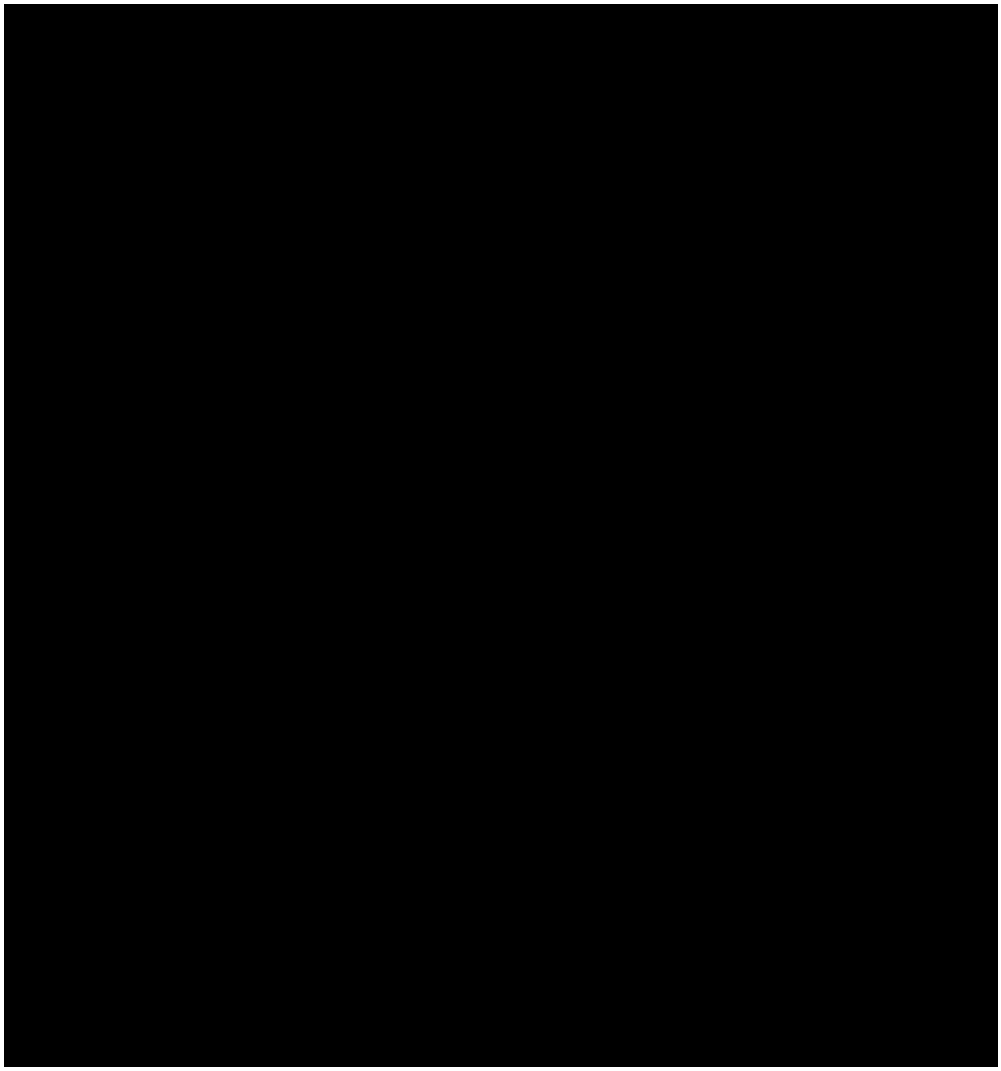
Investigation of Fort Ancient Settlement and Community Patterns: An Archaeological Survey of Dearborn County, Indiana



By: Matthew R. Swihart and Kevin C. Nolan
Edited by Kevin C. Nolan
Principal Investigators: Kevin C. Nolan, Robert A. Cook, and S. Homes Hogue
Reports of Investigation 83 Volume 1
April 2014

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

Investigation of Fort Ancient Settlement and Community Patterns: An Archaeological Survey of Dearborn County, Indiana

Grant # 13FFY03

By:
Matthew R. Swihart and Kevin C. Nolan
With Contributions by:
S. Homes Hogue
Robert A. Cook
Erin A. Steinwachs
M. LaTisha Neibarg
and
Kelsey J. Anderson

Edited by Kevin C. Nolan

Kevin C. Nolan, Robert A. Cook, and S. Homes Hogue
Principal Investigations

Reports of Investigations 83
Volume 1
April 2014

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 ASSISSTANCE

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, U.S. Department of the Interior, 1849 C Street, N.W., Washington, D.C. 20240.

ACKNOWLEDGEMENTS

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

We 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 Division of Historic Preservation and Archaeology (DHPA), Indiana Department of Natural Resources. Thanks especially to Cathy Draeger-Williams and Malia Vanaman of DHPA, and Chad Paskiewicz, Contracts and Grants, Ball State University, for their help in administering this grant.

This survey of Dearborn County, Indiana could not have been completed without the help of the various landowners that allowed us to survey their properties. A special thanks to [redacted] We are indebted to your kindness.

The field work and laboratory processing was completed by the authors and the following Ball State University students: Lauren Veach, Kelsey Anderson, Erin Steinwachs, Josh Donaldson, Oliver Firestone, Trey Hill, Erin Donovan, Nora Hillard, Kody Kirby, Faye Lichtsinn, John Monger, Caitlin Nichols, Eyn Philips, and Meghan Wolfe. John P. McCarthy assisted with identification and dating of historic artifacts. Thanks also Amber Yuellig for assistance in fieldwork and organizational logistics. Thank you for your help. We could not have completed this project without the help of all these individuals and many more unnamed.

ABSTRACT

The Applied Anthropology Laboratories (AAL) of Ball State University conducted an archaeological reconnaissance and reinvestigation project for archaeological materials in Dearborn County, Indiana, for an FY2013 Historic Preservation Fund Grant (Grant 13FFY03). The focus of this Historic Preservation Fund Grant project was three-fold. First, this research targeted Dearborn County, Indiana, specifically focusing on Late Prehistoric period (cf. Fort Ancient) settlement and community organization patterns. AAL targeted previously identified Late Woodland and Late Prehistoric archaeological sites for pedestrian survey, soil phosphate, and geophysical investigations. Second, AAL attempted to identify new archaeological sites through pedestrian survey of agricultural fields in the county. Third, AAL attempted to reinvestigate five archaeological sites (12D200 and 12D272 in [redacted] Township and 12D202, 12D203, and 12D205 in [redacted] Township) for the purpose of data correction and enhancement.

Approximately 345.67 acres (139.89 ha) of agricultural land underwent pedestrian survey, encountering 50 archaeological sites (5 reinvestigated sites, and 45 newly defined sites) and 12,363 artifacts. Sites 12D45, 12D396, and 12D480 were subjected to soils (chemical and geophysical) analysis (24.5 acres, 9.91 ha) revealing new details of community organization. The project recovered 12,297 prehistoric artifacts and 66 historic artifacts from the ten survey areas that underwent pedestrian survey. Multiple cultural periods are represented in the artifact assemblage recovered from pedestrian surveys, including diagnostics of the Middle Archaic, Middle Woodland, Late Woodland, and Late Prehistoric. Multiple cultural periods are represented in landowner collections obtained for this project as well. These include the Early Archaic, Middle Archaic, Late Archaic, Terminal Archaic, Early Woodland, Middle Woodland, Late Woodland, and Late Prehistoric. Artifact assemblages from pedestrian survey and landowner collections both contain historic artifacts. Overall, the average site density recorded for the project is one archaeological site per 7.18 acres (0.14 sites/acre). Excluding SA2, this overall site density becomes one archaeological site per 8.60 acres. Density for survey areas within the Uplands is one archaeological site per 31.54 acres. Density for survey areas within the lowlands is one archaeological site per 1.84 acres. The average artifact density for this project is one artifact per 0.03 acres (34.42 artifacts/acre). When excluding SA2, this average artifact density is one artifact per 1.33 acres (0.75 artifacts/acre).

Of all the sites from this project, a total of nine are recommended as potentially eligible for Indiana Register of Historic Sites and Structures (IRHSS) and the National Register of Historic Places (NRHP).

