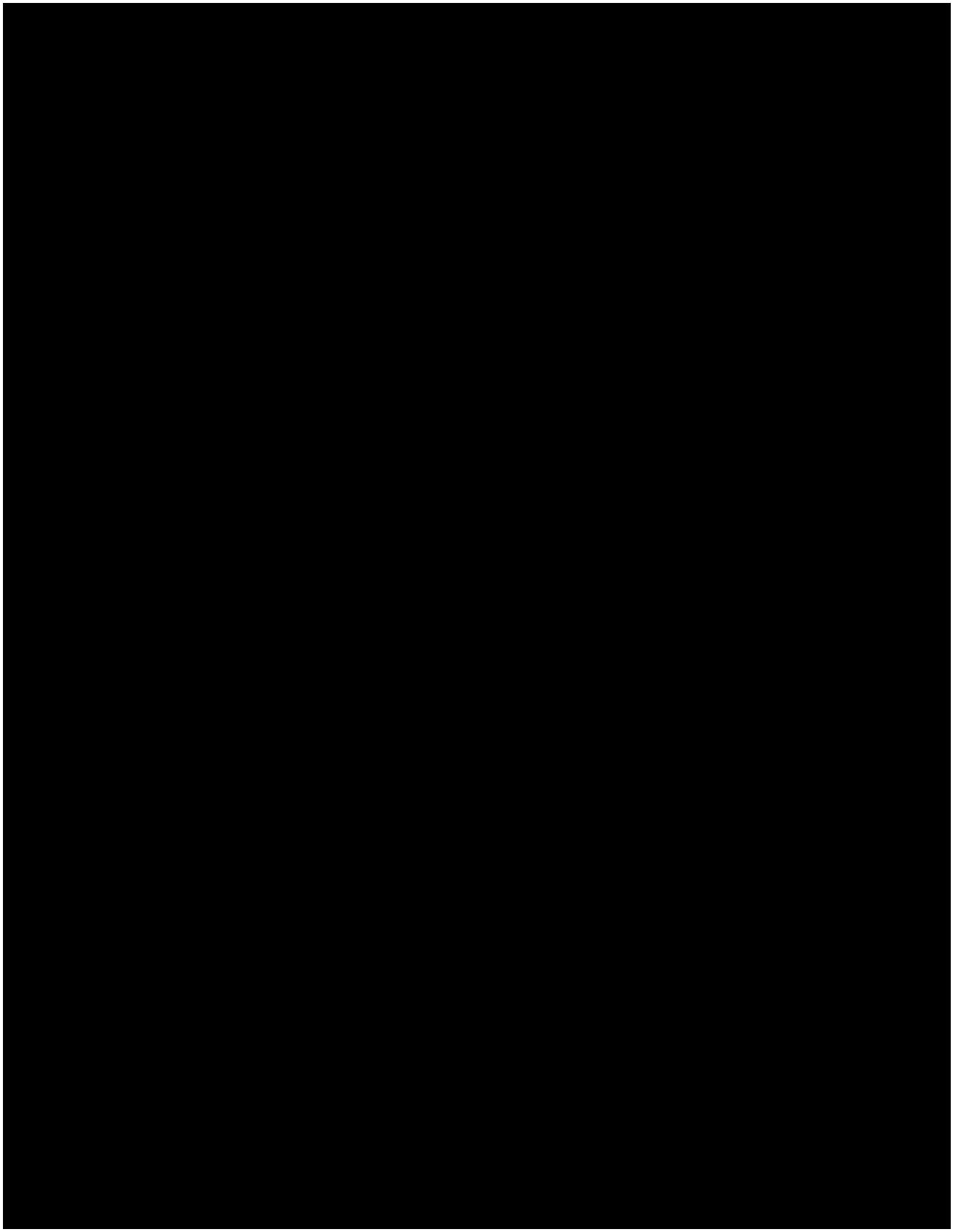


Figure 35: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the location of Survey Area 4.

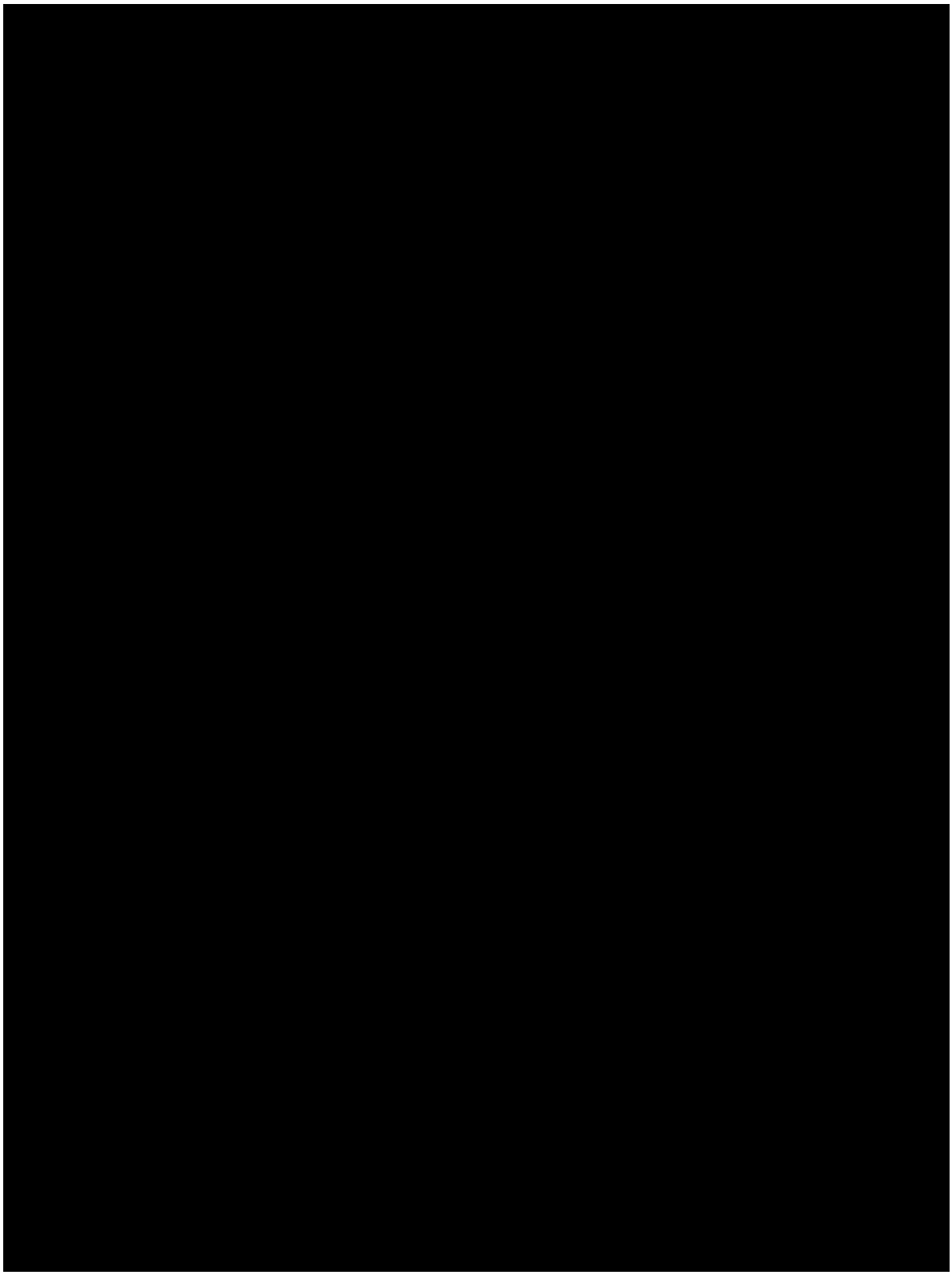


Figure 36: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of the 1997 survey area and site 12-N-16 targeted by Archaeological Resources Management Services, collector reported sites 12-N-147 and 12-N-205, the area deforested in the 1920s, the possible location of the butcher shop, and Survey Area 4.

Artifacts

A total of 318 artifacts was encountered in Survey Area 4, and of those artifacts 313 were collected. The five artifacts not collected (12-N-383 and 12-N-385) were bricks.

Table 6 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 37 through Figure 47. Artifacts are listed by individual site in Volume 2, Appendix E.

Sixty prehistoric artifacts were recovered (Figure 37 through Figure 42), four of which were diagnostic. A hafted Lamoka Cluster biface (Figure 37) dating to the Late Archaic period was recovered from site 12-N-397 (Justice 1987:127). A hafted Humpback Knife (Figure 38) dating to the Late Woodland period was recovered from site 12-N-402 (Munson and Munson 1972). A hafted Merom Cluster biface (Figure 39) dating to the Late Archaic period was recovered from site 12-N-402 (Justice 1987:130). A bannerstone groundstone tool (Figure 40 and Figure 41) dating to the Middle-Late Archaic period was recovered from site 12-N-402.

A total of 258 historic artifacts were identified in Survey Area 4 (Figure 43, Figure 44, Figure 45, Figure 46, and Figure 47) and of those collected, 235 are diagnostic (Table 7). Chronologically expressed these items include stoneware with Albany glaze interior and salt glaze exterior recovered from site 12-N-402 was manufactured from 1715 to 1920 (Noël Hume 1969:56-57; Ramsey 1939:21-22,59). Porcelain recovered from site 12-N-394 was manufactured from 1745 to 1795 (Noël Hume 1969:137; ODOT 1991:72). Porcelain with hand painted gold and black stripes recovered from site 12-N-409 was manufactured from 1745 to 1795 (Noël Hume 1969:137; ODOT 1991:72). Whiteware with a possible royal arms maker's mark recovered from site 12-N-394 manufactured in the early 1800s (Barber 1976:118; Godden 1964:552). Aqua glass recovered from sites 12-N-381, 12-N-394, and 12-N-403 was manufactured from ca.1800 to ca.1910 (IMACS 1992:472(18)). Turquois glass recovered from site 12-N-394 was manufactured from ca.1800 to ca.1910 (IMACS 1992:472(18)). Aqua tint glass recovered from 12-N-382 and 12-N-394 was manufactured from ca.1800 to ca.1910 (IMACS 1992:472(18)). An undecorated stoneware base with an Albany glaze interior and Bristol glaze exterior recovered from site 12-N-390 was manufactured from 1805 to present (Oswald et al. 1982:19;Ramsey 1939:21-22,59). Stoneware with an Albany glaze interior and undecorated exterior recovered from site 12-N-390 was manufactured from 1805 to 1920 (Ramsey 1939:21-22,59). Hand painted whiteware recovered from site 12-N-409 was manufactured from 1820 to present (ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13). Plain whiteware recovered from sites 12-N-379, 12-N-394, 12-N-399, and 12-N-409 was manufactured from 1820 to present (ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13). Stoneware with a Blue glaze interior and an undecorated exterior recovered from site 12-N-384 was manufactured from 1835 to mid-1890 (Stelle 2001:Chapter I). Stoneware with Bristol glaze interior and exterior recovered from site 12-N-394 was manufactured from 1835 to present (Oswald et al. 1982:19). Stoneware with a Blue glaze interior and exterior recovered from site 12-N-401 was manufactured from 1835 to mid-1890 (Stelle 2001:Chapter I). Ironstone recovered from site 12-N-379 was manufactured from 1842 to present (ODOT 1991:177; Trussel 2010:14). Ironstone with dark blue transfer print recovered from site 12-N-409 was manufactured from 1842 to present (ODOT 1991:177; Trussel 2010:14). Green glass recovered from sites 12-N-380, 12-N-392, 12-N-393, 12-N-394, 12-N-403, and 12-N-409 was manufactured from 1860 to

present (IMACS 1992:472(18)). Amber glass recovered from sites 12-N-387, 12-N-393, 12-N-394, 12-N-403, 12-N-405, 12-N-409, 12-N-411, and 12-N-413 was manufactured from 1860 to present (IMACS 1992:472(19)). Clear glass recovered from sites 12-N-378, 12-N-384, 12-N-387, 12-N-388, 12-N-393, 12-N-394, 12-N-395, 12-N-396, 12-N-403, 12-N-405, 12-N-407, 12-N-408, 12-N-409, 12-N-410, 12-N-411, and 12-N-414 was manufactured from 1875 to present (IMACS 1992:472(19)). Clear glass embossed with "Old Qu" recovered from site 12-N-394 was manufactured from 1875 to the late 1950s (Lockhart 2010). Amethyst glass recovered from sites 12-N-389 and 12-N-394 was manufactured from 1880 to 1925 (IMACS 1992:472(7); Newman 1970:74). A molded milk glass lid liner embossed with "C CAP," a rhombus shape, and "S" recovered from site 12-N-394 was manufactured from 1890 to 1960 (IMACS 1992:472(18)). Cobalt glass recovered from site 12-N-394 was manufactured from 1890 to 1960 (IMACS 1992:472(19)). Milk glass recovered from sites 12-N-392, and 12-N-394 was manufactured from 1890 to 1960 (IMACS 1992:472(18)). A molded green glass bottleneck with a crown cap finish and embossed stippling recovered from site 12-N-393 was manufactured from 1892 to present (IMACS 1992:472(18)). A Wisconsin Porcelain Co. semi-porcelain insulator embossed with "WP 36" and "USA" recovered from site 12-N-380 was manufactured post 1892 (Berge 1980:15b; Tod 1977). An oval shaped amber glass base with an embossed Owens-Illinois Glass Company makers mark, "4," "5," and "PINT" recovered from site 12-N-394 was manufactured ca. 1929 to 1954 (Lockhart and Hoenig 2015; Whitten 2016). An aluminum pan with a maker's mark reading "Priscilla Ware Speaks for Itself" recovered from site 12-N-409 was manufactured during the 1940s or 1902 (Worthpoint 2016).

Table 6: Artifacts from Survey Area 4.

Prehistoric	No.	Historic	No.
Biface, Hafted, Lamoka Cluster	1	Ceramic, Porcelain	4
Biface, Hafted, Humpback Knife	1	Ceramic, Semi-Porcelain	1
Biface, Hafted, Merom Cluster	1	Ceramic, Ironstone	2
Nonbiface, Tool	1	Ceramic, Whiteware	18
Core	2	Ceramic, Stoneware	9
Flake, Tool, Retouched, Utilized	1	Glass, Cobalt	1
Flake	7	Glass, Green	14
Flake, Heat Treated	1	Glass, Amethyst	3
Flake, Retouched	1	Glass, Milk	4
Flake, Retouched, Scraper, Heat Treated	1	Glass, Amber	17
Flake, Proximal	13	Glass, Aqua	8
Flake, Proximal, Scraper	1	Glass, Turquoise	1
Flake, Medial	7	Glass, Aqua Tint	3
Flake, Medial, Retouched	1	Glass, Clear	116
Flake, Distal	16	Metal, Iron, Bent Sheet	1
Flake, Distal, Heat Damaged	2	Metal, Iron, Barbed wire	1
Flake, Distal, Retouched	1	Metal, Iron, Unidentified	29
Flake, Distal, Retouched, Possible Spoke Shave	1	Metal, Iron, Possible Pulley Wheel	1
Groundstone, Tool, Bannerstone	1	Metal, Iron, Framed Lip	2
		Metal, Aluminum, Unidentified	3
		Metal, Aluminum, Pan	1
		Faunal, Shell, Welk	1
		Faunal, Shell, Mussels	8
		Faunal, Cortical, Possible Tibia	1
		Faunal, Cortical, Long Bone, Possible Radius	1
		Slag	3
		Brick (Uncollected)	5
Total	60	**Total**	**258**

Figure 37: A Lamoka Cluster diagnostic point from 12-N-397 (photo by Kiya Mullins, Ball State University).

Figure 38: A Humpback knife diagnostic point recovered from 12-N-402 (photo by Kiya Mullins, Ball State University).

Figure 39: A Merom Cluster diagnostic point from 12-N-402 (photo by Kiya Mullins, Ball State University).

Figure 40: Bottom of bannerstone tool from 12-N-402 (photo by Kiya Mullins, Ball State University).

Figure 41: Side of bannerstone tool from 12-N-402 (photo by Kiya Mullins, Ball State University).

Figure 42: Representative prehistoric artifacts from Survey Area 4 (photo by Kiya Mullins, Ball State University).

Table 7: Historic Diagnostics from Survey Area 4

Artifact Type	Site	Date Range	Citation
Porcelain	12-N-394	1745-1795	Noël Hume 1969:137; ODOT 1991:72
Porcelain hand painted gold and black stripes	12-N-409	1745-1795	Noël Hume 1969:137; ODOT 1991:72
Wisconsin Porcelain Co. Semi-Porcelain Insulator embossed with "WP 36" and "USA"	12-N-380	Post 1892	Berge 1980:15b; Tod 1977
Ironstone	12-N-379	1842 to present	ODOT 1991:177; Trussel 2010:14
Ironstone with dark blue transfer print	12-N-409	1842 to present	ODOT 1991:177; Trussel 2010:14
Plain Whiteware	12-N-379, 12-N-394, 12-N-399, and 12-N-409	1820-present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Whiteware with possible Royal Arms makers mark	12-N-394	Ca. early 1800s	Barber 1976:118; Godden 1964:552
Whiteware hand painted	12-N-409	1820-present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Stoneware with Blue Salt Glaze interior and Undecorated exterior	12-N-384	1835- mid 1890	Stelle 2001:Chapter I
Stoneware with Undecorated base, Albany Glaze interior and Bristol Glaze exterior	12-N-390	1805-Present	Oswald et al. 1982:19; Ramsey 1939:21-22,59
Stoneware with Albany Glaze interior and Undecorated exterior	12-N-390	1805-1920	Ramsey 1939:21-22,59
Stoneware with Bristol Glaze interior and exterior	12-N-394	1835-present	Oswald et al. 1982:19
Stoneware Blue Glaze interior and exterior	12-N-401	1835- mid 1890	Stelle 2001:Chapter I
Stoneware Albany Glaze interior and Salt Glaze exterior	12-N-402	1715-1920	Noël Hume1969:56-57; Ramsey1939:21-22,59
Cobalt Glass	12-N-394	1890-1960	IMACS 1992:472(19)
Green Glass	12-N-380, 12-N-392, 12-N-393, 12-N-394, 12-N-403, and 12-N-409	1860 to present	IMACS 1992:472(18)
Green Glass possible F.E. Reed & Co. molded push-up base with embossed	12-N-409	1923- 1956	IMACS 1992:472(18)

Artifact Type	Site	Date Range	Citation
makers mark and "51" and"3"			
Green Glass molded bottleneck with crown cap embossed stippling	12-N-393	1892 to present	IMACS 1992:472(3, 12, 18)
Amethyst Glass	12-N-389 and 12-N-394	1880 to 1925	Newman 1970:74; IMACS 1992:472(7)
Milk Glass	12-N-392 and 12-N-394	1890 to present	IMACS 1992:472(18)
Milk Glass molded lid liner embossed "C CAP," a rhombus shape, and "S"	12-N-394	1890-1960	IMACS 1992:472(18)
Amber Glass	12-N-387, 12-N-393, 12-N-394, 12-N-403, 12-N-405, 12-N-409, 12-N-411, and 12-N-413	1860 to present	IMACS 1992:472(19)
Amber Glass Owens-Illinois Glass Company molded oval base embossed makers mark, "4" "5" and "PINT"	12-N-394	Ca. 1929-1954	Lockhart and Hoenig 2015; Whitten 2016
Aqua Glass	12-N-381, 12-N-394, and 12-N-403	Ca.1800-ca.1910	IMACS 1992:472(18)
Turquoise Glass	12-N-394	Ca.1800-ca.1910	IMACS 1992:472(18)
Aqua tint Glass	12-N-382, 12-N-394	Ca.1800-ca.1910	IMACS 1992:472(18)
Clear Glass	12-N-378, 12-N-384, 12-N-387, 12-N-388, 12-N-393, 12-N-394, 12-N-395, 12-N-396, 12-N-403, 12-N-405, 12-N-407, 12-N-408, 12-N-409, 12-N-410, 12-N-411, and 12-N-414	1875 to present	IMACS 1992:472(19)
Clear Glass embossed with "Old Qu"	12-N-394	1878- late 1950s	Lockhart 2010
Metal Aluminum pan with makers mark reading "Priscilla Ware Speaks for Itself"	12-N-409	1940s or 1902	Worthpoint 2016

Figure 43: Representative historic ceramic artifacts from Survey Area 4 (photo by Kiya Mullins, Ball State University).

Figure 44: A semi-porcelain Wisconsin Porcelain Company insulator recovered from 12-N-380 (photo by Kiya Mullins, Ball State University).

Figure 45: Representative historic glass artifacts from Survey Area 4 (photo by Kiya Mullins, Ball State University).

Figure 46: Representative faunal artifacts from Survey Area 4 (photo by Kiya Mullins, Ball State University).

Figure 47: Representative historic metal artifacts from Survey Area 4 (photo by Kiya Mullins, Ball State University).

Sites

Thirty-seven archaeological sites (12-N-378 to 12-N-414), were recorded in Survey Area 4 (Figure 48 to Figure 53). Summaries for the individual sites are contained in Volume 2, Appendix F. Twenty-eight sites (12-N-378 to 12-N-382, 12-N-384, 12-N-387 to 12-N-390, 12-N-392 to 12-N-397, 12-N-399, 12-N-401 to 12-N-403, 12-N-405, 12-N-407 to 12-N-411, 12-N-413, and 12-N-414) contained diagnostic artifacts. One site (12-N-397) contained a Late Archaic component as part of a lithic scatter. One site (12-N-402) contained a Late Woodland, Middle-Late Archaic, and a Late Archaic component as part of the multicomponent site. One site (12-N-398) was a prehistoric isolated find and three sites (12-N-391, 12-N-397, and 12-N-406) were lithic scatters. Nine sites (12-N-378, 12-N-381, 12-N-382, 12-N-385, 12-N-386, 12-N-388, 12-N-399, 12-N-408, and 12-N-414) were historic isolated finds and seventeen sites (12-N-379, 12-N-380, 12-N-383, 12-N-384, 12-N-387, 12-N-390, 12-N-392 to 12-N-396, 12-N-404, 12-N-405, 12-N-409 to 12-N-411, and 12-N-413) were historic scatters. Seven sites were multicomponent sites including four sites (12-N-401, 12-N-403, 12-N-407, and 12-N-412) that were identified as a prehistoric isolated find and historic scatters, two sites (12-N-400 and 12-N-402) that were identified as historic scatters and lithic scatters, and one site (12-N-389) was identified as both a historic isolated find and prehistoric isolated find.

All 37 sites were discovered on moraines. Four sites (12-N-390, 12-N-396, 12-N-410, and 12-N-411) were located on Granby loamy fine sand (Gt) soil, seven sites (12-N-388, 12-N-389, 12-N-391, 12-N-392, 12-N-397, 12-N-399, and 12-N-400) were located on Oakville fine sand (OaB) soil, and two sites (12-N-402 and 12-N-406) were located on Oakville fine sand (ObB) soil. Two sites (12-N-381 and 12-N-384) were located on Ayr loamy fine sand (AyB) soil, two sites (12-N-379 and 12-N-380) were located on Sumava-Ridgeville-Odell fine sandy loam (SxA) soil, and one site (12-N-382) was located on Wallkill loam (Wa) soil. Four sites (12-N-387, 12-N-394, 12-N-395, and 12-N-398) were located on Morocco loamy sand (MuA) soil, three sites (12-N-401, 12-N-407, and 12-N-408) were located on Brems loamy sand (BmB) soil, six sites (12-N-404, 12-N-405, 12-N-409, 12-N-412, 12-N-413, and 12-N-414) were located on Prochaska loamy sand (Pu) soil, and three sites (12-N-378, 12-N-385, and 12-N-403) were located on Barry-Gilford fine sandy loam (Bh) soil. Three sites were located on multiple soil types. One site (12-N-383) was located on Gilford fine sandy loam (Gf) and Morocco loamy sand (MuA) soils, and one site (12-N-386) was located on Barry-Gilford find sandy loam (Bh) and Oakville fine sand (OaB) soils. One site (12-N-393) was located on Granby loamy fine sand (Gt) and Morocco loamy sand (MuA) soils.

Two collector reported sites (12-N-205 and 12-N-147) are located in Parcel A of Survey Area 4 (Figure 36). The only location information available in SHAARD for site 12-N-205 is its location within [redacted] with unknown site size (Division of Historic Preservation and Archaeology 2007). The location of site 12-N-205 as shown in Figure 36 is based on its approximate location on the map of collector reported sites within Beaver Township in Heistand (1951:31). During this FY2016 HPF Grant survey, no sites were located near the approximate location of site 12-N-205. Site 12-N-205 is possibly located farther north on land that was not permitted to be surveyed as part of the FY2016 HPF Grant project. According to SHAARD, the location of site 12-N-147 is in the NE ¼ of the SW ¼ of the NW ¼ of [redacted] Township 29N Range 9W with unknown site size (Division of Historic Preservation and Archaeology 2007). The approximate location of site 12-N-147 is shown on Figure 36 in the center of the location information given in SHAARD. Two sites, one identified as a lithic scatter (12-N-397) and the other identified as a multicomponent site containing a lithic and historic scatter (12-N-400), were located near the approximate location of site 12-N-147 during this FY2016 HPF survey (Figure 36, Figure 48, Figure 49). It is possible that the artifacts recovered from sites 12-N-397 and 12-N-400 could be representative of artifacts recovered from site 12-N-147 or could be part of site 12-N-147.

Site 12-N-394 is a historic scatter located in the far southeastern portion of Parcel A in Survey Area 4 (Figure 48 and Figure 49). The 104 artifacts recovered from site 12-N-394 consisted primarily of historic glass, ceramic, and metal dating from the early 1800s to the present. Clear glass accounts for 88 pieces of the assemblage with 22 pieces identified as pieces

of container glass. No evidence of historic features such as building foundations, shaft features (well, privies), or fence lines were identified during survey. The site is 550 square meters, or 0.14 acres in size, which leads to an artifact density of 7.4 artifacts per acre. After consulting several historic sources (Andreas 1968; Taylor 2009:52-53), the northern boundary of the Oakland Cemetery dating from 1873 to the present is located 12 meters southeast of the site outside the survey area. No evidence of structures were located and an artifact assemblage dominated by glass artifacts and few ceramic, metal, or construction debris, does not support the idea that a residence once stood at this location. Based on the archaeological and historical research, lack of obvious structural foundations or shaft features, and the lack of specific diagnostic materials in the artifact assemblage, site 12-N-394 does not appear to have the potential to yield additional information beyond the Phase I level and therefore is not considered eligible for the National Register of Historic Places.

Site 12-N-397, a lithic scatter, is located in the northern half of Parcel A in Survey Area 4 (Figure 48 and Figure 49). The site is located on a small ridge on well-drained soil of Aeolian origin, 308 meters south of Beaver Creek and 48 meters north of a small unnamed natural pond. The collector reported site 12-N-147 dating to the Woodland period is located near site 12-N-397. The assemblage from 12-N-397 includes only four prehistoric lithic artifacts. This includes a diagnostic Late Archaic Lamoka Cluster projectile point and three prehistoric non-diagnostic flakes. The presence of a formal tool located may indicate some level of hunting and/or butchering activity. Hunting of fauna associated with the nearby marsh to the south of the site is a distinct possibility as Surface-Evans (2015) and White (2007) have found similar patterns among Paleoindian and Archaic peoples in the Kankakee Marsh region. The chert sources identified within the lithic assemblage include Liston Creek and Muldraugh from northern and southern Indiana respectively. The size of site 12-N-397 is 271 square meters, or 0.07 acres, which results in an artifact density of 57.1 artifacts per acre. A historic map from an 1876 atlas shows the entire Parcel A in Survey Area 4 was a swamp with a tributary of Beaver Creek running directly east of site 12-N-397 (Andreas 1968). There were no historic structures located on any historic maps (Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53). Based on archaeological research, a diagnostic Late Archaic artifact, the non-local chert types identified, and the presence of artifacts on a topographic rise on well-drained soils could indicate the potential to yield additional important information on the prehistoric settlement and land use patterns of Newton County. Similar site types have been identified in the Kankakee Marsh region and archaeological excavation has often revealed dense feature and artifacts assemblages (e.g., Surface-Evans 2015). This potential importance of the site is amplified by the general lack of diagnostic artifacts from well-provenienced locations in Newton County. For these reasons, it is suggested that site 12-N-397 may be potentially eligible for the National Register of Historic Places.

Site 12-N-400, a lithic scatter, is located in the northern half of Parcel A in Survey Area 4 (Figure 48 and Figure 49). The site is located on a small ridge on well-drained soil of Aeolian origin, 253 meters south of Beaver Creek and 98 meters north of a small unnamed natural pond. The collector reported site 12-N-147 dating to the Woodland period is located near site 12-N-400. The assemblage from 12-N-400 includes 24 artifacts, 22 of which are prehistoric lithics and the remaining two consist of faunal artifacts. The 22 prehistoric artifacts are non-diagnostic flakes and nonbifacial tools. Almost half of the chert sources identified within the lithic assemblage include Blanding, Burlington, and Delaware cherts from northwestern and southern Illinois and central Ohio respectively. The size of site 12-N-400 is 1,012 square meters, or 0.25 acres, which results in an artifact density of 100 artifacts per acre. A historic map from an 1876 atlas shows the entire Parcel A in Survey Area 4 was a swamp with a tributary of Beaver Creek running directly west of site 12-N-400 (Andreas 1968). There were no structures located on any historic maps (Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53). Based on the archaeological research, the density and diversity of prehistoric artifacts, the exotic chert types identified, and the diversity of activities represented in the artifact assemblage on a rise in topography and well-drained soil could indicate the potential to yield additional important information on the prehistoric settlement and land use patterns of Newton County beyond the Phase I level. Therefore, site 12-N-400 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-402, a lithic and historic scatter, is located in the southwestern section of Parcel A in Survey Area 4 (Figure 48 and Figure 49). The site is located on a slight rise on moderately well-drained soil of Aeolian origin, 195 meters east of Beaver Creek. Adjacent to site 12-N-402 is the location of site 12-N-16 from the Archaeological Resources Management Service's 1997 survey of the Morocco Sewage Treatment Plant (Figure 36). Site 12-N-16 recovered a single unidentified prehistoric flake (Zoll and Westermeier 1997). The assemblage from 12-N-402 includes 25 artifacts, 23 of which are prehistoric lithics and the remaining two consist of a historic ceramic with a date range of 1715 to 1920 and one piece of slag. Three diagnostic lithics were recovered including a Late Archaic Merom Cluster point, a Middle-Late Archaic bannerstone, and a Late Woodland humpback knife (Munson and Munson 1972). The remaining 20 prehistoric artifacts recovered are non-diagnostic flakes and tools. The presence of formal tools located within the site could be an indication of faunal exploitation within the marsh region. Surface-Evans (2015) and White (2007) have found similar patterns among Paleoindian and Archaic peoples in the Kankakee Marsh region. The presence of Middle-Late and Late Archaic diagnostic artifacts may further support the idea of Archaic use of the marsh area. All the chert sources identified within the lithic assemblage include non-local cherts from central and southern Indiana, Delaware chert from central Ohio, and Blanding chert from northwestern Illinois. The size of site 12-N-402 is 475 square meters, or 0.12 acres, which results in an artifact density of 208 artifacts per acre. A historic map from 1876 atlas shows the entire Parcel A of Survey Area 4 was a swamp with Beaver Creek running directly south of site 12-N-402 (Andreas 1968). There

were no structures located on any historic maps (Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53), but a map does show the Chicago & Eastern Illinois railroad near the site (Geo. A. Ogle & Co. 1916). Based on the archaeological research, the density and diversity of prehistoric artifacts, the exotic chert types identified, the proximity to site 12-N-16, and the diversity of activities represented in the artifact assemblage on a slight rise in the topography could indicate the potential to yield additional important information on the early settlement patterns of the 19th Century and prehistoric settlement patterns of Newton County beyond the Phase I level. Therefore, site 12-N-402 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-409 is a historic scatter located in the northwestern portion of Parcel A in Survey Area 4 (Figure 48 and Figure 49). The 58 artifacts recovered from site 12-N-409 consisted primarily of historic ceramic, glass, and metal dating from 1740 to present. Clear glass accounts for 37 pieces of the assemblage with 12 pieces identified as parts of bottles or containers. No evidence of subsurface features (e.g., structural foundations, shaft features) were observed during survey. The site itself is 852 square meters, or 0.21 acres, in size, which leads to an artifact density of 276.2 artifacts per acre. After consulting several historic sources (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:52-53), there are no historic structures located near site 12-N-409. A historic map from 1876 atlas does show the entire Parcel A of Survey Area 4 was a swamp (Andreas 1968) and likely was not the location of a residence. Instead, the artifact scatter appears to represent a dump area where historic artifacts were discarded. Based on the archaeological and historical research, site 12-N-409 does not appear to have the potential to yield additional information beyond the Phase I level and therefore is not recommended eligible for the National Register of Historic Places.

The remainder of the site types (12-N-378 to 12-N-393, 12-N-395, 12-N-396, 12-N-398, 12-N-399, 12-N-401, 12-N-403 to 12-N-408, and 12-N-410 to 12-N-414) found in Survey Area 4 consisted of very small artifacts assemblages. Therefore, none of these sites likely contain additional information beyond the Phase I level. Therefore, none of the sites listed above are recommended as eligible for the National Register of Historic Places.

Density

Survey Area 4 consisted of 182.85 acres of principally moraine landforms. Within Survey Area 4, a density of one site per 4.94 acres occurred and sites covered 1.06 percent of the surface area.

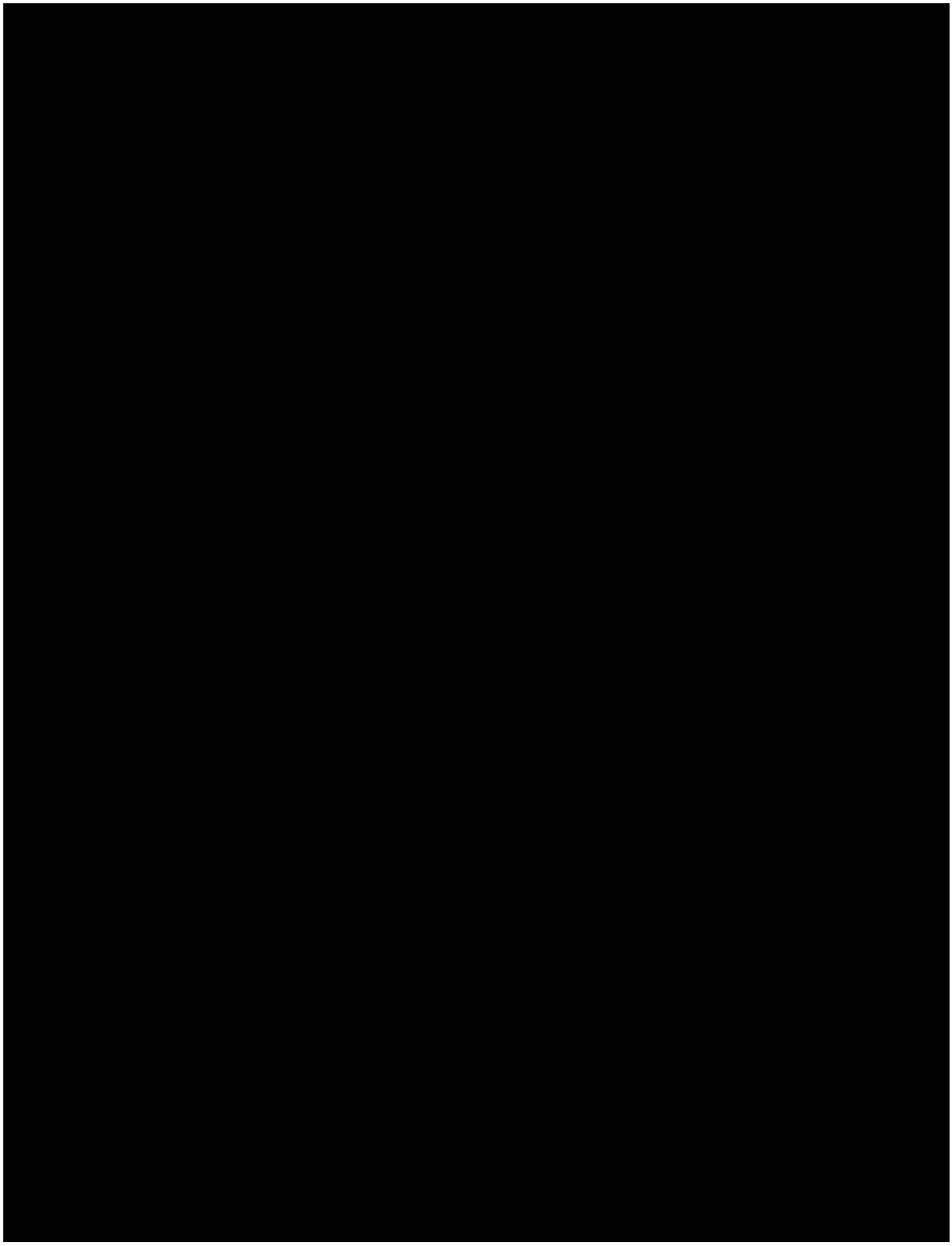


Figure 48: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the location of Survey Area 4, Parcel A and sites 12-N-378 to 12-N-409.

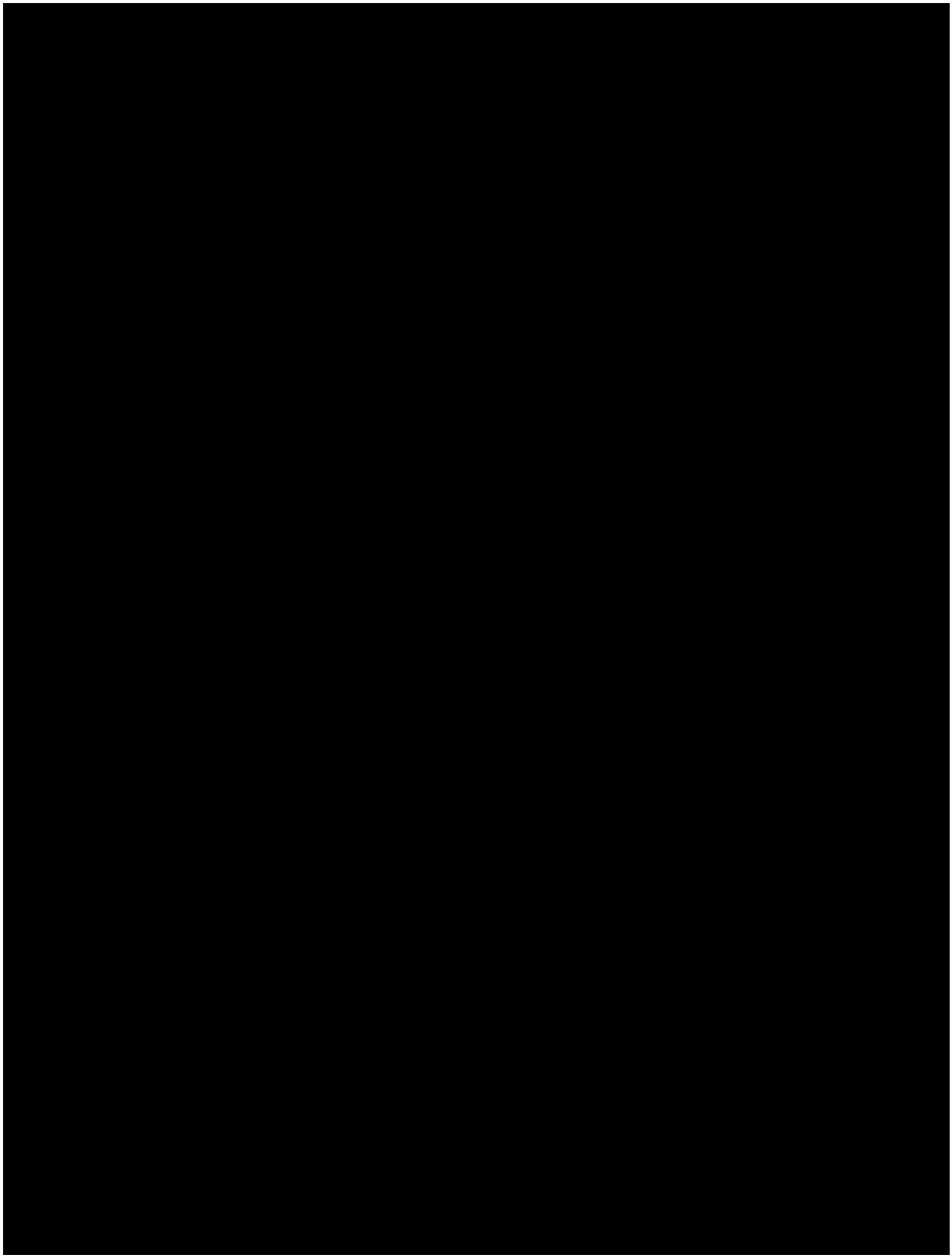


Figure 49: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of Survey Area 4, Parcel A and sites 12-N-378 to 12-N-409.

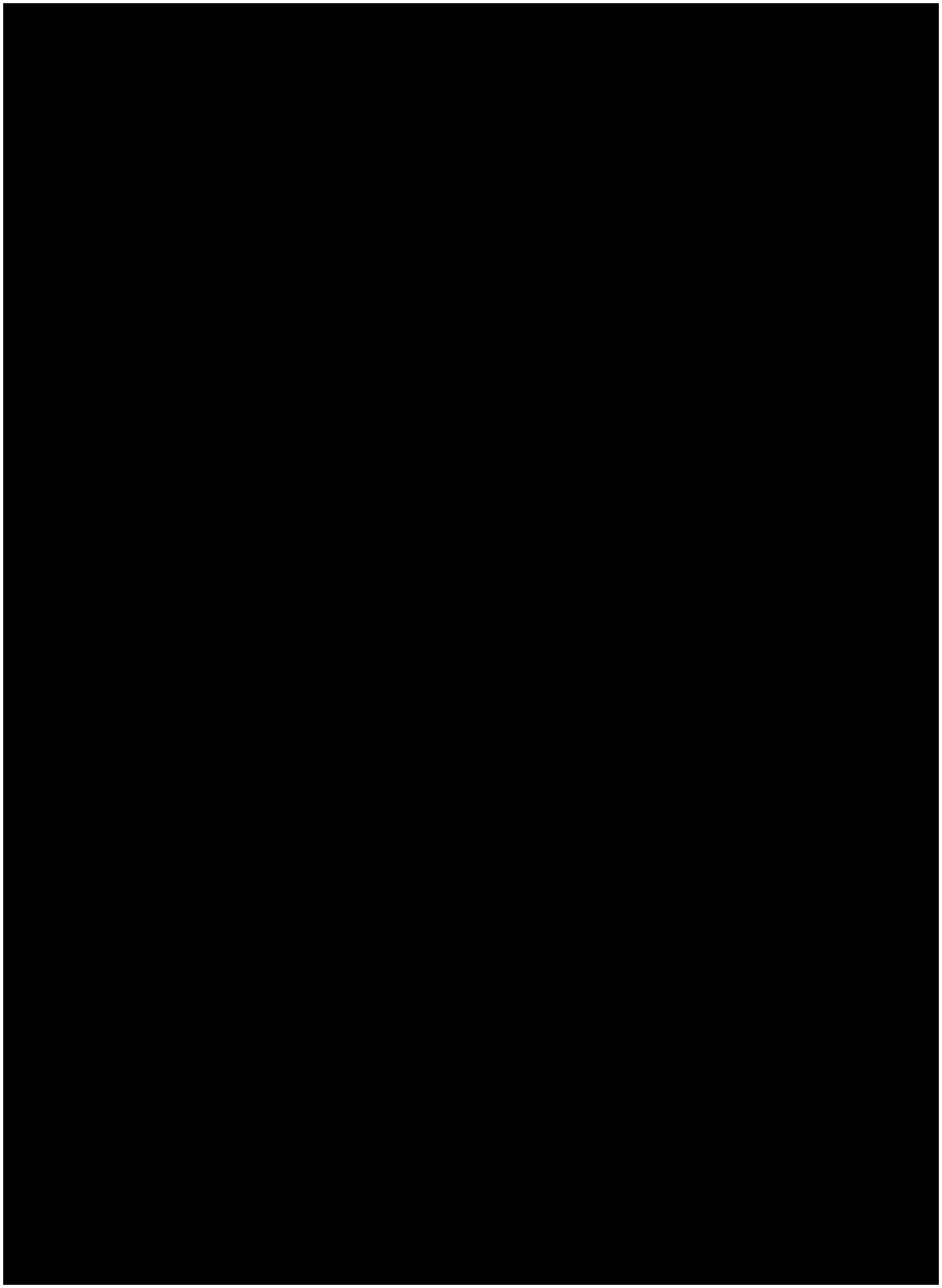


Figure 50: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the location of Survey Area 4, Parcel B and sites 12-N-412, 12-N-413, and 12-N-414.