Table of Contents

TABLE OF TABLES

TABLE OF FIGURES

INTRODUCTION

By Matthew Swihart

In the fall of 2013 through the spring of 2014, the Applied Anthropology Laboratories (AAL) conducted an FY2013 Historic Preservation Fund Grant project for Dearborn County, Indiana. Many areas of Dearborn County are currently undergoing rapid development, necessitating that the cultural resources of the area, both historic and prehistoric, be documented before further damage to archaeological sites and features occurs. With this in mind, the primary goals of this project can be narrowed even further to that of the transitory period between the Late Woodland period and the Late Prehistoric period. At the beginning of this project only sixteen well-known Fort Ancient village sites had been documented in Dearborn County. Of these sixteen sites, very few had been systematically investigated. This has created a considerable void in the data needed to fully understand the development of the Late Prehistoric Fort Ancient in southeastern Indiana (see Moore and Raymer in press). In order to fill this gap, we focus on the Late Woodland to Late Prehistoric transition period and the early formations of the Late Prehistoric Fort Ancient in Dearborn County, with specific attention paid to contextualizing communities from the White River (Oliver Phase) and the Miami drainage in Ohio (Anderson Phase).

The project consisted of 345.67 acres (139.89ha) of pedestrian survey of ten parcels of land, as well as 24.5 acres (9.91 ha) of soil phosphate surveys of three parcels of land. This survey is the second Historic Preservation Fund project conducted by the AAL (formerly Applied Archaeology Laboratories) to include soil phosphate and magnetic susceptibility analysis. These analyses have been included in this project in order to visually delineate inter- and intra-site activity patterns of Fort Ancient sites in Dearborn County. The soil analyses were conducted by Dr. Kevin C. Nolan, Mat Swihart, and Kelsey Anderson. All pedestrian surveys, with the exception of Survey Areas 6 through 8, were conducted under the supervision of Nolan with the help of various undergraduate and graduate students under the employ of Ball State University's AAL. Survey Areas 6 through 8 were conducted under the supervision of Mrs. Amber Yuellig.

The following research questions guided this project:

1. What is the nature of the Late Woodland and Fort Ancient cultures in Dearborn County?
    a. How are communities structured?
    b. What are the interaction patterns with other regions?

2. What are the settlement patterns for different cultural contexts?
    a. Specifically, how are the Fort Ancient occupations distributed across the environment in Dearborn County?

3. What is the cultural chronology for Dearborn County?

4. What are the densities and distributions of archaeological sites on the various landforms within the county?

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

6. Is prehistoric occupation more extensive and/or more intensive at the ecotones between the environmental zones?

BACKGROUND

By Matthew Swihart, Kevin C. Nolan, and Robert A. Cook

In order to properly contextualize the archaeological materials recovered during this project, a review of multiple sets of background data was conducted. The background information presented in this report includes environmental, historical and archaeological information concerning Dearborn County, Indiana.

Location

The project areas are located in Dearborn County (Figure 1). Within Indiana Dearborn County is bordered to the south by Ohio County, to the west by Ripley County, and to the north by Franklin County. To the southeast and east Dearborn is bordered by Boone County, Kentucky, and Hamilton and Butler Counties in Ohio, respectively. The research universe is approximately 196,779.28 acres (79,633.75 ha) in size. As this our aim is reinvestigating known archaeological sites of Late Woodland to Late Prehistoric age, the targeted areas of this project fall where these known sites occur. This happens to correspond the most with the south and eastern parts of the county (Figure 2).

Geology

The bedrock geology of Dearborn County is entirely composed of Ordovician rock (Gutschick 1966:3, 5). Specifically, the bedrock geology of Dearborn County is composed of Upper Ordovician rocks, which predominately consist of shales and limestones (Cantin 2008:6).

There are no known outcrops of any chert source within Dearborn County. However, there are known chert outcrops in the counties bordering Dearborn County directly to the north in Franklin County and directly to the west in Ripley County. These are shown as being as being the same outcrop of Laurel chert (Cantin 2008:9). Slightly overlapping with this outcrop directly west is an outcrop of Jeffersonville chert in Jennings, Decatur, and Jefferson Counties (Cantin 2008:9). An outcrop of Brassfield chert is shown located in the area of Butler and Preble counties to the east in the state of Ohio (Vickery 1996). Also in Preble County, Ohio is an outcrop of Laurel chert (Mullett 2009). There are no significant outcrops of chert to the south of Dearborn County in Kentucky.

Figure 1: Location of Dearborn County within Indiana

Glacial History

Modern Indiana has been shaped by the cumulative effects of three glaciations: the Kansan, Illinoian, and the Wisconsin glacial episodes (Shurig 1970:6; see Figure 1). The glaciers were formed in the upland east area near the Hudson Bay and spread out across the North

American continent, reaching its farthest 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 migration brought with it tons of glacial drift that resurfaced the face 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.

The Kansan Age glaciation was the first to impact Indiana and dates from approximately 350,000 to 400,000 years ago (Melhorn 1997:18). It extended southward towards the Scottsburg Lowland. The glaciation was responsible for the formation of the Ohio River. The pre-glacial Teays River valley was the main drainage system across the country stretching from North Carolina to Illinois. The waterway was dammed in western Ohio by the encroaching glacier and forced to find alternative outlets. The drainage was diverted to what is now the Ohio River (Shurig 1970:6). The Kansan glaciation was also responsible for some of the deepest valley-cutting during the Ice Age and deposited roughly 75 to 100 feet of glacial drift (Wayne 1966:32).

Glaciations are followed by years of warming, which result in differences in fossils and soil deposits. The differences make it possible to clearly delineate various glacial episodes. The Yarmouth Age was the warming period that followed the Kansan Age and lasted for 200,000 years (Melhorn 1997:18); it was later followed by the second glacial episode, the Illinoian Age.

The Illinoian Age began 125,000 years ago (Wayne 1966:32). This glaciation delved farthest into the Northern Hemisphere. The glacier margin fluctuated three times from its origin in the Lake Michigan Lowland to just south of the 38th parallel (Wayne 1966:33). Each fluctuation resulted in distinct till coloration as well as types of fossils present. The warming period known as the Sanagon Age preceded this glaciation (Wayne 1966:34).

Finally, the Wisconsin Age, began its encroachment upon Indiana from the northeast 70,000 years ago and produced the Trafalgar Formation, made up of the deposits from the Crawfordsville Moraine and Shelbyville Moraine (Wayne 1966:34). The Wisconsin glaciation represents the last major glaciation.

Dearborn County is part of the Butlerville Till Member of the Jessup Formation. The Jessup Formation was deposited during the Illinoian Age of glaciation. Dearborn County also contains very small portions of lacustrine facies from the Atherton Formation as well as a very small portion of Martinsville Formation, represented by an accumulation of non-glacial sediment that began with the melting of glacial ice in the region (Wayne 1966:37).

Physiography

Dearborn County is almost entirely located within the physiographic region known as the Dearborn Upland, with a very small portion of the county also being located within the Muscatatuck Plateau (Gray and Sowder 2002; Figure 3). The Dearborn Upland is "…a dissected plateau north and west of the Ohio River" and "remnants are well preserved away from the main streams" (Schneider 1966:42-43). Traveling further from the main streams are areas considered to be unmodified broad plains (Schneider 1966:43). In areas near the main streams, the rivers can dissect the uplands to the point of complete destruction (Schneider 1966:43). West of the Dearborn Upland region is the Muscatatuck Plateau, also referred to as the "Muscatatuck Regional Slope" (Schneider 1966:43). This area is considered to be a "structural plain or stripped surface on the rather resistant westward-dipping Silurian and Devonian carbonate rocks that lie beneath" (Schneider 1966:43).