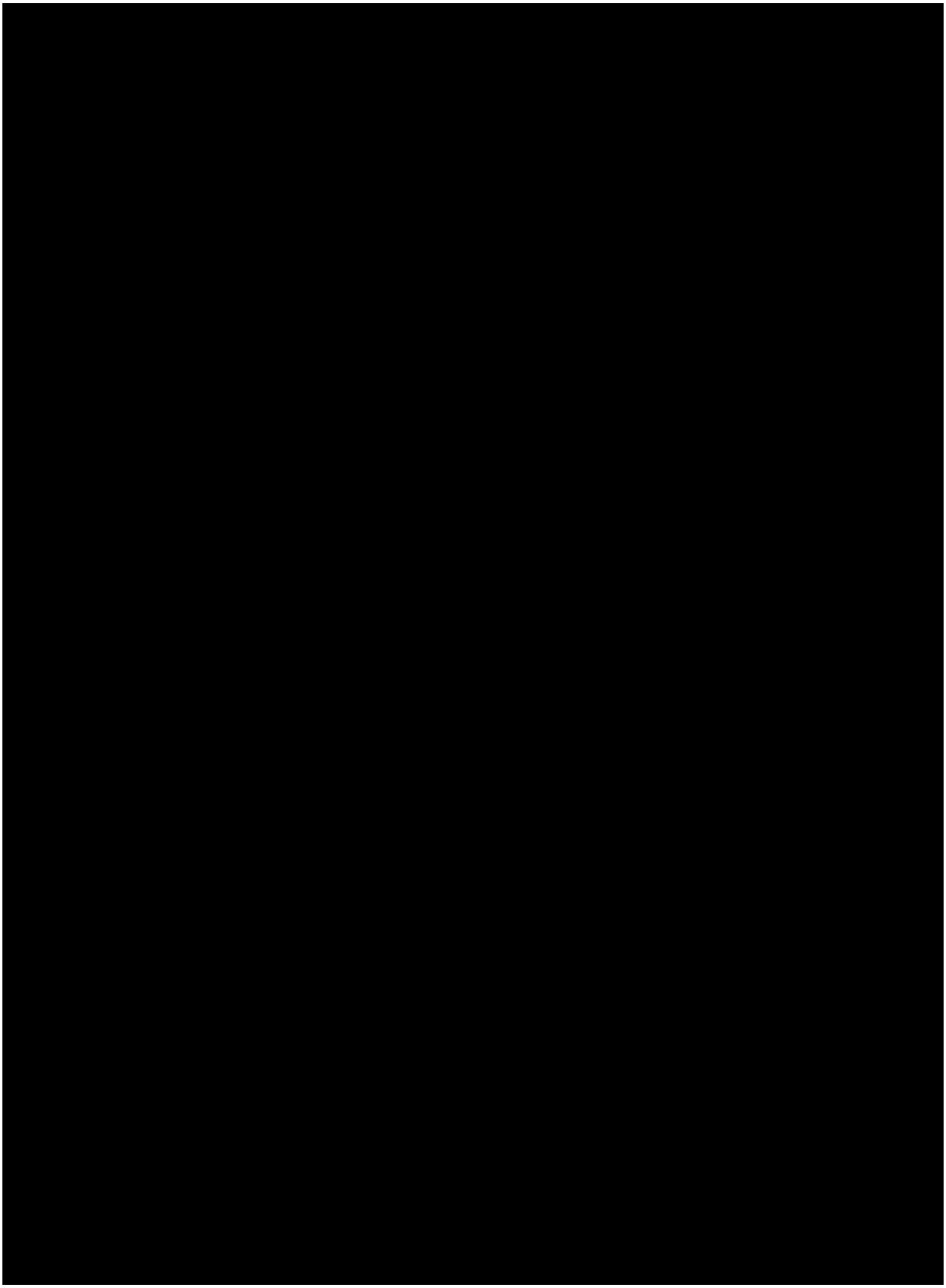


Figure 51: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of Survey Area 4, Parcel B and sites 12-N-412, 12-N-413, and 12-N-414.

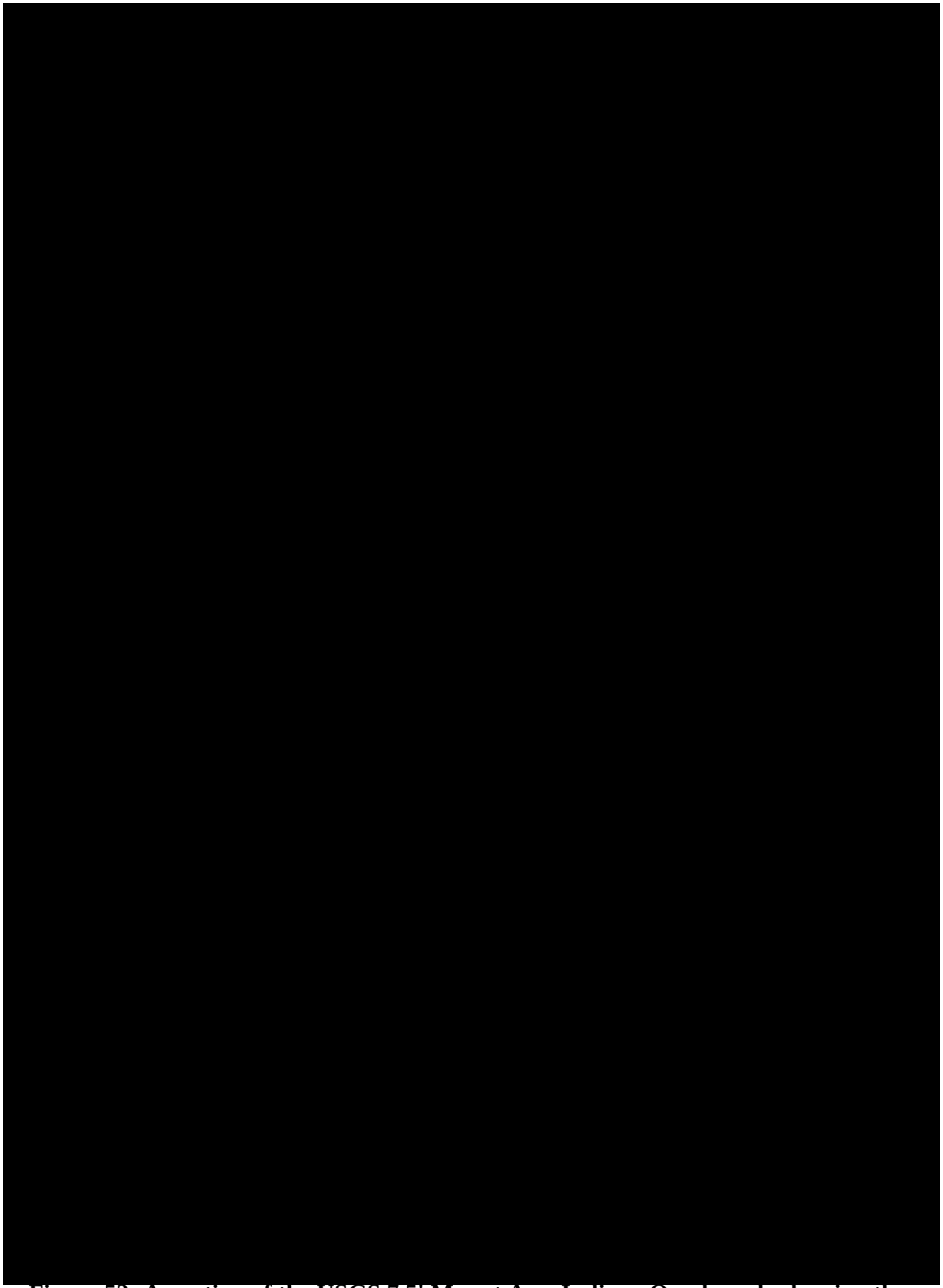


Figure 52: A portion of the USGS 7.5' Mount Ayr, Indiana Quadrangle showing the location of Survey Area 4, Parcel C and sites 12-N-410 to 12-N-411.

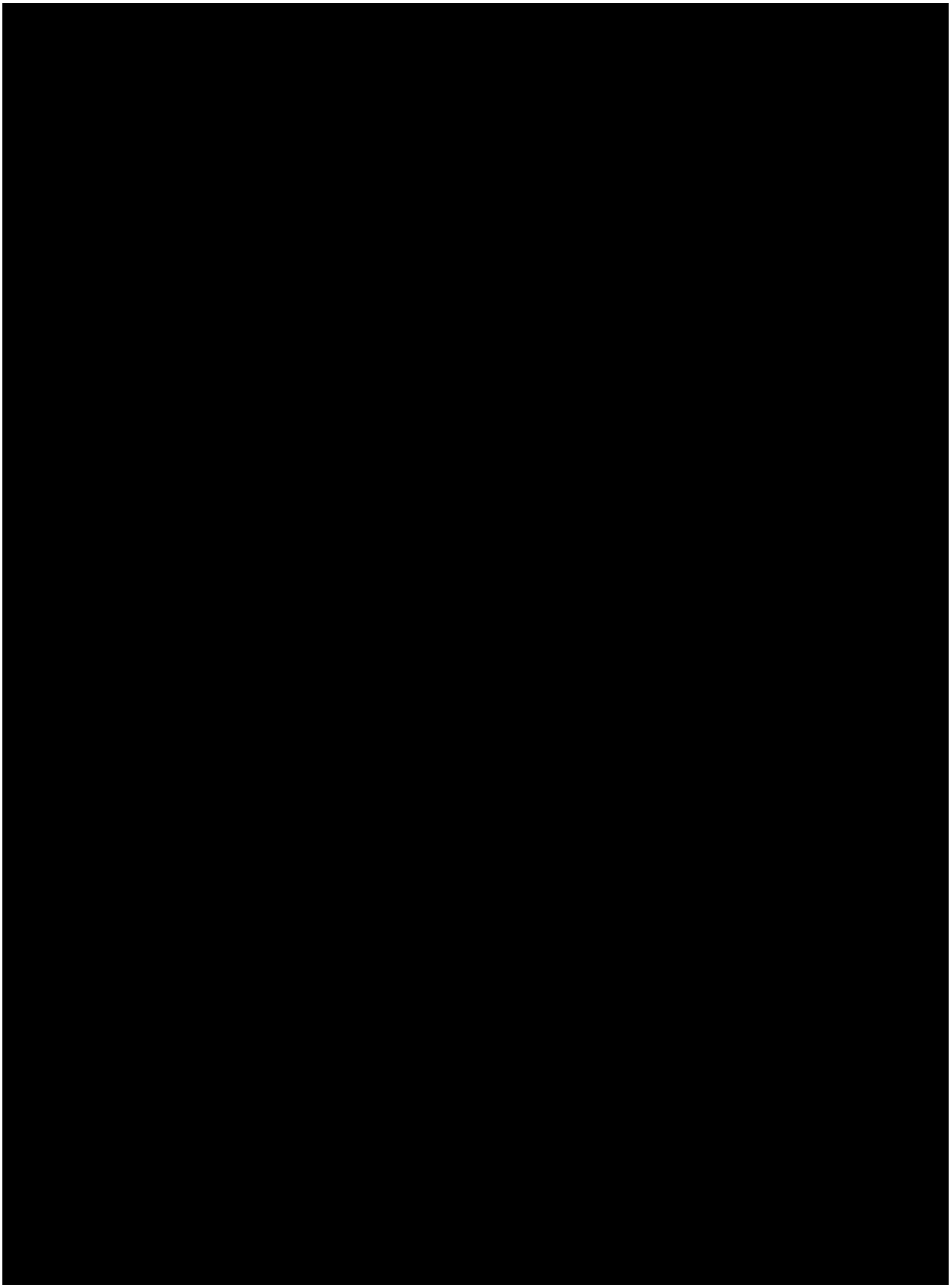


Figure 53: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of Survey Area 4, Parcel C and sites 12-N-410 and 12-N-411.

Survey Area 5

Survey Area 5 was located in Beaver Township in [redacted] Township 29 North, Range 9 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Morocco, Indiana Quadrangle (Figure 54 and Figure 55). The property was surveyed on September 18, 24, and 25, 2016. The field was still planted in corn, which was approximately seven to nine feet tall. Ground surface visibility was approximately 70 to 90 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacle. A total of 174.93 acres was surveyed consisting of outwash and till plains. The area contained Ayrmount loamy fine sand (AzA), Ayr loamy fine sand (AyB), Barry-Gilford fine sandy loam (Bh), Darroch fine sandy loam (DdA), Elston fine sandy loam (EsB), Seafield fine sandy loam (SeA), Selma fine sandy loam (Sh), Sparta loamy fine sand (SrB), and Sumava-Ridgeville-Odell fine sandy loam (SxA) soils. Twenty-thee sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds, to a lithic scatter of 826 square meters (0.2 acres) and multicomponent scatter of 2,853 square meters (0.7 acres).

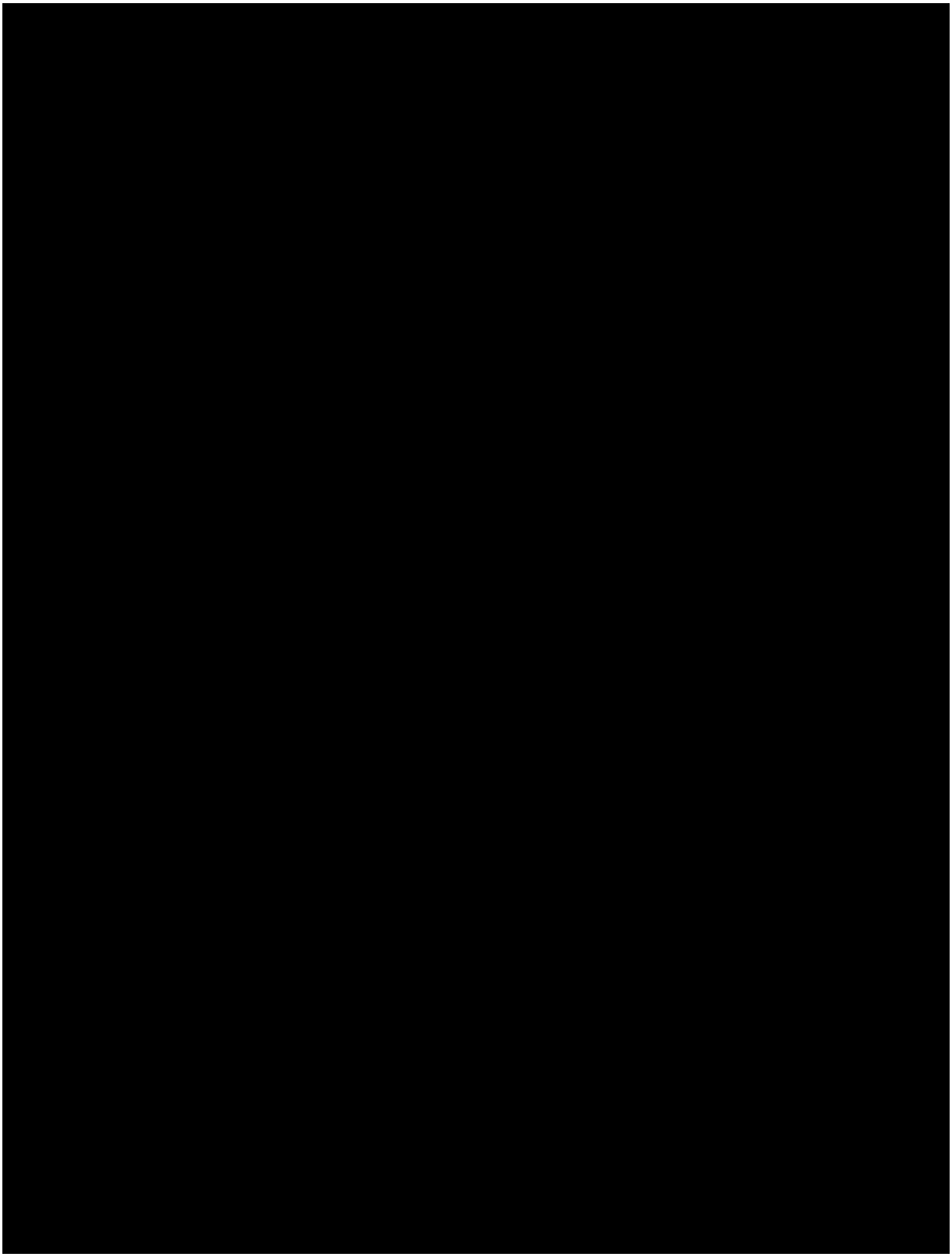


Figure 54: A portion of the map of Beaver Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 5. Note: Due to distortion in historical maps, the georeferenced location of SA5 is slightly off.

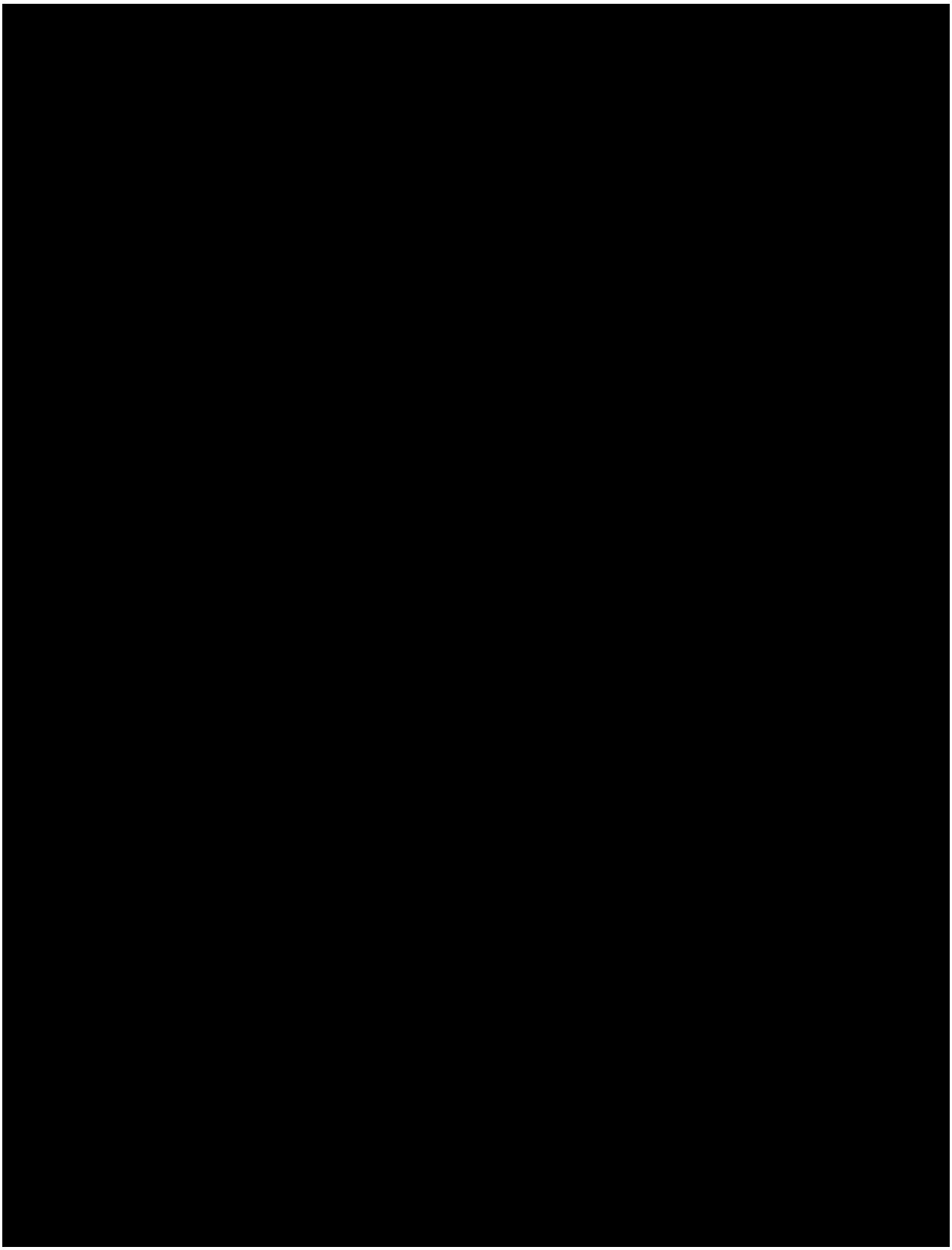


Figure 55: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the location of Survey Area 5.

Artifacts

A total of 380 artifacts was encountered in Survey Area 5, and of those artifacts 287 were collected. The 93 artifacts not collected (12-N-428 and 12-N-430) were brick. Table 8 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 56 through Figure 60. Artifacts are listed by individual site in Volume 2, Appendix E.

Twenty-two prehistoric artifacts were recovered (Figure 56 and Figure 57), one of which was diagnostic. A hafted, notched Matanzas Cluster biface (Figure 56) dating to the Late Archaic period was recovered from site 12-N-425 (Justice 1987:119).

A total of 265 historic artifacts were recovered from Survey Area 5 (Figure 58, Figure 59, and Figure 60) and of those collected, 263 are diagnostic (Table 9). Chronologically expressed these items include stoneware with unglazed interior and salt glaze exterior from site 12-N-421 was manufactured from 1715 to 1775 (Noël Hume 1969:56-57). Stoneware with Albany glaze interior and Grey salt glaze exterior from site 12-N-421 was manufactured from 1715 to 1920 (Noël Hume 1969:56-57; Ramsey 1939:21-22,59). Clear glazed redware with molded ridges from site 12-N-421 was manufactured from 1725 to present (Stelle 2001:Chapter I). Hand painted whiteware rim with a blue design from site 12-N-421 was manufactured from ca. early 1800 to ca. mid-20th century (Stelle 2001:Chapter I). Aqua glass from sites 12-N-421, 12-N-430, and 12-N-432 was manufactured from ca.1800 to ca.1910 (IMACS 1992:472(18)). Turquois glass from site 12-N-421 was manufactured from ca.1800 to ca.1910 (IMACS 1992:472(18)). Aqua tint glass from sites 12-N-421, 12-N-430, 12-N-432, and 12-N-434 was manufactured from ca.1800 to ca.1910 (IMACS 1992:472(18)). Stoneware with Albany glaze interior and Bristol glaze exterior from site 12-N-421 was manufactured from 1805 to present (Oswald et al. 1982:19; Ramsey1939:21-22,59). Stoneware with unglazed interior and Albany glaze exterior from site 12-N-421 was manufactured from 1805 to 1920 (Ramsey 1939:21-22,59). Stoneware with Albany glaze interior and exterior from sites 12-N-421 and 12-N-432 was manufactured from 1805 to 1920 (Ramsey 1939:21-22,59). Stoneware with Albany glaze interior and exterior with interior vertical roulettes from sites 12-N-421 and 12-N-422 was manufactured from 1805 to 1920 (Ramsey 1939:21-22,59). A stoneware base with Albany glaze interior and exterior with horizontal roulettes from site 12-N-421 was manufactured from 1805 to 1920 (Ramsey 1939:21-22,59). Stoneware with Albany glaze interior and Tan salt glaze exterior from site 12-N-421 was manufactured from 1805 to 1920 (Ramsey 1939:21-22,59). Ironstone with floral design transfer print from site 12-N-430 was manufactured from 1820 to 1860 (Stelle 2001:Chapter I). Whiteware with purple transfer print depicting possible “Italian Villas” Mulberry, English from site 12-N-421 was manufactured from 1820 to 1860 (Stelle 2001:Chapter I). Whiteware with a transfer print of annular blue bands from site 12-N-421 was manufactured from 1820 to 1860 (Stelle 2001:Chapter I). Hand painted whiteware with a gold line from site 12-N-430 was manufactured from 1820 to 1890s (Stelle 2001:Chapter I). Hand painted whiteware rim with a

blue and pink floral designs from site 12-N-421 was manufactured from 1820 to 1890s (Stelle 2001:Chapter I). Hand painted whiteware with a pink design from site 12-N-421 was manufactured from 1820 to 1890s (Stelle 2001:Chapter I). Plain whiteware from sites 12-N-416, 12-N-421, 12-N-422, 12-N-430, and 12-N-432 was manufactured from 1820 to present (ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13). Whiteware with a brown external band and red stain from site 12-N-421 was manufactured from 1820 to present (Stelle 2001:Chapter I). Hand painted whiteware with a green design from site 12-N-421 was manufactured from 1829 to 1850 (Stelle 2001:Chapter I). Whiteware with blue transfer print from site 12-N-421 was manufactured from 1829 to 1860 (Stelle 2001:Chapter I). Yellowware with Rockingham/Bennington glaze and tan temper from site 12-N-421 was manufactured from 1830 to 1900 (Stelle 2001:Chapter I). Stoneware with Blue salt glaze interior and exterior from site 12-N-417 was manufactured from 1835 to mid-1890 (Stelle 2001:Chapter I). A molded Milk glass button from site 12-N-421 was manufactured from 1840 to present (Marcel 1995). An ironstone electric fence insulator from site 12-N-423 was manufactured from 1842 to present (ODOT 1991:177; Trussel 2010:14). Plian ironstone from site 12-N-422 was manufactured from 1842 to present (ODOT 1991:177; Trussel 2010:14). Amber glass from sites 12-N-416, 12-N-421, 12-N-422, and 12-N-430 was manufactured from 1860 to present (IMACS 1992:472(19)). Clear glass from sites 12-N-415, 12-N-421, 12-N-422, 12-N-430, and 12-N-432 was manufactured from 1875 to present (IMACS 1992:472(19)). Amethyst glass from site 12-N-421 was manufactured from 1880 to 1925 (IMACS 1992:472(7); Newman 1970:74). Milk glass from site 12-N-430 was manufactured from 1890 to 1960 (IMACS 1992:472(18)). A molded milk glass lid liner from site 12-N-430 was manufactured from 1890 to 1960 (IMACS 1992:472(18)).

Table 8: Artifacts from Survey Area 5.

Prehistoric	No.	Historic	No.
Biface, Hafted, Notched, Matanzas Cluster	1	Ceramic, Ironstone	4
Biface, Unhafted, Heat Treated	1	Ceramic, Whiteware	75
Core	5	Ceramic, Stoneware	18
Angular Shatter, Detached	1	Ceramic, Yellowware	2
Flake	3	Ceramic, Redware	1
Flake, Tool	1	Glass, Amethyst	4
Flake, Proximal	2	Glass, Milk	10
Flake, Proximal, Bipolar, Reduction	1	Glass, Amber	8
Flake, Medial	2	Glass, Aqua	40
Flake, Distal	1	Glass, Turquoise	2
Flake, Distal, Heat Treated	3	Glass, Aqua Tint	50
Flake, Distal, Retouched	1	Glass, Clear	48
		Metal, Iron Base	1
		Faunal, Bone, Cortical, Left humerus	1
		Brick	1
		Brick (Uncollected)	93
Total	**22**	**Total**	**358**

Figure 56: A Matanzas Cluster diagnostic point from 12-N-425 (photo by Kiya Mullins, Ball State University).

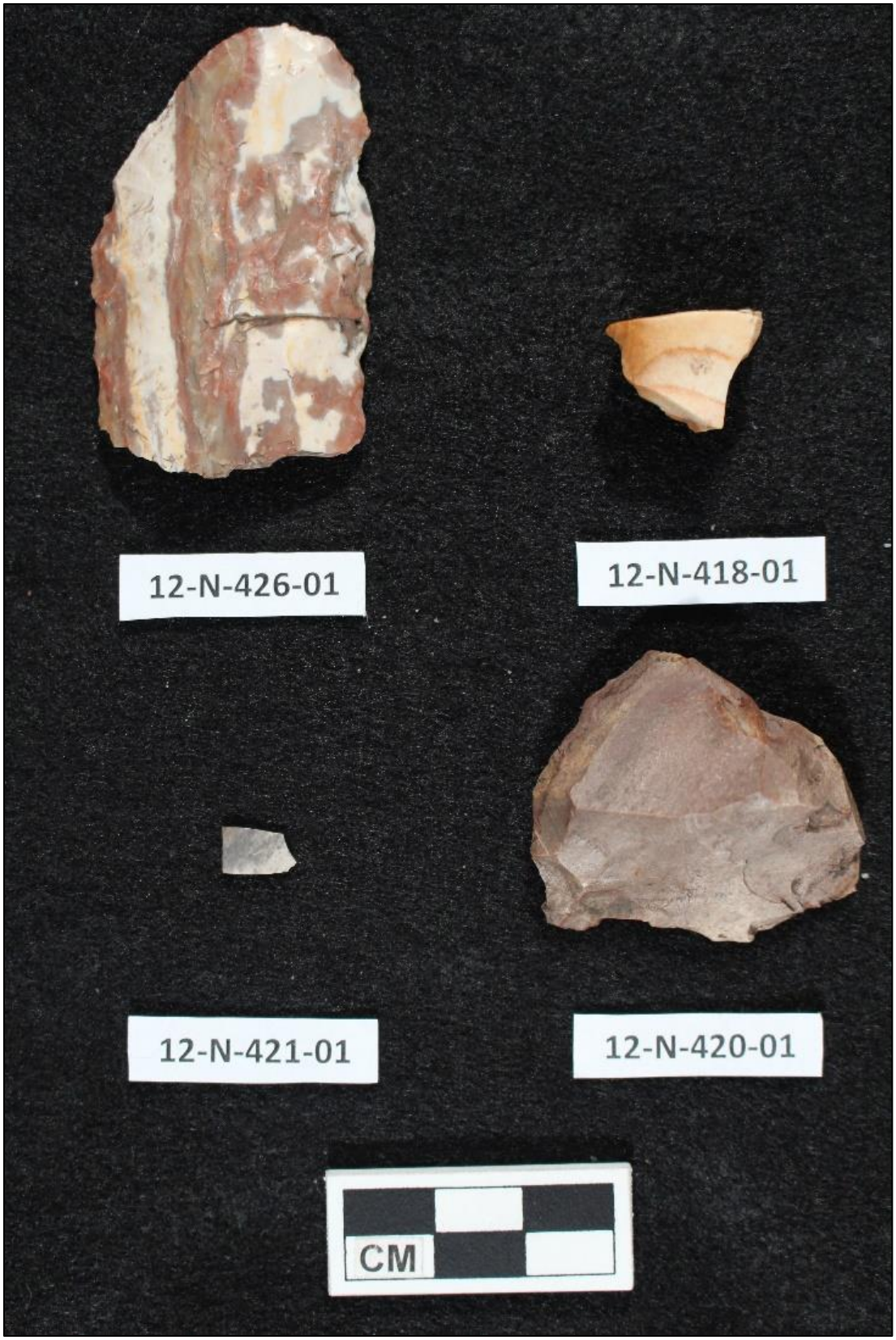


Figure 57: Representative prehistoric artifacts from Survey Area 5 (photo by Kiya Mullins, Ball State University).

Table 9: Historic Diagnostics from Survey Area 5

Artifact Type	Site	Date Range	Citation
Ironstone	12-N-422	1842 to present	ODOT 1991:177; Trussel 2010:14
Ironstone Electric Fence Insulator	12-N-423	1842 to present	ODOT 1991:177; Trussel 2010:14
Ironstone with floral design transfer print	12-N-430	1820 to 1860	Stelle 2001:Chapter I
Plain Whiteware	12-N-416, 12-N-421, 12-N-422, 12-N-430, and 12-N-432	1820 to present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Whiteware with handpainted gold line	12-N-430	1820 to 1890s	Stelle 2001:Chapter I
Whiteware handpainted rim with blue design	12-N-421	Ca. early 1800 to ca. mid-20th century	Stelle 2001:Chapter I
Whiteware handpainted rim with blue and pink floral design	12-N-421	1820 to 1890s	Stelle 2001:Chapter I
Whiteware handpainted pink design	12-N-421	1820 to 1890s	Stelle 2001:Chapter I
Whiteware handpainted green design	12-N-421	1829 to 1850	Stelle 2001:Chapter I
Whiteware blue transfer print	12-N-421	1829 to 1860	Stelle 2001:Chapter I
Whiteware purple transfer print depicting possible "Italian Villas" Murlberry, English	12-N-421	1820 to 1860	Stelle 2001:Chapter I
Whiteware transfer print of annular blue bands	12-N-421	1820 to 1860	Stelle 2001:Chapter I
Whiteware with brown external band and red stain	12-N-421	1820 to present	Stelle 2001:Chapter I
Stoneware with Albany Glaze interior and exterior	12-N-421 and 12-N-432	1805 to 1920	Ramsey 1939:21-22,59
Stoneware with Albany Glaze interior and Exterior and Vertical Roulette interior	12-N-421 and 12-N-422	1805 to 1920	Ramsey 1939:21-22,59
Stoneware base with Albany Glaze interior and exterior with Horizontal Roulettes	12-N-421	1805 to 1920	Ramsey 1939:21-22,59
Stoneware with Albany Glaze interior and Bristol Glaze exterior	12-N-421	1805 to present	Oswald et al. 1982:19; Ramsey 1939:21-22,59
Stoneware with Albany Glaze interior and Tan Salt Glaze exterior	12-N-421	1805 to 1920	Ramsey 1939:21-22,59
Stoneware with Albany Glaze interior and Grey Salt Glaze exterior	12-N-421	1715 to 1920	Noël Hume 1969:56-57; Ramsey 1939:21-22,59

Artifact Type	Site	Date Range	Citation
Stoneware with Blue Salt Glaze interior and exterior	12-N-417	1835 to mid 1890	Stelle 2001:Chapter I
Stoneware with Unglazed interior and Albany Glaze exterior	12-N-421	1805 to 1920	Ramsey 1939:21-22,59
Stoneware with Unglazed interior and Salt Glaze exterior	12-N-421	1715 to 1775	Noël Hume 1969:56-57
Yellowware with Rockingham/Bennington Glaze and Tan Temper	12-N-421	1830 to 1900	Stelle 2001:Chapter I
Redware with Clear Lead glaze and molded ridges	12-N-421	1725 to present	Stelle 2001:Chapter I
Amethyst Glass	12-N-421	1880 to 1925	IMACS 1992:472(7); Newman 1970:74
Milk Glass	12-N-430	1890 to 1960	IMACS 1992:472(18)
Milk Glass molded lid liner	12-N-430	1890 to 1960	IMACS 1992:472(18)
Milk Glass molded button	12-N-421	1840 to present	Marcel 1995
Amber Glass	12-N-416, 12-N-421, 12-N-422, and 12-N-430	1860 to present	IMACS 1992:472(19)
Aqua Glass	12-N-421, 12-N-430, and 12-N-432	Ca.1800 to ca.1910	IMACS 1992:472(18)
Turquoise Glass	12-N-421	Ca.1800 to ca.1910	IMACS 1992:472(18)
Aqua Tint Glass	12-N-421, 12-N-430, 12-N-432, and 12-N-434	Ca.1800 to ca.1910	IMACS 1992:472(18)
Clear Glass	12-N-415, 12-N-421, 12-N-422, 12-N-430, and 12-N-432	1875 to present	IMACS 1992:472(19)

Figure 58: Representative historic ceramic artifacts from Survey Area 5 (photo by Kiya Mullins, Ball State University).

Figure 59: Representative historic glass artifacts from Survey Area 5 (photo by Kiya Mullins, Ball State University).

Figure 60: Representative historic metal and faunal artifacts from Survey Area 5 (photo by Kiya Mullins, Ball State University).

Sites

Twenty-three archaeological sites (12-N-415 to 12-N-437) were recorded in Survey Area 5 (Figure 61 and Figure 62). Summaries for the individual sites are contained in Volume 2, Appendix F. Ten sites (12-N-415 to 12-N-417, 12-N-421 to 12-N-423, 12-N-425, 12-N-430, 12-N-432, and 12-N-434) included diagnostic artifacts. One site (12-N-425) contained a Late Archaic component as part of a lithic scatter. Nine sites (12-N-418 to 12-N-420, 12-N-424, 12-

N-426, 12-N-427, 12-N-429, 12-N-433, and 12-N-436) were prehistoric isolated finds, and three sites (12-N-425, 12-N-435, and 12-N-437) were lithic scatters. Six sites (12-N-415, 12-N-417, 12-N-423, 12-N-428, 12-N-431, and 12-N-434) were historic isolated finds, and three sites (12-N-416, 12-N-422, and 12-N-430) were historic scatters. Two sites (12-N-421 and 12-N-432) were multicomponent sites that were identified as lithic and historic scatters.

All 23 sites were found on outwash and till plains. Five sites (12-N-420, 12-N-423, 12-N-425, 12-N-435, and 12-N-436) were found on Ayr loamy fine sand (AyB) soil, four sites (12-N-415, 12-N-416, 12-N-418, and 12-N-434) were found on Ayrmount loamy fine sand (AzA) soil and one site (12-N-430) was found on Barry-Gilford fine sandy loam (Bh) soil. Four sites (12-N-427, 12-N-428, 12-N-433, and 12-N-437) were found on Darroch fine sandy loam (DdA) soil, two sites (12-N-429 and 12-N-431) were found on Elston fine sandy loam (EsB) soil, and one site (12-N-417) was found on Seafield fine sandy loam (SeA) soil. One site (12-N-424) was found on Selma loam (Sh) soil, and one site (12-N-422) was found on Sumava-Ridgeville-Odell fine sandy loam (SxA) soil. Four sites were located on multiple soil types. One site (12-N-419) was found on Ayr loamy fine sand (AyB) soil and Ayrmount loamy fine sand (AzA) soil. One site (12-N-421) was found on Ayr loamy fine sand (AyB) soil and Sumava-Ridgeville-Odell fine sandy loam (SxA) soil. One site (12-N-426) was found on Barry-Gilford fine sandy loam (Bh) soil and Sumava-Ridgeville-Odell fine sandy loam (SxA) soil. One site (12-N-432) was found on Elston fine sandy loam (EsB) soil and Sparta loamy fine sand (SrB) soil.

Site 12-N-421 is a lithic and historic scatter located on Aeolian deposits in the northeast portion of Survey Area 5 (Figure 61 and Figure 62). The 156 artifacts recovered from site 12-N-421 consisted primarily of historic ceramic and glass dating from 1715 to present and two prehistoric, non-diagnostic flakes. Several of the hand-painted whiteware sherds date to the early to mid-19th Century (see Table 9). The chert sources identified within the lithic assemblage include Liston Creek and Bryantsville from southern Indiana. The site itself is 2,853 square meters, or 0.70 acres, in size, which leads to an artifact density of 222.9 artifacts per acre. No evidence of subsurface features such as shaft features or structural foundations were observed during survey. There were no structures located on any historic maps (Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53). However, the location of the scatter on a gentle slope and high number and density of historic artifacts represent favorable conditions for a possible structure or other historic activity area located on the site. Based on archaeological research, the density and diversity of artifacts, the non-local chert types identified, and the diversity of activities represented in the artifact assemblage could indicate the potential to yield additional important information on the early settlement patterns of the 19th Century and prehistoric settlement patterns of Newton County beyond the Phase I level. Therefore, site 12-N-421 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-430 is a historic scatter located in the southern portion of Survey Area 5 (Figure 61 and Figure 62). The 174 artifacts recovered from site 12-N-430 consisted of historic glass, ceramic, and brick dating from 1800 to present. The site itself is 395 square meters, or 0.10 acres, in size, which leads to an artifact density of 1,740 artifacts per acre. No subsurface features were observed during survey. There were no structures located on any historic maps (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:52-53). However, the location of the scatter on a gentle slope and high density of artifacts represent favorable conditions for a possible structure or other historic activity area located on the site. Based on archaeological research, the density and diversity of artifacts, the topography, and the diversity of activities represented in the artifact assemblage, this site has potential to yield additional information on the early settlement and economic activity of 19th century Newton County beyond the Phase I level. Therefore, site 12-N-430 is considered potentially eligible for the National Register of Historic Places.

The remaining site (12-N-415 to 12-N-420, 12-N-422 to 12-N-429, and 12-N-431 to 12-N-437) found in Survey Area 5 are small and contain few diagnostics. They are not considered potentially eligible for inclusion to the National Register of Historic Places.

Density

Survey Area 5 consisted of 174.93 acres of outwash and lake plains. Within Survey Area 5, a density of one site per 7.61 acres occurred and sites covered 0.89 percent of the surface area.

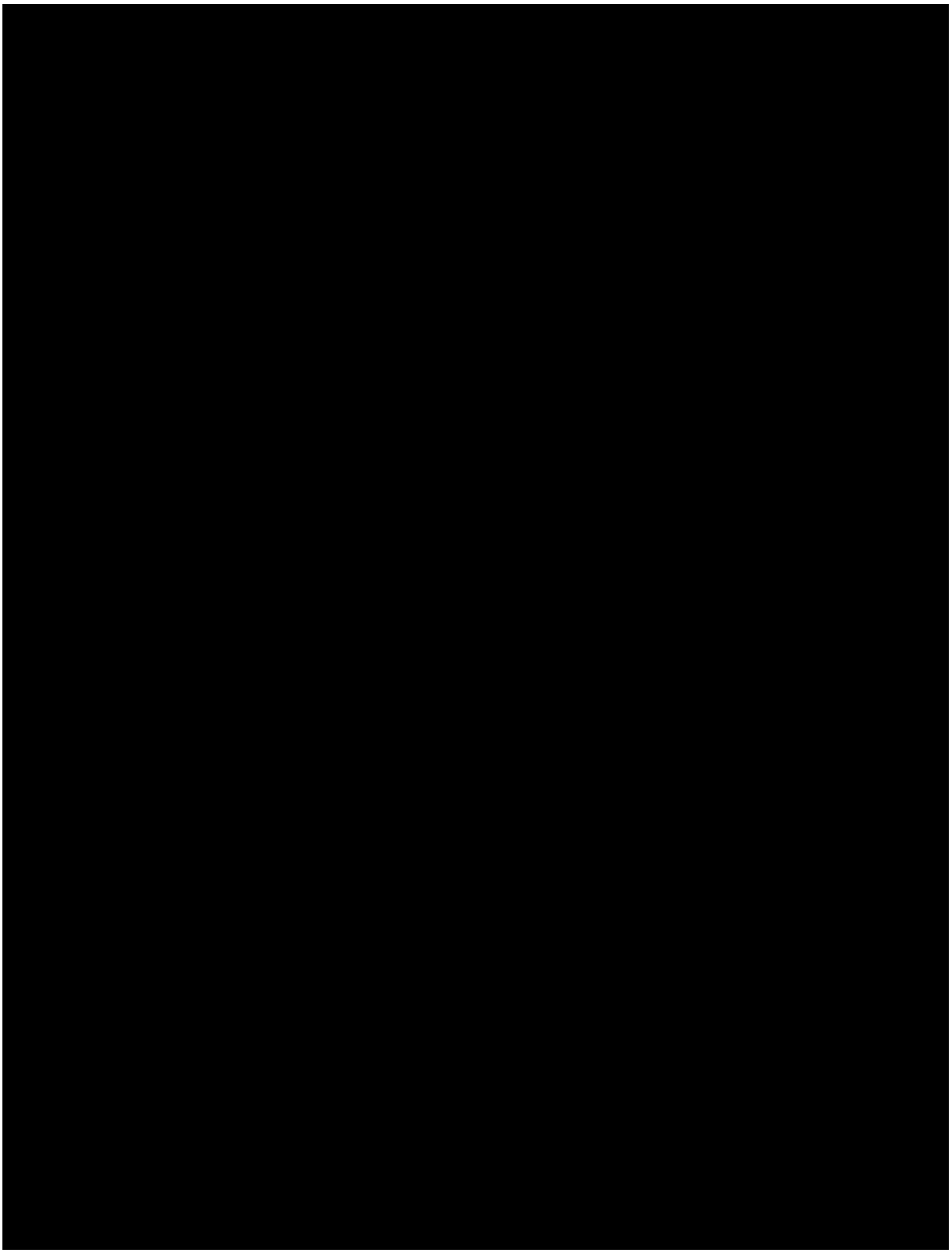


Figure 61: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the location of sites 12-N-415 to 12-N-437.

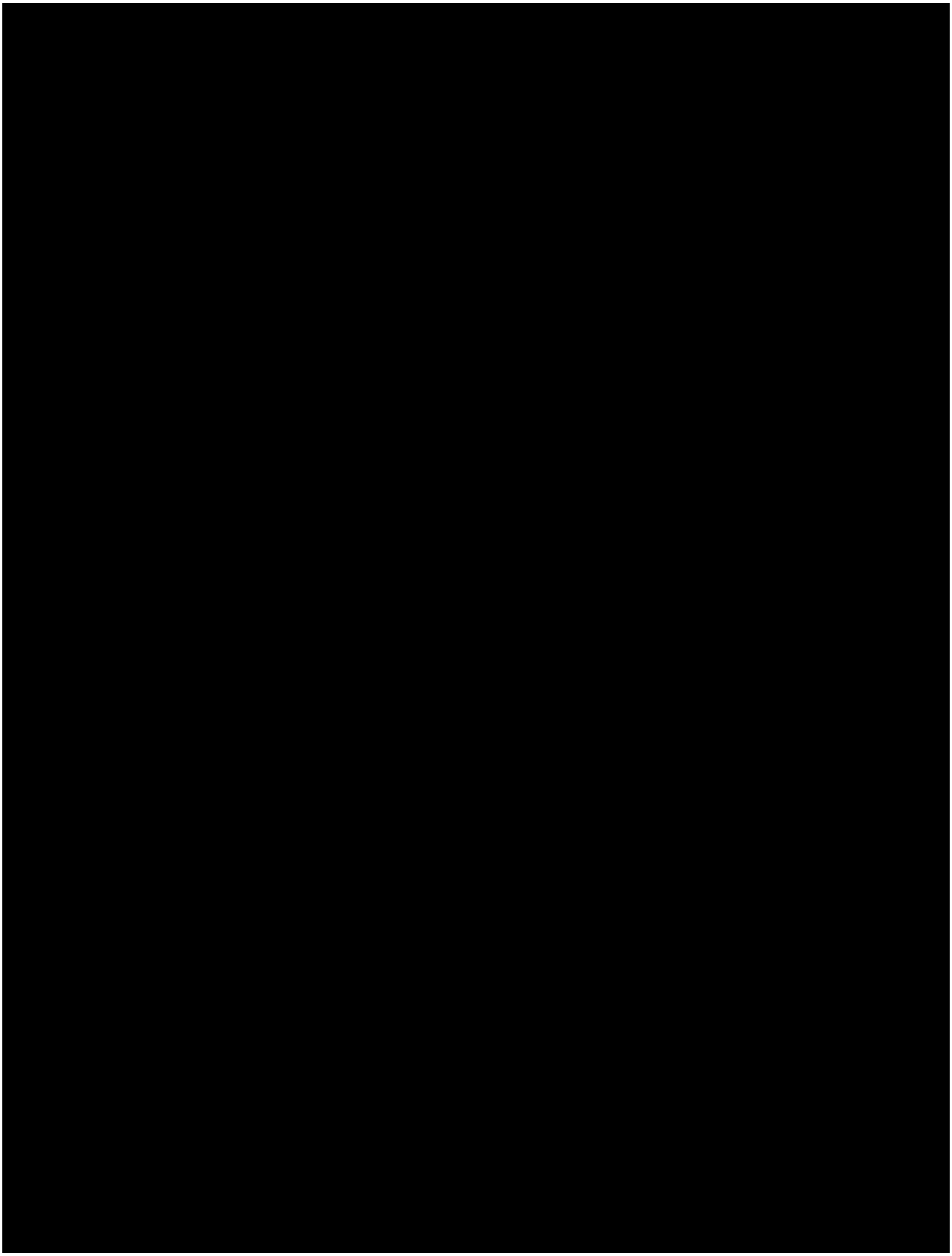


Figure 62: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-N-415 to 12-N-437.

Survey Area 6

Survey Area 6 was located in Beaver Township in [redacted] Township 29 North, Range 9 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Morocco, Indiana Quadrangle (Figure 63 and Figure 64). The property was surveyed on September 24 and September 25, 2016. The field surveyed was still planted in corn that was standing between seven to nine feet tall. Ground surface visibility was approximately 80 to 90 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. A total of 38.73 acres was surveyed consisting of outwash plains and flood plains. The area consisted of Barry-Gilford fine sandy loam (Bh), Oakville fine sand (ObB and OaB), Octagon-Ayr fine sandy loam (OkB2), and Sumava-Ridgeville-Odell fine sandy loam (SxA) soils. Eleven sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds and lithic scatters to a historic scatter of 485.62 square meters (0.12 acres).

The landowner, [redacted], visited the crew while they were surveying. He mentioned the possible location of a cabin that once stood on the property, approximately 200 feet from the western boundary of Survey Area 6 and 400 feet from the northern boundary of Survey Area 6. The location of the cabin was not located on any historic maps (Andreas 1968; Taylor 2007). [redacted] elaborated that the site could have also been used as a dump.

A Phase Ia field reconnaissance for a proposed wastewater project was completed in 1995 by Archaeological and Environmental Services, Inc. (Brammer 1995) that crossed Survey Area 6 (Figure 65). Two sites identified as historic scatters were found (12-N-11 and 12-N-12), with 12-N-11 within Survey Area 6. Site 12-N-11 was identified as a historic scatter containing a window glass fragment and sample of a dense coal scatter (Division of Historic Preservation and Archaeology 2007). Due to overlap of the Brammer (1995) survey and Survey Area 4 boundaries, the FY2016 HPF Newton Grant resurveyed 5.25 acres of the northwest corner of the 1995 Brammer survey.

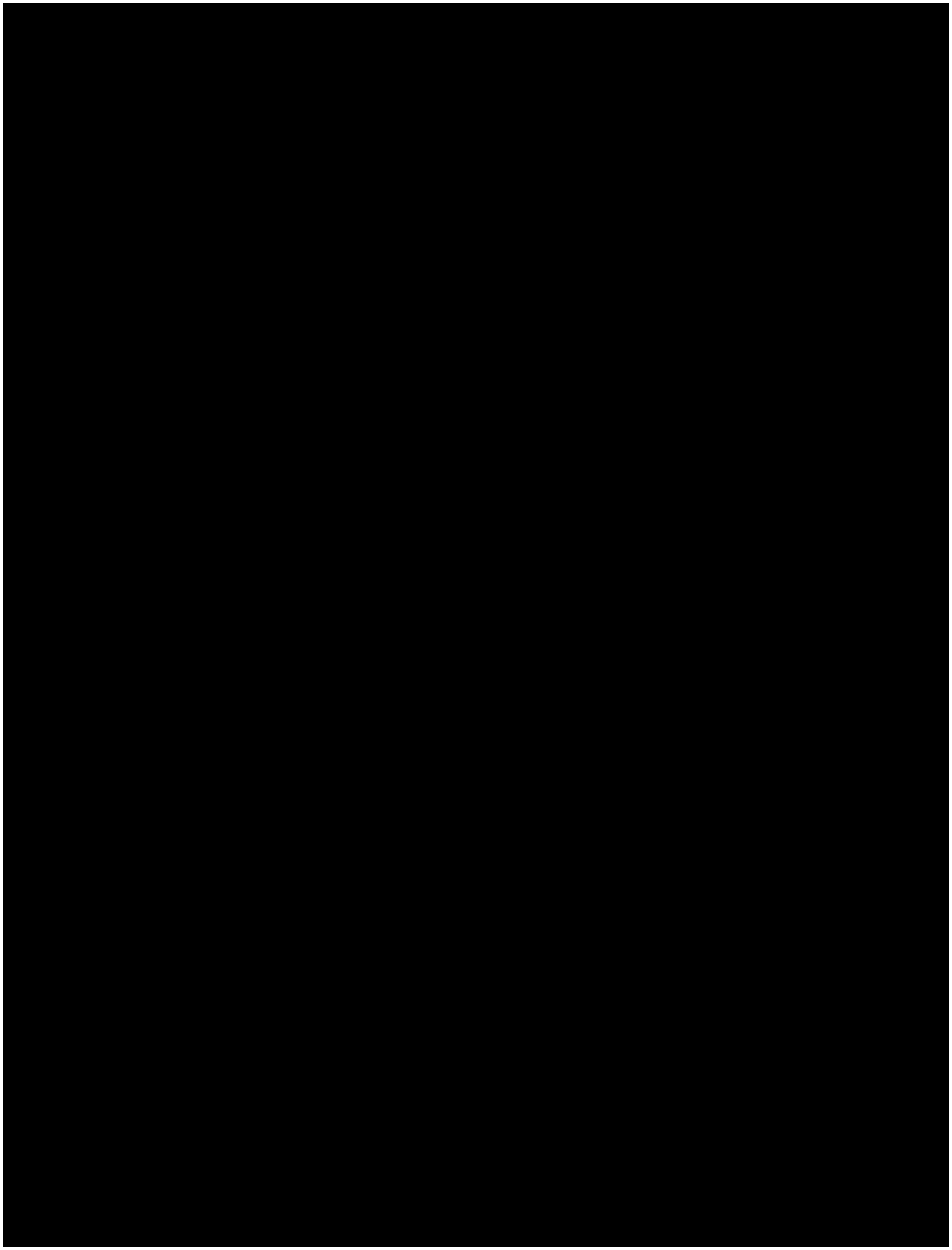


Figure 63: A portion of the map of Beaver Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 6. Note: Due to distortion in historical maps, the georeferenced location of SA6 is slightly off.

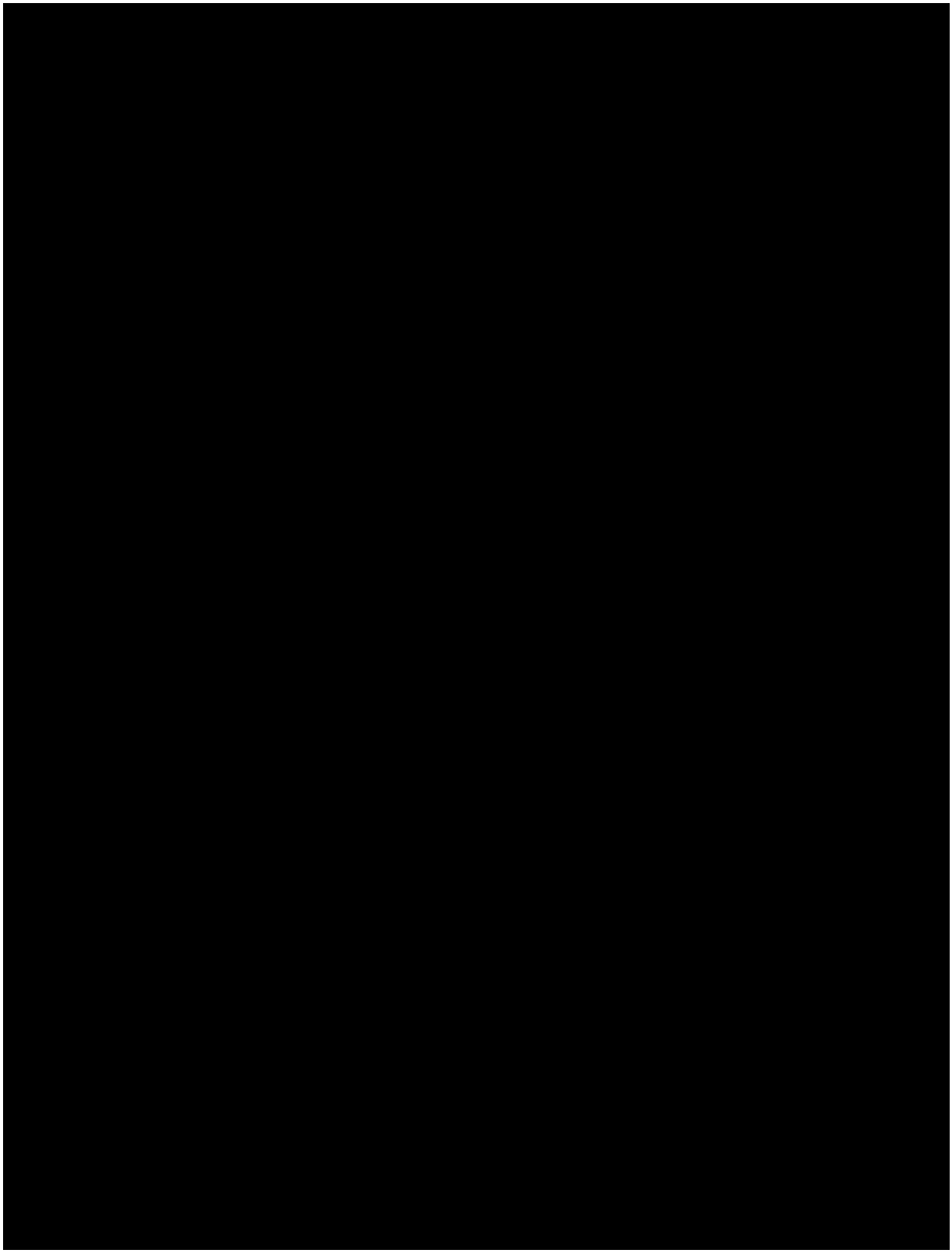


Figure 64: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the location of Survey Area 6.

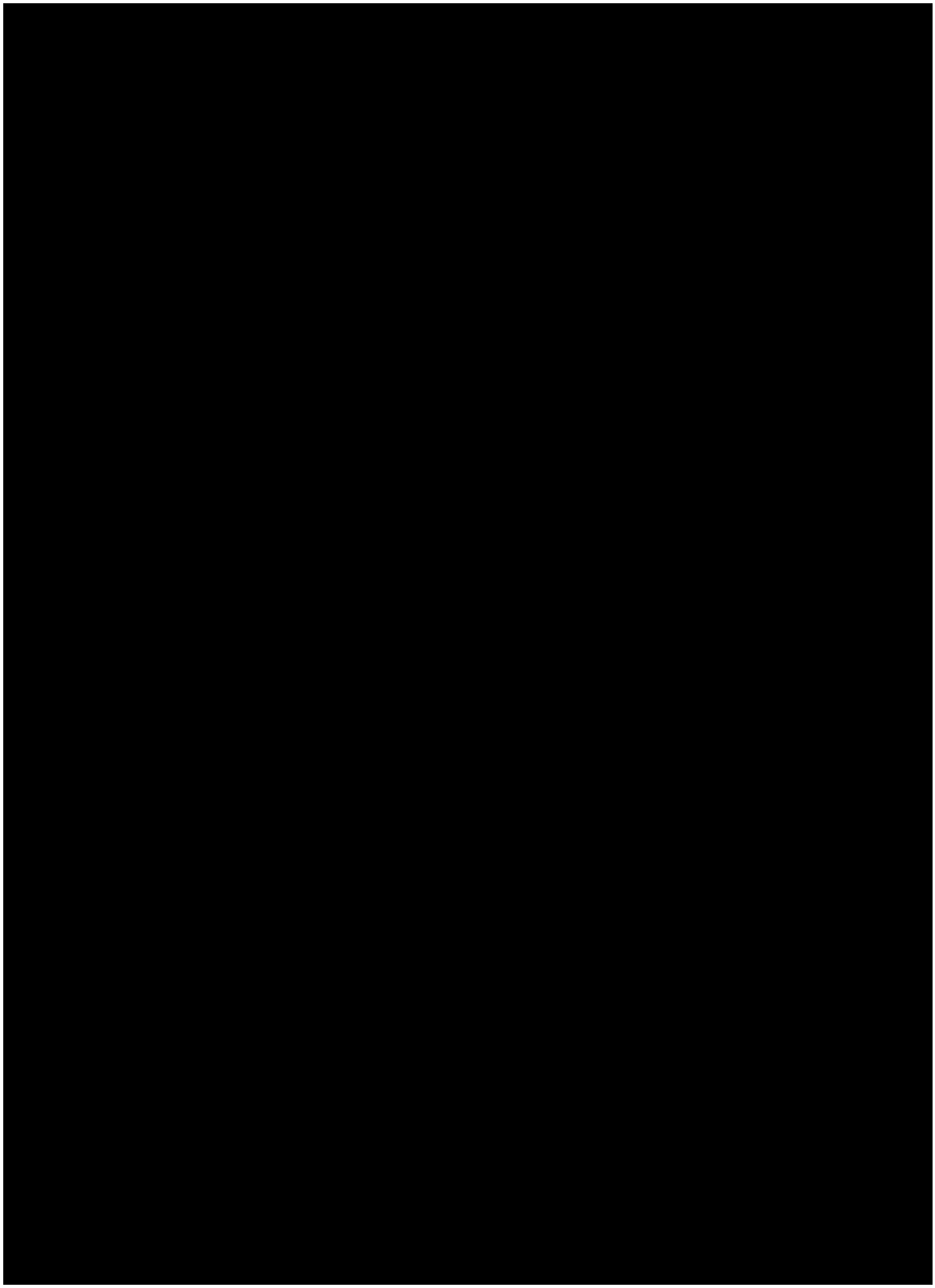


Figure 65: 2013 Aerial (Indiana Spatial Data Portal 2015) showing Survey Area 6 and the location of a 1995 Phase Ia field reconnaissance for a proposed wastewater project (Brammer 1995) with the location of sites 12-N-11 (southeast) and 12-N-12 (northwest) shown.

Artifacts

A total of 918 artifacts were encountered in Survey Area 6, and of those artifacts 98 were collected. The 820 artifacts not collected (12-N-438, 12-N-442, and 12-N-445) consisted of pieces of brick and charcoal. Table 10 provides a list of the artifacts recovered by category. Sample artifacts are shown in (Figure 66 through Figure 68). Artifacts are listed by individual site in Volume 2, Appendix E.

Fifteen prehistoric artifact was recovered from Survey Area 6 (Figure 66). None were diagnostic.

Eighty-three historic artifacts were recovered from Survey Area 6 (Figure 67 and Figure 68) and of those, 51 were diagnostic (Table 11). Chronologically expressed these items include clear glazed redware from site 12-N-438 which was manufactured between 1725 to present (Stelle 2001:Chapter I). Earthenware with a brown lead glaze from site 12-N-438 was manufactured from 1725 to present (Stelle 2001:Chapter I). Aqua glass from site 12-N-438 was manufactured between ca.1800 to ca.1900 (IMACS 1992:472(18)). Whiteware with blue transfer print from site 12-N-438 was manufactured from 1820 to 1860 (Stelle 2001:Chapter I). Plain Whiteware from site 12-N-438 was manufactured from 1820 to present (ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13). Whiteware with an unglazed exterior from site 12-N-422 was manufactured from 1820 to present (ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13). Whiteware with a blue slip from site 12-N-438 was manufactured between 1825 to 1840 (Miller 2000). Hand painted whiteware with a polychrome dot pattern from site 12-N-438 was manufactured from 1830 to 1860 (Stelle 2001:Chapter I). Unglazed Whiteware with a hand painted floral design from site 12-N-438 was manufactured from 1830 to 1860 (Stelle 2001:Chapter I). Whiteware with a hand painted green design from site 12-N-438 was manufactured from 1840 to 1860 (Stelle 2001:Chapter I). Unglazed whiteware with a hand painted green design from site 12-N-438 was manufactured from 1840 to 1860 (Stelle 2001:Chapter I). Ironstone from site 12-N-438 was manufactured between 1842 to present (ODOT 1991:177; Trussel 2010:14). Green glass from site 12-N-444 was manufactured between 1860 to present (IMACS 1992:472(18)). Amber glass from site 12-N-444 was manufactured between 1860 to present (IMACS 1992:472(19)). Amber glass from sites 12-N-442, 12-N-443, and 12-N-444 was manufactured between 1875 to present (IMACS 1992:472(19)).

Table 10: Artifacts from Survey Area 6.

Prehistoric	No.	Historic	No.
Angular Shatter	2	Ceramic, Ironstone	1
Flake	7	Ceramic, Whiteware	36
Flake, End Scraper	1	Ceramic, Earthenware	2
Flake, Retouched	1	Ceramic, Redware	4
Flake, Proximal	1	Glass, Green	4
Flake, Medial	1	Glass, Amber	4
Flake, Medial, Retouched	1	Glass, Aqua	4
Flake, Distal	1	Glass, Clear	7
		Faunal, Bone, Cortical, Skull, Left Parietal	1
		Charcoal/Clinker	20
		Charcoal/Clinker (uncollected)	800
		Brick (uncollected)	20
Total	**15**	**Total**	**903**

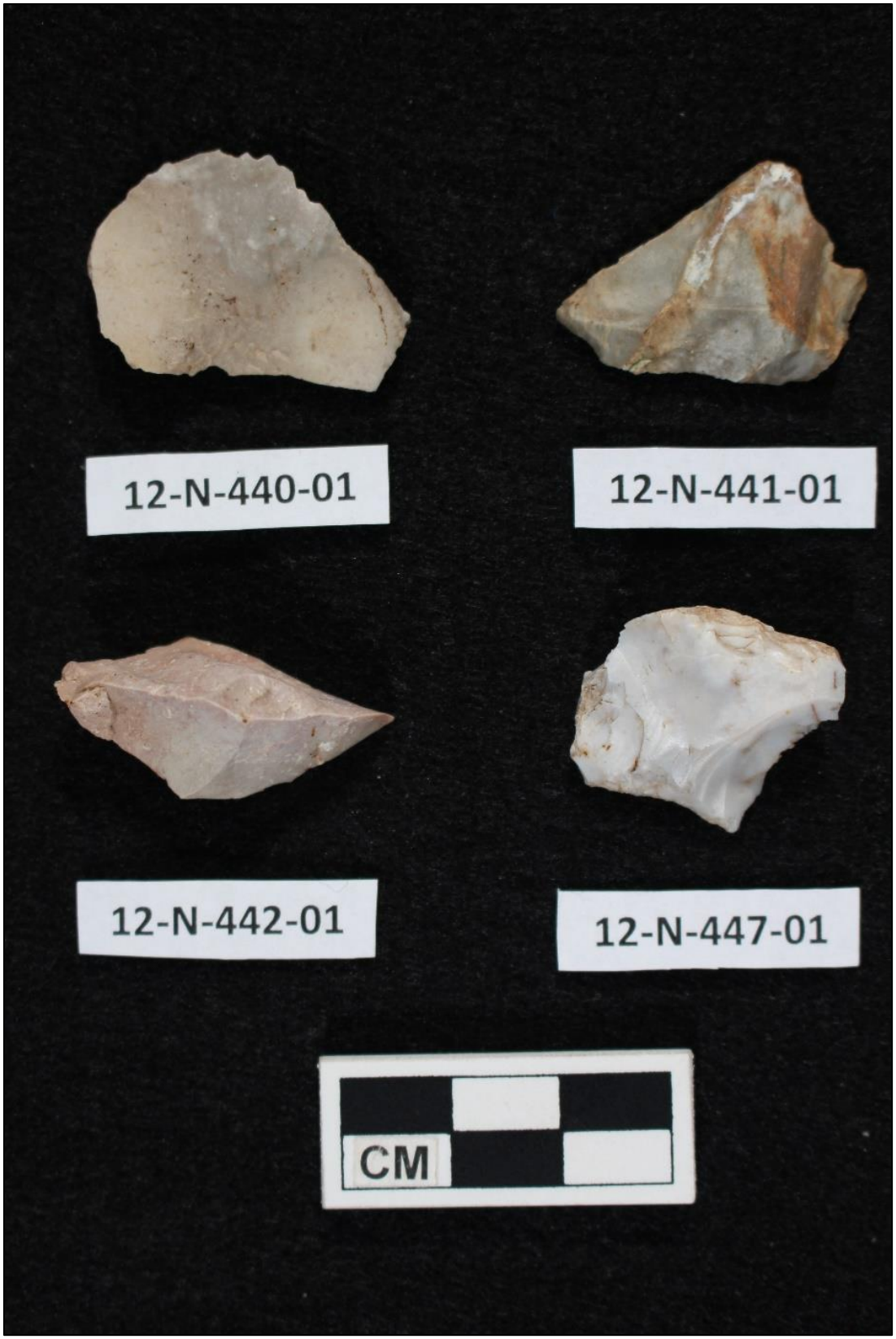


Figure 66: Representative prehistoric artifacts from Survey Area 6 (photo by Kiya Mullins, Ball State University).

Table 11: Historic Diagnostics from Survey Area 6

Artifact Type	Site	Date Range	Citation
Ironstone	12-N-438	1842-present	ODOT 1991:177; Trussel 2010:14
Plain Whiteware	12-N-438	1820-present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Whiteware handpainted with polychrome dot pattern	12-N-438	1830 to 1860	Stelle 2001:Chapter I
Whiteware handpainted green	12-N-438	1840 to 1860	Stelle 2001:Chapter I
Whiteware with blue transfer print	12-N-438	1820 to 1860	Stelle 2001:Chapter I
Whiteware with blue slip	12-N-438	1825 to 1840	Miller 2000
Whiteware unglazed hand painted floral design	12-N-438	1830 to 1860	Stelle 2001:Chapter I
Whiteware unglazed hand painted green	12-N-438	1840 to 1860	Stelle 2001:Chapter I
Whiteware unglazed exterior	12-N-442	1820 to present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Redware with clear lead glaze	12-N-438	1725 to present	Stelle 2001:Chapter I
Earthenware with brown lead glaze	12-N-438	1725 to present	Stelle 2001:Chapter I
Green Glass	12-N-444	1860 to present	IMACS 1992:472(18)
Amber Glass	12-N-444	1860 to present	IMACS 1992:472(19)
Aqua Glass	12-N-438	Ca.1800-ca.1910	IMACS 1992:472(18)
Clear Glass	12-N-442, 12-N-443, and 12-N-444	1875 to present	IMACS 1992:472(19)

Figure 67: Representative historic ceramic artifacts from Survey Area 6 (photo by Kiya Mullin, Ball State University).

Figure 68: Representative historic glass artifacts from Survey Area 6 (photo by Kiya Mullins, Ball State University).

Sites

Eleven archaeological sites (12-N-438 to 12-N-448) were recorded in Survey Area 6 (Figure 69 and Figure 70). Summaries for the individual sites are contained in Volume 2, Appendix F. Four sites (12-N-438 and 12-N-442 to 12-N-444) had diagnostic artifacts. Two sites (12-N-441 and 12-N-447) were prehistoric isolated finds, and two sites (12-N-446 and 12-N-448) were historic isolated finds. Two sites (12-N-438 and 12-N-444) were historic scatters, and two sites (12-N-439 and 12-N-440) were lithic scatters. Three sites were multicomponent sites including one site (12-N-442) identified as a prehistoric isolated find and a historic scatter, one site (12-N-443) identified as a prehistoric isolate find and historic isolated find, and one site (12-N-445) identified as a lithic scatter and historic scatter.

All 11 sites were discovered on outwash plains and flood plains. Three sites (12-N-443, 12-N-444, and 12-N-446) were encountered on Barry-Gilford fine sandy loam (Bh) soil, one site (12-N-441) was located on Oakville fine sand (OaB) soil, and four sites (12-N-438 to 12-N-440 and 12-N-445) were located on Oakville fine sand (ObB) soil. Two sites (12-N-447 and 12-N-448) were located on Octagon-Ayr find sandy loam (OkB2). One site (12-N-442) was located on multiple soils which were identified as Oakville fine sand (OaB) soil and Sumava-Ridgeville-Odell (SxA) soil.

Site 12-N-438 is a historic scatter located on Aeolian deposits in the southern portion of Survey Area 6 (Figure 69 and Figure 70). The 66 artifacts recovered from site 12-N-438 consisted of historic glass, ceramic, and brick dating from 1725 to present. The site itself is 503 square meters, or 0.12 acres, in size, which leads to an artifact density of 550 artifacts per acre. No evidence of subsurface features such as structural foundations or shaft features were encountered during survey. There were no structures located on any historic maps (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:52-53). However, the location of the scatter on a gentle slope and high number and density of artifacts represent favorable conditions for a possible structure or other historic activity area located on the site. Based on archaeological research, the density and diversity of artifacts, the topography, and the diversity of activities represented in the artifact assemblage could indicate the potential to yield additional important information on the early settlement and economic activity of 19th century Newton County beyond the Phase I level. Therefore, site 12-N-438 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-445 is a lithic and historic scatter located on the western edge of Survey Area 6 (Figure 69 and Figure 70). The 616 artifacts recovered from site 12-N-445 consisted of charcoal and two prehistoric flakes. The chert sources identified within the lithic assemblage include Jeffersonville from southern Indiana and Elwood Joliet or Blanding from northeastern and northwestern Illinois respectively. The site itself is 368 square meters, or 0.09 acres, in size,

which leads to an artifact density of 6,844.4 artifacts per acre. No evidence of subsurface features were encountered during survey. There were no structures located on any historic maps (Andreas 1968; Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53). The landowner, [redacted] reported that a controlled burn pile is located in the area of site 12-N-445 which explains the large quantity of charcoal. Based on the types and amount of artifacts collected and the lack of historical documentation of structures and the information provided by the landowner, site 12-N-445 does not appear to have the potential to yield additional information beyond the Phase I level. Therefore, the site is not considered potentially eligible for the National Register of Historic Places.

The remainder of the site types (12-439 to 12-N-444 and 12-N-446 to 12-N-448) found in Survey Area 6 were small scatters with few diagnostic artifacts. These sites do not have the potential to yield additional information beyond the Phase I level and therefore are not considered eligible for the National Register of Historic Places.

Density

Survey Area 6 consisted of 38.73 acres of moraines. Within Survey Area 6, a density of one site per 3.52 acres occurred and sites covered 1.55 percent of the surface area.

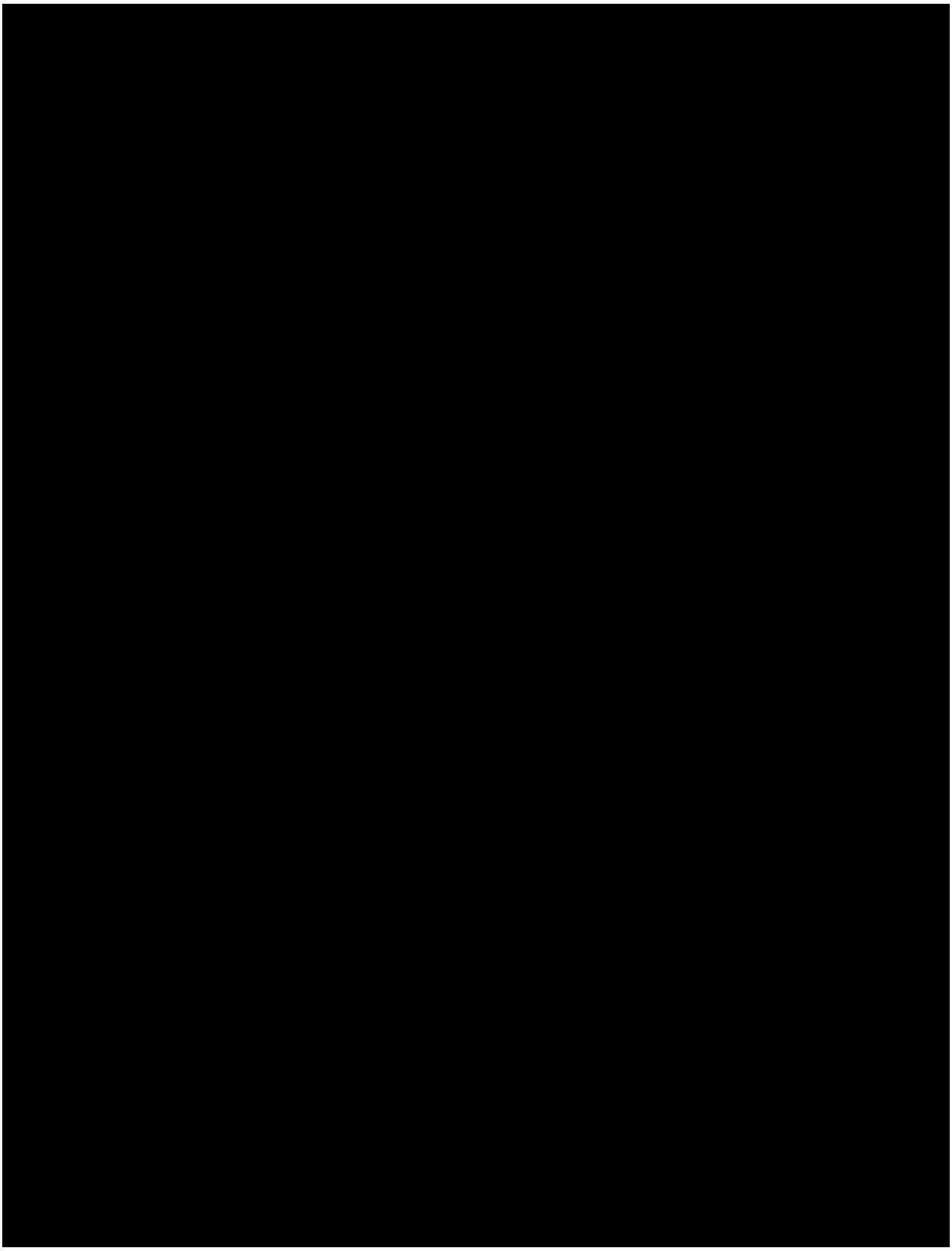


Figure 69: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the location of sites 12-N-438 to 12-N-448.

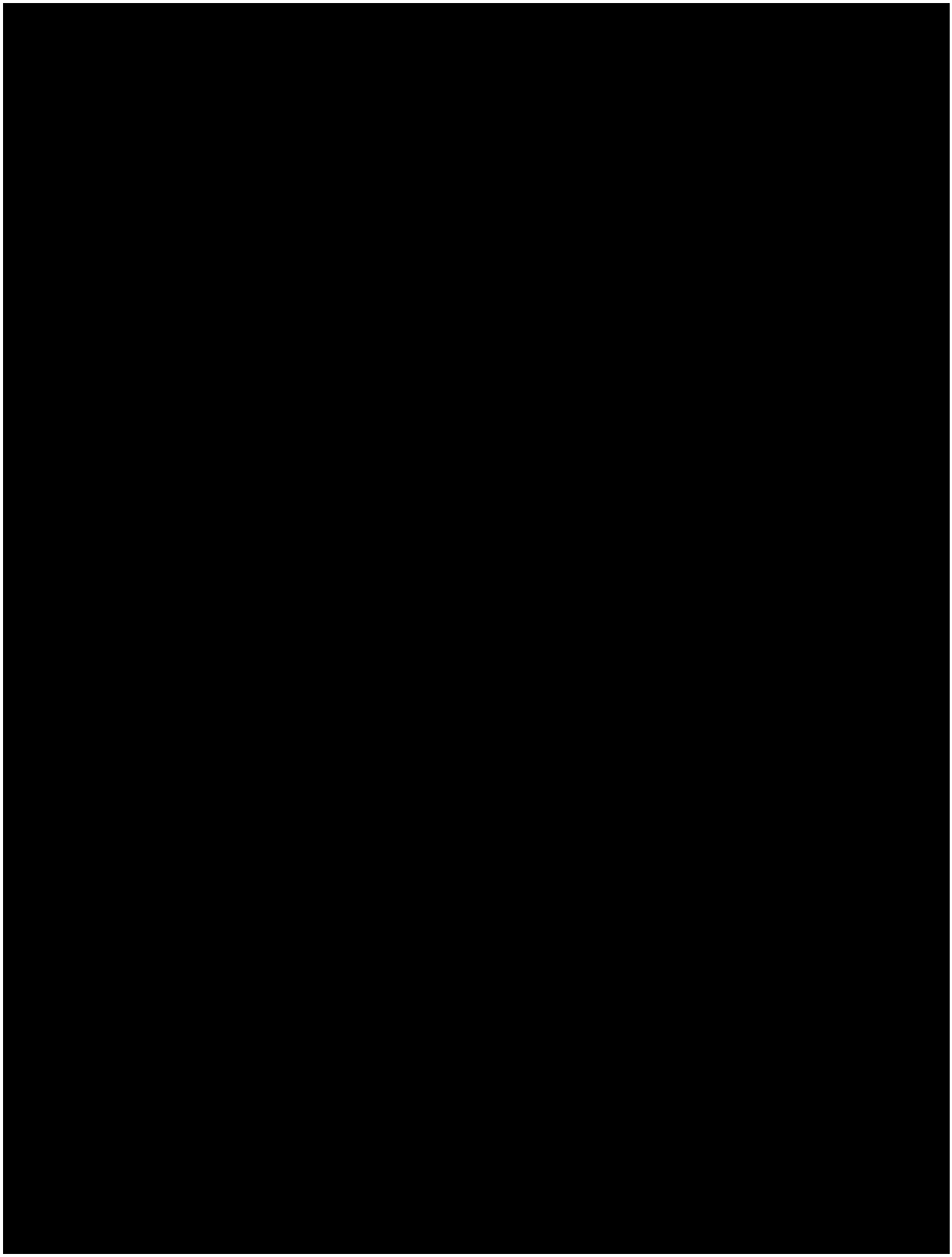


Figure 70: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-N-438 to 12-N-448.

Survey Area 7

Survey Area 7 was located in Beaver Township in [redacted] Township 29 North, Range 9 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Morocco, Indiana Quadrangle (Figure 71 and Figure 72). The property was surveyed from September 25, 2016. The field surveyed was still planted in corn that was standing between seven to nine feet tall. Ground surface visibility was approximately 80 to 90 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. A total of 22 acres was surveyed consisting principally of moraines. The area contained Barry-Gilford fine sandy loam (Bh), Montmorenci fine sandy loam (MrB2), and Sumava-Ridgeville-Odell fine sandy loam (SxA) soils. No sites were encountered during the survey.

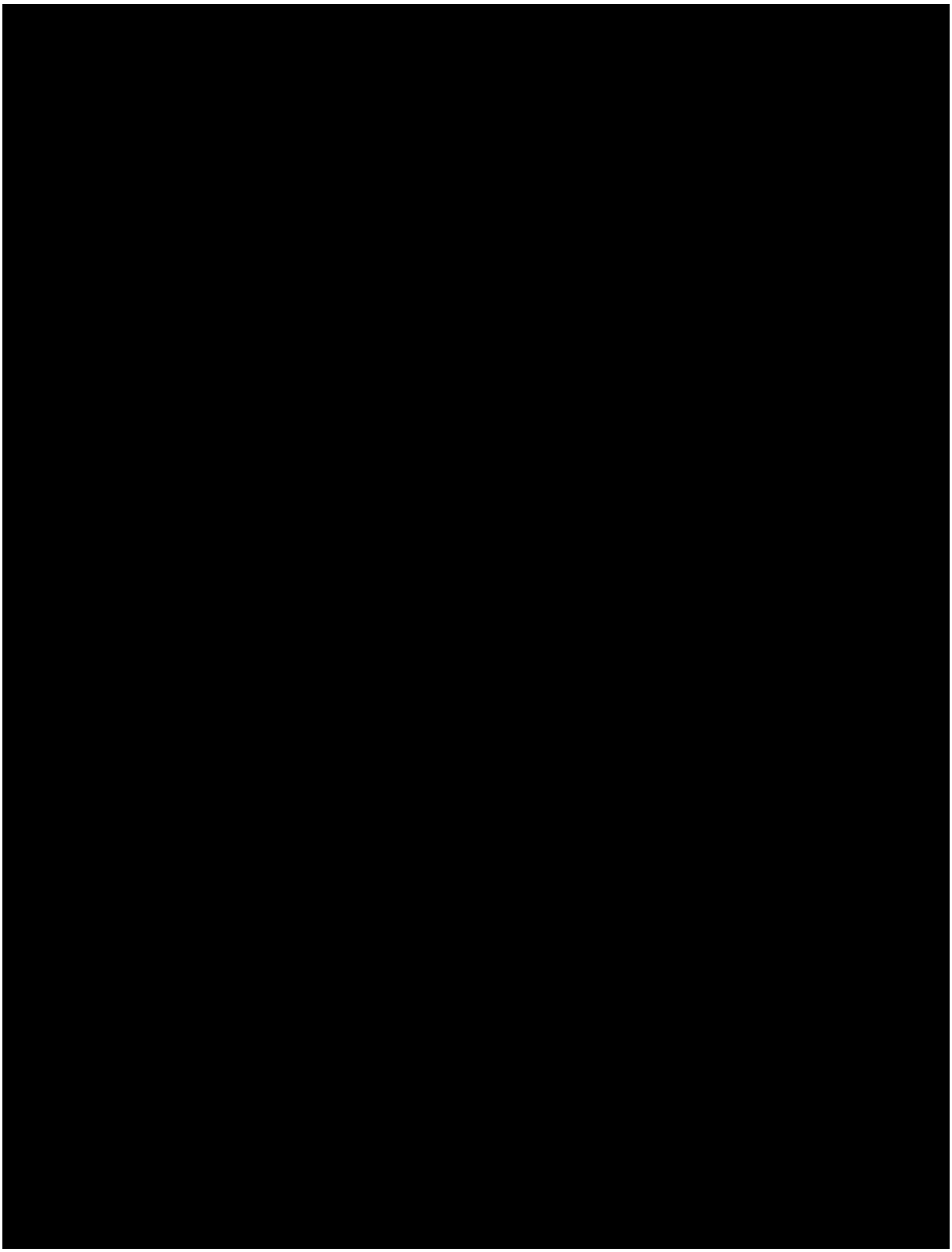


Figure 71: A portion of the map of Beaver Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 7. Note: Due to distortion in historical maps, the georeferenced location of SA7 is slightly off.

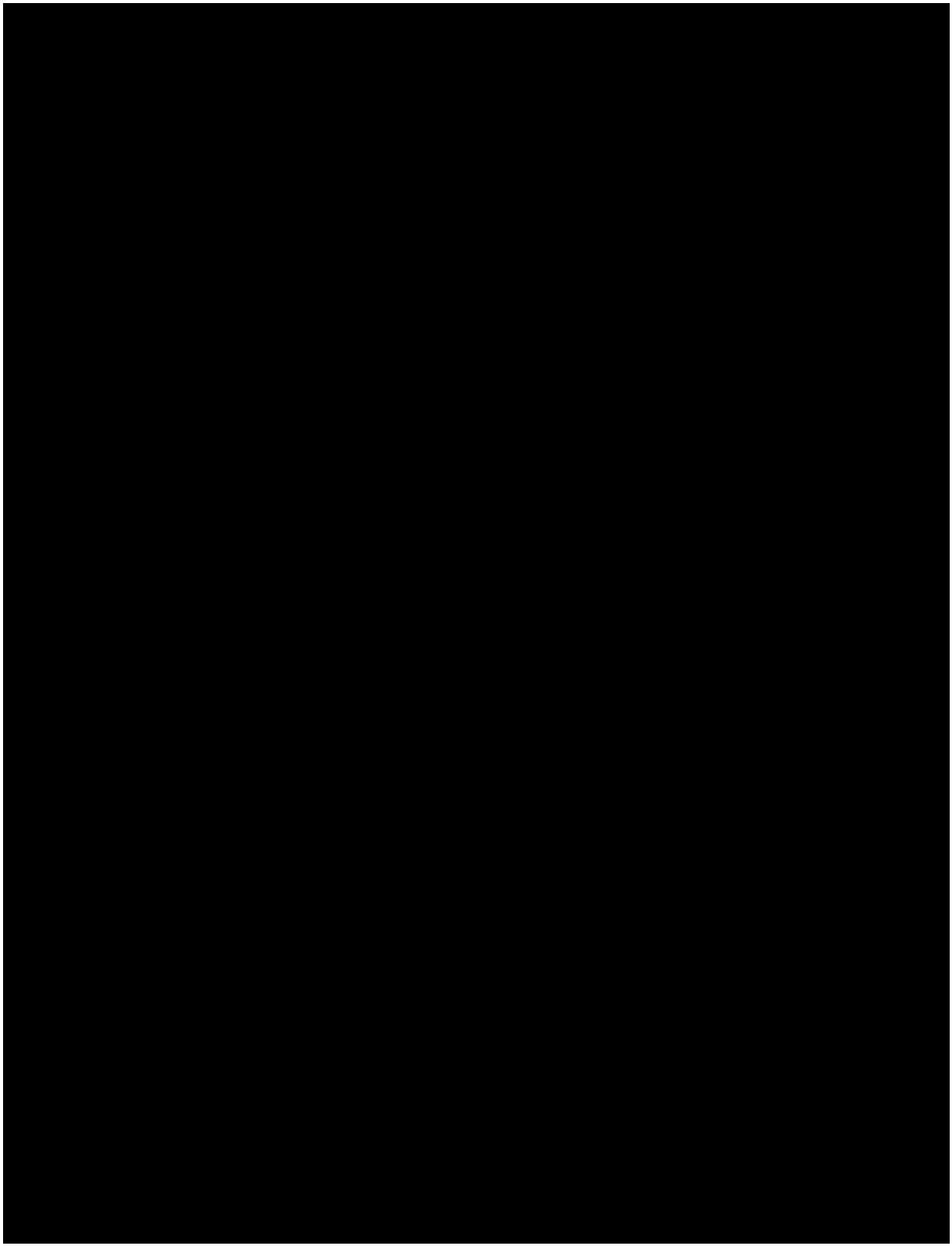


Figure 72: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the location of Survey Area 7.