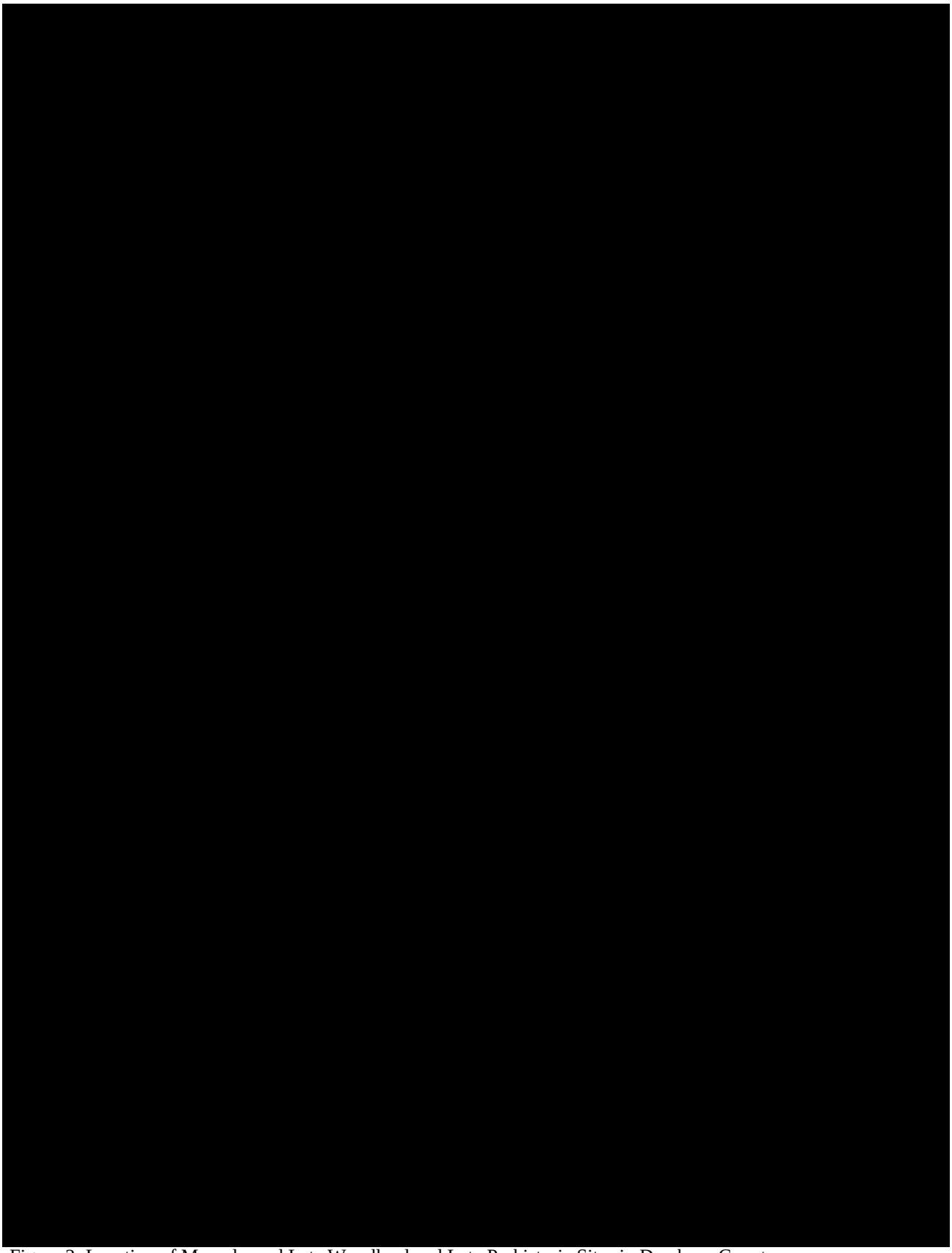


Figure 2: Location of Mounds, and Late Woodland and Late Prehistoric Sites in Dearborn County.

These two physiographic units are also the two bedrock physiographic units that Dearborn County is located on (Schneider 1966:42-44). All of the previous information applies to these bedrock physiographic units, with the addition that the Dearborn Upland is "underlain by virtually flat-lying limestones and shales of late Ordovician age that outcrop along the crest of the Cincinnati Arch" (Schneider 1966:42-43).

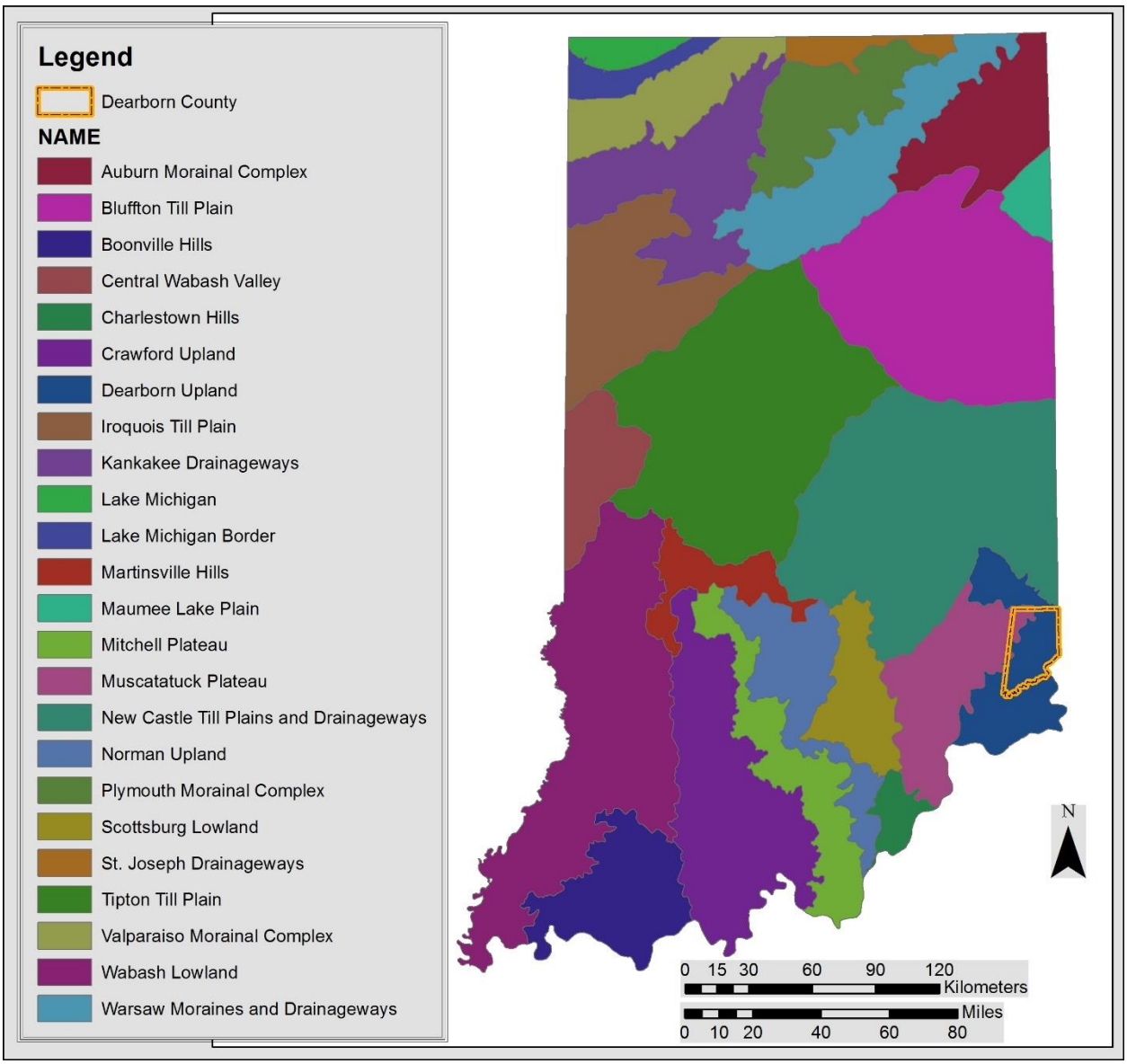


Figure 3: Physiographic Zones of Indiana

Soils

The soils in Dearborn County are composed of a mix of parent material, including loess over pre-Wisconsin glacial till, pre-Wisconsin till, outwash, lacustrine, and alluvial deposits.

There are six general soil map units (associations) in Dearborn County (Soil Survey Staff et al. 2013): Cincinnati-Bonnell-Rossmoyne, Cobbsfork-Avonburg-Rossmoyne, Eden-Switzerland-Edenton, Huntington-Newark-Woodmere, Miami-Miamian-Xenia, and Sawmill-Lawson-Genesee (Figure 4). Nickell (1981:3-4) describes the soils as highly variable in depth from shallow upland soils over Ordovician bedrock, to deep till covered in loess, to very deep and young alluvial lowlands. The county ranges from nearly level to extremely steep covering over a 300 foot range, often in very short distances (Figure 5). The majority of the county is, especially the uplands, composed of poorly drained soils (Figure 6). Many of the upland soils are formed in extensive loess deposits (Figure 7). Floodplain soils (Sawmill-Lawson-Genesse) are generally well drained and productive. The Cincinnati-Bonnell-Rossmoyne series are formed in the uplands in underlying glacial till as well as in loess (Nickell 1981:7). They are considered to be deep and "well drained and moderately well drained" (Nickell 1981:7). Some of the soils listed in Figure 6 correspond with the first soils series report generated by Nickell under different names. Eden-Switzerland-Edenton corresponds with the Eden-Carmel association, which is stated to form in uplands within "residuum or in loess and residuum of interbedded limestone and calcareous shale" (Nickell 1981:8). Huntington-Newark-Woodmere associations correspond with Huntington-Markland-Ockley associations, which are stated to form in terraces and bottomlands "in silty and loamy alluvium, in loess over clayey lacustrine material, or in loess and loamy outwash material over sand and gravel" (Nickell 1981:5-6). Cobbsfork-Avonburg-Rossmoyne soils correspond to Avonburg-Clermont soils, which form on uplands. They form in glacial till and loess and are poorly drained or somewhat poorly drained (Nickell 1981:6).

The soils within our survey areas range from level to as much as 25%-50% slopes, as shown in Figure 5 below. They also range from poorly drained to excessively drained as shown in Figure 6 below. There is also a range of parent material of the soils within our survey areas, as to be expected. These include parent material of loamy alluvium, silty over loamy alluvium, and loess over clayey deposits. These can be seen in Figure 7 below.

Figure 4: Dearborn County Soil Associations

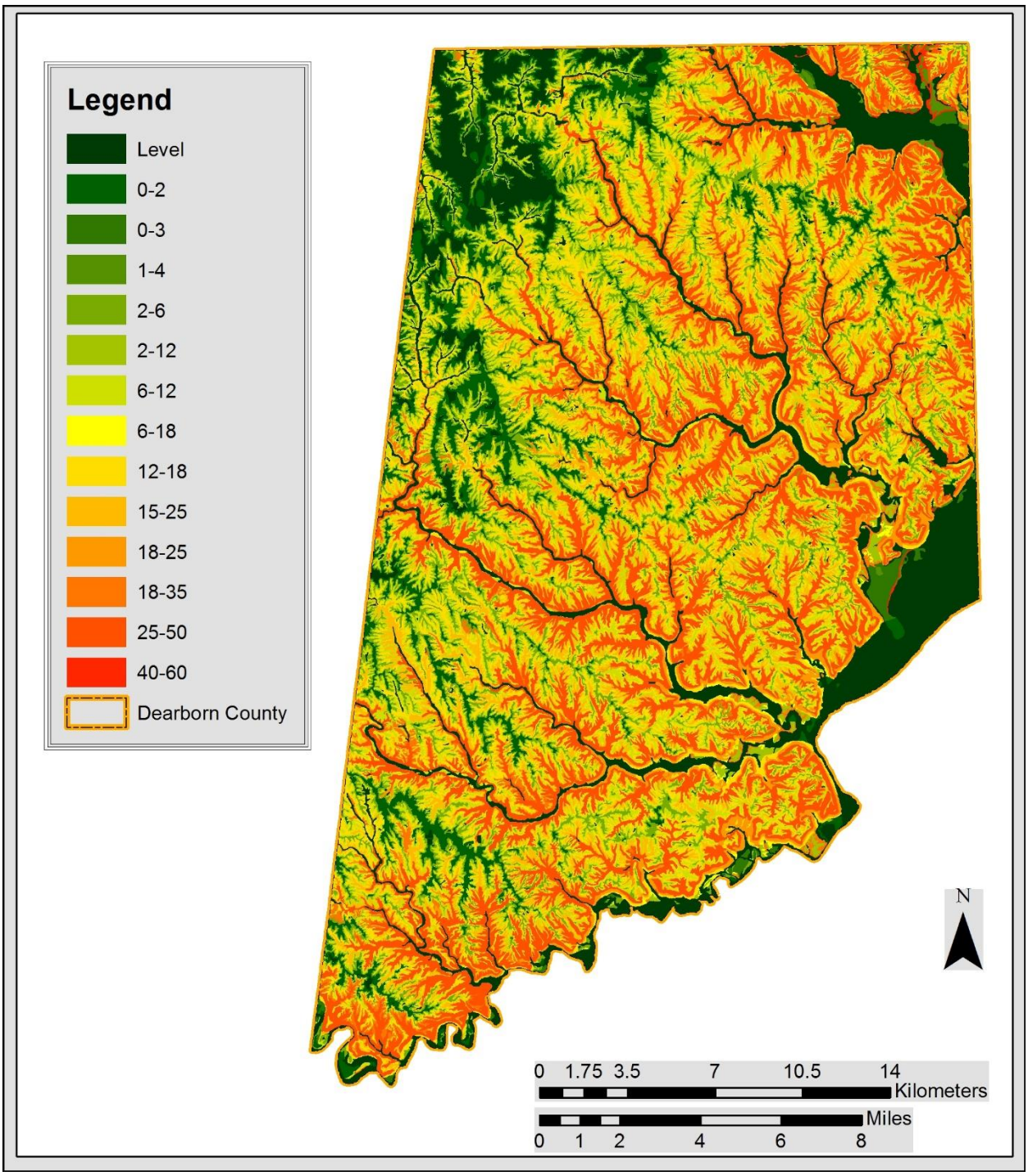


Figure 5: Slope Class of Soil Map Units.