Artifacts

No artifacts were encountered in Survey Area 7.

Sites

No archaeological sites were recorded in Survey Area 7 (Figure 73 and Figure 74).

Density

Survey Area 7 consisted of 22 acres of moraines. Within Survey Area 7, a density of 0 sites per 22 acres occurred and sites covered 0.00 percent of the surface area.

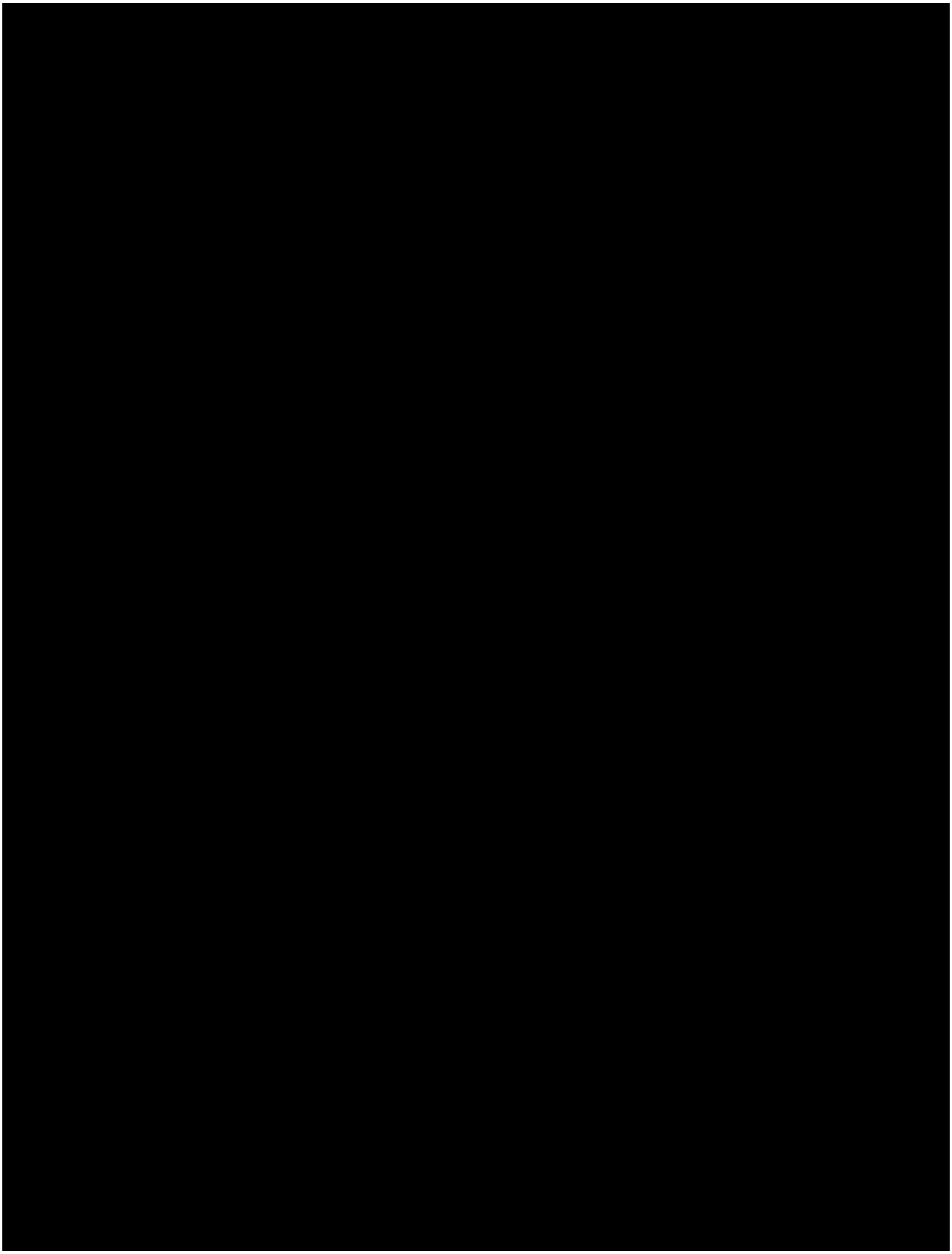


Figure 73: A portion of the USGS 7.5' Morocco, Indiana Quadrangle showing the lack of sites in Survey Area 7.

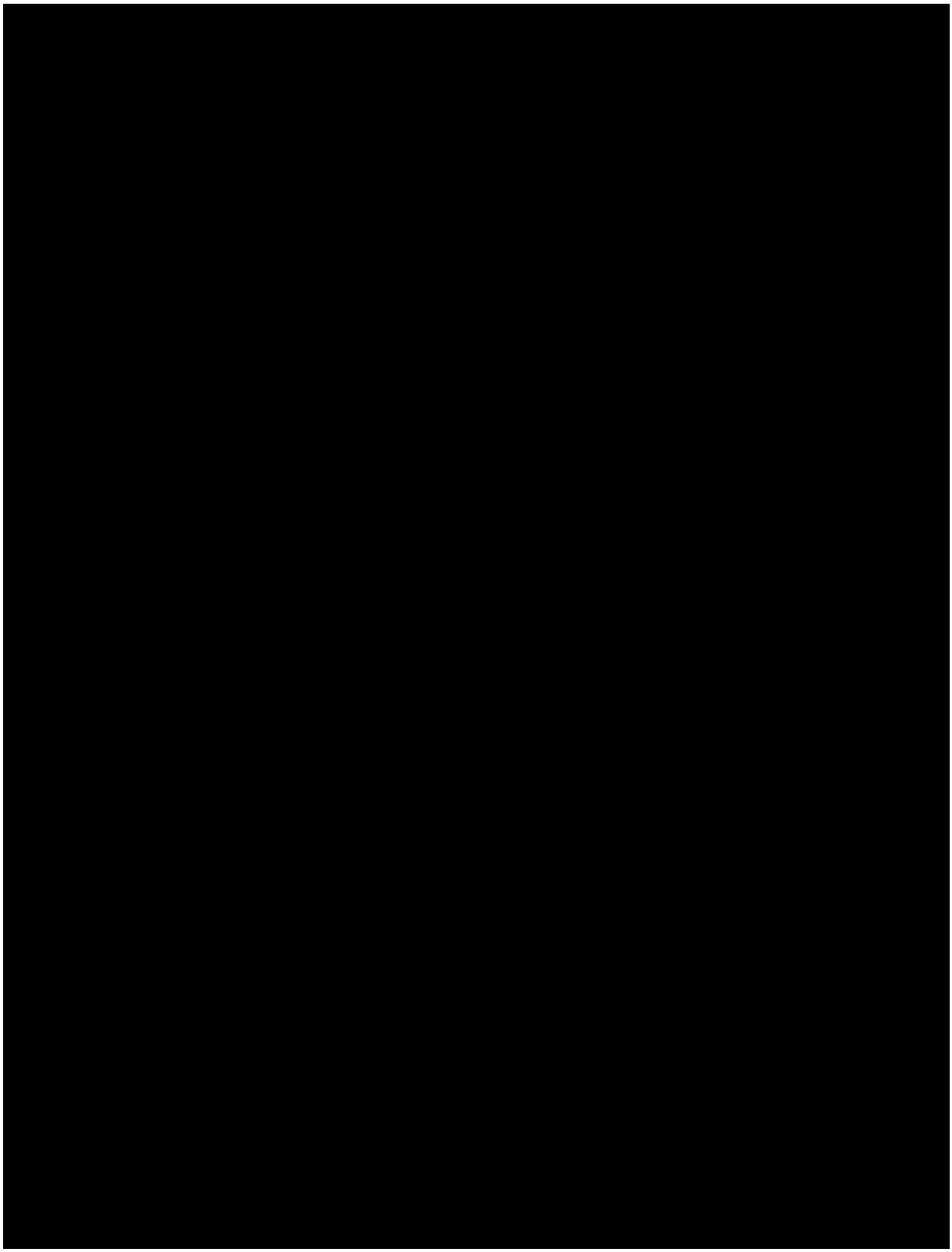


Figure 74: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the lack of sites in Survey Area 7.

Survey Area 8

Survey Area 8 was located in Iroquois Township in [redacted], Township 28 North, Range 8 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Mount Ayr and Goodland, Indiana Quadrangle (Figure 75 and Figure 76). The property was surveyed on October 8 and 9, 2016. The field surveyed was still planted in corn that was standing between seven to nine feet tall. Ground surface visibility was approximately 80 percent with small amounts of corn debris, and the corn stalks themselves being the only visual obstacles. A total of 266.24 acres in total were surveyed consisting of moraines. The area consisted of Darroch silt loam (DcA), Foresman silt loam (FoA, FoB2, and FwA), Iroquois fine sandy loam (Ir), Montgomery silty clay loam (Mp), Papineau fine sandy loam (PaA), Peotone silty clay loam (Pp), Simonin loamy sand (SmB), and Strole silty clay loam (SwA) soils. Nineteen sites were encountered during the survey. The sites ranged in size from prehistoric and historic isolated finds to a historic scatter of 3,484 square meters (0.9 acres) and a multicomponent scatter of 7,151 square meters (1.77 acres).

Neighbors [redacted] stopped by the survey area while the crew was surveying. They showed the crew prehistoric artifacts that they bought at an auction that supposedly recovered from the southeast portion of the survey area in the early 1900s (Figure 77). There is no additional evidence connecting these artifacts to the survey area.

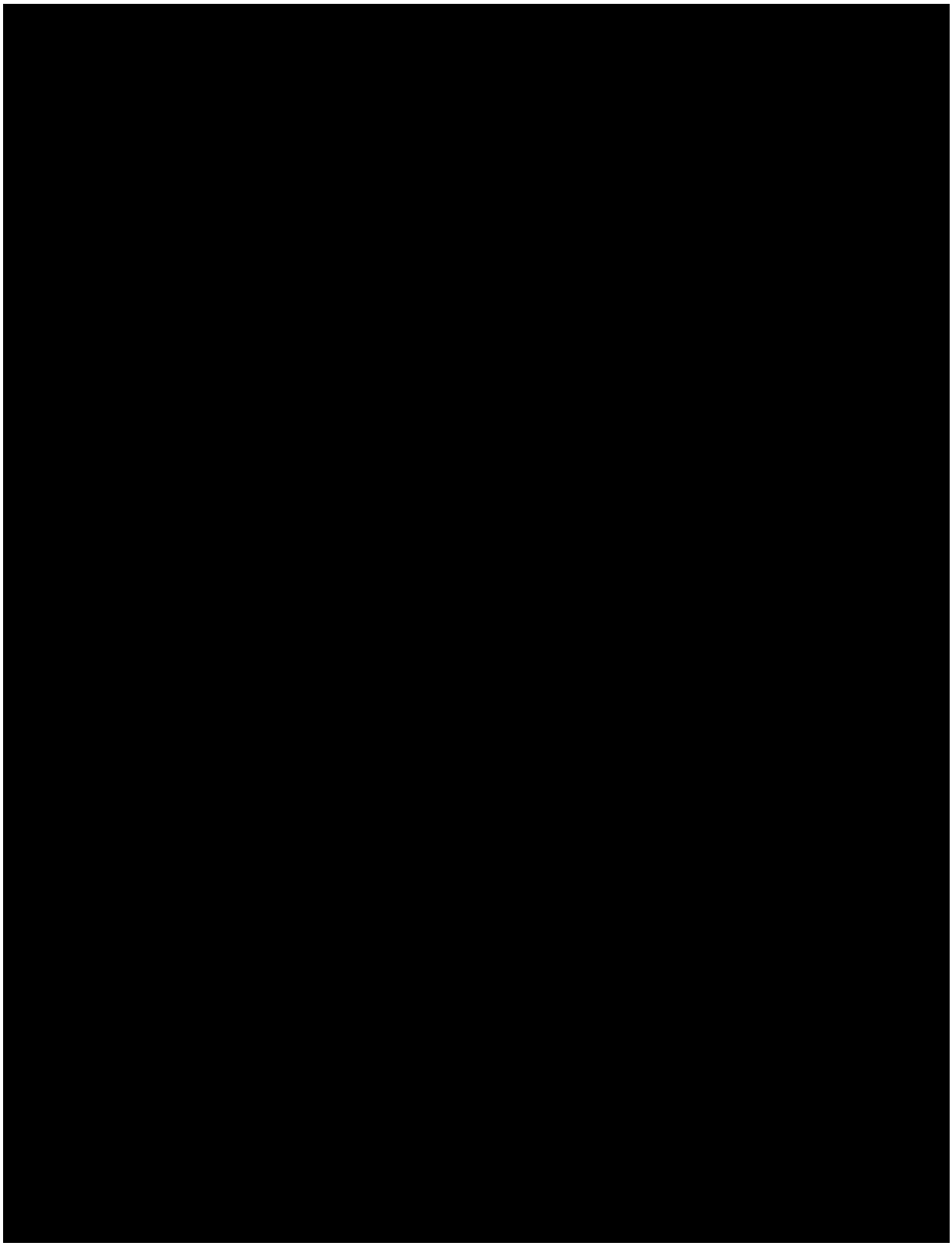


Figure 75: A portion of the map of Iroquois Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 8. Note: Due to distortion in historical maps, the georeferenced location of SA8 is slightly off.

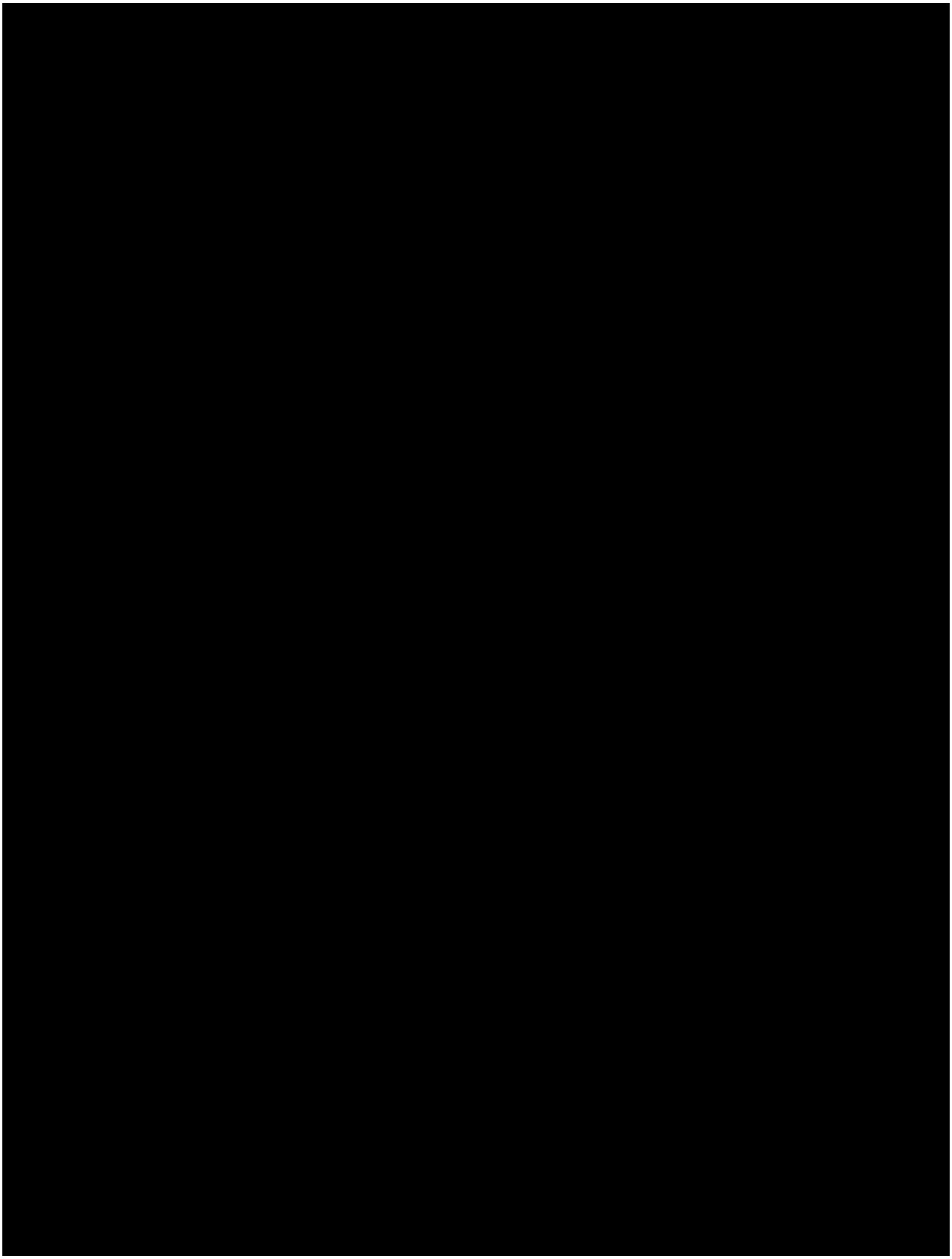


Figure 76: A portion of the USGS 7.5' Mount Ayr and Goodland, Indiana Quadrangles showing the location of Survey Area 8.

Artifacts

A total of 2,436 artifacts were encountered in Survey Area 8, and of those artifacts 575 were collected. The 1,861 artifacts not collected (12-N-457, 12-N-460, and 12-N-464 to 12-N-466) consisted of brick fragments. Table 13 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 78 through Figure 82. Artifacts are listed by individual site in Volume 2, Appendix E.

One prehistoric artifact, which was diagnostic, was recovered from Survey Area 8. A hafted quartz Morrow Mountain Cluster biface (Figure 78) dating to the Middle Archaic period was recovered from site 12-N-451 (Justice 1987:104).

A total of 574 historic artifacts were recovered from Survey Area 8 (Figure 79, Figure 80, Figure 81, and Figure 82) and of those, 508 are diagnostic (Table 13). Chronologically expressed these items include stoneware with a salt glaze interior and exterior recovered from site 12-N-459 which was manufactured from 1715 to 1775 (Noël Hume 1969:56-57). Stoneware with Albany slip interior and salt glaze exterior recovered from sites 12-N-451 and 12-N-464 was manufactured between 1715 and 1920 (Noël Hume1969:56-57; Ramsey1939:21-22,59). Plain porcelain recovered from sites 12-N-451, 12-N-455, and 12-N-462 was manufactured between 1745 and 1795 (Noël Hume 1969:137; ODOT 1991:72). Stoneware with tan glaze interior and exterior decorated with vertical roulette recovered from site 12-N-459 was manufactured between 1780 and present (Stelle 2001:Chapter I). Aqua glass recovered from sites 12-N-451, 12-N-459, 12-N-462, 12-N-464, and 12-N-465 was manufactured between ca.1800 and ca.1900 (IMACS 1992:472(18)). Aqua tint glass recovered from sites 12-N-451, 12-N-459, and 12-N-464 was manufactured between ca.1800 and ca.1900 (IMACS 1992:472(18)). Stoneware with Albany glaze interior and exterior recovered from sites 12-N-451 and 12-N-464 was manufactured between 1805 and 1920 (Ramsey1939:21-22,59). Stoneware with Albany slip and roulette interior and lead glaze exterior recovered from site 12-N-451 was manufactured between 1805 and 1920 (Ramsey1939:21-22,59). Stoneware with Albany slip interior and Bristol glaze exterior recovered from site 12-N-451 was manufactured between 1805 and present (Oswald et al. 1982:19; Ramsey1939:21-22,59). Plain whiteware recovered from site 12-N-451 was manufactured between 1820 and present (ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13). Unglazed whiteware recovered from site 12-N-451 was manufactured between 1820 and 1916 (Stelle 2001:Chapter I). Stoneware with blue glaze interior and exterior recovered from site 12-N-451 was manufactured between 1835 and mid-1890 (Stelle 2001:Chapter I). Stoneware with Bristol glaze interior and exterior recovered from sites 12-N-451 and 12-N-462 was manufactured between 1835 and present (Oswald et al. 1982:19). A milk glass molded button recovered from site 12-N-451 was manufactured between 1840 to present (Marcel 1995). Plain ironstone recovered from site 12-N-451 was manufactured between 1842 to present (ODOT 1991:177; Trussel 2010:14). Green glass recovered from sites 12-N-450 and 12-N-451 was

manufactured between 1860 to present (IMACS 1992:472(18)). Amber glass recovered from sites 12-N-451, 12-N-454, 12-N-461, and 12-N-464 was manufactured between 1860 to present (IMACS 1992:472(19)). Amber glass with a possible health warning sticker reading "Gove," "Genera," "Bever," "Birth," and "Beverage" recovered from site 12-N-451 was manufactured between 1860 to present (IMACS 1992:472(19)). Milk glass lid liner embossed with "For Mas" recovered from site 12-N-451 was manufactured between 1869 and 1871 (Whitten 2016). Milk glass lid liner recovered from site 12-N-451 was manufactured between 1869 and 1871 (Whitten 2016). Milk glass lid liner embossed with "22" recovered from site 12-N-451 was manufactured between 1871 and 1950s (Whitten 2016). Milk glass lid liner recovered from site 12-N-451 was manufactured between 1871 and 1950s (Whitten 2016). Clear glass recovered from sites 12-N-451, 12-N-453, 12-N-456, 12-N-457, 12-N-459, 12-N-462, 12-N-464, and 12-N-466 was manufactured between 1875 to present (IMACS 1992:472(19)). Amethyst glass recovered from sites 12-N-451, 12-N-458, 12-N-459, and 12-N-462 was manufactured between 1880 and 1925 (IMACS 1992:472(7); Newman 1970:74). Milk glass recovered from sites 12-N-451, 12-N-459, 12-N-461, and 12-N-462 was manufactured between 1890 and 1960 (IMACS 1992:472(18)). Cobalt glass recovered from sites 12-N-451 and 12-N-459 was manufactured between 1890 and 1960 (IMACS 1992:472(19)). An iron spark plug piece recovered from site 12-N-451 was manufactured between 1909 to present (Bosch 2017; Toeg 2017). A copper plated zinc wheat penny recovered from site 12-N-451 was dated 1928 (Cointracker 2017). A clear glass base embossed with a maker's mark, "Illiniois 10," and a shape followed by "0" recovered from site 12-N-451 was manufactured in the late-1920s (Lindsey 2016). Blue milk glass recovered from site 12-N-451 was manufactured between 1940s to 1950s (Depression Glass 2014). Red glass recovered from site 12-N-451 was manufactured between late-1940s to early-1960s (Lindsey 2016). Stoneware with grey lead glaze recovered from site 12-N-451 was manufactured until a termination date of 1940 (Stelle 2001:Chapter I). Stoneware with tan salt glaze and vertical roulette interior and clear glaze exterior recovered from site 12-N-451 was manufactured until a termination date of 1940 (Stelle 2001:Chapter I). A green glass cat eye marble recovered from site 12-N-451 was manufactured between mid-1980s to present (Block 2017).

Table 12: Artifacts from Survey Area 8.

Prehistoric	No.	Historic	No.
Biface, Hafted, Quartz, Morrow Mountain Cluster	1	Ceramic, Porcelain	7
		Ceramic, Ironstone	18
		Ceramic, Whiteware	43
		Ceramic Stoneware	46
		Glass, Red	1
		Glass, Cobalt	6
		Glass, Green	11
		Glass, Amethyst	26
		Glass, Milk	23
		Glass, Amber	27
		Glass, Aqua	70
		Glass, Aqua Tint	32
		Glass, Clear	195
		Metal, Iron, Hinge	1
		Metal, Iron, Nail	4
		Metal, Iron, Spark Plug Piece	1
		Metal, Iron, Eared Flange	1
		Metal, Iron, Squared with one Hole	1
		Metal, Iron, Slab with Nuts and Bolts	1
		Metal, Iron, Swivel Bracket	1
		Metal, Copper-plated zinc, wheat penny	1
		Metal, Copper, Tube	1
		Metal, Brass, Remington Shotgun shell head	1
		Metal, Sterling Silver, Butter Server	1
		Metal, Iron, Washer	1
		Metal, Iron, Flat blade with oval holes	1
		Faunal, Shell, Freshwater, Mussel	2
		Graphite, Battery	1
		Leather with six Nail or Brad Holes	1
		Asbestos Shingles	4
		Slag	5
		Concrete	1
		Charcoal/Clinker	39
		Brick (uncollected)	1,861
Total	**1**	**Total**	**2,435**

Figure 77: [redacted] prehistoric artifacts thought to be recovered from Survey Area 8 (photo by Christine Thompson, Ball State University).

Figure 78: A Middle Archaic Morrow Mountain Cluster diagnostic point recovered from 12-N-451 (photo by Kiya Mullins, Ball State University).

Table 13: Historic Diagnostics from Survey Area 8

Artifact Type	Site	Date Range	Citation
Porcelain	12-N-451, 12-N-455, and 12-N-462	1745-1795	Noël Hume 1969:137; ODOT 1991:72
Plain Ironstone	12-N-451	1842-present	ODOT 1991:177; Trussel 2010:14
Plain Whiteware	12-N-451	1820-present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Whiteware unglazed	12-N-451	1820-1916	Stelle 2001:Chapter I
Stoneware Albany glaze interior and exterior	12-N-451 and 12-N-464	1805-1920	Ramsey 1939:21-22,59
Stoneware Albany slip interior and Salt glaze exterior	12-N-451 and 12-N-464	1715-1920	Noël Hume1969:56-57; Ramsey1939:21-22,59
Stoneware Albany slip and roulette molding interior and lead glaze exterior	12-N-451	1805-1920	Ramsey 1939:21-22,59
Stoneware Grey lead glaze	12-N-451	Termination date of 1940	Stelle 2001:Chapter I
Stoneware Blue glaze interior and exterior	12-N-451	1835-mid-1890	Stelle 2001:Chapter I
Stoneware Albany slip interior and Bristol glaze exterior	12-N-451	1805-present	Oswald et al. 1982:19; Ramsey 1939:21-22,59
Stoneware Bristol glaze interior and exterior	12-N-451 and 12-N-462	1835-present	Oswald et al. 1982:19
Stoneware Salt glaze interior and exterior	12-N-459	1715-1775	Noël Hume 1969:56-57
Stoneware Tan glaze interior and exterior with vertical roulette	12-N-459	1780-present	Stelle 2001:Chapter I
Stoneware Tan salt glaze and vertical roulette interior and clear glaze exterior	12-N-464	Termination date of 1940	Stelle 2001:Chapter I
Red Glass	12-N-451	Late 1940s-early 1960s	Lindsey 2016
Cobalt Glass	12-N-451 and 12-N-459	1890-1960	IMACS 1992:472(19)
Green Glass	12-N-450 and 12-N-451	1860-present	IMACS 1992:472(18)
Green Glass cat eye marble	12-N-451	Mid-1980s-present	Block 2017
Amethyst Glass	12-N-451, 12-N-458, 12-N-459, and 12-N-462	1880-1925	IMACS 1992:472(7); Newman 1970:74
Milk Glass	12-N-451, 12-N-459, 12-N-461, and 12-N-462	1890-1960	IMACS 1992:472(18)
Milk Glass molded button	12-N-451	1840-present	Marcel 1995
Blue milk Glass	12-N-451	1940s-1950s	Depression Glass 2014
Milk Glass lid liner embossed with “For Mas”	12-N-451	1869-1871	Whitten 2016
Milk Glass lid liner molded	12-N-451	1869-1871	Whitten 2016
Milk Glass lid liner embossed with “22”	12-N-451	1871-1950s	Whitten 2016
Milk Glass lid liner molded	12-N-451	1871-1950s	Whitten 2016

Artifact Type	Site	Date Range	Citation
Amber Glass	12-N-451, 12-N-454, 12-N-461, and 12-N-464	1860-present	IMACS 1992:472(19)
Amber Glass with sticker saying "Gove" "Genera" "Bever" "Birth" and "Beverage" printed on it, possible Health Warning Sticker	12-N-499	1860-present	IMACS 1992:472(19)
Aqua Glass	12-N-451, 12-N-459, 12-N-462, 12-N-464, and 12-N-465	Ca.1800-ca.1900	IMACS 1992:472(18)
Aqua tint Glass	12-N-451, 12-N-459, and 12-N-464	Ca.1800-ca.1900	IMACS 1992:472(18)
Clear Glass	12-N-451, 12-N-453, 12-N-456, 12-N-457, 12-N-459, 12-N-462, 12-N-464, and 12-N-466	1875-present	IMACS 1992:472(19)
Clear Glass base embossed with a maker's mark, "Illinois 10" and a shape then "0"	12-N-451	Late 1920s	Lindsey 2016
Iron spark plug piece	12-N-451	1909-present	Bosch 2017; Toeg 2017
Copper plated zinc wheat penny	12-N-451	1928	Cointracker 2017

Figure 79: Representative historic ceramic artifacts from Survey Area 8 (photo by Kiya Mullins, Ball State University).

Figure 80: Stoneware neck and handle with an Albany slip interior and exterior from 12-N-451 (photo by Kiya Mullins, Ball State University).

Figure 81: Representative historic metal, graphite, and leather artifacts from Survey Area 8 (photo by Kiya Mullins, Ball State University).

Figure 82: Sterling silver butter server from 12-N-452 (photo by Kiya Mullins, Ball State University).

Sites

Nineteen archaeological sites, 12-N-449 to 12-N-467, were recorded in Survey Area 8 (Figure 83 and Figure 84). Summaries for the individual sites are contained in Volume 2, Appendix F. Fifteen sites (12-N-449 to 12-N-451, 12-N-453 to 12-N-459, 12-N-461, 12-N-462, and 12-N-464 to 12-N-466) had diagnostic artifacts. One site (12-N-451) contained a Middle Archaic component as part of a multicomponent site. Ten sites (12-N-449, 12-N-450, 12-N-452, 12-N-454 to 12-N-456, 12-N-458, 12-N-460, 12-N-463, and 12-N-467) were historic isolated finds, and eight sites (12-N-453, 12-N-457, 12-N-459, 12-N-461, 12-N-462, and 12-N-464 to 12-N-466) were historic scatters. One site was a multicomponent site (12-N-451) that was unidentified as prehistoric isolated find and historic scatters.

All 19 sites were discovered on moraines. One site (12-N-465) was located on Foresman silt loam (FoB2) soil, six sites (12-N-449, 12-N-453, 12-N-454, 12-N-456, 12-N-460, and 12-N-466) were located on Iroquois fine sandy loam (Ir) soil, one site (12-N-458) was located on Montgomery silty clay loam (Mp) soil. Four sites (12-N-455, 12-N-461, 12-N-463, and 12-N-467) were located on Papineau fine sandy loam (PaA) soil, and one site (12-N-450) was located on Strole silty clay loam (SwA) soil. Six sites were located on multiple soil types. Two sites (12-N-459 and 12-N-462) were located on Foresman silt loam (FoB2 and FwA) soils. Three sites were located on multiple soils, two sites (12-N-451 and 12-N-452) were located on Iroquois fine sandy loam (Ir) and Papineau fine sandy loam (PaA) soils, and one site (12-N-464) was located on Montgomery silty clay loam (Mp) and Foresman silt loam (FoB2) soils.

Site 12-N-451 is a prehistoric isolate and historic scatter located on the western border of Survey Area 8. (Figure 83 and Figure 84) The 1,185 artifacts recovered from site 12-N-451 consisted of historic glass, ceramic, leather, asbestos shingles, and brick dating from 1715 to present. One diagnostic projectile point made of quartz was recovered, a Morrow Mountain Cluster point dating to the Middle Archaic period (Justice 1987). The site itself is 7,151 square meters, or 1.77 acres, in size, which leads to an artifact density of 669.5 artifacts per acre. No evidence of subsurface features were encountered during survey. After consulting several historic sources (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:61), a structure belonging to John B. Lyons was located in the area of site 12-N-451 as early as 1876 and at least until 1916 (Andreas 1968; Geo. A. Ogle & Co. 1916). The Newton County Historical Society has the contact information for the individual in possession of the history of the Lyons family on their website (Newton County Historical Society 2017). John Bennet Lyons, Sr. was born in Newton County in 1845 and served in Co. B 51st Indiana Volunteer Infantry during the Civil War (Find A Grave 2010). This makes the Lyons family one of the earliest residents in the county. Based on archaeological research, historical prominence of the Lyons family, and the density and diversity of artifacts could indicate the potential to yield additional important information on the early settlement and economic activity of 19th century Newton County

beyond the Phase I level. In addition, the recovery of a quartz Morrow Mountain point is extremely rare in the Midwest (e.g., Purtill 2009) and its presence should be explored further. Therefore, site 12-N-451 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-457 is a historic scatter located on the western border of Survey Area 8 (Figure 83 and Figure 84). The 306 artifacts recovered from site 12-N-457 consisted of historic glass and brick dating from 1875 to present. The site itself is 465 square meters, or 0.11 acres, in size, which leads to an artifact density of 2781.8 artifacts per acre. No evidence of subsurface features such as structural foundations or shaft features were encountered during survey. After consulting several historic sources (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:61), a structure belonging to John B. Lyons was located in the area of site 12-N-451 as early as 1876 (Andreas 1968; Geo. A. Ogle & Co. 1916). The exact time range of the structures existence on the parcel is unknown at this stage of investigation. The Newton County Historical Society has the contact information for the individual in possession of the history of the Lyons family on their website (Newton County Historical Society 2017). John Bennet Lyons, Sr. was born in Newton County in 1845 and served in Co. B 51st Indiana Volunteer Infantry during the Civil War (Find A Grave 2010). This makes the Lyons family one of the earliest residents in the county. Based on archaeological research, historical prominence of the Lyons family, and the density and diversity of artifacts could indicate the potential to yield additional important information on the early settlement and economic activity of 19th century Newton County beyond the Phase I level. Therefore, site 12-N-457 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-462 is a historic scatter located on the southern border of Survey Area 8 (Figure 83 and Figure 84). The 13 artifacts recovered from site 12-N-462 consisted of historic glass and brick dating from 1875 to present. The site itself is 854 square meters, or 0.20 acres, in size, which leads to an artifact density of 65 artifacts per acre. No evidence of subsurface features were encountered during survey. There were no structures located on any historic maps (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:61). Based on the types and small amount of artifacts collected and the lack of historical documentation of structures, site 12-N-462 does not appear to have the potential to yield additional information beyond the Phase I level. Therefore, the site is not considered potentially eligible for the National Register of Historic Places.

Site 12-N-464 is a historic scatter located on the southern border of Survey Area 8 (Figure 83 and Figure 84). The 717 artifacts recovered from site 12-N-464 consisted of 5 pieces of historic ceramic and 7 pieces of historic glass dating from 1715 to present as well as charcoal, concrete, slag and brick. The site itself is 3,484 square meters, or 0.90 acres, in size, which leads to an artifact density of 796.7 artifacts per acre. No evidence of subsurface features were

encountered during survey. Although site 12-N-464 contained 700 uncollected brick fragments, there were no structures located on any historic maps (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:61). Based on archaeological research, the density and lack of artifact diversity, and the lack of historical documentation of structures, site 12-N-464 does not appear to have the potential to yield additional information beyond the Phase I level. Therefore, the site is not considered potentially eligible for the National Register of Historic Places.

The remainder of the sites (12-N-449, 12-N-450, 12-N-452 to 12-N-456, 12-N-458 to 12-N-461, 12-N-463, and 12-N-465 to 12-N-467) found in Survey Area 8 were determined to have little potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 8 consisted of 266.24 acres of moraines. Within Survey Area 8, a density of one site per 14.01 acres occurred and sites covered 1.35 percent of the surface area.

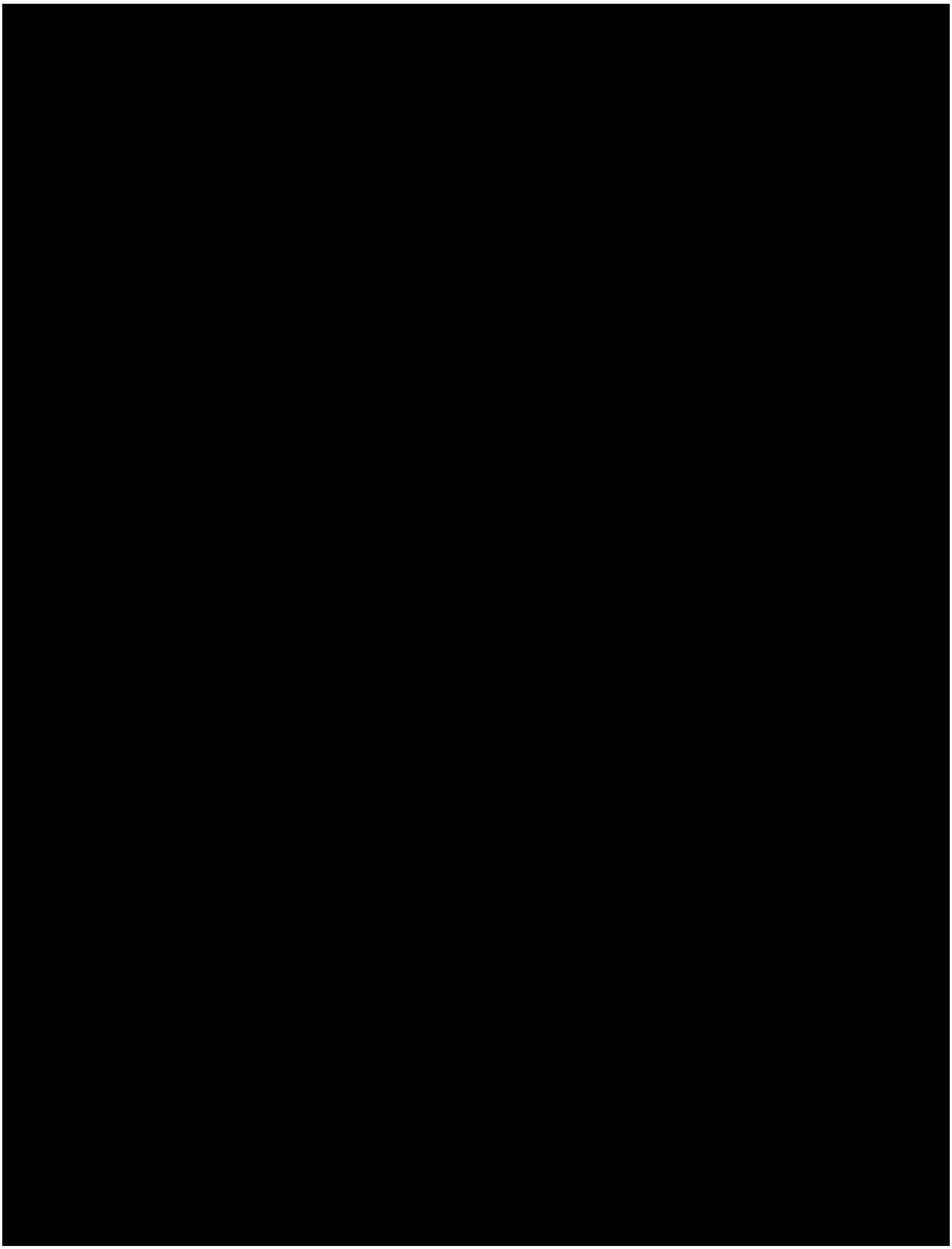


Figure 83: A portion of the USGS 7.5' Mount Ayr and Goodland, Indiana Quadrangles showing the location of sites 12-N-449 to 12-N-467.

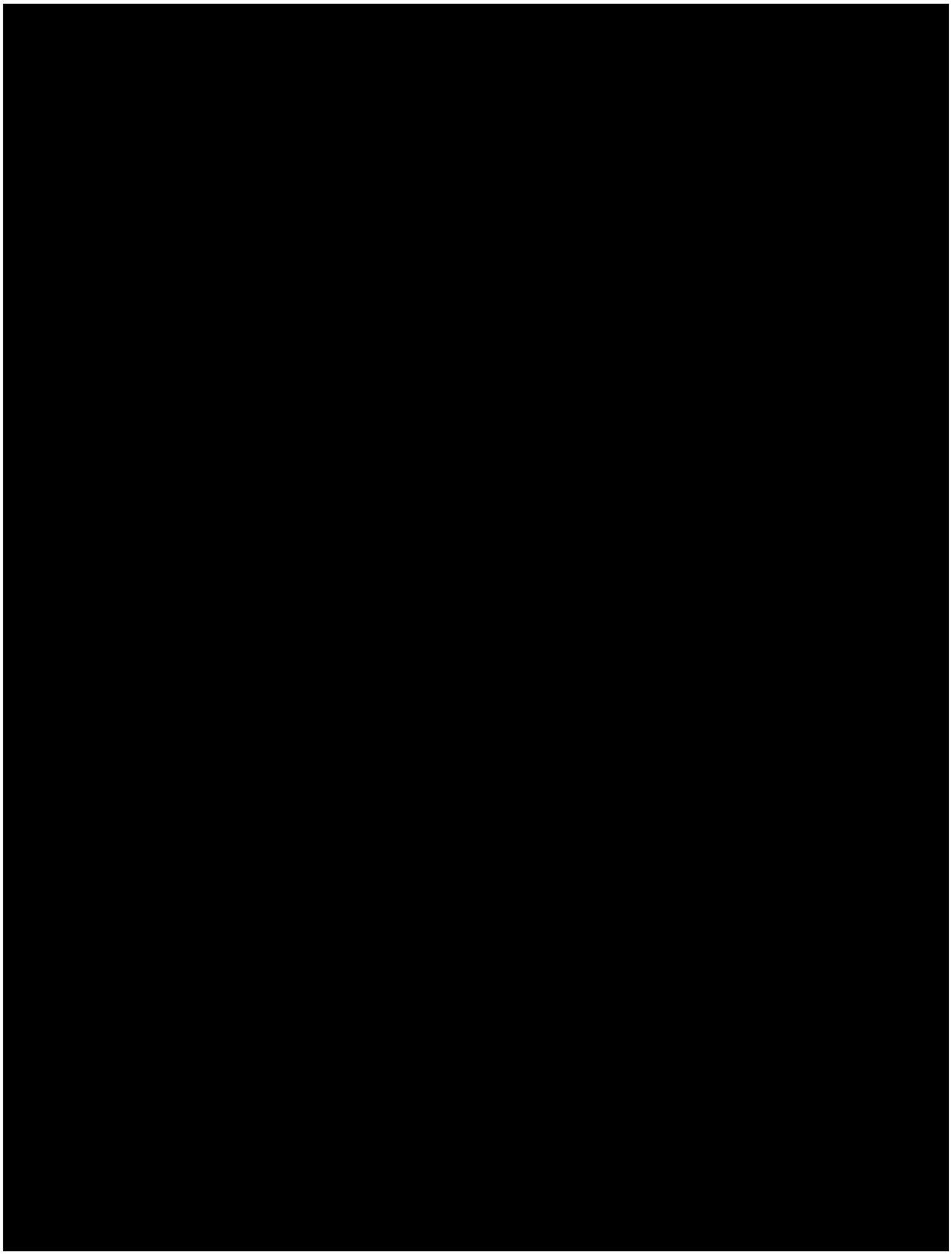


Figure 84: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-N-449 to 12-N-467.