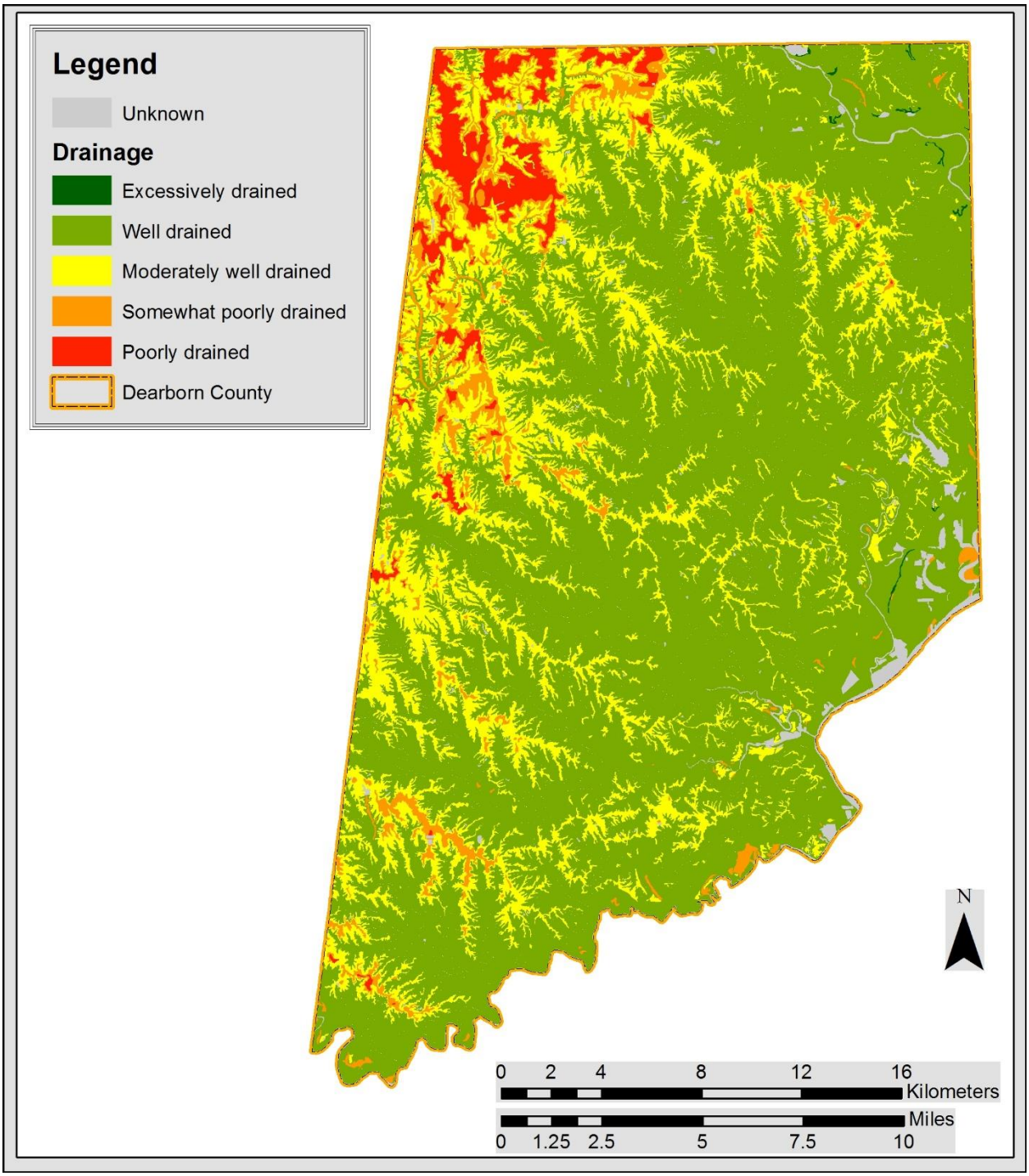


Figure 6: Drainage Class of Soil Map Units

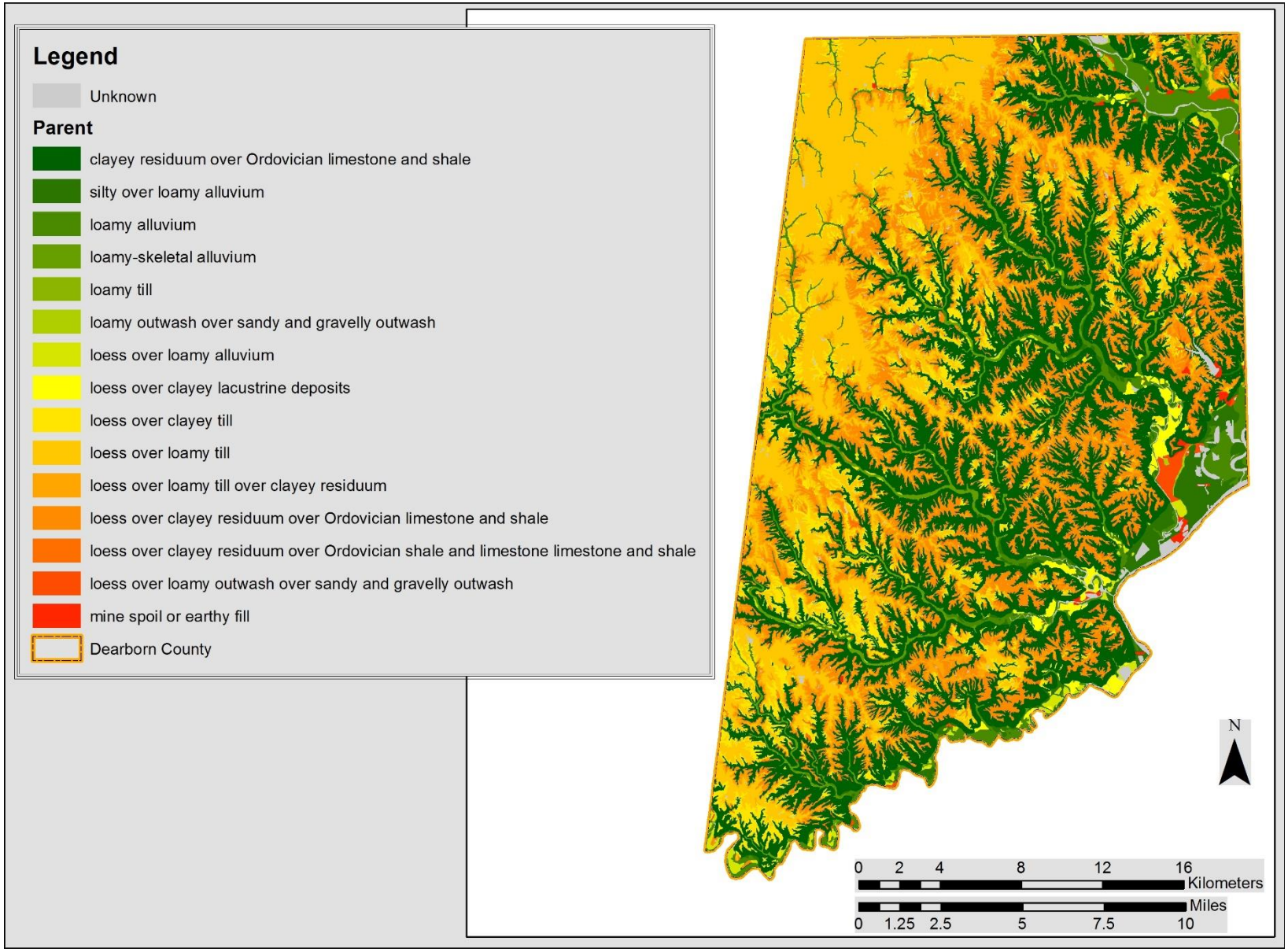


Figure 7: Parent Material of Soil Map Units

Table 1: Soil Map Units of Dearborn County

Map Unit Symbol	Map Unit Name	Acres in AOI	% AOI	Landform	Drainage Class	P. 2-D	P. 3-D	Parent Mat.	Freq. Flood	Freq. Pond
AvA	Avonburg silt loam, 0 to 2 percent slopes	7,206.90	3.70%	Till Plains	Somewhat Poor	Summit	Interfluve	Loess over loamy till	None	None
BaA	Bartle silt loam, 0 to 3 percent slopes	205.2	0.10%	Stream Terraces	Somewhat Poor	Summit	Tread	Loess over loamy alluvium	None	None
BeC2	Bonnell silt loam, 6 to 12 percent slopes, eroded	1,014.70	0.50%	Till Plains	Well	Shoulder, Backslope	Side Slope	Loess over clayey till	None	None
BeC3	Bonnell silt loam, 6 to 12 percent slopes, severely eroded	243.8	0.10%	Till Plains	Well	Shoulder, Backslope	Side Slope	Loess over clayey till	None	None
BeD2	Bonnell silt loam, 12 to 18 percent slopes, eroded	4,002.70	2.00%	Till Plains	Well	Backslope	Side Slope	Loess over clayey till	None	None
BeD3	Bonnell silt loam, 12 to 18 percent slopes, severely eroded	5,676.00	2.90%	Till Plains	Well	Backslope	Side Slope	Loess over clayey till	None	None
BeE	Bonnell silt loam, 18 to 35 percent slopes	2,891.80	1.50%	Till Plains	Well	Backslope	Side Slope	Loess over clayey till	None	None
CaC2	Carmel silt loam, 6 to 12 percent slopes, eroded	167.7	0.10%	Hills	Well	Shoulder, Backslope	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
CaD2	Carmel silt loam, 12 to 18 percent slopes, eroded	7,385.10	3.80%	Hills	Well	Shoulder, Backslope	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
CaE2	Carmel silt loam, 18 to 25 percent slopes, eroded	1,267.30	0.60%	Hills	Well	Backslope	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
CcC3	Carmel silty clay loam, 6 to 12 percent slopes, severely eroded	160.4	0.10%	Hills	Well	Shoulder, Backslope	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
CcD3	Carmel silty clay loam, 12 to 18 percent slopes, severely eroded	13,132.90	6.70%	Hills	Well	Backslope, Shoulder	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
CcE3	Carmel silty clay loam, 18 to 25 percent slopes, severely eroded	732.3	0.40%	Hills	Well	Shoulder, Backslope	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
Ch	Chagrin silt loam, frequently flooded	1,521.50	0.80%	Flood Plains	Well	Unlisted	Unlisted	Loamy Alluvium	Frequent	None
CnB2	Cincinnati silt loam, 2 to 6 percent slopes, eroded	6,383.20	3.20%	Till Plains	Moderately Well	Shoulder, Summit	Side Slope	Loess over loamy till	None	None
CnC2	Cincinnati silt loam, 6 to 12 percent slopes, eroded	3,513.30	1.80%	Till Plains	Moderately Well	Shoulder, Backslope	Side Slope	Loess over loamy till	None	None
CnC3	Cincinnati silt loam, 6 to 12 percent slopes, severely eroded	2,447.90	1.20%	Till Plains	Moderately Well	Backslope, Shoulder	Side Slope	Loess over loamy till	None	None
Ct	Clermont silt loam	5,315.40	2.70%	Depressions on Till Plains	Poor	Summit	Interfluve, talf	Loess over loamy till	None	None
De	Dearborn silt loam, frequently flooded	2,607.40	1.30%	Flood Plains	Well	Unlisted	Unlisted	Loamy-skeletal alluvium	Frequent	None
Df	Dearborn channery loam, frequently flooded	1,762.80	0.90%	Flood Plains	Well	Unlisted	Unlisted	Loamy-skeletal alluvium	Frequent	None
Du	Dumps	144.6	0.10%	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted

Map Unit Symbol	Map Unit Name	Acres in AOI	% AOI	Landform	Drainage Class	P. 2-D	P. 3-D	Parent Mat.	Freq. Flood	Freq. Pond
EcE2	Eden silty clay loam, 15 to 25 percent slopes, eroded	8,364.60	4.30%	Hills	Well	Backslope	Side Slope	Clayey residumm over ordovician limestone and shale	None	None
EdE3	Eden flaggy silty clay loam, 15 to 25 percent slopes, severely eroded	13,351.20	6.80%	Hills	Well	Backslope	Side Slope	Clayey residumm over ordovician limestone and shale	None	None
EdF	Eden flaggy silty clay, 25 to 50 percent slopes	43,613.60	22.20%	Hills	Well	Backslope	Side Slope	Clayey residumm over ordovician limestone and shale	None	None
EkA	Elkinsville silt loam, 0 to 2 percent slopes	218.5	0.10%	Stream Terraces	Well	Summit	Tread	Loess over loamy alluvium	Rare	None
EkB2	Elkinsville silt loam, 2 to 6 percent slopes, eroded	213.4	0.10%	Stream Terraces	Well	Shoulder, Summit	Tread	Loess over loamy alluvium	Rare	None
EkC2	Elkinsville silt loam, 6 to 12 percent slopes, eroded	220.6	0.10%	Stream Terraces	Well	Backslope	Riser	Loess over loamy alluvium	Rare	None
FoB2	Fox silt loam, 1 to 4 percent slopes, eroded	278.7	0.10%	Stream Terraces	Well	Backslope, Summit	Riser	Loamy outwast over sandy and gravelly outwash	None	None
HcG	Hennepin loam, 40 to 60 percent slopes	191.3	0.10%	Till Plains	Well	Backslope	Side Slope	Loamy till	None	None
Hu	Huntington silt loam, frequently flooded	3,661.00	1.90%	Flood Plains, Natural Levees	Well	Unlisted	Unlisted	Silty over loamy alluvium	Frequent	None
Ju	Jules silt loam, frequently flooded	2,834.80	1.40%	Natural Levees, Flood Plains	Well	Unlisted	Unlisted	Loamy alluvium	Frequent	None
MaB2	Markland silt loam, 2 to 12 percent slopes, eroded	779.8	0.40%	Lake Plains	Moderately Well	Summit, Shoulder	Riser	Loess over clayey lacustrine deposits	None	None
MaF2	Markland silt loam, 18 to 35 percent slopes, eroded	698.9	0.40%	Lake Plains	Well	Backslope	Riser	Loess over clayey lacustrine deposits	None	None
MbD3	Markland silty clay loam, 6 to 18 percent slopes, severely eroded	306.7	0.20%	Lake Plains	Well	Shoulder, Backslope	Riser	Loess over clayey lacustrine deposits	None	None
Ne	Newark silt loam, frequently flooded	343.1	0.20%	Flood Plains	Somewhat Poor	Unlisted	Unlisted	Silty over loamy alluvium	Frequent	None
OcA	Ockley silt loam, 0 to 3 percent slopes	768.9	0.40%	Stream Terraces	Well	Summit	Tread	Loess over loamy outwash over sandy and gravelly outwash	None	None
Omz	Orthents, earthen dam	15.8	0.00%	Unlisted	Unlisted	Unlisted	Unlisted	Mine spoil or earthy fill	None	None
Or	Orrville silt loam, frequently flooded	891.9	0.50%	Flood Plains	Somewhat Poor	Unlisted	Unlisted	Loamy Alluvium	Frequent	None
PaD2	Pate silty clay loam, 12 to 18 percent slopes, eroded	1,898.90	1.00%	Hills	Well	Backslope	Side Slope	Clayey residumm over ordovician limestone and shale	None	None
PaE2	Pate silty clay loam, 18 to 25 percent slopes, eroded	4,246.50	2.20%	Hills	Well	Backslope	Side Slope	Clayey residumm over ordovician limestone and shale	None	None
Pg	Pits, gravel	194.8	0.10%	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted
Ra	Rahm silt loam, occasionally flooded	166.5	0.10%	Flood-plain steps	Somewhat Poor	Unlisted	Unlisted	Loamy Alluvium	Occasional	None
RdG	Rodman sandy loam, 40 to 60 percent slopes	168.4	0.10%	Stream Terraces	Excessive	Backslope	Riser	Loamy outwast over sandy and gravelly outwash	None	None
RoA	Rossmoyne silt loam, 0 to 2 percent slopes	4,138.80	2.10%	Till Plains	Moderately Well	Summit	Interfluve	Loess over loamy till	None	None
RoB2	Rossmoyne silt loam, 2 to 6 percent slopes, eroded	6,366.60	3.20%	Till Plains	Moderately Well	Summit, Shoulder, Backslope	Side Slope	Loess over loamy till	None	None
RxB	Russell-Fincastle silt loams, 1 to 4 percent slopes	161	0.10%	Till Plains	Well	Backslope, Shoulder	Side Slope	Loess over loamy till	None	None
St	Stonelick sandy loam, frequently flooded	1,787.90	0.90%	Flood Plains	Well	Unlisted	Unlisted	Loamy Alluvium	Frequent	None

Map Unit Symbol	Map Unit Name	Acres in AOI	% AOI	Landform	Drainage Class	P. 2-D	P. 3-D	Parent Mat.	Freq. Flood	Freq. Pond
SwB2	Switzerland silt loam, 2 to 6 percent slopes, eroded	1,069.50	0.50%	Hills	Moderately Well	Shoulder, Summit	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
SwC2	Switzerland silt loam, 6 to 12 percent slopes, eroded	10,802.20	5.50%	Hills	Well	Backslope, Shoulder	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
SwC3	Switzerland silt loam, 6 to 12 percent slopes, severely eroded	1,976.90	1.00%	Hills	Well	Backslope, Shoulder	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
SwD2	Switzerland silt loam, 12 to 18 percent slopes, eroded	1,088.70	0.60%	Hills	Well	Backslope	Side Slope	Loess over clayey residuum over ordovician limestone and shale	None	None
Ud	Udorthents, loamy	467.1	0.20%	Unlisted	Unlisted	Unlisted	Unlisted	Mine spoil or earthy fill	None	None
W	Water	2,374.40	1.20%	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted	Unlisted
WbB2	Weisburg silt loam, 2 to 6 percent slopes, eroded	7,705.20	3.90%	Till Plains	Moderately Well	Shoulder, Summit	Side Slope	Loess over loamy till over clayey residuum	None	None
WbC2	Weisburg silt loam, 6 to 12 percent slopes, eroded	4,471.90	2.30%	Till Plains	Moderately Well	Shoulder, Backslope	Side Slope	Loess over loamy till over clayey residuum	None	None
WbC3	Weisburg silt loam, 6 to 12 percent slopes, severely eroded	2,916.20	1.50%	Till Plains	Moderately Well	Shoulder, Backslope	Side Slope	Loess over loamy till over clayey residuum	None	None
WhA	Wheeling silt loam, 0 to 2 percent slopes	250.9	0.10%	Stream Terraces	Well	Summit	Interfluve	Loess over loamy alluvium	None	None
	Totals for Area of Interest	196,788.10	1.00							

Water Resources

Dearborn County is occupied by three hydrological subbasins (HUC08, Figure 8; USDA-NRCS, USGS, and EPA 2010). The first is the Whitewater River basin, occupying the northeastern, eastern, and a small portion of the northwestern portions of the county. The second is the Middle Ohio – Laughery Creek basin, occupying the southwestern, southern, and middle portions of the county. The small remaining portion of the county is occupied by the Lower Great Miami. No survey areas for this project were within the Lower Great Miami. These three subbasins are located within the Great Miami and the Middle Ohio major watersheds (HUC04; USDA-NRCS, USGS and EPA 2010). In addition, the major watersheds that Dearborn County is located within have minor watersheds that follow the same boundaries. These are the Great Miami and Middle Ohio – Little Miami minor watersheds (HUC06; USDA-NRCS, USGS, and EPA 2010). Lastly, there are forty subwatersheds throughout Dearborn County. These subwatersheds are shown below in Figure 9 with the associated survey areas located within them.