Survey Area 9

Survey Area 9 was located in Jefferson Township in [redacted], Township 27 North and 26 North, Range 9 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Kentland, Indiana Quadrangle (Figure 85 and Figure 86). The property was surveyed on October 15, 2016. The field was planted in soybeans and had recently been harvested. Ground surface visibility was approximately 30 to 50 percent with agricultural debris from harvesting obscuring visibility. A total of 149 acres was surveyed consisting of moraines. The area contained Barce-Corwin silt loam (BbA), Barce-Montmorenci loam (BfB2), Darroch loam (DgA), Foresman silt loam (FtA and FtB2), Gilboa-Odell silt loam (GbA), Onarga fine sandy loam (OnA and OpB2), and Selma silty clay loam (Sk) soils. Twenty sites were encountered during the survey. The sites ranged in size from historic isolated finds to a multicomponent site identified as a prehistoric isolated find and historic scatter of 858 square meters (0.15 acres).

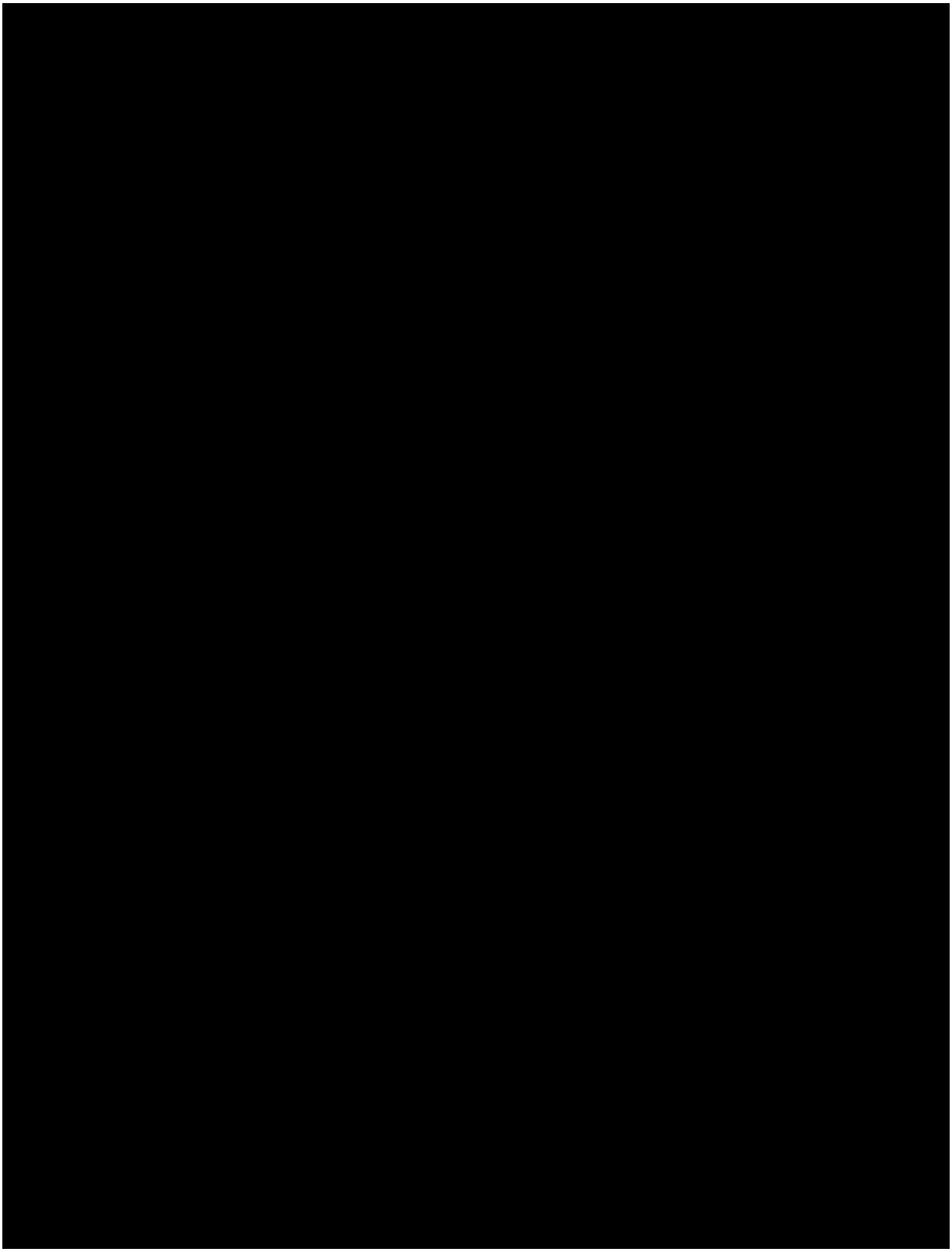


Figure 85: A portion of the map of Jefferson Township, Newton County in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) showing Survey Area 9. Note: Due to distortion in historical maps, the georeferenced location of SA9 is slightly off.

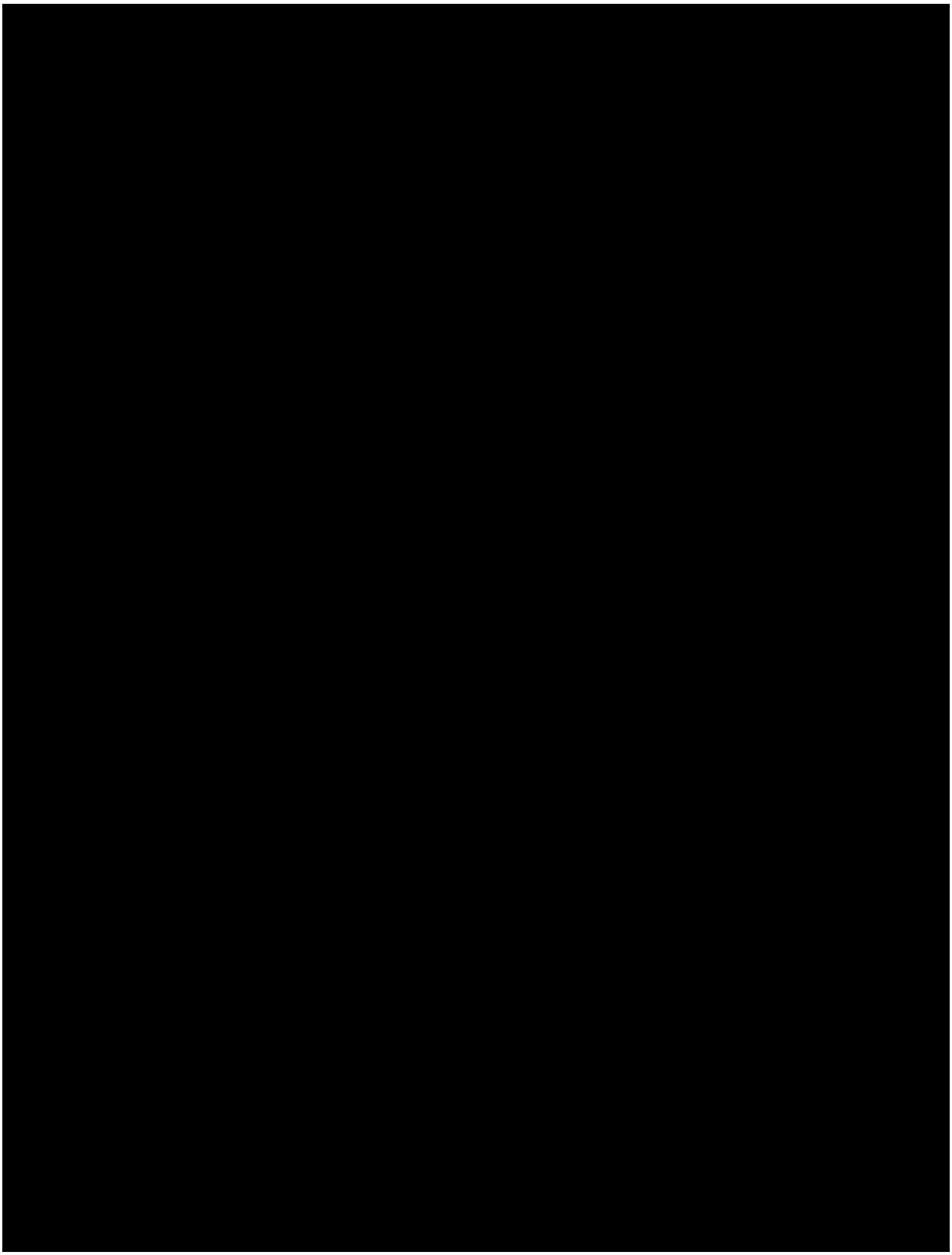


Figure 86: A portion of the USGS 7.5' Kentland, Indiana Quadrangle showing the location of Survey Area 9.

Artifacts

A total of 114 artifacts was encountered in Survey Area 9, and of those artifacts 51 were collected. The 63 artifacts not collected (12-N-471, 12-N-478, and 12-N-485) consisted of concrete and brick fragment. Table 14 provides a list of the artifacts recovered by category. Sample artifacts are shown in Figure 87 through Figure 91. Artifacts are listed by individual site in Volume 2, Appendix E.

Five prehistoric artifact was recovered from Survey Area 9 (Figure 87). None were diagnostic.

Forty-eight historic artifacts were recovered from Survey Area 9 (Figure 88, Figure 89, Figure 90, and Figure 91) and of those, 42 are diagnostic (Table 15). Chronologically expressed these items include aqua glass recovered from sites 12-N-470 and 12-N-475 which was manufactured from ca.1800 to ca.1900 (IMACS 1992:472(18)). Plain whiteware recovered from sites 12-N-476 and 12-N-486 was manufactured from 1820 to present (ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13). Whiteware tile with brown speckling recovered from site 12-N-487 was manufactured between 1820 to present (ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13). Stoneware with blue glaze interior and exterior from sites 12-N-475 and 12-N-483 was manufactured between 1835-mid-1890 (Stelle 2001:Chapter I). Plain ironstone recovered from site 12-N-468 was manufactured between 1842-present (ODOT 1991:177; Trussel 2010:14). Green glass recovered from site 12-N-469 was manufactured between 1860 to present (IMACS 1992:472(18)). Amber glass recovered from sites 12-N-470, 12-N-472, 12-N-474, 12-N-475, 12-N-476, and 12-N-479 was manufactured between 1860 to present (IMACS 1992:472(19)). Milk glass lid liner embossed with "D" recovered from site 12-N-476 was manufactured between 1871 and 1950s (Whitten 2016). Clear glass recovered from sites 12-N-468, 12-N-470, 12-N-473, 12-N-475, 12-N-479, 12-N-483, and 12-N-487 was manufactured between 1875 to present (IMACS 1992:472(19)). Amethyst glass recovered from sites 12-N-482 and 12-N-484 was manufactured between 1880 and 1925 (IMACS 1992:472(7); Newman 1970:74). Semi-porcelain fence insulator recovered from site 12-N-483 was manufactured between 1892 to present (Berge 1980:15b). An amber glass base embossed with "2580," possible "6," a makers mark, "52," and "3" recovered from site 12-N-468 was manufactured between 1944 and 1982 (Whitten 2016).

Table 14: Artifacts from Survey Area 9.

Prehistoric	No.	Historic	No.
Nonbiface, Flake, End Scraper	1	Ceramic, Semi-Porcelain	1
Core	1	Ceramic, Ironstone	2
Flake	1	Ceramic, Whiteware	3
Flake, Proximal	2	Ceramic, Stoneware	2
		Glass, Green	1
		Glass, Amethyst	2
		Glass, Milk	1
		Glass, Amber	15
		Glass, Clear	13
		Metal, Iron, Railroad spike	1
		Metal, Iron, Staple	3
		Metal, Steel, Gear	1
		Brick	1
		Concrete (uncollected)	19
		Brick (uncollected)	44
Total	**5**	**Total**	**109**

Figure 87: Representative prehistoric artifacts from Survey Area 9 (photo by Kiya Mullins, Ball State University).

Table 15: Historic Diagnostics from Survey Area 9

Artifact Type	Site	Date Range	Citation
Semi-Porcelain, Fence Insulator	12-N-483	1892-present	Berge 1980:15b
Ironstone	12-N-468	1842-present	ODOT 1991:177; Trussel 2010:14
Plain whiteware	12-N-476 and 12-N-486	1820-present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Whiteware tile with brown speckling	12-N-487	1820-present	ODOT 1991:177, Stelle 2001: Chapter 1; Trussel 2010:13
Stoneware Blue glaze interior and exterior	12-N-475 and 12-N-483	1835-mid-1890	Stelle 2001:Chapter I
Green Glass	12-N-469	1860-present	IMACS 1992:472(18)
Amethyst Glass	12-N-482 and 12-N-484	1880-1925	IMACS 1992:472(7); Newman 1970:74
Milk Glass lid liner embossed with "D"	12-N-476	1871-1950s	Whitten 2016
Amber Glass base embossed with "2580," possible "6," a makers mark, "52," and "3"	12-N-468	1944-1982	Whitten 2016
Amber Glass	12-N-470, 12-N-472, 12-N-474, 12-N-475, 12-N-476, and 12-N-479	1860-present	IMACS 1992:472(19)
Aqua Glass	12-N-470 and 12-N-475	Ca.1800-ca.1900	IMACS 1992:472(18)
Clear Glass	12-N-468, 12-N-470, 12-N-473, 12-N-475, 12-N-479, 12-N-483, and 12-N-487	1875-present	IMACS 1992:472(19)

Figure 88: Representative historic ceramic artifacts from Survey Area 9 (photo by Kiya Mullins, Ball State University).

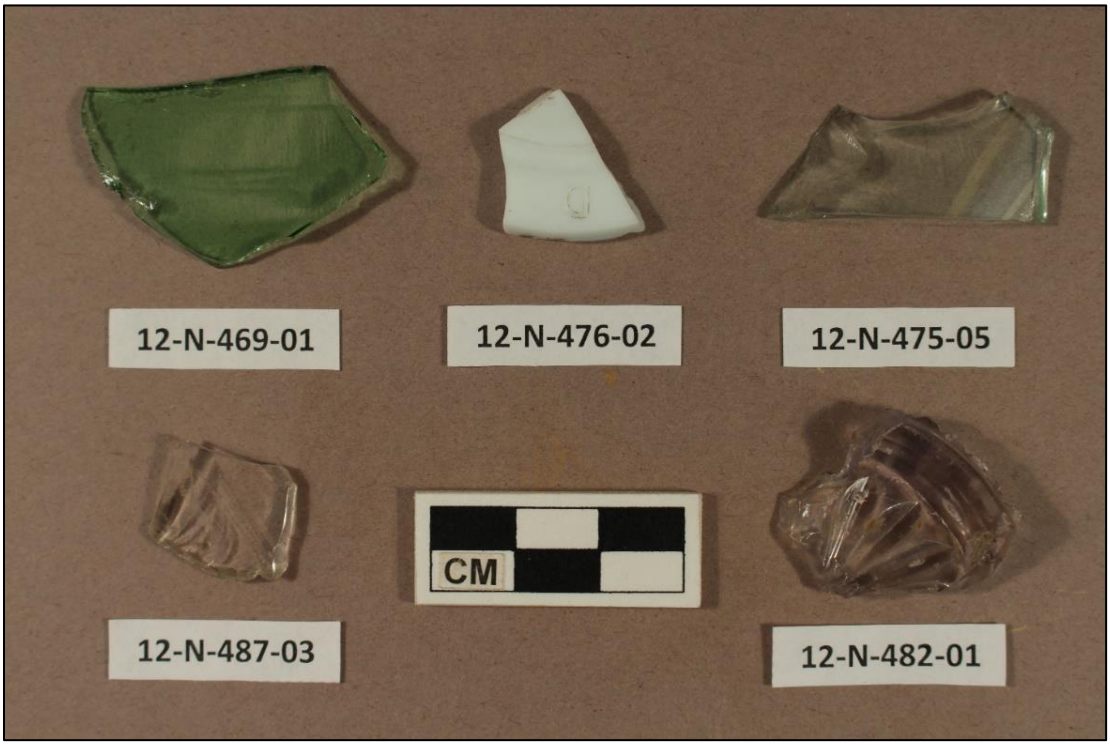


Figure 89: Representative historic glass artifacts from Survey Area 9 (photo by Kiya Mullins, Ball State University).

Figure 90: Amber glass base embossed with the Thatcher Glass Company maker's mark from 12-N-468 (photo by Kiya Mullins, Ball State University).

Figure 91: Representative historic metal artifacts from Survey Area 9 (photo by Kiya Mullins, Ball State University).

Sites

Twenty archaeological sites, 12-N-468 to 12-N-487, were recorded in Survey Area 9 (Figure 92 and Figure 93). Summaries for the individual sites are contained in Volume 2, Appendix F. Fourteen sites (12-N-468 to 12-N-470, 12-N-472 to 12-N-476, 12-N-479, 12-N-482 to 12-N-484, 12-N-486, and 12-N-487) had diagnostic artifacts. Three sites (12-N-477, 12-N-480, and 12-N-481) were prehistoric isolated finds. Seven sites were historic isolated finds (12-N-469, 12-N-471, 12-N-473, 12-N-478, 12-N-482, 12-N-484, and 12-N-486) and eight sites were historic scatters (12-N-468, 12-N-470, 12-N-472, 12-N-474, 12-N-476, 12-N-479, 12-N-483, and 12-N-485). Two sites (12-N-475 and 12-N-487) were multicomponent identified as prehistoric isolated finds and historic scatters.

All 20 sites were discovered on moraines. Four sites (12-N-469, 12-N-470, 12-N-477 and 12-N-484) were located on Darroch loam (DgA) soil, seven sites (12-N-468, 12-N-476, 12-N-478, 12-N-481 to 12-N-483, and 12-N-485) were located on Gilboa-Odell silt loam (GbA) soil and six sites (12-N-471, 12-N-472, 12-N-479, 12-N-480, 12-N-483, and 12-N-487) were located on Selma silty clay loam (Sk) soil. Three sites were located on multiple soils, one site (12-N-473) was located on Gilboa-Odell silt loam (GbA) and Selma silty clay loam (Sk), and two sites (12-N-474 and 12-N-475) were located on Barce-Montmorenci loam (BfB2) and Gilboa-Odell silt loam (GbA).

The site types found in Survey Area 9 are typically considered to not have the potential to yield additional information beyond the Phase I level and are therefore not considered eligible for the National Register of Historic Places.

Density

Survey Area 9 consisted of 149 acres of moraines. Within Survey Area 9, a density of one site per 7.45 acres occurred and sites covered 0.72 percent of the surface area.

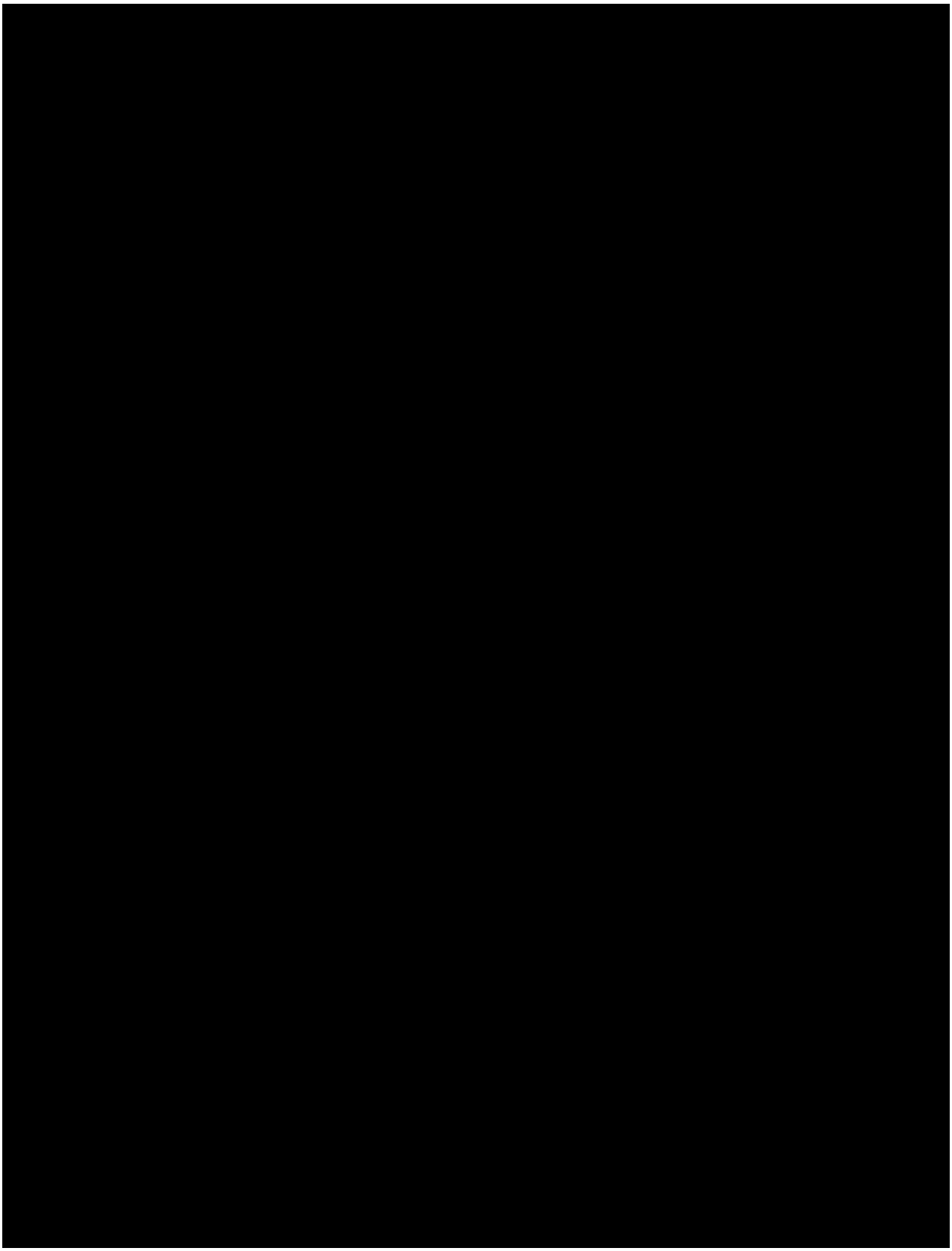


Figure 92: A portion of the USGS 7.5' Kentland, Indiana Quadrangle showing the location of sites 12-N-468 to 12-N-487.

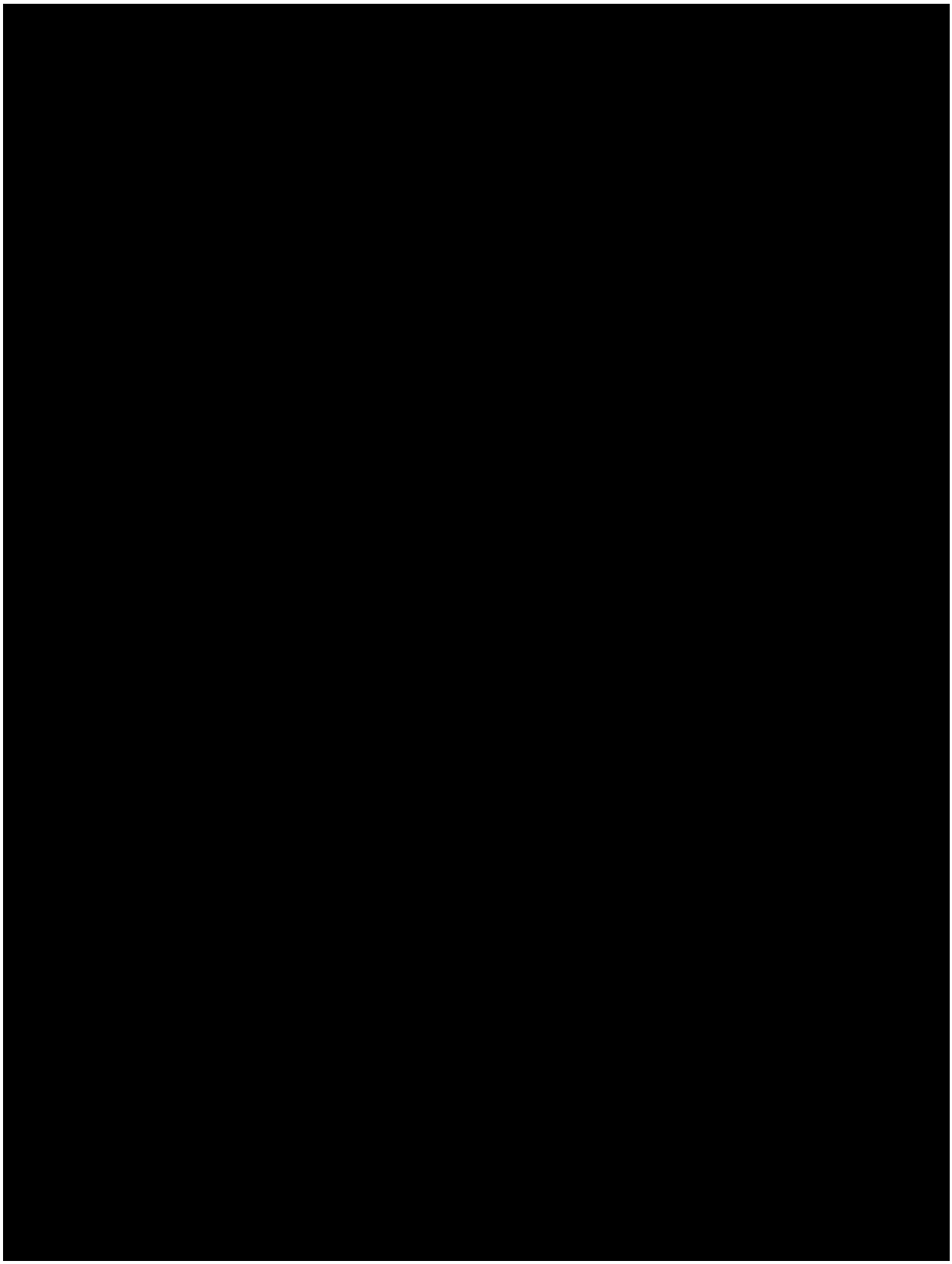


Figure 93: 2013 Aerial (Indiana Spatial Data Portal 2015) showing the location of sites 12-N-468 to 12-N-487.

Collector Visit

The [redacted] Collection

On September 17, 2016, AAL archaeologist Christine Thompson and Graduate Assistant Sean Smith visited [redacted] at his home in Morocco, Indiana to photograph his private artifact collection. According to [redacted], his collection came from fields and wooded areas on his property, some of which were investigated as Survey Area 4. His property is located in Beaver Township in [redacted], Township 29 North, Range 9 West as shown on the Newton County map in the "Illustrated Historical Atlas of the State of Indiana" (Andreas 1968) and the USGS 7.5' Morocco, Indiana Quadrangle (Figure 34 and Figure 35). The Smart Collection consists of 119 artifacts, of which 92 are diagnostic points with intact bases, 10 are nondiagnostic bifaces and flake tools, and 17 are groundstone tools.

Following the procedure established by Macleod et al. (2015), AAL archaeologist Kevin Nolan and undergraduate student Abby Clark counted the lithic tools shown in the photos by base shape. We counted totals for each base type (Table 16). All specimens were photographed at [redacted] residence by Christine Thompson (Figure 94 and Figure 95). Additional artifact photos from the [redacted] Collection are shown in Volume 2, Appendix I.

As part of the FY2014 HPF grant project (Grant #18-14-FFY-03) in Newton County, two private collections [redacted]) were examined. The [redacted] collection, housed at the Newton County Public Library, consists of over 300 artifacts, which include 265 diagnostic tools or points with intact bases and 41 ceramic sherds. The [redacted]n collection contained 427 artifacts that were collected predominantly from Jasper County, but a few were located within Newton County. The artifact classes included projectile points and biface tools, groundstone tools, prehistoric ceramics, and some historic artifacts (Leeuwrik et al. 2015). As part of the FY2015 HPF grant project (Grant #18-15FFY-05) in Newton County, one private collection ([redacted]) was examined. The [redacted] collection consists of 95 diagnostic points with intact bases, 55 nondiagnostic bifaces and flake tools, and seven groundstone tools all recovered from his property (Leeuwrik et al. 2016). These three private collections are used for comparison to the [redacted] collection.

Figure 94: A variety of diagnostic points from the [redacted] Collection (photo by Christine Thompson, Ball State University).

Figure 95: A variety of diagnostic points from the [redacted] Collection (photo by Christine Thompson, Ball State University).

There are 92 diagnostic points with intact bases; additionally 27 non-diagnostic tools were analyzed. The diagnostic collection was split with side notched (28.71%), stemmed points

(33.66%), and corner notched (17.82%) making up a large proportion of points in the collection. This high proportion of side notched and stemmed points is consistent with the two private collections examined during the FY2014 HPF Grant in Newton County (Leeuwirk et al. 2015) and one private collection examined during FY2015 HPF Grant in Newton County (Leeuwirk et al. 2016). However, the private collection examined from Jasper County also included a high proportion of corner notched points, which differs from the [redacted], [redacted] and [redacted] collections in Newton County. The side notched points indicate a possible strong Middle Archaic signal and a possible Middle Woodland signal in Newton County. Triangular points are a surprising occurrence, though not inconsistent with some other studies from the region (e.g., Surface-Evans 2015; Surface-Evans et al. 2005).

Late Archaic and Early Woodland Stemmed points are also well represented. There are only two Paleoindian point in the diagnostic collection (1.98%). This is similar to the [redacted] Collection which contained two points (0.75%) identified as Paleoindian (Leeuwrik et al. 2015) and the one point (0.67%) contained in the [redacted] Collection (Leeuwrik et al. 2016). However, this is distinct from the predominately Jasper County collection of [redacted] which contained 15 (6.7%) Paleoindian points (Macleod et al. 2015). Paleoindian projectile point types accounting for less than two percent of the [redacted] collection is consistent with the artifacts in the [redacted] and [redacted] collections. The [redacted], [redacted] and [redacted] collections indicate a definite Paleoindian presence in northwestern Indiana, more than quadrupling the officially recorded presence in the area (c.f. Dorwin 1966:Figure 1; Division of Historic Preservation and Archaeology 2007). The presence of bifurcate points (0.99%) within the [redacted] diagnostic collection and (5.26%) within the [redacted] diagnostic collection also indicates Late Archaic cultural period within Newton County (Leeuwrik et al. 2016).

The lower proportion of corner notched points (17.82%) also indicates an agreement with the points from the [redacted] and [redacted] collections (Leeuwrik et al. 2016). While this base type is not limited in temporal distribution, it may indicate a lessened use during the Middle and early Late Woodland periods. This impression is somewhat contradicted by the pottery from the [redacted] Collection which was collected "at various sites in Newton County, Indiana" according to the label on the back of the display case, but was collected from locations in Washington and Beaver Townships.

These collector results agree in certain respects with the previously archaeological record. The Unidentified Woodland and Late Woodland predominance among prehistoric sites (see Table 3) may match up with the presence of triangular points and Middle Woodland and Late Prehistoric ceramics. However, the most prolific periods of use indicated by the [redacted] Collection do not match the official records from SHAARD, particularly the abundance of side-notched and stemmed points (i.e., Middle Archaic and Terminal Archaic/Early Woodland). While it is not likely that [redacted] collection is representative of the entire county, it is a

strong reminder that professional investigations only net a small proportion of the local archaeological record, and a more comprehensive and extensive record is contained within private collections that professional archaeologists ignore at the peril of misrepresenting the past (LaBelle 2003; Pitblado 2014; Peebles and Shott 1981; Shott 2008).

Table 16: Distribution of Base Types for the [redacted] Collection

Base Type	Side Notched	Triangular	Paleo	Stemmed	Corner Notched	Preform	Bifurcate	Non-Diagnostic	Total
Total	29	8	2	34	18	--	1	10	102
%	28.71	7.92	1.98	33.66	17.82	0	0.99	8.91	

Summary/Discussion

A total of 932.27 acres were surveyed during this project, which includes 5.63 acres of resurveyed area, and 110 new archaeological sites were recorded. No human remains were discovered as a result of this grant project. Nine parcels in the central townships, Beaver and Jackson, and under-represented ecological communities in Newton County based on our FY2014 and FY2015 HPF grant surveys were surveyed. The survey documented the human occupation of Newton County with the strongest presence during the Late Archaic period. This is followed by the Middle Archaic, Late Woodland, and other unidentifiable Prehistoric periods. The Historic period is the most strongly represented in the assemblages recovered during our survey (Table 23). Considering the limitations of Phase I surveys, it is presumptuous to assign functionality to sites identified during this survey. Site types were therefore not defined beyond isolates and scatters. However, it appears likely based upon the variation in artifact classes discovered at some sites that multiple sites types were represented. Indeed, this seems likely when compared to other regional surveys and more intensive investigations (e.g., Surface-Evans et al. 2005). In addition to the field survey, a collector visit was conducted on September 17, 2016, which yielded information concerning the presence of unrepresented artifact classes as well as probable site locations in Newton County.

Artifacts

The field survey recovered 103 prehistoric artifacts and 4,063 historic artifacts (Table 17). The majority of prehistoric artifacts consist of lithic debitage. The edge modification of approximately 81 flakes indicates that debitage could have functioned as expedient tools, and recent use-wear analyses of similar sites in Hamilton County indicate that many, if not most, of these were used in processing meat, hide, bone, and occasionally plant resources (see Swihart 2016). Of the 14 formal lithic tools, six were diagnostic (Table 20). These diagnostics include three projectile points dating to the Late Archaic period (Justice 1987:119, 127, 130), one projectile point dating to the Middle Archaic period (Justice 1987:104), one projectile point dating to the Late Woodland period (Munson and Munson 1972), and one bannerstone possibly dating to the Middle-Late Archaic period. Other stone tools consisted of a utilized and retouched flake tools. Historic artifacts included various types of ceramics, various colors and types of glass, metal objects, and brick fragments.

The field surveys from FY2014, FY2015, and FY2016 HPF grant projects in Newton County recovered 666 prehistoric artifacts and 7,209 historic artifacts (Table 18 and Table 19). The majority of prehistoric artifacts consisted of lithic debitage. Of the 32 formal lithic tools fifteen were diagnostic (Table 20). These diagnostics include one projectile point dating to the Early Archaic period (Justice 1987:71), one projectile point dating to the Middle Archaic period (Justice 1987:104), and one bannerstone possibly dating to the Middle-Late Archaic period.

Eight projectile points dating to the Late Archaic period were also recovered (Justice 1987:115-116, 119-121, 124-125, 127, 130). Additionally, one projectile point dating to the Late Archaic/Early Woodland period, one projectile point dating to the Late Woodland period (Justice 1987:230), one projectile point dating to the Late Woodland/Late Prehistoric period (Justice 1987:224), and one bifacial drill dating to the Late Prehistoric period (Justice 1987:224) were recovered during the surveys. Other stone tools consisted of a groundstone pestle, prehistoric ceramic, fire cracked rock, and utilized and retouched flake tools. Historic artifacts included various types of ceramics, various colors and types of glass, metal objects, faunal bones and shells, and brick fragments.

Table 17: FY2016 Artifacts Recovered

Prehistoric	No.	Historic	No.
Biface, Hafted, Lamoka Cluster	1	Ceramic, Porcelain	11
Biface, Hafted, Humpback Knife	1	Ceramic, Semi-Porcelain	2
Biface, Hafted, Merom Cluster	1	Ceramic, Ironstone	27
Biface, Hafted, Notched, Matanzas Cluster	1	Ceramic, Whiteware	175
Biface, Hafted, Quartz, Morrow Mountain Cluster	1	Ceramic, Stoneware	75
Biface, Unhafted, Heat Treated	1	Ceramic, Yellowware	2
Nonbiface, Tool	1	Ceramic, Redware	5
Nonbiface, Flake, End Scraper	1	Ceramic, Earthenware	2
Core	8	Glass, Red	1
Flake	18	Glass, Cobalt	7
Flake, Heat Treated	1	Glass, Green	30
Flake, Retouched	2	Glass, Amethyst	35
Flake, Tool	1	Glass, Milk	38
Flake, Tool, Scraper, Heat Treated	1	Glass, Amber	71
Flake, Tool, Retouched, Utilized	1	Glass, Aqua	122
Flake, End scraper	1	Glass, Turquoise	3
Flake, Proximal	18	Glass, Aqua Tint	85
Flake, Proximal, Scraper	1	Glass, Clear	379
Flake, Proximal, Bipolar, Reduction	1	Metal, Iron, Bent Sheet	1
Flake, Medial	10	Metal, Iron, Unidentified	29
Flake, Medial, Retouched	2	Metal, Iron, Barbed Wire	1
Flake, Distal	18	Metal, Iron, Possible Pulley Wheel	1
Flake, Distal, Heat Treated	3	Metal, Iron, Hinge	1
Flake, Distal, Heat Damaged	2	Metal, Iron, Framed Lip	2
Flake, Distal, Retouched	2	Metal, Iron, Base	1
Flake, Distal, Retouched, Possible Spoke Shave	1	Metal, Iron, Nail	4
Angular Shatter	2	Metal, Iron, Spark Plug Piece	1
Angular Shatter, Detached	1	Metal, Iron, Eared Flange	1
Groundstone, Tool, Bannerstone	1	Metal, Iron, Squared with one Hole	1
		Metal, Iron, Slab with Nuts and Bolts	1
		Metal, Iron, Swivel Bracket	1
		Metal, Iron, Washer	1
		Metal, Iron, Flat blade with oval holes	1
		Metal, Iron, Railroad spike	1
		Metal, Iron, Staple	3
		Metal, Steel, Gear	1
		Metal, Copper-plated zinc, wheat penny	1
		Metal, Copper, Tube	1
		Metal, Brass, Remington Shotgun shell head	1
		Metal, Sterling Silver, Butter Server	1
		Metal, Aluminum, Unidentified	3
		Metal, Aluminum, Pan	1
		Leather with six Nail or Brad Holes	1

Prehistoric	No.	Historic	No.
		Graphite, Battery	1
		Faunal, Shell, Welk	1
		Faunal, Shell, Mussels	10
		Faunal, Bone	4
		Asbestos Shingle	4
		Brick	2
		Brick (Uncollected)	2,023
		Concrete	1
		Concrete (Uncollected)	19
		Charcoal/Clinker	59
		Charcoal/Clinker (Uncollected)	800
		Slag	8
Total	**103**	**Total**	**4,063**

Table 18: FY2014, FY2015, and FY2016 Prehistoric Artifacts Recovered

Prehistoric	No. FY2014	No. FY2015	No. FY2016	Total
Biface, Hafted, Lamoka Cluster	-	-	1	**1**
Biface, Hafted, Humpback Knife	-	-	1	**1**
Biface, Hafted, Merom Cluster	-	-	1	**1**
Biface, Hafted, Matanzas Cluster	1	1	1	**3**
Biface, Hafted, Quartz, Morrow Mountain Cluster	-	-	1	**1**
Biface, Hafted, Kirk Corner-Notched	-	1	-	**1**
Biface, Hafted, Brewerton Side-Notched	1	1	-	**2**
Biface, Hafted, Bottleneck Stemmed	-	1	-	**1**
Biface, Hafted, Adena Stemmed	-	1	-	**1**
Biface, Hafted, Triangular Cluster Drill	-	1	-	**1**
Biface, Hafted, Madison	-	1	-	**1**
Biface, Hafted, Unidentified	4	-	-	**4**
Biface, Fractured Base	-	1	-	**1**
Biface, Unhafted	2	8	-	**10**
Biface, Unhafted, Heat Treated	-	-	1	**1**
Nonbiface, Tool	-	-	1	**1**
Nonbiface, Flake, End Scraper	-	-	1	**1**
Core	2	3	8	**13**
Core Tool	-	1	-	**1**
Core Fragment	1	3	-	**4**
Flake	-	121	18	**139**
Flake, Heat Treated	-	13	1	**14**
Flake, Burnt	-	3	-	**3**
Flake, Retouched	-	2	-	**2**
Flake, Blade-Like	1	1	-	**2**
Flake, Tool	2	18	1	**21**
Flake, Tool, Heat Treated	-	1	-	**1**
Flake, Tool, Scraper, Heat Treated	-	-	1	**1**
Flake, Tool, Retouched, Utilized	-	-	1	**1**
Flake, End scraper	-	-	1	**1**
Flake, Bipolar	-	2	-	**2**
Flake, Proximal	21	83	18	**122**
Flake, Proximal Tool	-	1	-	**1**
Flake, Proximal Tool, Heat Treated	-	1	-	**1**
Flake, Proximal, Heat Treated	-	9	-	**9**
Flake, Proximal, Heat Damaged	-	1	-	**1**
Flake, Proximal, Burnt	-	2	-	**2**
Flake, Proximal, Retouched	-	1	-	**1**
Flake, Proximal, Scraper	-	-	1	**1**
Flake, Proximal, Bipolar, Reduction	-	-	1	**1**
Flake, Medial	-	61	10	**71**
Flake, Medial, Blade-Like	-	4	-	**4**
Flake, Medial, Heat Treated	-	3	-	**3**
Flake, Medial, Heat Damaged	-	1	-	**1**
Flake, Medial, Burnt	-	3	-	**3**
Flake, Medial, Retouched	-	1	2	**3**
Flake, Distal	-	107	18	**125**
Flake, Distal Tool	-	1	-	**1**
Flake, Distal, Blade-Like	-	1	-	**1**
Flake, Distal, Heat Treated	-	5	3	**8**
Flake, Distal, Burnt	-	6	2	**8**
Flake, Distal, Retouched	-	1	2	**3**
Flake, Distal, Retouched, Possible Spoke Shave	-	-	1	**1**

Prehistoric	No. FY2014	No. FY2015	No. FY2016	Total
Flake, Shatter	-	31	-	**31**
Flake, Shatter, Heat Treated	-	3	-	**3**
Flake, Shatter, Heat Damaged	-	1	-	**1**
Flake, Shatter, Burnt	-	4	-	**4**
Angular Shatter	2	-	2	**4**
Angular Shatter, Detached	-	-	1	**1**
Groundstone Pestle	-	1	-	**1**
Groundstone, Tool	3	-	-	**8**
Groundstone, Tool, Bannerstone	-	-	1	**1**
Pottery, Grit Temper, 1 cord marked	-	3	-	**3**
Fire Cracked Rock	-	4	-	**4**
Shell	2	-	-	**2**
Total	**42**	**523**	**101**	**666**

Table 19: FY2014, FY2015, and FY2016 Historic Artifacts Recovered

Historic	No. FY2014	No. FY2015	No. FY2016	Total
Ceramic, Porcelain	18	5	11	**34**
Ceramic, Industrial Porcelain/Insulator	4	5	-	**9**
Ceramic, Bisque Porcelain	-	3	-	**3**
Ceramic, Semi-Porcelain	5	7	2	**14**
Ceramic, Ironstone	41	33	27	**101**
Ceramic, Whiteware	164	261	175	**600**
Ceramic, Stoneware	104	103	75	**282**
Ceramic, Yellowware	4	4	2	**10**
Ceramic, Creamware	3	11	-	**14**
Ceramic, Redware	6	4	5	**15**
Ceramic, Earthenware	-	3	2	**5**
Ceramic, Prosser Button	2	-	-	**2**
Glass, Red/Pink	1	2	1	**4**
Glass, Cobalt	10	15	7	**32**
Glass, Black	-	1	-	**1**
Glass, Yellow	1	4	-	**5**
Glass, Green	10	13	30	**53**
Glass, Amethyst	90	148	35	**273**
Glass, Milk	68	148	38	**254**
Glass, Amber	49	79	71	**199**
Glass, Aqua	293	368	122	**783**
Glass, Turquoise	-	-	3	**3**
Glass, Aqua Tint	-	-	85	**85**
Glass, Clear	164	342	379	**885**
Glass, Marble	-	1	-	**1**
Metal, Iron, Bar	-	1	-	**1**
Metal, Iron, Barbed Wire	-	-	1	**1**
Metal, Iron, Base	-	-	1	**1**
Metal, Iron, Bent Sheet	-	-	1	**1**
Metal, Iron, Bracket	1	1	-	**2**
Metal, Iron, Chain Links	1	-	-	**1**
Metal, Iron, Decorative Cat Shape	1	-	-	**1**
Metal, Iron, Disk	1	-	-	**1**
Metal, Iron, Eared Flange	-	-	1	**1**
Metal, Iron, Flat blade with oval holes	-	-	1	**1**
Metal, Iron, Framed Lip	-	-	2	**2**
Metal, Iron, Hinge	1	-	1	**2**
Metal, Iron, Hook	1	1	-	**2**
Metal, Iron, Hubcap	-	1	-	**1**
Metal, Iron, Lock Hasp	-	1	-	**1**
Metal, Iron, Mechanical Part	-	1	-	**1**
Metal, Iron, Nail	2	9	4	**15**
Metal, Iron, Nut	-	2	-	**2**
Metal, Iron, Ore Concretions	-	6	-	**6**
Metal, Iron, Partial Possible Blacksmith Tuyere	-	1	-	**1**
Metal, Iron, Partial Ring	-	1	-	**1**
Metal, Iron, Part from Differential or Drive Train	2	-	-	**2**
Metal, Iron, Possible Pulley Wheel	-	-	1	**1**
Metal, Iron, Railroad spike	-	1	1	**2**
Metal, Iron, Ring	3	-	-	**3**
Metal, Iron, Screw	-	1	-	**1**
Metal, Iron, Slab with Nuts and Bolts	-	-	1	**1**

Historic	No. FY2014	No. FY2015	No. FY2016	Total
Metal, Iron, Small Buckle	-	1	-	**1**
Metal, Iron, Spark Plug Piece	-	-	1	**1**
Metal, Iron, Staple	-	2	3	**5**
Metal, Iron, Square Bolt		1	-	**1**
Metal, Iron, Squared with one Hole	-	-	1	**1**
Metal, Iron, Swivel Bracket	-	-	1	**1**
Metal, Iron, Washer	1	2	1	**4**
Metal, Iron, Wheel	-	1	-	**1**
Metal, Iron, Wire	-	3	-	**3**
Metal, Iron, Unidentified	25	30	29	**84**
Metal, Copper-plated zinc, Penny	-	1	1	**2**
Metal, Copper, Tube	-	-	1	**1**
Metal, Lead, Buck Shot	-	1	-	**1**
Metal, Steel, Band	-	1	-	**1**
Metal, Steel, Gear	-	-	1	**1**
Metal, Zinc/Copper, Shotgun Shell	2	-	-	**2**
Metal, Zinc/Copper, Small Broken Buckle	1	-	-	**1**
Metal, Zinc/Copper, Rivet	1	-	-	**1**
Metal, Zinc/Copper, Unidentified	2	5	-	**7**
Metal, Zinc, Shoe Eyelet	-	1	-	**1**
Metal, Zinc, Lid Fragments	-	11	-	**11**
Metal, Tin/Silver, Slotted Spoon	1	-	-	**1**
Metal, Brass, Bullet Casing	2	-	-	**2**
Metal, Brass, Hubcap	1	-	-	**1**
Metal, Brass, Rivet	1	-	-	**1**
Metal, Brass, Shotgun shell head	1	-	1	**2**
Metal, Brass, Unidentified	1	-	-	**1**
Metal, Sterling Silver, Butter Server	-	-	1	**1**
Metal, Aluminum, Pan	-	-	1	**1**
Metal, Aluminum, Tube	-	1	-	**1**
Metal, Aluminum, Unidentified	-	-	3	**3**
Leather with six Nail or Brad Holes	-	-	1	**1**
Graphite, Battery	2	-	1	**3**
Graphite	1	-	-	**1**
Hard Rubber	-	2	-	**2**
Plastic, Button	-	1	-	**1**
Wood, Post	-	2	-	**2**
Wood, Fragments	-	15	-	**15**
Faunal, Shell, Welk	-	-	1	**1**
Faunal, Shell, Mussels	-	-	10	**10**
Faunal, Bone	-	14	4	**18**
Asbestos Shingle	-	11	4	**15**
Brick	19	1	2	**22**
Brick (Uncollected)	114	-	2,023	**2,137**
Concrete	-	-	1	**1**
Concrete (Uncollected)	-	-	19	**19**
Charcoal/Clinker	31	52	59	**142**
Charcoal/Clinker (Uncollected)	-	-	800	**800**
Slag	138	6	8	**152**
Total	**1,394**	**1,752**	**4,063**	**7,209**

Table 20: *FY2014, ⊙FY2015, and ▪FY2016 Diagnostic Prehistoric Artifacts by Cultural Time Period

Cultural Period	Projectile Point Styles
Early Archaic	⊙Kirk Corner-Notched (1)
Middle Archaic	▪Morrow Mountain Cluster (1)
Middle-Late Archaic	▪Bannerstone (1)
Late Archaic	⊙Bottleneck Stemmed (1), *⊙Brewerton Side-Notched (2), ▪Lamoka Cluster (1), *⊙▪Matanzas Side-Notched (3), ▪Merom Cluster (1)
Late Archaic/Early Woodland	⊙Adena Stemmed (1)
Late Woodland	▪Humpback Knife (1)
Late Woodland/Late Prehistoric	⊙Madison (1)
Late Prehistoric	⊙Triangular Cluster (1)

Chert

Lithic artifact chert types from FY2016 are shown in Table 21. The chert identification is listed by geologic time period as this is the most accurate and consistent means of identification. Chert was then listed by which type it is most consistent with as described in Cantin (2005, 2008), Stelle and Duggan (2003), and in comparison with specimens in the AAL comparative collection at 10x – 40 x magnification (see previous BSU AAL Standard Lithic Identification Method). If the artifact material displayed characteristics that were consistent with multiple chert types, all applicable types were listed in the identification. If the artifact material could not be determined using those methods, then it was listed either as an unidentified type of the geological age or as an unknown chert. The locations of chert outcrops in Indiana and Illinois are shown in Figure 4.

The lithic artifacts for this survey were preferentially made of Silurain cherts (33.33%). Of the Silurian assemblage the majority was consistent with Liston Creek chert (25.49%). Liston Creek is also the strongest chert type preference within the entire assemblage. No natural chert outcrops exist within Newton County. However, outcrops of Liston Creek exist in Miami, Wabash, and Huntington counties, the closest of which being approximately 116 km to the east of Newton County (Cantin 2005). Specimens consistent with Kenneth chert appear in 2.94 percent of the assemblage recovered from the survey areas. The closest outcrop of this chert exists in Cass County, Indiana approximately 65 km to the east of Newton County. Two of the identifiable points date to the Late Archaic period (from sites 12-N-397 and 12-N-402) were made of chert consistent with Liston Creek.

Mississippian chert had the second greatest representation of identified cherts in this survey (31.36%). Of the Mississippian material recovered, those consistent with Blanding comprised the most frequently identified Mississippian chert of the collection (4.90%). Outcrops of Blanding exist in Jo Daviess County, Illinois approximately 266 km from Newton County. One of the identifiable points date to the Late Archaic period (from site 12-N-425) was made of chert consistent with Attica. Two prehistoric artifacts, a non-diagnostic bifacial point and a non-

diagnostic nonbifacial tool, recovered were made from Mississippian chert which were consistent with Cataract and Attica (12-N-426 and 12-N-391). Blanding (4.90%), Elwood-Joliet chert (2.94%) and Burlington chert (2.94%) come from central and western Illinois and are typically higher quality material than what is found in northwest Indiana. Burlington chert in particular can be an exceptional material and would have been highly prized in prehistoric times, and in fact was widely traded during various periods in prehistory. The distance to these materials indicates that trade would likely have been active at least at some point between the areas that are now northwest Indiana and central/southwest Illinois.

Devonian chert is the next most represented chert in abundance (19.61%) with specimens consistent with Jeffersonville being the highest identified chert (15.69%). Jeffersonville chert is the only Devonian Age chert within Indiana with two outcrops located in the southeastern part of the state. The closest outcrop of Jeffersonville is located approximately 250 km southeast of Newton County. One of the identifiable points dating to the Late Woodland period (from site 12-N-402) was made of chert consistent with Jeffersonville. Pennsylvanian chert constitutes a small portion of the survey collection (3.92%) with specimens consistent with Holland. The low amount of Pennsylvanian chert is to be expected as the sources of these cherts in Indiana are located exclusively in the southern half of the state. Holland outcrops approximately 300 km to the south in Dubois County. The breakdown of the chert types is slightly skewed by the large percentage of unknown chert (10.78%) and even within geologic ages, large percentages of unidentified cherts (7.84%).

Lithic artifact chert types from FY2014, FY2015, and FY2016 HPF grant projects are shown in Table 22. The lithic artifacts recovered from these three surveys of Newton County were dominated by Silurian cherts (34.23%) followed by Unidentified cherts (31.24%) as the most abundant identified chert type. Of the Silurian assemblage the majority was consistent with Liston Creek chert (16.74%) followed by Harmilda (2.24%), Harmilda/Kenneth (1.20%), and Kenneth (1.05%). Liston Creek is the strongest chert type preference within the entire assemblage. Mississippian Chert had the second greatest representation of identified cherts in the surveys (25.86%) after Unidentified cherts. Of the Mississippian assemblage recovered, those consistent with Blanding (9.72%), followed by Attica (2.69%), and Burlington (2.24%). Pennsylvanian chert constitutes a small, but potentially important portion of the surveys' assemblage (4.48%) with specimens most consistent with Holland (1.94%) and three Flint Ridge artifacts recovered in FY2015. Devonian chert is the least represented chert abundance (4.04%) with specimens consistent with Jeffersonville being the highest identified chert (2.69%).

A total of 12 identifiable points dating from Early Archaic to Late Prehistoric periods was recovered from the FY2014, FY2015, and FY2016 HPF Grant projects combined. Two identifiable Silurian chert points dating to the Late Archaic period (from sites 12-N-397 and 12-N-402) were made of chert consistent with Liston Creek. Three identifiable Mississippian chert

points dating to the Late Archaic period (from sites 12-N-75, 12-N-327, and 12-N-425) were made of chert consistent with Attica and one identifiable Mississippian chert point dating to the Early Archaic period (from site 12-N-312) was made of chert consistent with Attica. One identifiable Mississippian chert point dating to the Late Archaic period (from site 12-N-325) was made of chert consistent with Burlington and one identifiable Mississippian chert drill dating to the Late Prehistoric period (from site 12-N-327) was made of chert consistent with Burlington. One identifiable Mississippian chert point dating to the Late Archaic period (from site 12-N-354) was made of chert consistent with Stanford, one identifiable Mississippian chert point dating to the Late Archaic period (from site 12-N-284) was made of chert consistent with Stanford, and one identifiable Mississippian chert point dating to the Late Woodland/Late Prehistoric period (from site 12-N-295) was made of chert consistent with Elwood-Joliet. One identifiable Devonian chert point dating to the Late Woodland period (from site 12-N-402) was made of chert consistent with Jeffersonville.

The identified chert breakdown tells us that prehistoric people living in Newton County were likely relying primarily on the closest chert sources (Liston Creek, Harmilda, Elwood-Joliet, Attica, and Kenneth to the east, northwest, south, and southeast of Newton County) for approximately 27.65 percent of the total assemblage. This includes seven identifiable points made of chert consistent with Liston Creek, Attica, and Elwood-Joliet. This is followed closely by a reliance on more exotic chert types from central and southern Illinois and eastern central Ohio (Blanding, Burlington, and Flint Ridge to the northwest, southwest, and southeast of Newton County), which make up approximately 13.45 percent of the total lithic assemblage (Table 22). This includes five identifiable points made of chert consistent with Burlington, Stanford, Muldragh, and Jeffersonville. This breakdown of the lithic assemblage could indicate that the peoples that inhabited Newton County during prehistoric times migrated from south and southwest of the county, bringing chert materials with them. Northern Newton County was known to be a highly utilized area due to the vast floral and faunal resources available within the Kankakee marsh and Beaver Lake regions and several projectile points were recovered north and south of the Iroquois River, in the uplands, of southern Newton County (Leeuwrik et al. 2015, 2016). The diagnostic lithic artifacts recovered by the surveys support that upland features within the marsh region throughout the county would have been preferred area for hunting camps during the Late Archaic period (Leeuwrik et al. 2015, 2016; Surface-Evan 2015:180).

Flint Ridge flint bladelets and blade-like flakes along with Burlington chert being present in Newton County also show possible Middle Woodland influence from both the Ohio and Illinois Hopewell industries. The presence of these chert types shows potential direct or indirect contact with these Middle Woodland cultures through trade, which is a hallmark of Hopewell peoples (Greber et al. 1981:525; Seeman 1979:291). These chert sources would have been considered exotic and consistent with Hopewell phenomenon and extra-regional trade routes (Nolan et al. 2007:321; Seeman 1979:291).

Table 21: FY2016 Chert Raw Material

Chert	No.	% of the Whole Assemblage
Silurian Chert	**34**	**33.33**
Consistent with Fall Creek	1	0.98
Consistent with Kenneth	3	2.94
Consistent with Laurel	2	1.96
Consistent with Laurel/ Liston Creek	1	0.98
Consistent with Liston Creek	26	25.79
Unidentified Silurian	1	0.98
Devonian Chert	**20**	**19.61**
Consistent with Jeffersonville	16	15.69
Consistent with Jeffersonville Heat Treated	1	0.98
Consistent with Jeffersonville/ Delaware	1	0.98
Consistent with Delaware	1	0.98
Unidentified Devonian	1	0.98
Mississippian Chert	**32**	**31.36**
Consistent with Attica	3	2.94
Consistent with Blanding	5	4.90
Consistent with Blanding/Elwood-Joliet	3	2.94
Consistent with Bryansville	3	2.94
Consistent with Burlington	1	0.98
Consistent with Cataract Heat Treated	1	0.98
Consistent with Indian Creek	1	0.98
Consistent with Indian Creek Heat Treated	2	1.96
Consistent with Muldragh	3	2.94
Consistent with Muldragh/Attica	1	0.98
Consistent with Wyandotte	3	2.94
Unidentified Mississippian	6	5.88
Pennsylvanian Chert	**4**	**3.92**
Consistent with Holland	2	1.96
Consistent with Holland Heat Treated	1	0.98
Consistent with Holland Heat Damaged	1	0.98
Unidentified Chert	**11**	**10.89**
Unidentified Chert	10	9.80
Unidentified Chert Heat Damaged	1	0.98
Other	**1**	**0.98**
Quartz	1	0.98
Total	**102**	**100**

Table 22: FY2014, FY2015, and FY2016 Chert Raw Materials

Chert	No. FY2014	No. FY2015	No. FY2016	Total	% of the Whole Assemblage
Silurian Chert	**39**	**156**	**34**	**229**	**34.23**
Consistent with Harmilda	-	15	-	15	2.24
Consistent with Harmilda Heat Treated	-	7	-	7	1.05
Consistent with Harmilda Burnt	-	5	-	5	0.75
Consistent with Harmilda/ Kenneth	-	8	-	8	1.20
Consistent with Harmilda/ Liston Creek	-	4	-	4	0.60
Consistent with Harmilda/ Liston Creek Heat Treated	-	3	-	3	0.45
Consistent with Fall Creek	-	-	1	1	0.15
Consistent with Kenneth	1	3	3	7	1.05
Consistent with Laurel	2	5	2	9	1.35
Consistent with Laurel Burnt	-	3	-	3	0.45
Consistent with Laurel/ Liston Creek	-	-	1	1	0.15
Consistent with Liston Creek	35	51	26	112	16.74
Consistent with Liston Creek Heat Treated	1	1	-	2	0.30
Unidentified Silurian	-	45	1	46	6.88
Unidentified Silurian Heat Treated	-	3	-	3	0.45
Unidentified Silurian Burnt	-	3	-	3	0.45
Devonian Chert	**-**	**7**	**20**	**27**	**4.04**
Consistent with Jeffersonville	-	2	16	18	2.69
Consistent with Jeffersonville Heat Treated	-	-	1	1	0.15
Consistent with Jeffersonville/ Delaware	-	-	1	1	0.15
Consistent with Delaware	-	-	1	1	0.15
Unidentified Devonian	-	2	1	3	0.45
Unidentified Devonian Heat Treated	-	3	-	3	0.45
Mississippian Chert	**10**	**131**	**32**	**173**	**25.86**
Consistent with Allen's Creek	-	1	-	1	0.15
Consistent with Attica	5	10	3	18	2.69
Consistent with Attica/Muldragh Heat Treated	1	-	-	1	0.15
Consistent with Blanding	-	60	5	65	9.72
Consistent with Blanding Heat Treated	-	2	-	2	0.30
Consistent with Blanding Heat Damaged	-	1	-	1	0.15
Consistent with Blanding/Elwood-Joliet	-	1	3	4	0.60
Consistent with Bryantsville	-	-	3	3	0.45
Consistent with Burlington	1	13	1	15	2.24
Consistent with Burlington Heat Treated	-	5	-	5	0.75
Consistent with Cataract	1	1	-	2	0.30
Consistent with Cataract Heat Treated	-	1	1	2	0.30
Consistent with Elwood-Joliet	2	2	-	4	0.60
Consistent with Indian Creek	-	6	1	7	1.05
Consistent with Indian Creek Heat Treated	-	-	2	2	0.30
Consistent with Kaolin	-	1	-	1	0.15
Consistent with Muldragh	-	1	3	4	0.60
Consistent with Muldragh/ Attica	-	-	1	1	0.15
Consistent with Stanford	-	1	-	1	0.15
Consistent with Upper St. Louis	-	21	-	21	3.14
Consistent with Wyandotte	-	-	3	3	0.45
Unidentified Mississippian	-	4	6	10	1.49
Pennsylvanian Chert	**1**	**25**	**4**	**30**	**4.48**
Consistent with Ditney	-	4	-	4	0.60
Consistent with Flint Ridge	-	2	-	2	0.30
Consistent with Flint Ridge Heat Treated	-	1	-	1	0.15

Chert	No. FY2014	No. FY2015	No. FY2016	Total	% of the Whole Assemblage
Consistent with Holland	-	11	2	13	1.94
Consistent with Holland Heat Treated	1	-	1	2	0.30
Consistent with Holland Heat Damaged	-	2	1	3	0.45
Consistent with Holland/Ditney	-	1	-	1	0.15
Unidentified Pennsylvanian	-	4	-	4	0.60
Unidentified Chert	**-**	**198**	**11**	**209**	**31.24**
Unidentified Chert	-	180	10	190	28.40
Unidentified Chert Heat Treated	-	11	-	11	1.64
Unidentified Chert Heat Damaged	-	7	1	8	1.20
Other	**-**	**-**	**1**	**1**	**0.15**
Quartz	-	-	1	1	0.15
Total	**50**	**517**	**102**	**669**	**100**

Sites

Of the 110 archaeological sites identified during the FY2016 project, 35 had unidentified Prehistoric components (Table 23). The identified precontact components consisted of one Middle Archaic site, one Middle-Late Archaic site, three Late Archaic sites, and one Late Woodland site. Seventy-two sites had Historic components, dating from the early 18th century to present.

Of the 295 archaeological sites identified during FY2014, FY2015, and FY2016 HPF Grant projects combined, 72 had unidentified components (Table 24). The identified precontact components consisted of one Early Archaic site, one Middle Archaic site, one Middle-Late Archaic site, seven Late Archaic sites, one Late Archaic/Early Woodland site, one Late Woodland site, one Late Woodland/Late Prehistoric site, and one Late Prehistoric site. There are 209 Historic components, dating from the early 18th century to present. Previously recorded sites for northwestern Indiana support the trend of encountering low frequencies of Paleoindian, Early Woodland, and Middle Woodland component sites.

Table 23: FY2016 Site Components Recorded as a Result of Survey

Component	No.	Comment
Unidentified Prehistoric	35	14 Multicomponent (11 Historic, 1 Historic and Late Archaic, 2 Late Archaic)
Middle Archaic	1	1 Multicomponent (1 Historic)
Middle-Late Archaic	1	1 Multicomponent (1 Historic)
Late Archaic	3	3 Multicomponent (2 Unidentified Prehistoric, 1 Historic)
Late Woodland	1	1 Multicomponent (1 Historic)
Historic	72	15 Multicomponent (1 Middle Archaic, 1 Middle-Late Archaic, 1 Late Archaic and Unidentified Prehistoric, 1 Late Woodland, 11 Unidentified Prehistoric)
Total	**113**	

Table 24: FY2014, FY2015, and FY2016 Site Components Recorded as a Result of Survey

Component	No. FY2014	No. FY2015	No. FY2016	Total	Comment
Unidentified Prehistoric	23	14	35	**72**	28 Multicomponent (25 Historic, 1 Historic and Late Archaic, 2 Late Archaic)
Early Archaic	-	1	-	**1**	
Middle Archaic	-	-	1	**1**	1 Multicomponent (1 Historic)
Middle-Late Archaic	-	-	1	**1**	1 Multicomponent (1 Historic)
Late Archaic	2	2	3	**7**	4 Multicomponent (2 Unidentified Prehistoric, 1 Historic, 1 Late Prehistoric and Historic)
Late Archaic/Early Woodland	-	1	-	**1**	1 Multicomponent (1 Historic)
Late Woodland	-	-	1	**1**	
Late Woodland/Late Prehistoric	-	1	-	**1**	
Late Prehistoric	-	1	-	**1**	1 Multicomponent (1 Late Archaic and Historic)
Historic	74	63	72	**209**	32 Multicomponent (1 Middle Archaic, 1 Middle-Late Archaic, 1 Late Archaic, 1 Late Archaic and Unidentified Prehistoric, 1 Late Archaic/Early Woodland, 1 Late Woodland, 1 Late Archaic and Late Prehistoric, 25 Unidentified Prehistoric)
Total	**99**	**83**	**113**	**295**	

Various results of the collector visits from FY2014, FY2015, and FY2016 were both consistent and inconsistent with the results of our surveys. The high number of Paleoindian artifacts from the Vohlken and, to a lesser extent, the [redacted], [redacted] and [redacted] collections has helped inform a previously under-documented time period and hinted at potentially different cultural representation within the county than the results of our survey and previous investigations (Leeuwrik et al. 2015, 2016; Macleod et al. 2015). The large percentage of Side-Notched points in the [redacted] and [redacted] collections was somewhat consistent with the eight Late Archaic points recovered from Newton County during the surveys. This is also distinct from what was previously know about the county. The relatively large number of Stemmed points from the [redacted] and [redacted] collections as well as Early Woodland ceramics from the [redacted] collection stood in contrast to the total absence of Early Woodland components were recovered from our survey and only four had been previously documented in SHAARD (Leeuwrik et al. 2015). Furthermore, the large number of triangular points in the [redacted] and [redacted] collections combined with Middle Woodland period and Mississippian ceramics from the [redacted] collection indicate a potentially large gap in the existing professional records for Newton County. Particularly interesting are the Hopewell ceramics and a partial effigy made from shell tempered clay (Leeuwrik et al. 2015).

The interest expressed in our survey by the librarians and director, [redacted], [redacted], and [redacted] and others has helped tremendously in developing the culture history of Newton County. Future investigations, particularly in areas with more finite artifact locales such as Newton County, would do well to use the previously acquired knowledge and materials accrued by local collectors. Our experience with these private collections illustrates patterns found in many other places: collectors hold the vast majority (>90%) of the archaeological record and any examination of the past that ignores this resource is woefully incomplete (LaBelle 2003; Pitblado 2014; Shott 2008).

Historic Settlement

Seventy-two sites with Historic components were discovered during the FY2016 project. These sites ranged from small isolated finds to extensive historic scatters and were occasionally multicomponent with prehistoric isolates or scatters. The historic component sites yielded the vast majority of artifacts recovered during the project.

Survey Areas 5 and 8 contained sites with relatively substantial historic assemblages that had early historic dates, from ceramic artifacts such as porcelain, between 1745 and 1795, but also artifacts dating into the mid to late 19th and early 20th Centuries (12-N-421, 12-N-430, 12-N-451, and 12-N-457). Based on historic and archaeological research, the majority of sites appear to be historic dump sites, or secondary deposits from relatively recent to modern activity, rather than primary deposits and locations of structures or activity areas possibly associated with early occupation of the county. All these sites (12-N-421, 12-N-430, 12-N-451, and 12-N-457) yielded a high quantity and diversity of artifacts. Additionally, sites 12-N-451 and 12-N-457 in Survey Area 8 are located on the site of a historic structure belonging to John B. Lyons as early as 1876 (Andreas 1968; Geo. A. Ogle & Co. 1916) a locally prominent Newton County native and Civil War veteran. Sites 12-N-421, 12-N-430, 12-N-451, and 12-N-457 are all located in the proximity to high use areas and upland features which could indicate that further information could be yielded from additional archaeological investigation these sites. Further research and analysis of our data could greatly increase our understanding of early historic occupation in Newton County.

Density

The FY2016 HPF Grant project documented an average of 1 site per 8.48 acres and an average artifact density of 1 artifact per 0.22 acres surveyed. The project documented an average density of 1 historic artifact per 0.23 acres surveyed and an average density of 1 prehistoric artifact per 9.05 acres surveyed. Artifact densities by survey area are presented in Table 25.

Four soil orders were represented within the nine Survey Areas, which include Mollisols (89.86%), Alfisols (9.5%), Entisols (8.96%), and Inceptisols (1.52%), which is fairly

representative of the percentages within the entire county. Sites were located on all four orders. From the number of site soil components represented (n=119) the percentages are representative of those throughout the entire county with 76.5 percent of sites located on Mollisols (n=91), 20.2 percent of sites located on Entisols (n=24), 0.84 percent of sites located on Inceptisols (n=1), and 2.5 percent of sites located on Alfisols (n=3). Within the order of Mollisols, the percentages are further broken down into 49.6 percent of the sites on Typic/Udic Mollisols (n=59) and 26.9 percent of sites on Aquic Mollisols (n=32). The distribution of sites among the soil orders shows overall similarities with both the percentages of soil orders surveyed as well as the percentages for the entirety of Newton County; however, Mollisols are underrepresented in sites and Entisols are overrepresented. This could indicate a preference for young and accumulating landforms within Newton County for intensive activity areas.

Table 25: FY2016 Artifact Densities

Survey Area	No. Acres	No. Sites	Sites per Acre	No. Artifacts	Artifacts per Acre
SA 1 (Moraines)	22.43	0	0.00	0	0.00
SA 2 (Outwash Plains)	38.55	0	0.00	0	0.00
SA 3 (Outwash Plains)	37.53	0	0.00	0	0.00
SA 4 (Outwash Plains/Lake Plains)	182.85	37	0.20	318	1.74
SA 5 (Outwash Plains/Lake Plains)	174.93	23	0.13	380	2.17
SA 6 (Outwash Plains/Floodplains)	38.73	11	0.28	918	23.70
SA 7 (Moraines)	22	0	0.00	0	0.00
SA 8 (Moraines)	266.24	19	0.08	2,436	9.15
SA 9 (Moraines)	149	20	0.13	114	0.77
Total	**932.26**	**110**	**0.82**	**4,166**	**37.53**

Recommendations

Of the 110 archaeological sites discovered by this project, 102 are not considered eligible for listing on the Indiana Register of Historic Sites and Structures or the National Register of Historic Places (

Table 26: Site Recommendations.

). Most ineligible sites were isolated finds or small scatters of artifacts. Eight multicomponent lithic and historic scatters (12-N-397, 12-N-400, 12-N-402, 12-N-421, 12-N-430, 12-N-438, 12-N-451, and 12-N-457) were determined potentially eligible for listing on the Indiana Register of Historic Sites and Structures and the National Register of Historic Places based on the results of this work. Additional research would be needed to fully evaluate each site.

Table 26: Site Recommendations.

Recommendation	Site No.
No further archaeological investigations recommended; n=102	12-N-378 to 12-N-396, 12-N-398, 12-N-399, 12-N-401, 12-N-403 to 12-N-420, 12-N-422 to 12-N-429, 12-N-431 to 12-N-437. 12-N-439 to 12-N-450, 12-N-452 to 12-N-456, and 12-N-458 to 12-N-487
Further archaeological investigations recommended (high density, large historic/prehistoric scatters); n=8	12-N-397, 12-N-400, 12-N-402, 12-N-421, 12-N-430, 12-N-438, 12-N-451, and 12-N-457

Though there were a limited number of recommended sites in this survey, the sites that were recommended (12-N-397, 12-N-400, 12-N-402, 12-N-421, 12-N-430, 12-N-438, 12-N-451, and 12-N-457) could be significant in their contribution to the understanding of Newton County prehistoric and historic settlement.

Site 12-N-397, a lithic scatter, is located in the northern half of Parcel A in Survey Area 4 (Figure 48 and Figure 49). The site is located on a small ridge on well-drained soil of Aeolian origin, 308 meters south of Beaver Creek and 48 meters north of a small unnamed natural pond. The collector reported site 12-N-147 dating to the Woodland period is located near site 12-N-397. The assemblage from 12-N-397 includes only four prehistoric lithic artifacts. This includes a diagnostic Late Archaic Lamoka Cluster projectile point and three prehistoric non-diagnostic flakes. The presence of a formal tool located may indicate some level of hunting and/or butchering activity. Hunting of fauna associated with the nearby marsh to the south of the site is a distinct possibility as Surface-Evans (2015) and White (2007) have found similar patterns among Paleoindian and Archaic peoples in the Kankakee Marsh region. The chert sources identified within the lithic assemblage include Liston Creek and Muldraugh from northern and southern Indiana respectively. The size of site 12-N-397 is 271 square meters, or 0.07 acres, which results in an artifact density of 57.1 artifacts per acre. A historic map from an 1876 atlas shows the entire Parcel A in Survey Area 4 was a swamp with a tributary of Beaver Creek running directly east of site 12-N-397 (Andreas 1968). There were no historic structures located on any historic maps (Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53). Based on archaeological research, a diagnostic Late Archaic artifact, the non-local chert types identified, and the presence of artifacts on a topographic rise on well-drained soils could indicate the potential to yield additional important information on the prehistoric settlement and land use patterns of Newton County. Similar site types have been identified in the Kankakee Marsh region and archaeological excavation has often revealed dense feature and artifacts assemblages (e.g., Surface-Evans 2015). This potential importance of the site is amplified by the general lack of diagnostic artifacts from well-provenienced locations in Newton County. For these reasons, it is suggested that site 12-N-397 may be potentially eligible for the National Register of Historic Places.

Site 12-N-400, a lithic scatter, is located in the northern half of Parcel A in Survey Area 4 (Figure 48 and Figure 49). The site is located on a small ridge on well-drained soil of Aeolian origin, 253 meters south of Beaver Creek and 98 meters north of a small unnamed natural pond. The collector reported site 12-N-147 dating to the Woodland period is located near site 12-N-400. The assemblage from 12-N-400 includes 24 artifacts, 22 of which are prehistoric lithics and the remaining two consist of faunal artifacts. The 22 prehistoric artifacts are non-diagnostic flakes and nonbifacial tools. Almost half of the chert sources identified within the lithic assemblage include Blanding, Burlington, and Delaware cherts from northwestern and southern Illinois and central Ohio respectively. The size of site 12-N-400 is 1,012 square meters, or 0.25 acres, which results in an artifact density of 100 artifacts per acre. A historic map from an 1876 atlas shows the entire Parcel A in Survey Area 4 was a swamp with a tributary of Beaver Creek running directly west of site 12-N-400 (Andreas 1968). There were no structures located on any historic maps (Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53). Based on the archaeological research, the density and diversity of prehistoric artifacts, the exotic chert types identified, and the diversity of activities represented in the artifact assemblage on a rise in topography and well-drained soil could indicate the potential to yield additional important information on the prehistoric settlement and land use patterns of Newton County beyond the Phase I level. Therefore, site 12-N-400 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-402, a lithic and historic scatter, is located in the southwestern section of Parcel A in Survey Area 4 (Figure 48 and Figure 49). The site is located on a slight rise on moderately well-drained soil of Aeolian origin, 195 meters east of Beaver Creek. Adjacent to site 12-N-402 is the location of site 12-N-16 from the Archaeological Resources Management Service's 1997 survey of the Morocco Sewage Treatment Plant (Figure 36). Site 12-N-16 recovered a single unidentified prehistoric flake (Zoll and Westermeier 1997). The assemblage from 12-N-402 includes 25 artifacts, 23 of which are prehistoric lithics and the remaining two consist of a historic ceramic with a date range of 1715 to 1920 and one piece of slag. Three diagnostic lithics were recovered including a Late Archaic Merom Cluster point, a Middle-Late Archaic bannerstone, and a Late Woodland humpback knife (Munson and Munson 1972). The remaining 20 prehistoric artifacts recovered are non-diagnostic flakes and tools. The presence of formal tools located within the site could be an indication of faunal exploitation within the marsh region. Surface-Evans (2015) and White (2007) have found similar patterns among Paleoindian and Archaic peoples in the Kankakee Marsh region. The presence of Middle-Late and Late Archaic diagnostic artifacts may further support the idea of Archaic use of the marsh area. All the chert sources identified within the lithic assemblage include non-local cherts from central and southern Indiana, Delaware chert from central Ohio, and Blanding chert from northwestern Illinois. The size of site 12-N-402 is 475 square meters, or 0.12 acres, which results in an artifact density of 208 artifacts per acre. A historic map from 1876 atlas shows the entire Parcel A of Survey Area 4 was a swamp with Beaver Creek running directly south of site 12-N-402 (Andreas 1968). There

were no structures located on any historic maps (Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53), but a map does show the Chicago & Eastern Illinois railroad near the site (Geo. A. Ogle & Co. 1916). Based on the archaeological research, the density and diversity of prehistoric artifacts, the exotic chert types identified, the proximity to site 12-N-16, and the diversity of activities represented in the artifact assemblage on a slight rise in the topography could indicate the potential to yield additional important information on the early settlement patterns of the 19th Century and prehistoric settlement patterns of Newton County beyond the Phase I level. Therefore, site 12-N-402 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-421 is a lithic and historic scatter located Aeolian deposits in the northeast portion of Survey Area 5 (Figure 61 and Figure 62). The 156 artifacts recovered from site 12-N-421 consisted primarily of historic ceramic and glass dating from 1715 to present and two prehistoric, non-diagnostic flakes. The chert sources identified within the lithic assemblage include Liston Creek and Bryantsville from southern Indiana. The site itself is 2,853 square meters, or 0.70 acres, in size, which leads to an artifact density of 222.9 artifacts per acre. No subsurface features were encountered during survey. There were no structures located on any historic maps (Geo. A. Ogle & Co. 1916; Guernsey 1932; Taylor 2009:52-53). However, the location of the scatter on a gentle slope of the topography and high number and density of artifacts represent favorable conditions for a possible structure or other historic activity area located on the site. Based on archaeological research, the density and diversity of artifacts, the non-local chert types identified, and the diversity of activities represented in the artifact assemblage could indicate the potential to yield additional important information on the early settlement patterns of the 19th Century and prehistoric settlement patterns of Newton County beyond the Phase I level and therefore site 12-N-421 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-430 is a historic scatter located in the southern portion of Survey Area 5 (Figure 61 and Figure 62). The 174 artifacts recovered from site 12-N-430 consisted of historic glass, ceramic, and brick dating from 1800 to present. The site itself is 395 square meters, or 0.10 acres, in size, which leads to an artifact density of 1,740 artifacts per acre. No subsurface features were encountered during survey. There were no structures located on any historic maps (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:52-53). However, the location of the scatter on a gentle slope of the topography and high number and density of artifacts represent favorable conditions for a possible structure or other historic activity area located on the site. Based on archaeological research, the density and diversity of artifacts, the topography, and the diversity of activities represented in the artifact assemblage could indicate the potential to yield additional important information on the early settlement and economic activity of 19th century Newton County beyond the Phase I level and therefore site 12-N-430 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-438 is a historic scatter located on Aeolian deposits in the southern portion of Survey Area 6 (Figure 69 and Figure 70). The 66 artifacts recovered from site 12-N-438 consisted of historic glass, ceramic, and brick dating from 1725 to present. The site itself is 503 square meters, or 0.12 acres, in size, which leads to an artifact density of 550 artifacts per acre. No subsurface features were encountered during survey. There were no structures located on any historic maps (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:52-53). However, the location of the scatter on a gentle slope of the topography and high number and density of artifacts represent favorable conditions for a possible structure or other historic activity area located on the site. Based on archaeological research, the density and diversity of artifacts, the topography, and the diversity of activities represented in the artifact assemblage could indicate the potential to yield additional important information on the early settlement and economic activity of 19th century Newton County beyond the Phase I level and therefore site 12-N-438 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-451 is a prehistoric isolate and historic scatter located on the western border of Survey Area 8. (Figure 83 and Figure 84) The 1,185 artifacts recovered from site 12-N-451 consisted of historic glass, ceramic, leather, asbestos shingles, and brick dating from 1715 to present. One diagnostic projectile point made of quartz was recovered, dating to the Middle Archaic period. The site itself is 7,151 square meters, or 1.77 acres, in size, which leads to an artifact density of 669.5 artifacts per acre. No subsurface features were encountered during survey. After consulting several historic sources (Andreas 1968; Geo. A. Ogle & Co. 1916; Taylor 2009:61), a structure belonging to John B. Lyons was located in the location of site 12-N-451 as early as 1876 (Andreas 1968; Geo. A. Ogle & Co. 1916). The exact time range of the structure's existence on the parcel is unknown at this stage of investigation but the most recent map that the structure does appear on dates to 1916 (Geo. A. Ogle & Co. 1916). The Newton County Historical Society has the contact information for the individual in possession of the history of the Lyons family on their website (Newton County Historical Society 2017). John Bennet Lyons, Sr. was born in Newton County in 1845 and served in Co. B 51st Indiana Volunteer Infantry during the Civil War Find A Grave 2010). This makes the Lyons family one of the earliest residents in the county. Based on archaeological research, historical prominence of the Lyons family, and the density and diversity of artifacts could indicate the potential to yield additional important information on the early settlement and economic activity of 19th century Newton County beyond the Phase I level and therefore site 12-N-451 is considered potentially eligible for the National Register of Historic Places.

Site 12-N-457 is a historic scatter located on the western border of Survey Area 8 (Figure 83 and Figure 84). The 306 artifacts recovered from site 12-N-457 consisted of historic glass and brick dating from 1875 to present. The site itself is 465 square meters, or 0.11 acres, in size, which leads to an artifact density of 27.8 artifacts per acre. No subsurface features were encountered during survey. After consulting several historic sources (Andreas 1968; Geo. A.

Ogle & Co. 1916; Taylor 2009:61), a structure belonging to John B. Lyons was located in the location of site 12-N-451 as early as 1876 (Andreas 1968; Geo. A. Ogle & Co. 1916). The exact time range of the structures existence on the parcel is unknown at this stage of investigation. The Newton County Historical Society has the contact information for the individual in possession of the history of the Lyons family on their website (Newton County Historical Society 2017). Mr. Lyons was a Newton County native and Civil War veteran. Based on archaeological research, historical prominence of the Lyons family, and the density and diversity of artifacts could indicate the potential to yield additional important information on the early settlement and economic activity of 19th century Newton County beyond the Phase I level and therefore site 12-N-457 is considered potentially eligible for the National Register of Historic Places.

Public Outreach and Student Involvement

On September 24, 2016, Ball State University's Applied Anthropology Laboratories took part in Mound State Park's annual Indiana Archaeology Month activities. There were numerous hands-on demonstrations and participant activities for visitors. A poster explaining the methodology and goals of the FY2015 Grant surveys in Benton and Newton counties was presented to visitors. Ball State archaeologists and students used this public event to speak with numerous local individuals fostering public interest and awareness in this HPF Grant survey. Approximately 300 members of the public attended this event at Mounds State Park in Anderson, Indiana.

On November 30, 2017, an Open House was held in the Applied Anthropology Laboratories. The goals of the open house were to showcase current projects that included student involvement, encourage additional student involvement, and to invite possible community and professional collaborators to view our work and in-process projects. The focus of the Newton and Benton County FY2016 Historic Preservation Fund Grant exhibit (Figure 96) was threefold. Historic and prehistoric artifacts were displayed and explained to the public in order to demonstrate the diversity of knowledge necessary for archaeological investigations such as this. Student lab technicians were demonstrating artifact processing and identification. In addition, chert and lithic identification with hands-on demonstrations of the identification and cataloging processes were given to Open House attendees.

On May 2, 2017, a public presentation was given at the Benton County Government Annex in Fowler, Indiana, by AAL archaeologist Christine Thompson and Department of Anthropology graduate student Amanda Balough (Figure 97 and Figure 98). The presentation was sponsored by the Benton County Historical Society. The hour-long presentation reviewed all aspects of the grant including background, methodology, and results. Both historic and prehistoric artifacts representative of newly discovered sites were available for the attendees to view. A student created video was also shown that described and illustrated our methodology, field techniques, artifact processing, and identification. Over 50 people attended the presentation which included a question and answer session, and a short discussion of Indiana archaeology laws. Coverage of this presentation and project proceedings in general were also posted to the AAL's Facebook page and various other social media sites.

Throughout this project there was broad support for the pedestrian surveys from the residents of Newton County. Ten landowners gave permission to survey their properties totaling 2,872.3 acres of agricultural land available for survey. Landowners who granted permission to survey their property were very enthusiastic and eager to have their fields surveyed. Landowners were deeply interested in the types of artifacts that were found and how their property was used in prehistory and during Euro-American contact. Most landowners requested that the artifacts discovered not be returned to them (see Volume 2, Appendix D). Numerous personal phone calls

were made with various landowners who expressed great interest in participating in the survey and shared with the author the types of artifacts that had been surface collected on their property in the past. It became apparent that Newton County has an active and involved public that displays a great interest in their county's history, both historic and prehistoric.

In addition to public presentations and demonstrations, the results of the Newton County HPF grant are being published in various ways. An article on the overall results of this FY2016 Grant will be published in the Indiana Archaeology journal, compiled and distributed by DHPA.

Throughout this project, there has been a very large amount of Ball State University Department of Anthropology student involvement and participation. All students were supervised and mentored by co-PIs Thompson and Nolan. Twenty students were involved with the fieldwork and participated in field surveys. Two students were involved in washing and labeling of artifacts. One student was responsible for artifact photography and cataloging. Two students compiled and checked all data entered into the SHAARD database. One student assisted with the presentation at the Benton County Government Annex on May 2, 2017. One student from the 2012 Blackford County HPF project created the methodology video that was shown during that this year's HPF Grant presentation.

Figure 96: Students discussing the Benton and Newton County HPF grants at the AAL Open House in November 2016 (Photo by Kiya Mullins, Ball State University).

Figure 97: Crowd gathering for the FY2016 HPF grant presentation for Newton and Benton Counties held at the Benton County Government Annex (photo by Christine Thompson, Ball State University).

Figure 98: Attendees viewing the posters and exhibits at the FY2016 HPF grant presentation for Newton and Benton Counties held at the Benton County Government Annex (photo by Christine Thompson, Ball State University).

Alignment with Cultural Resources Management Plan for Indiana

This FY2016 HPF Grant addressed various goals and objectives in Indiana's Cultural Resource Management Plan for 2013-2019 (Division of Historic Preservation and Archaeology 2012) by increasing and fostering public awareness and interest in the archaeological resources of Newton County. This grant project enhanced understanding and relationships in Newton County from curious citizens, to landowners, to collectors.

The first goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:33) is to increase public awareness, public understanding, and public support for preservation archaeology. Through numerous waves of letters mailed to 45 landowners in Newton County, through public events such as the annual Archaeology Month Activities at Mound State Park, and with the public presentation held in Newton County in May 2017, AAL has been able to make the public aware of both our HPF grant surveys and the importance of archaeology. The AAL has received broad support, interest, and enthusiasm from the people of Newton County. They have shown a great interest in the history and prehistory of their county, and are excited to be a part of the surveys to learn more about their own property. They also realize the importance of protecting these archaeological resources as evidenced by the attendance and interest at the presentation at the Newton County Historical Society in Newton County. These activities have helped meet Indiana's objectives of increasing public awareness through varied efforts, media, and programs aimed at all Hoosiers; increasing public understanding of Indiana's cultural resources and our statewide heritage; and increasing the public support for heritage preservation by marketing its benefits.