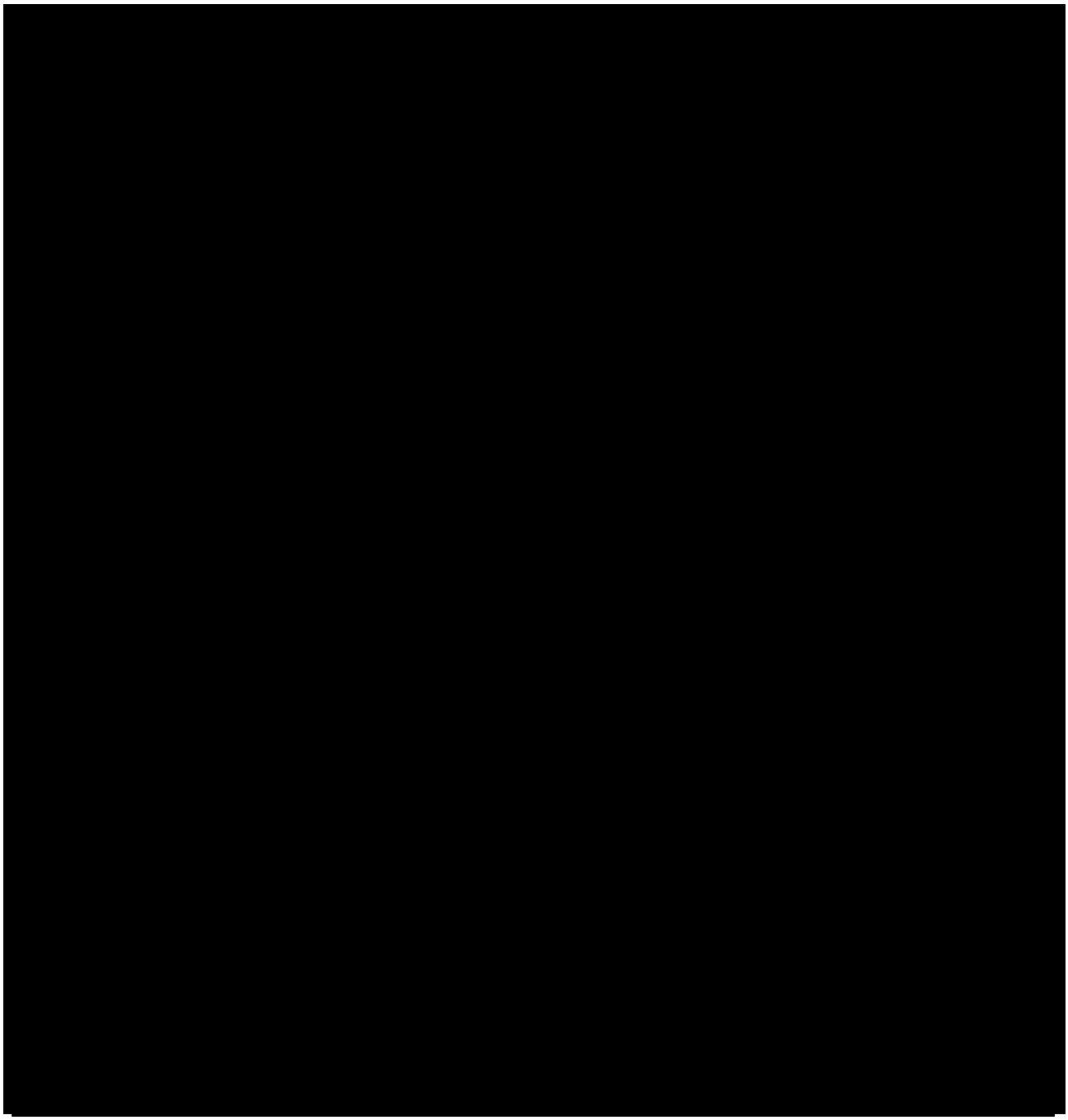


Figure 8: Watersheds of Dearborn County.

Figure 9: Subwatersheds of Dearborn County (HUC14)

Climate

In Dearborn County, as well as Indiana in general, the climate is variable throughout the year. This climate, with hot summers and freezing winters, is stated to vary on a yearly basis as well (Schaal 1966:165). Southern Indiana, compared to the rest of the state, does not experience snow cover nearly as much (Schaal 1966:165). It is also stated that along the Ohio River "the long term average of daily minimum air temperatures does not drop to freezing", which can be extended to portions of Dearborn County (Schaal 1966:165). Being further away from lakes, especially Lake Michigan, Dearborn County and southern Indiana in general are less susceptible to cloudiness than northern Indiana (Schaal 1966:166). Dearborn County and southern Indiana differ from the northern portions of the state in many other ways, including the south having a longer growing season, a higher evaporation rate, and a slightly higher rate of thunderstorms (Schaal 1966:167).

Dearborn County averages between 150-180 days without frost per year for its "frost-free" season (Newman 1966:172, Figure 50). Dearborn is within "Koppen's mesothermal (Caf) type meaning a warm temperature climate similar to those found in the South and East" (Newman 1966:171). This, coupled with the longer growing season, makes Dearborn County well suited for agriculture. Other factors specifically to Dearborn County affecting climate are what Newman (1966:174) refers to as "meso-scale climates", which are stated to be "controlled mainly be the wind". Other factors include "slope, forest cover, large buildings, large areas of concrete, major wind obstructions, etc." (Newman 1966:174). Dearborn County contains many significant river valleys, such as along the Ohio River, as well as elevated areas within the Muscatatuck Plateau. The slope created by these unique local features have effects on these "meso-scale climates" (Newman 1966:174). The large amount of forest cover in prehistoric times would also affect the more localized climates within the county.

Overall, the climate of Dearborn County would provide a habitat able to support a variety of resources for hunting and gathering among prehistoric natives. These resources will be explored in the following sections concerned with flora and fauna. The warm temperature climate of the county, coupled with the longer growing season, would also provide an area well suited for the adoption of maize-based agriculture in the Late Prehistoric.

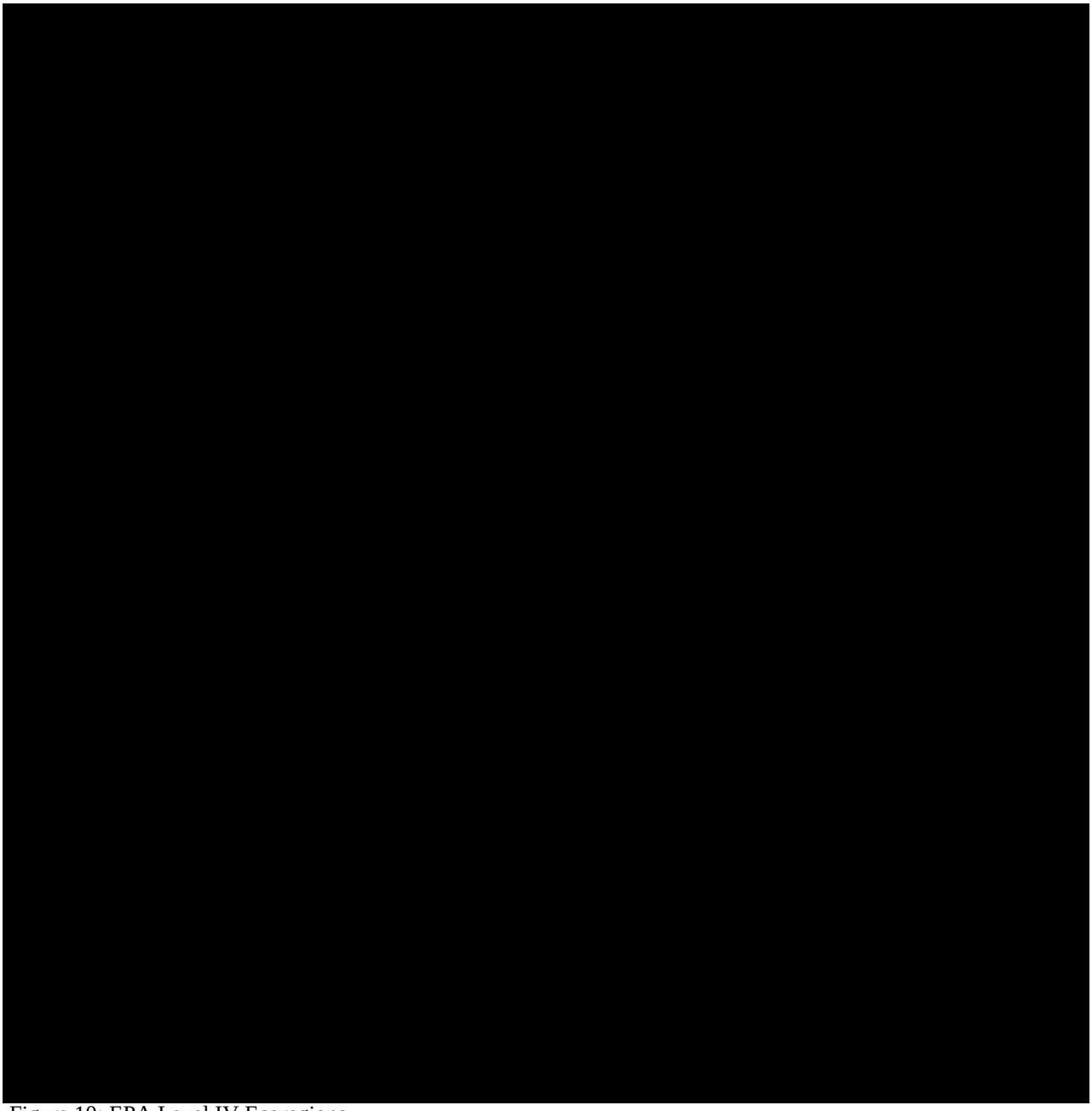


Figure 10: EPA Level IV Ecoregions

Biotic Communities

Flora

Dearborn County is within the Illinoian Drift, one of eight "Floral Areas of Indiana" defined by Petty and Jackson (1966:284). The range of variability in regards to presettlement vegetation zones within Dearborn County is high, containing three of the five zones defined by Petty and Jackson (1966:280). Dearborn County contains mixed forested areas, in which a wide variety of species share dominance (Petty and Jackson 1966:281). A significant portion of the county is within the Western Mesophytic Association, containing species such as Beech, Sugar

Maple, White Oak, Red Oak, White Ash, Tulip Poplar, Pignut Hickory, Black Gum, Shagbark Hickory, and Red Maple (Petty and Jackson 1966:281). The Oak-Hickory Association is also quite extensive in the county, containing species such as White oak, Black Oak, Red Oak, Pignut Hickory, Shagbark Hickory, and American Elm (Petty and Jackson 1966:287-289). The Beech-Maple Association is the third largest in the County, containing species such as Beech, Sugar Maple, Tulip Poplar, White Ash, Slippery Elm, American Elm, White Oak, Basswood, and Hickory (Petty and Jackson 1966:285-286). These lists are not exhaustive, yet provide examples of the wide variety of forest associations present in the county.