The second goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:34) is to broaden the preservation and archaeology communities and promote archaeology preservation communities. As stated in the first goal, numerous public events and presentations have taken place as part of the FY2016 Newton County HPF Grant. Contact with a local collector and an examination of his collections in September 2016 has served to both increase the ability of this survey to make archaeological interpretations of this county as well as cement ties with and foster more responsible practices within the collecting community. In addition, several articles have been or are being submitted to the Indiana Archaeology journal and may be submitted to other publications or presented at conferences. Redacted versions of both grant reports will be available for public review on AAL's web site. The activities listed in Goal 1 and the publications listed here have helped and will help meet Indiana's objectives of building relationships among people and groups with similar purposes and to identify new partners and develop opportunities for collaboration.

The third goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:35) is to advocate for preservation opportunities and options for all community, cultural, and heritage resources. Although AAL's FY2016 HPF

Grant did not have a direct impact on this goal, it is hoped that our grant projects could be the foundation for future preservation opportunities and options for Newton County.

The final goal of Indiana's Cultural Resource Management Plan 2013-2019 (Division of Historic Preservation and Archaeology 2012:37) is to advance preservation as economic development. Again, AAL's FY2016 HPF Grant did not have a direct impact on this goal. However, it is hoped that through the presentations, online journal articles, and the online redacted versions of the two grant reports the public may start to think of ways to protect, promote, and capitalize on their cultural and archaeological resources.

Research Questions

The following research questions, while not exhaustive, guided this project.

1. What is the cultural chronology for Newton County?
    a. Is the prevalence of Upper Mississippian among collector reported sites a result of bias, or representation of real pattern in pre-contact use of the Grand Prairie Region?

2. What are the densities and distributions of archaeological sites along the Kankakee River and on Northern Moraine and Lake Region within the county?
    a. Are there patterns in the use of various ecologies through time?
    b. Can this survey inform our knowledge of landscape change?
    c. How does this compare to utilization of similar and different environments within the Northern Moraine and Lake region and Till Plains region?

3. What is the settlement pattern for Euro-American people in Newton County?

4. What is the average site density within the county?

We will address our findings of each of these questions, in order, below.

1. What is the cultural chronology for Newton County?

Prior to this year's survey, Newton County had 152 Unidentified Prehistoric sites, no Paleoindian sites, twelve Archaic sites (three Early Archaic, one Middle Archaic and seven Late Archaic), 45 Woodland sites (four Early Woodland, four Middle Woodland, and ten Late Woodland), two Mississippian sites, five Protohistoric sites, and 155 Historic sites (Table 3).

This project has added to the cultural chronology of the county with 110 sites including 35 Unidentified Prehistoric site components, two Middle Archaic (one Middle-Late Archaic) site components, three Late Archaic site components, one Late Woodland site component, and 72 historic site components (Table 27).

In addition, three previously undocumented projectile point types were added to the knowledge of Newton County's prehistory (Table 28). The one diagnostic Middle Archaic point added was a Morrow Mountain Cluster point. The three diagnostic Late Archaic projectile points recovered were one Matanzas Side-Notched point, one Lamoka Clusert point, and one Merom Cluster point. The one diagnostic Late Woodland point recovered was a Humpback Knife point.

Table 27: Number of Site Components Added

Cultural Period	Added	Previous	Total
Unidentified Prehistoric	**35**	**152**	**187**
Paleoindian (ca. 10,000 – 7500 B.C.)	**0**	**0**	**0**
Archaic	**5**	**12**	**17**
Early Archaic (ca. 8000 – 6000 B.C.)	0	3	3
Middle Archaic (ca. 6000 – 3500 B.C.)	2	1	3
Late Archaic (ca. 4000 – 700 B.C.)	3	7	10
Unidentified Archaic	0	1	1
Woodland	**1**	**45**	**46**
Early Woodland (ca. 1000 – 200 B.C.)	0	4	4
Middle Woodland (ca. 200 B.C. – A.D. 600)	0	4	4
Late Woodland/**Late** Prehistoric (ca. A.D. 500 – 1650)	1	10	11
Unidentified Woodland	0	27	27
Mississippian	**0**	**2**	**2**
Protohistoric/Contact	**0**	**5**	**5**
Historic (post A.D. 1650)	**72**	**155**	**227**
Unknown	**0**	**25**	**25**
Total	**113**	**396**	**509**

Table 28: Documented Points within Newton County.
(* indicates point added from FY2014 survey, ⦿ indicates points added from FY2015 survey, ▪ indicates points added from FY2016 survey).

Cultural Period	Projectile Point Types
Paleoindian	
Early Archaic	Palmer, Charleston Corner Notched, Rice Lobed, MacCorkle Stemmed, Kirk, Kanauha Stemmed, St. Albans Side Notched, Thebes, Kirk Corner-Notched⦿
Middle Archaic	Graham Cave side-notched, Morrow Mountian Cluster▪
Late Archaic	Matanzas, Table Rock Stemmed, Riverton, Merom cluster▪, Brewerton eared-notched, Matanzas side notched*▪, Brewerton Side-Notched*⦿, Matanzas Cluster⦿, Bottleneck Stemmed⦿, Lamoka Cluster▪,
Terminal Late Archaic	Genesee cluster
Early Woodland	Adena Stemmed⦿, Motley
Middle Woodland	Affinis Snyder, Snyders
Late Woodland	Madison⦿, Unclassified Side Notched, Unclassified Corner Notched, Unclassified Flared Stem, Triangular Cluster⦿, Humpback Knife▪

Precontact settlement within Newton County is dominated by Archaic and Woodland cultural periods, and of those two culture periods the most commonly encountered are the Late Archaic and Late Woodland periods. Very little information has been recovered for the Early and Middle Archaic, Early and Middle Woodland, and Paleoindian cultural phases. The cultural phase representations may be skewed is due to development. Newton County is primarily farm land, and as such remains largely within the private sector. Compared to other counties, Newton County has had less archaeology conducted as a result of federal requirements or state regulations. These archaeological surveys have helped build the cultural chronology in other counties by requiring investigations in areas that would not have otherwise been targeted by researchers. Another reason that the cultural phase representations are skewed is due to sampling

bias. Many of the surveys conducted have been on till plain and moraine landforms rather than an adequate sample of all landforms within Newton County. An additional reason for the cultural phase representations to be skewed is due to collectors finding the majority of diagnostic artifacts such as Upper Mississippian and Paleoindian diagnostics that are not added to the official archaeological record. As a result it is likely that the surveys conducted in Newton County have not been extensive enough, have not sampled enough landforms within the county, or collectors have removed diagnostic artifacts from the locations causing the underrepresentation of cultural time periods. With these HPF surveys, especially in those areas not typically surveyed, we will begin to reconstruct the history of use, and the differential spatial patterns of exploitation associated with fluctuations of the marsh regions.

2. What are the densities and distributions of archaeological sites within the county?

The densities and distributions of sites are important for modeling and prediction. In the current study not only was site distribution tracked by landform and cultural period, but the amount of the surface that was covered by individual sites was used to calculate the percentage of utilized surface by landform (Table 30 and Table 32). For example, five small lithic scatters on a given landform may utilize a smaller portion of the landscape than one large lithic scatter on another landform. The percentage of utilized landscape may provide a further refined perspective of how settlement occurred within the research universe. Additionally, the total site distribution by landform and cultural period along with the amount of surface that was covered by individual sites was used to calculate the percentage of utilized surface by landform of FY2014, FY2015, and FY2016 combined (Table 31 and Table 33).

The northern portion of Newton County consists of more diverse landforms compared to the southern half of the county. This can be attributed to the marshlands that existed prior to draining in order to create more agricultural lands. The major waterways in Newton County are the Kankakee River and the Iroquois River. Smaller waterways, exposed more formally with the draining of the Beaver Lake marsh area, feed these larger bodies by crisscrossing the county leading to a high proportion of floodplain features in the area (Barnes and Osterholz 1998:2-6). Of the two large waterways, the Kankakee River is the dominant in the northern half of Newton County and as such was the one more frequently encountered, but there were several survey areas which still fell into the Iroquois River watershed. Much of the previous smaller waterways have also been drained to access more agricultural land and are now referred to as ditches.

Although very limited, the results from the 932.27 acres of the FY2016 HPF Grant survey show Middle Archaic, Late Archaic, and Late Woodland presence in the northern portion of the county across several landform types (Table 29). The time periods represented upon several landforms from FY2014, FY2015, and FY2016 surveys include Early Archaic, Middle

Archaic, Late Archaic, Late Woodland, Late Woodland/Late Prehistoric, and Late Prehistoric. This distribution among landforms shows differential use by landform among the culture periods. No evidence of the Paleoindian presence was recovered in this survey. The diagnostic prehistoric artifact recovered from this year's survey were fairly restricted to upland landforms. The previous year's FY2014 HPF Grant surveys were fairly restricted to upland landforms, which constrained the land use and settlement pattern analysis of southern Newton County to only till plains and moraines. The diversity of landforms surveyed within the northern portion of the county as part of this FY2015 HPF Grant project, as compared to the previous year, allows for a broader understanding of land use and settlement patterns among prehistoric peoples better than in previous surveys.

Table 29: Projectile Point Site Numbers and Cultural Periods Per Landform.
(* indicates points from FY2016)

Landform	Sites and Cultural Periods
Moraines	12-N-75 (Late Archaic), 12-N-284 (Late Archaic), 12-N-295 (Late Woodland/Late Prehistoric), 12-N-312 (Early Archaic), 12-N-451 (Middle Archaic)*
Outwash Plains and Till Plains	12-N-325 (Late Archaic), 12-N-327 (Late Archaic and Late Prehistoric), 12-N-397 (Late Archaic)*, 12-N-402 (Late Archaic and Late Woodland)*, 12-N-435 (Late Archaic)*
Lake Beds or Lake Plains	12-N-354 (Late Archaic)

Table 30: FY2016 Site Densities and Distributions By Landform

Landform	# of acres	# of sites	Site Acreage	Density	Distribution
Outwash Plains and Till Plains	355.7	58	3.44	1 site per 6.13 acres	Sites cover 0.97% of surface area
Moraines	459.7	39	4.66	1 site per 11.79 acres	Sites cover 1.01% of surface area
Outwash Plains	114.8	11	0.6	1 site per 10.4 acres	Sites cover 0.52% of surface area
Floodplains	2.1	2	0.04	1 site per 1.05 acres	Sites cover 1.9% of surface area

Table 31: FY2014, FY2015, and FY2016 Site Densities and Distribution By Landform

Landform	FY2014 - 2016 # of acres	FY2014 - 2016 # of sites	Site Acreage	Density	Distribution
Outwash Plains and Till Plains	729.9	89	15.8	1 site per 8.2 acres	Sites cover 2.16% of surface area
Lake Plains or Lake Beds	219.3	20	7.86	1 site per 10.67 acres	Sites cover 3.58% of surface area
Moraines	1,454.6	125	23.31	1 site per 11.64 acres	Sites cover 1.6% of surface area
Outwash Plains	166.7	21	18.3	1 site per 7.94 acres	Sites cover 10.98% of surface area
Floodplains	113.6	20	.64	1 site per 5.68 acres	Sites cover .56% of surface area

Table 32: Number of FY2016 Artifacts per Landform.

Landform	# of artifacts	% of artifacts recovered
Outwash Plains and Till Plains	733	17.3%
Lake Plains or Lake Beds	0	0%
Moraines	2,574	60.9%
Outwash Plains	917	21.7%
Floodplains	2	0.05%

Table 33: Number of FY2014, FY2015, and FY2016 Artifacts per Landform.

Landform	# of FY2014 Artifacts	# of FY2015 Artifacts	# of FY2016 Artifacts	Total	% of Artifacts Recovered
Outwash Plains and Lake Plains	0	361	733	1,094	14%
Lake Plains or Lake Beds	0	1,184	0	1,184	15.1%
Moraines	1,069	124	2,574	3,767	48%
Outwash Plains	0	608	917	1,525	19.4%
Floodplains	260	9	2	271	3.5%

The sites within the central portion of Newton County were located on 28 different soil types, some of which were also located on more than one. These different soil types have characteristics that may have made them favorable for habitation during the prehistoric period. Accounting for sites that were larger scatters and were located on multiple soil types, the majority of soil components were discovered on loamy sand and loamy fine sand texture soils. In predominance order, 28.3 percent of sites were located on fine sandy loam (n=34), 18.3

percent of sites were located on fine sand (n=22), 12.5% percent of sites were located on loamy sands (n=15), 22.9 percent of sites were located on loamy fine sand (n=15), 11.7 percent of sites were located on silt loam (n=14), 8.3 percent of sites were on silty clay loam (n=10), 6.7 percent of sites were on loam (n=8), and 1.7 percent of sites were on sandy loam (n=2).

Somewhat poorly drained soils (n=39) were the predominant drainage class with 31.7 percent of the soil components associated with the sites occurring on these types of soils. A total of 25.2 percent of sites was found on poorly drained soils (n=31), 18.7 percent of sites were found on moderately well drained soils (n=23), 15.5 percent of sites were found on well drained soils (n=19), and 8.1 percent of sites were found on very poorly drained soils (n=10).

The five soil orders present within Newton County are Mollisols (72.1%), Entisols (18.4%), Alfisols (6%), Inceptisols (2%), and Histosols (1.1%). Four orders were represented within the nine Survey Areas, which include Mollisols (89.9%), Entisols (9%), Alfisols (1.02%), and Inceptisols (0.16%), which is fairly representative of the percentages within the entire county. Sites were located on all four soil orders present in the surveyed areas. From the number of soil components represented the percentages are 76.5 percent of sites located on Mollisols (n=91), 20.2 percent of sites located on Entisols (n=24), 2.5 percent of sites located on Alfisols (n=3), and 0.84 percent of sites located on Inceptisols (n=1). Mollisols are underrepresented in the surveyed areas as site locations and Entisols and, to a lesser extent, Alfisols are overrepresented. Within the order of Mollisols, the percentages are further broken down into 49.6 percent of the sites on Typic/Udic Mollisols (n=59) and 26.9 percent of sites on Aquic Mollisols (n=32). The distribution of sites among the soil orders shows similarities with both the percentages of soil orders surveyed as well as the percentages for the entirety of Newton County.

The sites encountered with diagnostic prehistoric artifacts were located on fairly evenly distributed soil textures and drainage classes. Of the four sites with an identified prehistoric culture period, one Late Archaic site was located on poorly drained fine sand (12-N-397), one Late Archaic site was located on well drained loamy fine sand (12-N-425), and one Middle Archaic site was located on very poorly drained fine sandy loam and somewhat poorly drained fine sandy loam (12-N-451). The last site was a large Late Archaic, Middle-Late Archaic, and Late Woodland site located on moderately well drained fine sand (12-N-402). The four sites were located on two soil orders, which included Mollisols and Entisols. One site (12-N-425) containing diagnostic prehistoric artifacts was located on Mollisols and two sites (12-N-402 and 12-N-397) was located on Entisols. The location of diagnostic artifacts within sites 12-N-402 and 12-N-397 on Entisols is consistent with the site being located on an upland feature within the survey area. One site (12-N-451) located on Mollisols was located on both Aquic Mollisols and Typic/Udic Mollisols.

3. What is the settlement pattern for Euro-American people within Newton County?

Shown in Figure 99 are the locations of the nine Survey Areas in relation to the Kankakee and Iroquois Rivers. Two surveys areas were located in an area closer to the Kankakee River, one was closer to the Iroquois river, and the last six survey areas were located in the central portion of Newton County. The historic cultural context was present in Survey Areas 1-9 and was representative of the initial mid-19th century settlement of the county through modern times. Mean dates were taken for each survey area by using artifacts that displayed a date range (Table 34). This excluded non-diagnostics and anything with unanchored parameters (i.e. pre-1940). Results indicate that the majority of survey areas were most likely active during the late 19th and early 20th centuries. This is corroborated by the mean historic date of the whole survey which was 1909. Both of these pieces of information are in keeping with the literature narrative concerning the draining of Beaver Lake beginning in the 1850s and completed by 1880 (Barnes and Osterholz 1998:2). This draining progressively opened up the county for farming during this period and as such makes sense that most historic artifacts would date to this time.

Table 34: Survey Area Mean Dates for Historic Artifacts

Survey Area	Mean Date
Survey Area 4	1918
Survey Area 5	1908
Survey Area 6	1891
Survey Area 8	1912
Survey Area 9	1915
All Survey	**1909**

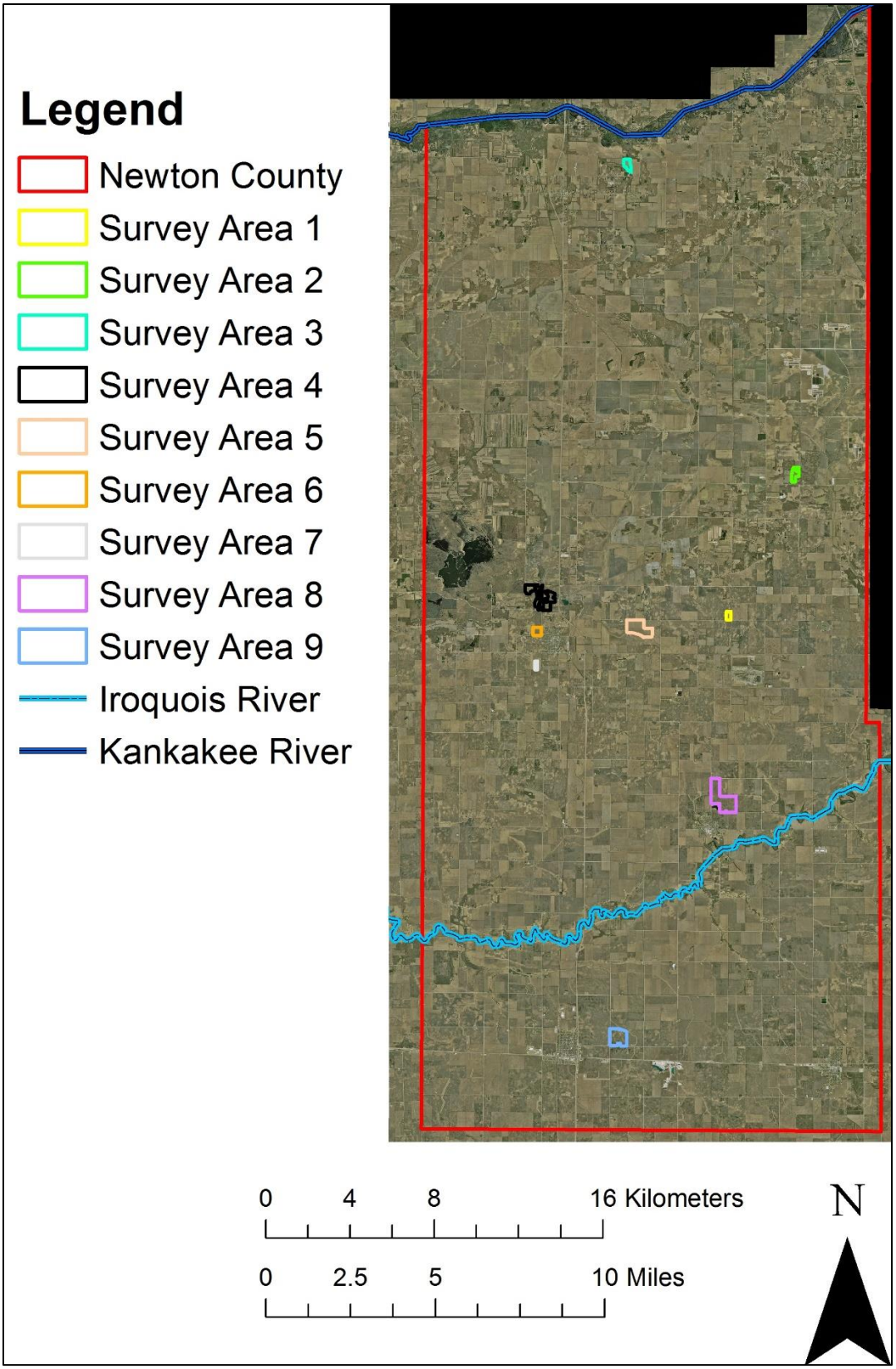


Figure 99: Distribution of Survey Areas from the FY2016 survey on an aerial (Indiana Spatial Data Portal 2015) of Newton County.

4. What is the average site density within the county?

Before this survey there were 377 documented sites in the county (Volume 2, Appendix A). Upon completion of the survey, 110 sites were added to the site database making the total 487 sites in Newton County. For this survey, the average site density encountered was one site per 8.5 acres with survey area densities ranging from one site per 14 acres (SA8) to one site per 3.5 acres (SA6) with four negative surveys encountered (SA1, SA2, SA3, SA7). Although previous indications of density vary, prior surveys have indicated a positive ratio survey of one positive survey per 3.12 surveys conducted. If we evaluate our survey areas as individual surveys, our ratio of successful surveys for this study is one positive survey per 1.8 surveys conducted. This density is comparable to the FY2014 HPF Grant survey in southern Newton County, which was one site per 10.14 acres surveyed and the ratio of positive surveys was one positive survey per 1.14 surveys conducted due to one negative survey area of the eight total (Leeuwrik et al. 2015). The density is also comparable to the FY2015 HPF Grant survey in northern Newton County, which was one site per 10.7 acres surveyed and the ratio of positive surveys was one positive survey per one survey conducted (Leeuwrik et al. 2016). Though the ratio of successful surveys for this FY2016 HPF Grant project and the previous FY2014 HPF Grant and FY2015 HPF Grant are high, this could be due to the large amount of land and high visibility. Conversely, the lower ratio shown by the previous surveys may be influenced by low survey acreage, different methodologies, or poor field conditions.

Conclusions and Recommendations

This project targeted the central townships, Beaver and Jackson, and under-represented ecological communities in Newton County based on our FY2014 and FY2015 HPF grant surveys. The project area was selected due to the lack of known archaeological sites in the SHAARD database and the identification of Newton County as a data deficient county and was a supplement to the FY2014 HPF Grant surveys of the southern half and the FY2015 HPF Grant surveys of the northern half of Newton County. The goals of the project were to increase the site database, refine the cultural chronology for the county, examine evidence for early Euro-American settlement, resolve any inconsistencies found in the SHAARD database, and provide updated information for collector reported sites in SHAARD.

Newton County displayed a lack of artifacts as compared to similar county surveys in Indiana. This is similar to the results of previous surveys conducted in and around Newton County (Cree et al. 1994; Leeuwrik et al. 2015; Leeuwrik et al. 2016; Macleod et al. 2015; McCord 2007; Murray et al. 2011; Surface-Evans et al. 2005). It is very likely that the presence of Beaver Lake wetland and the Kankakee Marsh during prehistoric times and into the mid-1800s heavily influenced the habitability of the area. The wetlands were a great source of resources for the prehistoric people of the area, who tended to settle along the Iroquois River, Kankakee River, and near Beaver Lake (Heistand 1951:8-10). The marshes and wetlands were more highly used by prehistoric people and fur trappers because of their large amounts of flora and fauna available for exploitation (Meyer 1935:367-369). However, the variably extensive wetlands would have dramatically restricted both livable land and resources in the area for the incoming Euro-American settlers during the historic period. This constraint would have concentrated those individuals who were there to select upland and well drained features in order to avoid the marshlands that were so prevalent throughout the county.

The large scale changes to the environment brought about by the historic draining of Beaver Lake brought in a relatively late Euro-American settlement pushing the majority of the historic settlement dates to much later in the 19th century. Before the draining, many of the Euro-American settlements were located along streams in the southern portions of the county (Heistand 1951:10-11). This draining also allowed for investigation into areas that may have been exposed prehistorically and therefore offer insights into the habitation preferences of prehistoric peoples as well as the dynamic nature of the extent and location of the wetlands through time (Figure 100).

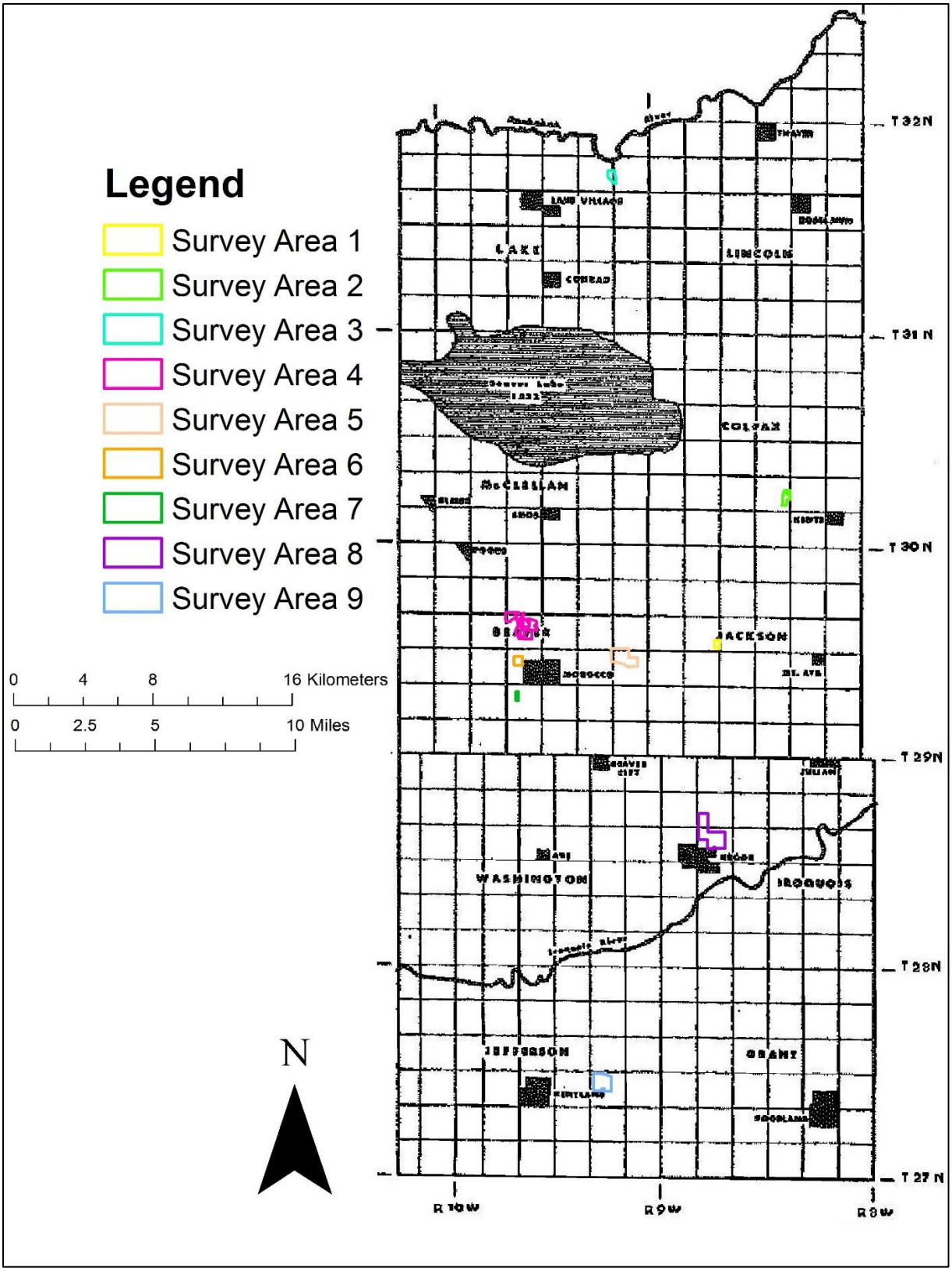


Figure 100: 1832 location of Beaver Lake in Newton County in relation to the Survey Areas (Heistand 1951).

The four diagnostic prehistoric artifacts recovered from the survey areas date to the Middle Archaic, Middle-Late Archaic, Late Archaic, and Late Woodland periods. Though the amount of recovered prehistoric diagnostics from the survey is not enough to make generalizations regarding occupation habits, we may be able to use this information in order to identify the use of the land during these periods. One projectile point was encountered in a survey area near the Iroquois River, three others were encountered in two survey area in the central part of the county on more upland features (Figure 101). The majority of landforms the projectile points were located on where moraines and outwash plains which are upland features.

Not much is known about Early Archaic settlement and land use within northwestern Indiana and Newton County. With only three previously documented sites within the county, there is not sufficient evidence to make any statements pertaining to the relationship between Early Archaic culture and upland landform preference. Neither the [redacted] (FY2015 HPF Grant), [redacted] (FY2014 HPF Grant), nor the [redacted] Collections had any supplemental information or artifacts pertaining to the Early Archaic Period. While tentative, the relationship between the Late Archaic in Newton County is similar to the preponderance of Late Archaic occupancy along the Kankakee Marsh in Lake County (Surface-Evans 2015; Surface-Evans et al. 2005). This relationship shows utilization of upland features for settlement areas and the lowlands as hunting camps and resource extraction points along the marsh region and floodplains (Surface-Evans 2015:180; White et al. 2007). This assumption is based on the recovery of mostly formal lithic tools from the Late Archaic period and somewhat matches the [redacted], [redacted], and [redacted] collections relatively large number of stemmed points.

Late Woodland/Late Prehistoric and Late Prehistoric presence in Newton County has been well documented in previous sites and by Triangular Points within the [redacted], [redacted], and [redacted] Collections. The evidence of Late Woodland/Late Prehistoric and Late Prehistoric presence in Newton County is not substantial enough to establish settlement patterns, but it does give some insight into land use (Surface-Evans 2015:184). The common assumption about Late Woodland and Late Prehistoric peoples in this region, it that they practiced mixed subsistence patterns with an emphasis on farming over foraging (Surface-Evans 2015:184). However, an opposing viewpoint, upheld by Surface-Evans (2015) is that Late Woodland and Late Prehistoric people practice more mixed resource extraction strategies from a wide varieties of environments. This evidence of resource extraction and processing cannot be evaluated based on the one site (12-N-402) discovered during this survey, which was an isolated Late Woodland Humpback Knife projectile point.

The [redacted], [redacted], and [redacted] Collections highlight several other important areas of information pertaining to cultural periods and land use that is sparse or entirely absent in the official records. Without incorporating the knowledge contained in private collections, we can never hope to fully reconstruct the prehistory and history of the regions we target to understand.

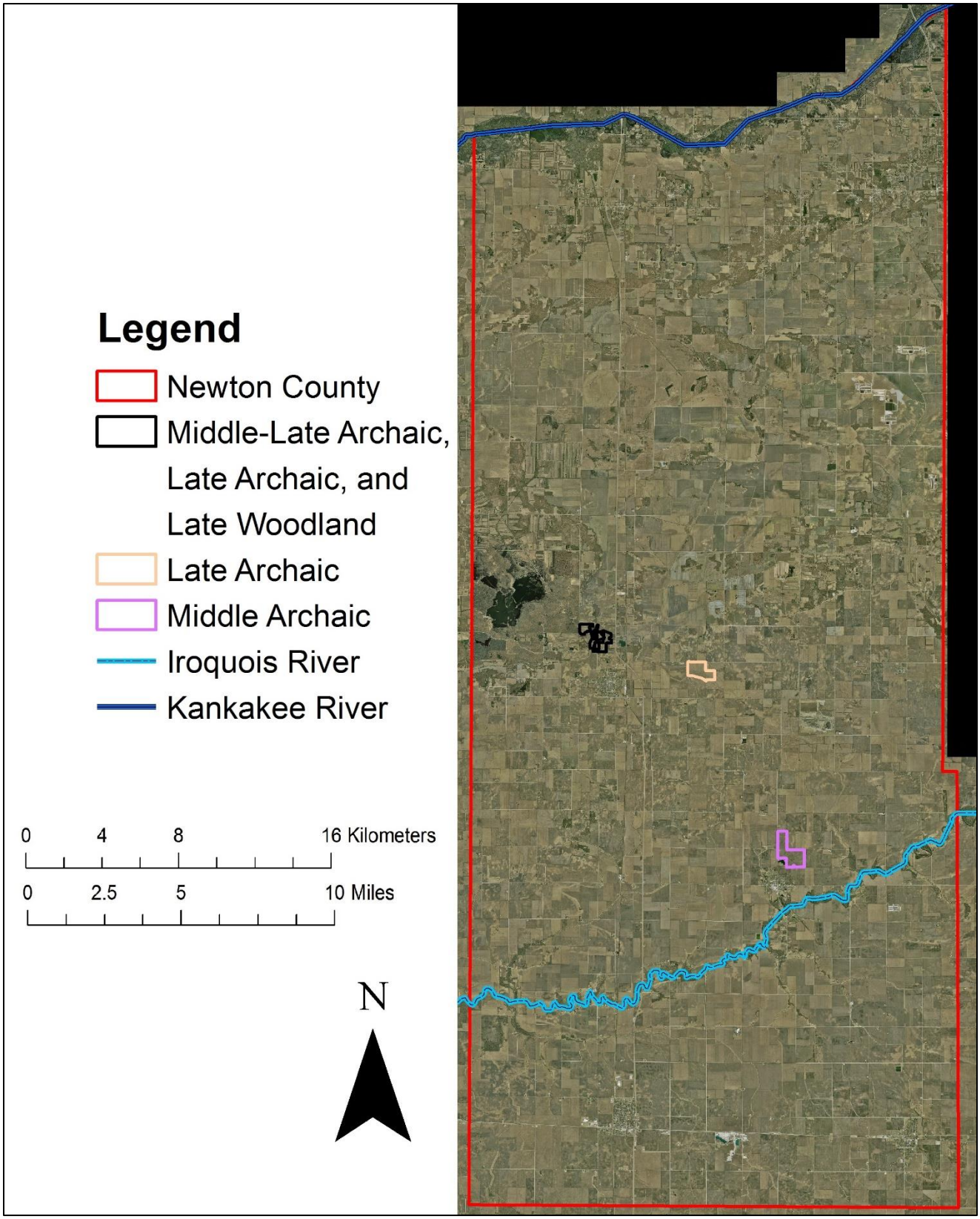


Figure 101: Diagnostic Projectile Point Culture Periods in relation to the Iroquois and Kankakee Rivers (Indiana Spatial Data Portal 2015).

The majority of the precontact sites were unable to be identified by cultural period; however several prehistoric cultural periods – the Middle Archaic, Late Archaic, Middle-Late Archaic, and Late Woodland – were documented. Eight sites were recommended for further investigation and 102 sites were recommended as not eligible for listing on the Indiana Register of Historic Sites and Structures or the National Register of Historic Places. Three sites contained diagnostic projectile points including two sites from Survey Area 4 (12-N-397 and 12-N-402) with projectile points dating to the Late Archaic, Middle-Late Archaic, and Late Woodland, and one site from Survey Area 8 (12-N-451) contained a Middle Archaic projectile point which indicates that further research could yield important information about prehistoric settlement patterns and land use in Newton County. The remaining sites (12-N-400, 12-N-421, 12-N-430, 12-N-438, and 12-N-457) are located on areas of interest that produced a wide diversity of artifacts. Further investigation into these sites could yield information that would be beneficial towards a more complete understanding of prehistoric and historic utilization of a region that was once considered to be inhospitable to settlers (Heistand 1951:36).

The surveys conducted in Newton County are unable to be compared to those of other Indiana counties whose results show a greater evidence of land use in upland areas because of the disproportionate survey of upland features in Newton County (Leeuwrik et al. 2015, 2016; Macleod et al. 2015; Swihart and Nolan 2014). Much of the evidence of land use discovered on the floodplain areas consisted of historic artifacts with very little prehistoric artifacts recovered and no diagnostic prehistoric artifacts recovered. Due to the vast majority of surveys being located on upland landforms it is difficult to make a comparison to the occupation patterns as found on other varieties of landforms. For the future, survey of a greater variety of landforms would be beneficial in expanding the knowledge of occupation patterns across the county and making inferences about upland feature occupation preferences.

Many factors could have influenced the project data including the location of the surveyed properties, whether a field was tilled recently or not, the collection of fields by lithic enthusiasts and even local weather patterns prior to field survey. Further research into prehistoric landform usage is recommended within Newton County.

Newton County would benefit from further archaeological investigations, especially those focusing on the procurement of diagnostic prehistoric materials and systematization of landform use prehistorically. Included in this should be further large scale pedestrian surveys to complement the findings in this report as well as identify potentially new areas of interest. Particularly surveys that attempt to capture representative samples of the topographic, geomorphic, hydric, and texture properties of landforms and soils given the peculiar hydrological history of this area and the already documented peculiar distribution of archaeological materials in this portion of the state (Leeuwrik et al. 2015; Macleod et al. 2015; Surface-Evans 2015; and this report). Surveys designed in this way could add not only to our understanding of shifting

resource procurement and settlement strategies throughout prehistory, but could also be used to hypothesize changes in overall drainage properties of the region related to the formation of the various marshes, and marsh-like environments that predominated in this region.

References Cited

Abrams, Elliot

2009 Hopewell Archaeology: A View from the Northern Woodlands. *Journal of Archaeological Research* 17:169-204.

Adderley, Anthony W.

1996 *Archaeological Records Search, Reconnaissance and Recommendations, Construction of a Recreational Pond in Central Newton County, Indiana*. Indiana State University, Terre Haute, Indiana.

2002 *Archaeological Records Review and Phase 1a Field Reconnaissance for Curtis Creek Site County Road 550 East Newton County, Indiana*. Sagamore Environmental Services, Inc., Indianapolis, Indiana.

Ade, John

1911 *Newton County: A Collection of Historical Facts and Personal Recollections Concerning Newton County, Indiana, From 1853-1911*. The Bobs-Merrill Company, Indianapolis, Indiana.

American Chemical Society

2016 *The Columbia Dry Cell Battery: National Historic Chemical Landmark*. American Chemical Society Office of Communications, Washington D.C.

Anderson, William D.

2006 Knobbed Whelk. In *Overview – Comprehensive Wildlife Conservation Strategy: Species Description*. South Carolina Department of Natural Resources, http://www.dnr.sc.gov/cwcs/pdf/Knobbedwhelk.pdf, accessed November 17, 2016.

Andreas, Alfred T.

1968 *Maps of Indiana Counties in 1876*. Baskin, Forester & Co., Chicago, Illinois.

Andrefsky, William J.

2005 *Lithics: Macroscopic Approaches to Analysis*. Second Edition ed. Cambridge University Press, United Kingdom.

Angst, Michael

1994 *An Archaeological Survey of Fayette County*. Reports of Investigation 40. Archaeological Resources Management Service, Ball State University, Muncie, Indiana. Management Service, Ball State University, Muncie, Indiana.

1998 *Archaeological Field Reconnaissance Newton County Community Center, Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Anslinger, Michael C.

1993 *Archaeological Records Review and Recommendation, INDOT Project ST-019-1(), Des. 29805, Replacement of Structures Carrying U.S. 41 over Bogus Island Ditch, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.

Barber, Edwin A.

1976 *Marks of American Potters*. Ars Ceramica, Philadelphia, Pennsylvania.

Barnes, James R., and Larry C. Osterholz

1998 *Soil Survey of Newton County, Indiana*. United States Department of Agriculture, Washington, D.C.

Beard, Thomas C.
1991 *Archaeological Field Reconnaissance INDOT Project ST-1441-1 (D) Replacement of Two Small Structures on U.S. 24 East of U.S. 41 in Newton County, Indiana.* Lebanon, Indiana.
1994 *Archaeological Field Reconnaissance INDOT Project BRS-5356(004)/BRS-3745(003) Proposed Wetland Replacement Area Along SR 55 South of the Kankakee River in Newton County, Indiana.* Landmark Archaeological and Environmental Services, Inc., Lebanon, Indiana.
Beazley, Matthew, and Dina M. Bazzill
2013 *Archaeological Assessment (TCNS ID#91020) Proposed 270ft Self-Supporting Lattice Telecommunications Structure within an Approximately 90ftX90ft Lease Area.* Environmental Corporation of America, Alpharetta, Georgia.
Bechert, Charles H., and John M. Heckard
1966 Ground Water. In, *Natural Features of Indiana*. Edited by Alton A. Lindsey. Indiana Academy of Science, Indianapolis, Indiana.
Bellis, James O.
1979 *Report of the Archaeological Reconnaissance of Project No. ST-674 "WW" LaSalle State Fish & Wildlife Area in Newton County, Indiana.* Notre Dame University, Notre Dame, Indiana.
1984 *Report of the Archaeological Reconnaissance for the Newton County Bridge No. 57 on County Road 700 North Over Beaver Lake Ditch.* Department of Anthropology, Notre Dame University, Notre Dame, Indiana.
Bellis, James O., Terry D. Freudenrich, and Ernst von Rahl
1979 *An Archeological Study in the Kankakee Marsh*. Indiana State University, Department of Sociology and Anthropology, Terre Haute, Indiana.
Bennett, Stacy N.
2000 *Phase 1a Archaeological Field Reconnaissance: INDOT Project Stp-9956(), Des. #9506860: Rehabilitation of CR 600E from SR 10 to CR 1200N, Newton County, Indiana.* Landmark Archaeological and Environmental Services, Inc., Sheridan, Indiana.
2016 *Phase Ia Archaeological Field Reconnaissance: Proposed Cheese and Whey Factory at Fair Oaks Farm in Newton County, Indiana*. Accidental Discoveries, LLC, Noblesville, Indiana.
Benson, Larry, Timothy R. Pauketat, and Edward R. Cook
2009 Cahokia's Boom and Bust in the Context of Climate Change. *American Antiquity* 74: 467–483.
Berge, Dale L.
1980 Simpson Springs Station Historical Archaeology in Western Utah 1974-1975. *Cultural Resources Series* No.6. Bureau of Land Management, Utah State Office, Salt Lake City, Utah.
Black, Glenn A.
1936 Excavation of the Nowlin Mound. *Indiana History Bulletin* 13(7):207-305. Indianapolis, Indiana.
Black, Max
2005 *Archaeological Field Reconnaissance Newton County Well Project Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Black, Max, and Shaun Miller
2003 *County Road 700 North Newton County, Indiana Archaeological Field Reconnaissance.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Block, Robert S.
2017 *Machine Made Marbles*. Marble Collectors Society of America, http://www.marblecollecting.com/marble-reference/ online-marble-id-guide/ machine-made-marbles/, accessed January 11, 2017.
Bond, Gerard, Bernd Kromer, Juerg Beer, Raimund Muscheler, Michaeol N. Evans, William Showers, Sharon Hoffmann, Rusty Lotti-Bond, Irka Hajdas, and Georges Bonani
2001 Persistent Solar Influence on North Atlantic Climate Change during the Holocene. *Science* 294:2130-2136.
Bonnichsen, Robson, Bradley T. Lepper, Dennis Stanford, and Michael R. Waters (editors)
2005 *Paleoamerican Origins: Beyond Clovis*. Texas A&M University Press, College Station.
Bosch, Robert
2017 *History*. Bosch Auto Parts. http://tw.bosch-automotive.com/en/parts_and_accessories/ service_parts_1/spark_plugs_1/history_1/history_1, accessed January 12, 2017.
Brammer, Beth N.
1995 *Archaeological Field Reconnaissance: Proposed Wastewater Project for Morocco, Newton County, Indiana.* Landmark Archaeological and Environmental Services, Inc., Lebanon, Indiana.
Burkett, Frank N.
1993 *Archaeological Reconnaissance for INDOT Project: STP-3856() Replacement of SR 16 Bridge over Iroquois River in Newton County.* Indiana Department of Transportation, Indianapolis, Indiana.
Caldwell, Joseph R.
1971 Eastern North America. In *Prehistoric Agriculture*, edited by Stuart Stuever, pp. 361-382, The Natural History Press, Garden City, New York.
Callendar, Charles
1978 Miami. In *Handbook of North American Indians,* Vol. 15 "Northeast" edited by Bruce. G Trigger, the Smithsonian Institution, Washington D.C.
Callendar, Charles, Richard K. Pope, and Susan M. Pope
1978 Kickapoo. In *Handbook of North American Indians,* Vol. 15 "Northeast" edited by Bruce. G Trigger, the Smithsonian Institution, Washington D.C.
Cantin, Mark
1995 *Archaeological Reconnaissance and Recommendations, INDOT Project ST-019-1(), Des. 9229805, Replacement of Structure Over Bogus Island Ditch on US 41, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.
2005 *Provenience, Description, and Archaeological Use of Selected Chert Types of Indiana.* Technical Report No. 05-01, Indiana State University Anthropology Laboratory, Terre Haute, Indiana.
2008 *Provenience, Description, and Archaeological Use of Selected Chert Types of Indiana*. Technical Report No. 05-01, Indiana State University Anthropology Laboratory, Terre Haute, Indiana.
2011 Chert Types of Indiana. Paper presented at the March 2011 Indiana Archaeology Council Spring Workshop. Strawtown, Indiana.

Carmony, Donald F.
1998 *Indiana 1816 to 1850: The Pioneer Era (History of Indiana).* Indiana Historical Society, Indianapolis, Indiana.
Centerfire Shot Shells
2017 *Shot Shell Headstamp Identification*, http://members.shaw.ca/cartridge-corner/shotgun.htm, accessed October 25, 2016.
Clifton, James A.
1978 Potawatomi. In *Handbook of North American Indians*, Vol. 15 "Northeast" edited by Bruce. G Trigger, the Smithsonian Institution, Washington D.C.
Cochran, Blake
2006 *Archaeological Reconnaissance Kentland Municipal Airport Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Cochran, Donald R., and Kelly Cox
1977 *Federal Aid Secondary Project No. OS099-56(2) F.A.S. Route County Road 525 E Newton Bridge #151 Over Iroquois River, Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Cochran, Donald, and Jeanette Buehrig
1985 *An Archaeological Survey on the Wabash Moraine: A Study of Prehistoric Site and Artifact Density in the Upper Wabash Drainage*. Reports of Investigation 15. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.
Cointrackers
2017 *1928 Wheat Penny*, http://cointrackers.com/coins/13548/1928-wheat-penny/, accessed October 24, 2016.
Conover, Diana R.
1983 *Archaeological Records Review Newton County Bridge 147 Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
1985a *Archaeological Records Review Goodland Water Utility Extension Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
1985b *Archaeological Field Reconnaissance Willow Slough Fish Wildlife, Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
1986a *Archaeological Records Review Newton County Road 1300 South Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
1986b *Archaeological Records Review Roselawn Postal Building, Roselawn Gardens Subdivision Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
1986c *Amendment to Archaeological Records Review Newton County Road 1300 South Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Coon, Matt
2008 *An Archaeological Records Check and Phase 1a Field Reconnaissance: Two Small Structure Replacements on SR 18 over Gruden Ditch (De. Nos. 0201032 and 0201033), Newton County, Indiana.* Cultural Resources Services Indiana Department of Transportation, Indianapolis, Indiana.
2010 *SR 10 Superstructure Replacement over Best Ditch, 3.28 miles west of SR 41.* INDOT, CRS, Indianapolis, Indiana.
2012a *An Archaeological Records Check and Phase 1a Reconnaissance Survey: INDOT LaPorte District Unit Permits in Carroll, Cass, Fulton, Jasper, Lake, LaPorte, Marshall, Newton, Porter, Pulaski, and St. Joseph Counties, Indiana.* Cultural Resources Office INDOT Environmental Services, Indianapolis, Indiana.
2012b *SR 114 Pipe Line Over Unnamed Tributary to Zabrosky Ditch, 1.47 Miles East of US 41, Newton County, Indiana.* INDOT, CRO, Indianapolis, Indiana.
2016 Phase Ia Records Check and Field Reconnaissance for US 24 Bridge Replacement over Sheldon Ditch (DES 1500078), Newton County, Indiana.
Craig, Joseph
2015a *Proposed Schneider Telecommunications Tower in Newton County*. Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology, Indianapolis Indiana.
2015b *Proposed Schneider Telecommunications Tower in Newton County (Figure 1)*. Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology, Indianapolis Indiana.
Cree, Donald W.
1991 *Archaeological Field Reconnaissance Goodland Senior Citizen Apartment Project Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Cree, Donald W., Randy Gaw, Gerald Waite, Lisa Paylo, and Donald R. Cochran
1994 *Historic and Prehistoric Contexts in the Tipton Till Plain*. Reports of Investigation 36. Archaeological Resources Management Service, Ball State University, Muncie.
Delcourt, Hazel R., and Paul A. Delcourt
1991 *Quaternary Ecology*: A Paleoecological Perspective. Chapman & Hall, London, England.
Depression Glass
2014. *Milk Glass - What is it?* http://www.depression-glass.com/milk-glass/, accessed January 12, 2017.
DeRegnaucourt, Tony
1976 *Archaeological Reconnaissance of Indiana State Highway 10 from Roselawn, Indiana to the Intersection of State Road 110, Project Number S-883(4) in Newton and Jasper Counties, Indiana*. Upper Miami Valley Archaeological Research Museum, Arcanum, Ohio.
1982 *Archaeological Reconnaissance of the Site for a New Salt Storage Building at the Kentland Maintenance Unit Center in Newton County, Indiana.* Upper Miami Valley Archaeological Research Museum, Arcanum, Ohio.
DeRegnaucourt Tony, and Jeff Georgiady
1998 *Prehistoric Chert Types of the Midwest.* Western Ohio Podiatric Medical Center, Greenville, Ohio.

Division of Historic Preservation and Archaeology
2007 State Historic Architectural and Archaeological Research Database (SHAARD). Electronic Database, https://secure.in.gov/apps/dnr/shaard/welcome.html, accessed March 2017.
2012 *Indiana's Cultural Resources Management Plan For 2013 to 2019*. http://www.in.gov/dnr/historic/files/hp-IndianaStatePlan2013-2019.pdf. Accessed May 15, 2016.
Donaldson, Joshua A.
2013 *Archaeological Records Check, Rehabilitation of Lake County Bridge No. 36, Carrying State Line Road Over the Kankakee River, Lake and Newton Counties, Indiana and Kankakee County, Illinois.* Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.
Dorwin, John T.
1966 *Fluted Points and Late-Pleistocene Geochronology in Indiana.* Indiana Prehistory Series, Volume IV, Number III. Indiana Historical Society, Indianapolis, Indiana.
Drury, John
1955 *This is Newton County: An Up-to-Date Historical Narrative with County and Township Maps and Many Unique Aerial Photographs of Cities, Towns, Villages, and Farmsteads*. The Loree Company, Chicago, Illinois.
Eichenlaub, Val
1979 *Weather and Climate of the Great Lakes Region*. University of Notre Dame Press, South Bend, Indiana.
Evans, Dallas
1990 *Archaeological Resources Management Services Bridge Over the Kankakee River Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
F.A. Battey & Co.
1883 *Counties of Warren, Benton, Jasper, and Newton, Indiana: Historical and Biographical.* F.A. Battey & Co. Publishers, Chicago, Illinois.
Fabyan, E.J.
ca. 1976-1979 *Archaeological Reconnaissance of Project: RS-4256(1) Newton County.* Muncie, Indiana.
1979 *Archaeological Reconnaissance of Indiana State Highway Commission Project ST-5356(A) SR 55 Newton County, Indiana.* IN State Highway Commission, Muncie, Indiana.
1982 *Supplemental Archaeological Reconnaissance of Indiana Department of Highways Project: S-883(4) State Road 10 to State Road 110, Newton and Jasper Counties, Indiana.* IN State Highway Commission, Muncie, Indiana.
Farrar, John
2016 *The History and Art of Shotshells*. Shotgun World, http://www.shotgunworld.com/bbs/viewtopic.php?t=71330, accessed October 25, 2016.
Faulkner, Charles H.
1972 The Late Prehistoric Occupation of Northwestern Indiana: A Study of the Upper Mississippi Cultures of the Kankakee Valley. *Indiana Historical Society* 5(1):13-222. Indianapolis, Indiana.

Find A Grave
2010 John Bennet Lyons, https://www.findagrave.com/cgi-bin/fg.cgi?page=gr&GSln=Lyons&GSfn=John&GSmn=B&GSbyrel=all&GSdyrel=all&GSst=17&GScnty=847&GScntry=4&GSob=n&GRid=59456070&df=all&, accessed April 27, 2017.
For Goodness Sake Productions
2012 *Everglades of the North: The Story of the Grand Kankakee Marsh*. DVD Movie, accessed November 2015.
Fritz, Gayle J.
1999 Gender and the Early Cultivation of Gourds in Eastern North America. *American Antiquity* 64(3):417-430.
Fullerton, David S.
1986 Stratigraphy and Correlation of Glacial Deposits from Indiana to New York and New Jersey. *Quaternary Science Reviews* 5:23-37.
Gammon, James R., and Shelby D. Gerking
1966 Fishes. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 401-425. Indiana Academy of Science, Indianapolis, Indiana.
General Land Office Surveys
1795−1840 Microfilm on file at Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.
Geo. A. Ogle & Co.
1916 *Standard Atlas of Newton County, Indiana: Including a Plat Book.* Geo. A. Ogle & Co. Chicago, Illinois.
Godden, Geoffrey
1964 *Encyclopedia of British Pottery and Porcelain Marks.* Bonanza Books, New York.
Gray, Henry H.
2000 *Physiographic Divisions of Indiana*. Indiana Geological Survey No. 61, Indiana University, Bloomington, Indiana.
Gray, Henry H., and Kim Sowder
2002 Indiana_Physiographic_Regions: Physiographic regions of Indiana (Indiana Geological Survey, 1:2,150,000, Polygon Shapefile) Geospatial_Data_Presentation_Form: Map. Indiana Geological Survey, Bloomington, Indiana.
Grayson, Donald K., and David J. Metzler
2003 A Requiem for North American Overkill. *Journal of Archaeological Science* 30:585-593. Oxford, United Kingdom.
Greber, N'omi, Richard S. Davis, and Ann S. DuFresne
1981 The Micro Component of the Ohio Hopewell Lithic Technology: Bladelets. *Annals New York Academy of Science*: 489-528.
Greenhouse, Barry D., William I. Roberts, John W. Matthews, Gerald P. Smith, Paula M. Crowley, and R. Diane Hammonds
2000 *Archaeological Survey and Testing Walstra Cellular Tower Site Demotte, Newton County, Indiana.* Greenhouse Consultants, Inc., Atlanta, Georgia.
2001a *Phase 1a Cultural Resources Reconnaissance Survey Whaley Farm Cellular Tower Site (SAC-1703A) Kentland, Newton County, Indiana.* Greenhouse Consultants, Inc., Atlanta, Georgia.

2001b *Phase 1a Cultural Resources Reconnaissance Survey Molson Farm Cellular Tower Site (SAC-1701A) Morocco, Newton County, Indiana.* Greenhouse Consultants, Inc., Atlanta, Georgia.

2001c *Phase 1a Cultural Resources Reconnaissance Survey Dorn Farm Cellular Tower Site (SAC-1700B) Lake Village, Newton County, Indiana.* Greenhouse Consultants, Inc., Atlanta, Georgia.

Greenlee, Diana M.

2002 Accounting for Subsistence Variation among Maize Farmers in Ohio Valley Prehistory. Ph.D. Dissertation, Department of Anthropology, University of Washington, Seattle, Washington.

Greenlee, Rachel J.

2007 *An Archaeological Records Check and Phase 1a Field Reconnaissance: A Proposed Bridge Replacement on SR 55 Over Moffitt Ditch (INDOT Des. No. 0301053) in Lincoln Township, Newton County, Indiana.* Cultural Resources Section, Indiana Department of Transportation, Indianapolis, Indiana.

Guernsey, E.Y.

1932 Indiana: the Influence of the Indian upon its history... (map). Department of Conservation, Indianapolis.

Gutshick, Raymond C.

1966 Bedrock Geology. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 1-20. Indiana Academy of Science, Indianapolis, Indiana.

Hale, Malcolm D.

1966 Lakes and Streams. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 91-99. Indiana Academy of Science, Indianapolis, Indiana.

Hansen, Michael C.

1995 *The Teays River: Ohio Department of Natural Resources.* Vol. GeoFacts No. 10, Ohio Department of Natural Resources, Division of Geological Survey, Columbus.

Hart, John P.

1999 Maize Agriculture Evolution in the Eastern Woodlands of North America: A Darwinian Perspective. *Journal of Archaeological Method and Theory* 6(2):137-180.

Heistand, Joseph E.

1951 *An Archaeological Report on Newton County Indiana*. Indiana Historical Bureau, Indianapolis, Indiana. Reprinted in 2005 by the Newton County Historical Society, Family History Division.

Helmkamp, Criss R.

2000 *Archaeological Records Check: INDOT Project STP-9956, Des. No. 9506860, Rehabilitation of CR 600E from SR 10 to CR 1200N, Newton County, Indiana.* Purdue University, West Lafayette, Indiana.

Helmkamp, Criss R., and Katherine S. Kanne

2001 *Archaeological Records Check: INDOT Project ST-3856(1), Des. No. 9704030, Small Structure Replacement on SR 16 over Unnamed Tributary of the Iroquois River, Newton County, Indiana.* Purdue University, West Lafayette, Indiana.

Helmkamp, Criss R., and Matthew S. Coon
1999 *Archaeological Records Check Reconnaissance Survey: INDOT Project ST-144-1(), Small Structure Replacement on US 24 Over Morrison Ditch, Des. No. 8824915, Newton County, Indiana.* Cultural Resource Management Program, Purdue University, West Lafayette, Indiana.
Holloway, Richard, and Vaughn M. Bryant, Jr.
1985 *Late-Quaternary Pollen Records and Vegetational History of the Great Lakes Region: United States and Canada. In Pollen Records of Late-Quaternary: North American Sediments* edited by Vaughn M. Bryant, Jr., and Richard G. Holloway. pp. 245-280 American Association of Stratigraphic Palynologists Foundation, Austin, Texas.
Holycross, David N.
1997 *Archaeological Records Review and Recommendations Project ST-5356(F), Des. 8657710, Replacement of Small Structure Over Weiss Ditch on SR 55, Iroquois Township, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.
2001 *Archaeological Records Review, Reconnaissance, and Recommendation, Project ST-4956(), Des. 9701700, SR 55 Bridge Replacement over Burgess Ditch, 1.30km South of US 24, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.
Horn, Johnathon C.
2005 *Historic Artifact Handbook.* Alpine Archaeological Consultants, Inc., Montrose, Colorado.
Hutchinson, Stacie
1986 *Archaeological Records Review Small Structure Replacement on State Road 16 (Project# RS-3856()) Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Intermountain Antiquities Computer System (IMACS)
1984 *Intermountain Antiquities Computer System (IMACS) User Guide*. Bureau of Land Management, Utah State Office, Salt Lake City, Utah.
1992 *Intermountain Antiquities Computer System (IMACS) User Guide*. Bureau of Land Management, Utah State Office, Salt Lake City, Utah.
2009 *Intermountain Antiquities Computer System (IMACS) User Guide*. Bureau of Land Management, Utah State Office, Salt Lake City, Utah.
Indiana Department of Natural Resources (IDNR)
2016a *Freshwater Mussels*. DNR. http://www.in.gov/dnr/fishwild/8684.htm Accessed September 26, 2016.
2016b *Iroquois River*. DNR. http://www.in.gov/dnr/outdoor/4485.htm Accessed December 15, 2016.
IndianaMAP
2015 Watersheds_8-Digit Hydrologic Units (U.S. Geologic Survey 1:24,000, Polygon Shapefile). IndianaMAP Online Database for Indiana. Indiana Geographic Information Council, Indianapolis, Indiana < http://maps.indiana.edu>.
Indiana Spatial Data Portal
2015 *Indiana University Indiana Spatial Data Portal (ISDP*). The Trustees of Indiana University, Indiana University, Bloomington, Indiana.
Jones, James R., and Amy L. Johnson
2008 *Early Peoples of Indiana*. Department of Natural Resources, Division of Historic Preservation and Archaeology, Indianapolis, Indiana.

Justice, Noel
1987 *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States*. Indiana University Press, Bloomington, Indiana.
Keene, David
2010 *Phase 1a Archaeological Investigations CNG Fueling Station and Pipelines, Fair Oaks, Indiana.* Archaeological Research, Inc., Chicago, Illinois.
Keene, David, and Margaret Hayes
2005 *Phase 1a Archaeological Investigations on the Proposed Efroysmson Ecosystem Restoration Project Near Enos, Newton County, Indiana.* Archaeological Research, Inc., Chicago, Illinois.
Kellar, James H.
1993 *Introduction to the Prehistory of Indiana*. Indiana Historical Society, Indianapolis.
King, R. Brad
2007 *Archaeological Field Reconnaissance Morocco Well Field Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.
2009 *Archaeological Field Reconnaissance Lake Village Fire Station Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.
2010a *Archaeological Field Reconnaissance Goodland Ditch Construction Newton County, Indiana*. Pioneer Consulting Services, Inc., Muncie, Indiana.
2010b *Archaeological Field Reconnaissance for a Open Ditch and Storm Sewer in Newton County, Indiana*. Pioneer Consulting Services, Muncie, Indiana.
2010c *Archaeological Field Reconnaissance Kentland Storm Sewer Project Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.
King, R. Brad, and Mitchell Zoll
2009 *Archaeological Field Reconnaissance Brook Fire Station Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.
King, Frances B.
1993 Climate, Culture, and Oneota Subsistence in Central Illinois. In, *Foraging and Farming in the Eastern Woodland*, edited by Margaret Scarry, pp. 232-254. University Press of Florida, Gainesville, Florida.
Koldehoff, Brad
1985 Southern Illinois Cherts: A Guide to Silicious Materials Exploited by Prehistoric Populations in Southern Illinois. Manuscript on File 1985-6, Center for Archaeological Investigations, Illinois.
Kooyman, Brian P.
2000 *Understanding Stone Tools and Archaeological Sites*. University of Calgary Press, Calgary, Alberta.
Kullen, Douglas, and Matt Greby
2003 *Phase I Archaeological Survey of the Van Kalker Property, Range Line, Lake County Indiana*. Allied Archaeology, Aurora, Illinois.
LaBelle, Jason M.
2003 Coffee Cans and Folsom Points: Why We Cannot Continue to Ignore the Artifact Collectors. In Ethical Issues in Archaeology, edited by Larry J. Zimmerman, Karen D. Vitelli, and Julie Hollowell-Zimmer, pp. 115-127. Walnut Creek, California.

Leeuwrik, Jamie M., Christine Thompson, Shelbi Long, Kevin C. Nolan, and Erin Steinwachs
2015 *An Archaeological Survey of Newton County: Enhancement of a Data Deficient Region.* Reports of Investigation 88, Vol. 1-2, edited by Christine Thompson and Kevin C. Nolan. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

Leeuwrik, Jamie M., Christine Thompson, and Kevin C. Nolan
2016 *An Archaeological Survey of Newton County: Enhancement of a Data Deficient Region, Part II.* Reports of Investigation 92, Vol. 1-2, edited by Christine Thompson and Kevin C. Nolan. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

Lindsey, Bill
2016 Glassmaking & Glassmakers. https://sha.org/bottle/glassmaking.htm#Top of Glassmaking Page. Accessed November 2, 2016.

Lockhart, Bill
2010 The Dating Game: In Pursuit of the Elusive Diamond G, March-April. Bottles and Extras: 56-60. https://sha.org/bottle/pdffiles/DiamondG.pdf Accessed Dec. 2, 2016.

Lockhart, Bill, and Russ Hoenig
2015 *The Bewildering Array of Owens-Illinois Glass Co. Logos and Codes*. https://sha.org/bottle/pdffiles/OwensIll_BLockhart.pdf. Accessed March 20, 2017.

Luedtke, Barbara E.
1992 *An Archaeologist's Guide to Chert and Flint.* Cotsen Institute of Archaeology Press, Los Angeles, CA.

Lumbis, Barbara J.
1984 *Archaeological Records Review Newton County Bridge No. 137 Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Lurie, Rochelle, Douglas Kullen, and Scott J. Demel
2009 Defining the Archaic in Northern Illinois. In, *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 755-785. State University of New York Press, Albany, New York.

Lyon, Marcus W.
1936 Mammals of Indiana. *The American Midland Naturalist* 17(1).

Macleod, Colin L., Shelbi Long, Christine Thompson, Kevin C. Nolan, and Erin Steinwachs
2015 *An Archaeological Survey of Jasper County: Enhancement of a Data Deficient Region.* Reports of Investigation 87, edited by Christine Thompson and Kevin C. Nolan. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

Mangold, William L.
2003 *Archaeological Investigations at Willow Slough Fish and Wildlife Area.* Indiana Division of Historic Preservation and Archaeology, Indianapolis, Indiana.
2009 The Middle Woodland Occupations of the Kankakee River Valley and Beyond. Unpublished Ph.D. dissertation, Indiana University, Bloomington, Indiana.

Maust, Lisa, and Donald Cochran
1989 *Historic Sites from the General land Office Surveys: An Indiana Survey*. Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

McAlpine, Thomas H., Jr.
2004 *Archaeological Records Review of J.C. Murphy Lake Dam, Newton County, Indiana.* Archaeological Resource Management Services, 04RC004, Muncie, Indiana.
McCord, Beth K., and Donald R. Cochran
2008 The Adena Complex: Identity and Context in East-central Indiana. In *Transitions: Archaic and Early Woodland Research in the Ohio Country,* edited by Martha P. Otto and Brian G. Redmond, pp. 334-359. Ohio University Press, Athens.
2015 *Native American Mounds and Earthworks of Indiana: A Statewide Inventory (A Preserve America Project).* Gray & Pape, Inc., Cincinnati, Ohio.
McCord, Beth K.
2004 *County Road 600 East and 700 North Newton County, Indiana Archaeological Field Reconnaissance.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
2007 *A Profile of the Till Plain Archaeology: A Survey of Hancock County, Indiana.* Reports of Investigation 71. Archaeological Resources Management Service, Ball State University, Muncie.
Melhorn, Wilton. N.
1997 Indiana on Ice: The Late Tertiary and Ice Age History of Indiana Landscapes. In *The Natural Heritage of Indiana,* edited by M.T. Jackson, pp. 15-27. Indiana University Press, Bloomington, Indiana.
Mensforth, Robert P.
2001 Warfare and Trophy Taking in the Archaic Period. In *Archaic Transitions in Ohio And Kentucky Prehistory,* edited by Olaf H. Prufer, Sara E. Pedde and Richard S. Meindl, Kent State University Press, Kent, Ohio.
Meyer, A.H.
1935 The Kankakee "Marsh" of Northern Indiana and Illinois. *Michigan Academy of Science, Arts, and Letters Papers* 12:359-396. Ann Arbor, Michigan.
Meyers, Eric
1997 An Endangered Natural Resource: Wetlands. In *The Natural Heritage of Indiana,* edited by M. T. Jackson, pp. 76. Indiana University Press, Bloomington, Indiana.
Miller, George L.
2000 Comments on Bill Adams Time Lag Paper, unpublished paper, https://lists.asu.edu/cgi-bin/wa?INDEX. Accessed March 2015.
Miller, Joseph R, Victoria Kiefer, and Kristin Kjeldsen
2012 *A Survey of Blackford County: A Data Enhancement Project.* Reports of Investigation 79, edited by Christine Keller. Applied Anthropology Laboratories, Ball State University, Muncie.
Miller, Rex K.
1941 McCain site, Dubois County, Indiana. *Indiana Historical Society* 2(1):1-60. Indianapolis, Indiana.

Miller, Shaun A.
2006 *An Archaeological Records Check: Proposed Small Structure Replacement on US 24 over Railroad Ditch (INDOT Des. No. 0200070) 0.66 miles west of US 41 of Kentland, Newton County, Indiana.* Cultural Resource Section, Indiana Department of Transportation, Indianapolis, Indiana.
2014 *An Archaeological Records Check for the US 41 Bridge Replacements (NB and SB Bridges) over Montgomery Ditch, 2.66 miles north of US 24, Newton County, Indiana (INDOT Des. No. 1172324 & 1173419).* INDOT, Cultural Resources Office, Indianapolis, Indiana.
Milton, Sherman A.
1966 Amphibians and Reptiles. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 426-451. Indiana Academy of Science, Indianapolis, Indiana.
Moffatt, David
2009 *An Archaeological Records Check and Reconnaissance: Two Proposed Small Structure Replacement on SR 14 (INDOT Des. No. 0400006 and 0400007) Newton County, Indiana*. Cultural Resources Section, Indiana Department of Transportation, Indianapolis Indiana.
2010 *Bridge Replacement on SR 10 over Beaver Lake Ditch near Lake Village in Newton County.* Cultural Resources Section Indiana Department of Transportation, Indianapolis, Indiana.
Montet-White, Anta
1968 *The Lithic Industries of the Illinois Valley in the Early and Middle Woodland Period.* The University of Michigan, Ann Arbor, Michigan.
Moodie, Roy L.
1929 *The Geological History of the Vertebrates of Indiana and their Position in the Ancient North American Faun*a. Publication 90, Indiana Department of Conservation, Indianapolis, Indiana.
Mumford, Russell F.
1966 Mammals. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 474-488. Indiana Academy of Science, Indianapolis, Indiana.
Munson, Patrick J.
1986 What Happened in the Archaic in the Midwestern United States? *Reviews in Anthropology* Fall 1986.
Munson, Patrick J., and Cheryl A. Munson
1972 Unfinished Triangular Projectile Points or "Humpbacked" Knives? *Pennsylvania Archaeologist* 42(3):31-36.
2004 Marion Culture (Early Woodland) Occupations in the Wabash and White River Valleys, Indiana and East-Central Illinois. In *Aboriginal Ritual and Economy in the Eastern Woodlands: Essays in Memory of Howard Dalton Winters*, edited by A. M. Cantwell, L. A. Conrad, and J. E. Reyman, pp. 133-146. Illinois State Museum Scientific Papers, Vol. XXX. Springfield. Kampsville Studies in Archaeology and History 5.
Munson, Cheryl A., Michael Strezewski, and C. Russell Stafford
2006 *Archaeological Investigations at the Prather Site, Clark County, Indiana: The 2005 Survey and Excavations.* Indiana University-Purdue University Fort Wayne, Fort Wayne, Indiana.

Murray, Emily, Jessie Moore, and Victoria Kiefer
2011 *A Survey of Montgomery County: A Data Enhancement Project.* Reports of Investigation 77, edited by Christine Keller. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.
Newman, James E.
1966 Bioclimate. In, *Natural Features of Indiana,* edited by Alton A. Lindsey, pp. 171-180. Indiana Academy of Science, Indianapolis, Indiana.
Newman, T. Stell
1970 A Dating Key for Post-Eighteenth Century Bottles. *Historic Archaeology* 4:70-75.
Newton County Historical Society
2017 *Welcome to Newton County*. INGENWEB. http://www.ingenweb.org/innewton/ Accessed March 28, 2017.
Noël Hume, Ivor
1969 *A Guide to Artifacts of Colonial America*. Alfred A. Knopf, New York.
Nolan, Kevin C., Mark F. Seeman, and James L. Theler
2007 A Quantitative Analysis of Skill and Efficiency: Hopewell Blade Production at the Turner Workshop, Hamilton County, Ohio. *Midcontinental Journal of Archaeology* 32(2):297-330.
Ohio Department of Transportation (ODOT)
1991 *Coding System Manual for the East Liverpool, Ohio Urban Archaeology Project*. Archaeology Series No. 1, Ohio Department of Transportation, Columbus, Ohio.
Oswald, Adrian, R. J. C. Hildyard, and R. G. Hughes
1982 *English Brown Stoneware 1670-1900*. Faber & Faber, London.
Pace, Robert E.
1984 *Additional Archaeological Reconnaissance, Borrow Pit "A", Newton County Bridge #79, Contract No. B-14196.* Indiana State University, Terre Haute, Indiana.
1987 *Archaeological Records Search and Reconnaissance, RS-4856(2), 14-56-7348(1760A), SR 14 Bridge Over Kent Ditch, Newton County.* Indiana State University, Terre Haute, Indiana.
Parsell, Veronica
2012 *Phase 1a Archaeological Records Review and Reconnaissance for the Colfax Substation in Newton County, Indiana.* Cardno JFNew, Indianapolis, Indiana.
Pedde, Sara E., and Olaf H. Prufer
2001 Holocene Vegetation and Climate Changes in the Ohio Region. In *Archaic Transitions in Ohio and Kentucky Prehistory,* edited by Olaf H. Prufer, Sara E. Pedde and Richard S. Meindl, Kent State University Press, Kent, Ohio.
Peebles, Christopher S., and Michael J. Shott
1981 *The Distribution and Abundance of Archaeological Sites in the River Raisin Watershed, Michigan*. Paper presented at the 46th Annual Meeting of the Society for American Archaeology, San Diego, California.
Petty, Robert O., and Marion T. Jackson
1966 Plant Communities. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 264-296. Indiana Academy of Science, Indianapolis, Indiana.
Pitblado, Bonnie L.
2014 An Argument for Ethical, Proactive, Archaeologist-Artifact Collector Collaboration. *American Antiquity* 79(3):385-400.

Plunkett, Jeffrey A.
2015 *Phase Ia Archaeological Field Reconnaissance: Proposed Hotel and Convention Center at Fair Oaks Farm in Newton County, Indiana*. Accidental Discoveries, Inc., Noblesville, Indiana.
2016 *Phase Ia Archaeological Field Reconnaissance: Proposed Water System Improvements Wastewater Treatment Plant Expansion Newton County, Indiana*. Accidental Discoveries, Inc., Noblesville, Indiana.
Prince, Hugh
1997 *Wetlands of the American Midwest: A Historical Geography of Changing Attitudes*. The University of Chicago Press, Chicago, Illinois.
Purtill, Matthew P.
2009 The Ohio Archaic: A Review. In *Archaic Societies: Diversity and Diversity across the Midcontinent*, edited by Thomas E. Emerson, Dale T. McElrath and Andrew C. Fortier, pp. 565-606. SUNY Press, Albany, New York.
Ramsey, John
1939 *American Pottery & Porcelain*. Hall, Cushman & Flint, Boston, Massachusetts.
Ray, Louis L.
1974 *Geomorphology and Quaternary Geology of the Glaciated Ohio River Valley: A Reconnaissance Study: a Study of the Geomorphic Development and Drainage Modifications Resulting from the Quaternary Glaciations of the Ohio River Valley, from Above Cincinnati, Ohio, to Louisville, Ky*. US Government Printing Office, Washington, DC.
Redmond, Brian G., and James R. Jones III
2003 *Facing the Final Millennium: Studies in the late Prehistory of Indian, A.D. 700 to 1700.* Indiana Department of Natural Resources, Division of Historic Preservation & Archaeology, Indianapolis, Indiana.
Redmond, Brian G., and Robert G. McCullough
2000 The Late Woodland to Late Prehistoric Occupations of Central Indiana. In, *Late Woodland Societies: Tradition and Transformation across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 643-683. University of Nebraska Press, Lincoln, Nebraska.
Richards, Ronald L., and John O. Whitaker, Jr.
1997 Indiana's Vertebrate Fauna: Origins and Change. In, *The Natural Heritage of Indiana*, edited by M.T. Jackson. Indiana University Press, Bloomington, Indiana.
Riley, Thomas J., Gregory R. Waltz, Charles J. Bareis, Andrew C. Fortier, and Kathryn E. Parker
1994 Accelerator Mass Spectrometry (AMS) Dates Confirm Early *Zea mays* in the Mississippi River Valley. *American Antiquity* 59:490–97.
Robertson, Elizabeth C.
2011 Reassessing Hypsithermal human-Environment Interaction on the Northern Plains. In, *Human Interaction with the Geosphere: The Geoarchaeological Perspective*, edited by Lucy Wilson. The Geological Society of London, Bath, United Kingdom.
Rosenberg, Seth A.
2004 *Roselawn Library Newton County, Indiana Archaeological Field Reconnaissance.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

Rourke-Jordan, V.A.M.
1979 *Archaeological Records Review Bridge No. 79 Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Ruby, Bret J.
1994 *An Archaeological Investigation of Crab Orchard Tradition Settlement Patterns in Southwestern Indiana*. Reports of Investigation 94-15. Glenn A. Black Laboratory of Archaeology, Indiana University, Bloomington, Indiana.
Schaal, Lawrence A.
1966 Climate. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 156-170. Indiana Academy of Science, Indianapolis, Indiana.
Schneider, Allen F.
1966 Physiography. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 40-56. Indiana Academy of Science, Indianapolis, Indiana.
Seeman, Mark F.
1979 *The Hopewell Interaction Sphere: The Evidence for Interregional Trade and Structural Complexity.* Indiana Historical Society, Indianapolis, Indiana.
1992 *Cultural Variability in Context: Woodland Settlements of the Mid-Ohio Valley*. The Kent State University Press, Kent, Ohio.
Settle, Katie, and Veronica Parsell
2016 *Interstate 65 Lane Expansion Project from State Road 10/Exit 230 to State Road 2/Exit 240, Jasper, Newton, and Lake Counties, Indiana*. Cardno JFNew, Walkerton, Indiana.
Shane, Linda
1976 Late-glacial and Postglacial Palynology and Chronology of Darke County, West Central Ohio. Unpublished Ph.D. Dissertation, Kent University, Kent, Ohio.
Shane, Linda C. K., Gordon G. Snyder, and Katherine H. Anderson
2001 Holocene Vegetation and Climate Changes in the Ohio Region. In, *Archaic Transitions in Ohio and Kentucky Prehistory*, edited by Olaf H. Prufer, Sara E. Pedde and Richard S. Meindl, Kent State University Press, Kent, Ohio.
Shott, Michael J.
1993 Spears, Darts, and Arrows: Late Woodland Hunting Techniques in the Upper Ohio Valley. *American Antiquity* 58(3):425-443.
2004 Representativity of the Midwestern Paleoindian Sample. *North American Archaeologist* 25(2):189-212.
2008 equal o nll roofht w ded I e vsbr cted: A Proposal for Conservation of Private Collections in American Archaeology. *Archaeological Record* 8:30-34.
Shurig, Donald G.
1970 *Engineering Soils Map of Wabash County, Indiana*. Purdue University, West Lafayette, Indiana.
Smith, Andrew, Rachel Klabacka, and Beth McCord
2009 *Archaeological Investigations in the Upper Wabash River Valley: A 2009 Survey in Huntington, Miami and Wabash Counties, Indiana*. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.
Smith, Bruce D., and Richard A. Yarnell
2009 Initial formation of an indigenous crop complex in eastern North America at 3800 BP. *Proceedings of the National Academy of Sciences, USA* 106(16):6561-6566.

Smith, Edward E.
1986 The Swan's Landing Site: An Early Archaic Lithic Reduction and Tool Manufacturing Site in Harrison County, Indiana. *Current Research in the Pleistocene* 4:71-72. College Station, Texas.
Stafford, Russell C.
1987 *Archaeological Records Search, Reconnaissance and Recommendations, Project RS-5356(), 55-56-7284, Bridge Carrying SR 55 Over Kankakee River, Newton-Lake County Line.* Indiana State University, Terre Haute, Indiana.
1988 *Archaeological Records Search, Reconnaissance and Recommendations, Goodland Wastewater Works Project, Newton County, Indiana.* Indiana State University, Terre Haute, Indiana.
Stafford, C. Russell, and Mark Cantin
2009 Archaic Period Chronology of Southern Indiana. In, *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 287-316. State University of New York Press, Albany, New York.
Stelle, Lenville
2001 *An Archaeological Guide to Historic Artifacts of the Upper Sangamon Basin*. Center f or Social Research, Parkland College, Champaign, Illinois.
Stelle, Lenville J., and Thomas P. Duggan
2003 *An Archaeological Guide to Chert Types of East-Central Illinois.* http://virtual.parkland.edu/lstelle1/len/biface_guide/chert/documents/chert_types.html
Stillwell, Larry N.
1999 *An Archaeological Field Reconnaissance of a Proposed Cellular Phone Tower (Project #SPECM-028) near Fair Oaks, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2000 *An Archaeological Field Reconnaissance of Two Proposed Housing Lots in Brook; Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2001 *An Archaeological Field Reconnaissance of a Proposed Cellular Phone Tower (Project #RT-736a) near Mount Ayr, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2002 *An Archaeological Field Reconnaissance of a Proposed Small Structure Replacement on US 24 over Hunter Ditch (Project #NH-14-1(), Des. 98010960) in Goodland, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2004 *An Archaeological Field Reconnaissance of a Proposed Expanded Right-of-Way for the SR 14 and I-65 Interchange (Project #IM-65-8(151), Des. 0200346) in Jasper and Newton Counties.* Archaeological Consultants of Ossian, Muncie, Indiana.
2005 *An Archaeological Field Reconnaissance of a Proposed Alteration of Montgomery Ditch Near Goodland, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2006 *An Archaeological Reconnaissance of the Proposed SR 10 Improvements (Des. 01006441) in Jasper and Newton Counties, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.
2010a *An Archaeological Field Reconnaissance of a Proposed Telecommunications Facility (Project #0017-647) in Goodland, Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.

2010b *An Archaeological Field Reconnaissance of a Proposed Telecommunications Facility (Project #0017-558) near Fair Oaks, Newton County, Indiana.* Archaeological Consultant of Ossian, Muncie, Indiana.

2013 *An Archaeological Field Reconnaissance of the Proposed Replacement of Bridge No. 127 (Des. No. 1297542) in Newton County, Indiana.* Archaeological Consultants of Ossian, Muncie, Indiana.

2015 *An Archaeological Field Reconnaissance Proposed Airport Taxiway and Apron at the Kentland Municipal Airport in Kentland, Newton County, Indiana*. Archaeological Consultants of Ossian, Muncie, Indiana.

Surface-Evans, Sarah

2015 Intra-Wetland Land Use in the Kankakee Marsh Region of Northwestern Indiana. *Midcontinental Journal of Archaeology* 40(2):166-189.

Surface-Evans, Sarah L., Donald H. Gaff, and R. Brian Somers

2005 *Phase II Subsurface Investigations of Five Multicomponent Prehistoric Archaeological Sites (12-La-84, 91, 92, 522, 526) in the Kankakee Marsh of Lake County, Indiana*. Indiana University-Purdue University Fort Wayne, Fort Wayne, Indiana.

Swartz, Ben K., Jr.

1981 *Indiana's Prehistoric Past*. Revised edition. Ball State University, Muncie, Indiana.

Swihart, Matthew R., and Kevin C. Nolan

2013 *Distributional Analysis of Archaeological Remains in the Upper White River Basin: An Archaeological Survey of Hamilton County, Indiana*. Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

2014 *Investigation of Fort Ancient Settlement and Community Patterns: An Archaeological Survey of Dearborn County, Indiana.* Applied Anthropology Laboratories, Ball State University, Muncie, Indiana.

Taylor, Amanda J.

2009 *Newton County Indiana Historic Sites and Structures Inventory.* Indiana Division of Historic Preservation and Archaeology, Indianapolis, Indiana.

Tod, Jack

1977 *The History of the Electrical Porcelain Industry in the United States*. *R-∞* website, 2016. Accessed November 14, 2016. http://www.r-infinity.com/Standard_Porcelain_Insulators/MainPage.htm

Toeg, Peter

2017. *Spark Plug*. How Products are Made, http://www.madehow.com/Volume-1/Spark-Plug.html, accessed January 12, 2017.

Tomak, Curtis H.

1984 *An Archaeological Records Check for Indiana Department of Highways Project 55-56-7284 in Newton and Lake Counties.* Indiana Department of Highways, Indianapolis, Indiana.

Trussel, Tim

2010 *Quick and Dirty Field Guide to Historic Artifacts*. Millersville University, Millersville, Pennsylvania.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA/NRCS)
2002 SOILS_STATSGO_IN: Soil Associations in Indiana (U.S. Dept. of Agriculture, 1:250,000, Polygon Shapefile). State Soil Geographic (STATSGO) data base for Indiana, 1994. U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas. <http://igs.indiana.edu/arcims/statewide/download.html>
2015a SOILS_SSURGO_IN: Soil Properties and Components in Indiana (U.S. Dept. of Agriculture,1:250,000, Polygon Shapefile). Soil Survey Geographic (SSURGO) data base for Indiana. U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, Texas. < http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>
2015b Illustrated Soil Taxonomy Guide, version 1.1. U.S. Department of Agriculture, Natural Resources Conservation Service, National Soil Survey Center, Lincoln, Nebraska.
Waguespack, Nicole M., and Todd A Surovell
2003 Clovis Hunting Strategies, or How to Make Out on Plentiful Resources. *American Antiquity*, 68(2):333-352.
Wappenstein, Rick
1999 *Phase Ia Archaeological Field reconnaissance INDOT Project No. STP-4956(), Des. No. 9701700; Bridge Replacement on SR 55 over Durgess Ditch, Approximately 1.3km (0.81 miles) South of US 24 in Newton County, Indiana.* Landmark Archaeological and Environmental Services, Inc., Sheridan, Indiana.
Waters, Nikki
1999 *Bridge #57, Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Wayne, William J.
1963 *Pleistocene Formations in Indiana*. Indiana Department of Conservation, Geological Survey Bulletin No. 25, Bloomington, Indiana.
1966 Ice and land. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 21-39. Indiana Academy of Science, Indianapolis, Indiana.
Wayne, William J., and James H. Zumberge
1983 Pleistocene Geology of Indiana and Michigan. In, *The Quaternary Geology of the United States: A Review Volume for the VII Congress of the International Association for Quaternary Research*, edited by H.E. Wright and D.G. Frey, pp. 63-84. Princeton University Press, Princeton, New Jersey.
Webster, J. Dan
1966 Birds. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 452-473. Indiana Academy of Science, Indianapolis, Indiana.
Wepler, William R.
1978 *Newton County Records Review for Proposed Improvements to Kentland Airport.* Department of Anthropology, Ball State University, Muncie, Indiana.
West, Bryan
1988 *Archaeological Field Reconnaissance I-65 Borrow Area Newton County, Indiana.* Archaeological Resources Management Service, Ball State University, Muncie, Indiana.
Westermeier, Scott
1997 *Morocco Sewage Treatment Plant Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.

White, Andrew A., Craig Arnold, and Joshua Wells
2007 *The Late Pleistocene and early Holocene Occupation of the Kankakee Region of Northwest Indiana.* Indiana University-Purdue University, Fort Wayne, Indiana.
Whitehead, Donald R.
1997 In the Glacier's Wake: Patterns of Vegetation Change Following Glaciation. In, *The Natural Heritage of Indiana*, edited by M.T. Jackson, pp. 102-109. Indiana University Press, Bloomington, Indiana.
Whitten, David
2016 *Glass Bottle Marks: Collecting History of the Glass Manufacturing* Industry. http://www.glassbottlemarks.com/. Accessed October 25, 2016.
Winters, Howard D.
1968 Value Systems and Trade Cycles of the Late Archaic in the Midwest. In *New Perspectives in Archaeology*, edited by S. R. Binford and L. R. Binford, pp. 175-221. Aldine, Chicago.
1969 *The Riverton Culture: A Second Millenium Occupation in the Central Wabash Valley*. Illinois State Museum, Springfield.
Woods, Alan J., James M. Omernik, C. Scott Brockman, Timothy D. Gerber, William D. Hosteter, and Sandra H. Azevedo
2003 Ecoregions of Indiana and Ohio. United State Environmental Protection Agency, Washington, D.C.
Worthpoint
2016 *Vintage 1940s Priscilla Ware Aluminum Cookware Catalog*. Worthpoint Corporation. https://www.worthpoint.com/worthopedia/vintage-1940s-priscilla-ware-aluminum-161414527. Accessed October 2016.
Yellowmap World Atlas
2015 Indiana Blank Map. Electronic document, http:www.yellowmaps.com/map/ Indiana-blank-map-93.htm, accessed March 2015.

Zoll, Mitchell K.
1991 *Archaeological Records Review Senior Citizen Apartment Project, Newton County, Indiana*. Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Zoll, Kevin, and R. Brad King
2010 *Archaeological Field Reconnaissance Kessler Ditch Reconstruction Newton County, Indiana.* Pioneer Consulting Services, Inc., Muncie, Indiana.
Zoll, Mitchell, and Scott Westermeier
1997 *Morocco Sewage Treatment Plant Newton County, Indiana*. Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Zunker, Kim
2001 *Newton County Library Site Newton County, Indiana.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.
Zunker, Kim, and Kimberly Nagle
2002 *Replacement at US 24 over O'Brien Ditch Newton County, Indiana, Archaeological Field Reconnaissance.* Archaeological Resources Management Services, Ball State University, Muncie, Indiana.