Fauna

The faunal arrangement greatly changed around 10,000 to 11,000 years ago with the extinction of many of the larger mammalian species. A rapidly changing climate combined with the introduction of humans resulted in a reorganization of biotic communities (Richards and Whitaker 1997:151). In 1816, an estimated 66 species of mammals 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 exterminated from Indiana and include 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 have been 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). The species 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).

Archaeological and Historical Background

Archaeological Background

Dearborn County has seen a relatively large number of Cultural Resource Management (CRM) investigations with over 250 documents logged in SHAARD. Following Swihart and Nolan (2013) we summarize the previous CRM investigation intensity by Civil Township in order to get a sense of the intensity of investigation and the relative abundance of archaeological resources over space. This is a quick tool to assess both the pace of development in an area and local density of archaeological resources at a coarse scale. Table 2 provides a summary of the frequency of CRM investigation by Civil Township and the relative frequency of positive investigations (#positive/total# investigations), and Figure 11 illustrates the distribution of investigation intensity. Figure 12 illustrates the distribution of the positive investigation ratio.

Figure 11: Frequency of Investigations by Civil Township in Dearborn County, Indiana. See Table 2 for citations.

Table 2: Summary of Previous CRM investigations by Civil Township in Dearborn County

Township	Surveys	Positive	Ratio	References
Caesar Creek	1	0	0	(Martin 1998)
Center	28	10	0.357143	(Anslinger 1990a; Anslinger 1993; Baltz 1985c; Beard 1990a; Beard 1990b; Beard 1990c; Carson 2004; Carson 2001; Cochran 1995; Duddleson 2009; Jones 1981; Kearney 1992a; Martin 2002; McCord 2008; Miller 2006; Munson 1980; Nolan 2011a; O'Brien 1997b; Pirkl and O'Brien 1996; Plunkett 2005; Stafford 1995; Stillwell 2009; Tomak 1979; Tomak 1985; Tomak 1990; Whalen 2003; Zoll 1997; Zoll 2005)
Clay	10	1	0.1	(Adderley 2012b; Adderley 2012d; French 1990; McCullough 2007; Moffatt 2011; Pace 1982; Snell 2010; Stillwell 2010; Tomak 1978; Westermeier and Zoll 1997)
Harrison	15	4	0.266667	(Breetzke 2005; Brown 2008; Fabyan 1980; Hawkins 2000a; Hawkins 2000b; King 2009; Kreinbrink 2010; Munson 1986; Myers 1981; O'Brien 1997a; Richardson 1981a; Stillwell 2008; Tomak 1980; Walley 1997; Waters 1999)
Hogan	9	4	0.444444	(Baltz 1985b; Beard 1990d; Keener 2002; Kreinbrink 2001b; Munson 1988a; Stallings 1990; Stallings, et al. 1990; Stallings 1991; Stillwell 2007a)
Jackson	5	2	0.4	(Bubb 2014; Green 2006; Jones 1983b; Plunkett 2007; Zoll 1993)
Kelso	16	1	0.0625	(Adderley 2012a; Adderley 2012c; Adderly 2012; Cochran 1986; Gibson 1998; Holycross 1998; Keener 2000; Parrish 1994; Schurr 1989a; Services' 1994; Snyder 2007; Stillwell 1999; Stillwell 2005; Zoll 1991; Zoll 1999; Zoll 2000)
Lawrenceburg	92	49	0.532609	(Angst 1994; Baltz 1985a; Baltz 1989; Barber 2006a; Barber 2006b; Barber 2006c; Barber 2006d; Barber 2006e; Barber 2010; Barber 2005; Baudendistel 2008; Beard 1990b; Beard 2004; Bennett 2000a; Bennett 2000b; Bennett 2000c; Bennett 2001; Bergman 2001; Blanton 1999; Bradbury 1997; Buehrig 1989; Carson 2005a; Carson 2005b; Clay, et al. 2005; Clay and Rotman 2004; Cook and Martin 2013; Creasman 1995a; Creasman 1995b; Creasman 2006; Creasman, et al. 2005; Creasman and Rotman 2003a; Creasman and Rotman 2003b; Creasman and Rotman 2003c; Creasman, et al. 2004; Duerksen 1995; Greenlee 2007; Hawkins 1999; Haywood 1995; Jackson 2005; Jackson 2006a; Jackson 2006b; Jones 1983c; Kearney 1992b; Kerr 2007; Kerr and Bundy 2010; Kerr and Creasman 2003; Kerr and Creasman 2004; Kerr 2004a; Kerr 2004b; Kreinbrink 2001a; Kreinbrink 2001b; Kreinbrink 2005a; Kreinbrink 2005b; Kreinbrink 2006; Mankowski 2001; Marinaro 1995; Miller 2001; Miller and Bergman 2001; Miller 2008; Munson 1988b; Natt 1998; Natural & Ethical Environmental Solutions 2001; O'Brien 1995; Olmanson 2000; Olmanson 2001; Parrish and Cochran 1993; Parrish and Creasman 1996; Patton 2007; Peebles 1994; Peterson 2006; Plunkett 2001a; Plunkett 2001b; Plunkett 2001c; Plunkett 2001d; Plunkett 2008; Plunkett 2009; Plunkett 2006; Riegel 1994; Rue 1990; Stillwell 2002; Stillwell 2006; Stillwell 2007b; Stillwell 2007c; Stone 1996; Tolonen 1996; Tomak 1997a; Tomak 1997b; US Army Engineer District 1985; Walley 2000a; Walley 2000b; Walley 2000c; Zoll and Verbka 1994)
Logan	4	0	0	(Barton 1980; Guendling 1980; Stafford 1990; Stillwell 2005)
Manchester	9	3	0.333333	(Arthur 1998; Baltz 1988; Guendling and Munson 1977; Kearney 1993; Schurr 1989b; Smith 1999; Stallings, et al. 1990; Stallings 1991; Stillwell 2001b)
Miller	13	3	0.230769	(Adams 2003; Black 2003; Blanton 1999; Jones 1983a; Keane 1995; King 2009; Laswell 2008; Miller and Bergman 2001; Schneider 2006; Stillwell 1999; Stillwell 2001a; Stillwell 2003; Stropes 1996)
Sparta	9	2	0.222222	(Adams 2003; Black 2003; Blanton 1999; Jones 1983a; Keane 1995; King 2009; Laswell 2008; Miller and Bergman 2001; Schneider 2006; Stillwell 1999; Stillwell 2001a; Stillwell 2003; Stropes 1996)
Washington	10	4	0.4	(Anslinger 1990b; Baltz 1985b; Beard 1992; Carmany 2001; King 2004; McCullough and McCullough 2013; Pirkl and O'Brien 1996; Plamann 1978; Richardson 1981b; Stallings, et al. 1990)
York	3	0	0	(Bubb 2014; Stillwell 2011a; Stillwell 2011b)
Total	224	83	0.370536	
Average	16	5.9286	0.370536	

Figure 12: Distribution of the Ratio of Positive CRM Investigations in Dearborn County, Indiana. See Table 2 for details and citations.

With an average of one positive investigation for every 2.7 CRM projects in Dearborn County, there is a relative abundance of archaeological resources in the small county. The overall positive ratio is nearly identical to that reported for Hamilton County, Indiana (Swihart and Nolan 2013:19, Table 3).

Significant Archaeological Investigations

Many large scale archaeological reconnaissance efforts have been completed in Dearborn County. These efforts date back centuries and cover a wide variety of topics. The following descriptions outline and partially summarize many of these efforts. Though this is not meant to be entirely exhaustive, these summaries are important for understanding the context of archaeological work completed within Dearborn County.

Work by amateur and professional archaeologists in Dearborn County begins in the 1790's with the work of General William H. Harrison. Harrison was interested in documenting

"hill fortifications" in the area, which are now recognized as the hilltop enclosures of the Middle Woodland period. Only one such site is located in Dearborn County, 12D25, known formally as the Oberting Fort site (a.k.a. Oberting-Glenn site, PA-D-019). Within the next hundred years or so, not much professional archaeological work was completed or reported in Dearborn County. A majority of the archaeological information in the 1800s is actually referenced to in non-archaeologically based publications and reports. A majority of these discuss the Oberting Fort site. This includes a drawing made by Samuel Morrison in 1816 of 12D25, which also appears in an 1878 Geological Report for Indiana (MacPherson 1879:125). The site appears one more time in Shaw's *History of Dearborn County, Indiana*, where it is stated to be "One of the most extensive evidences of the existence of this pre-historic people…" (Shaw 1915:73).

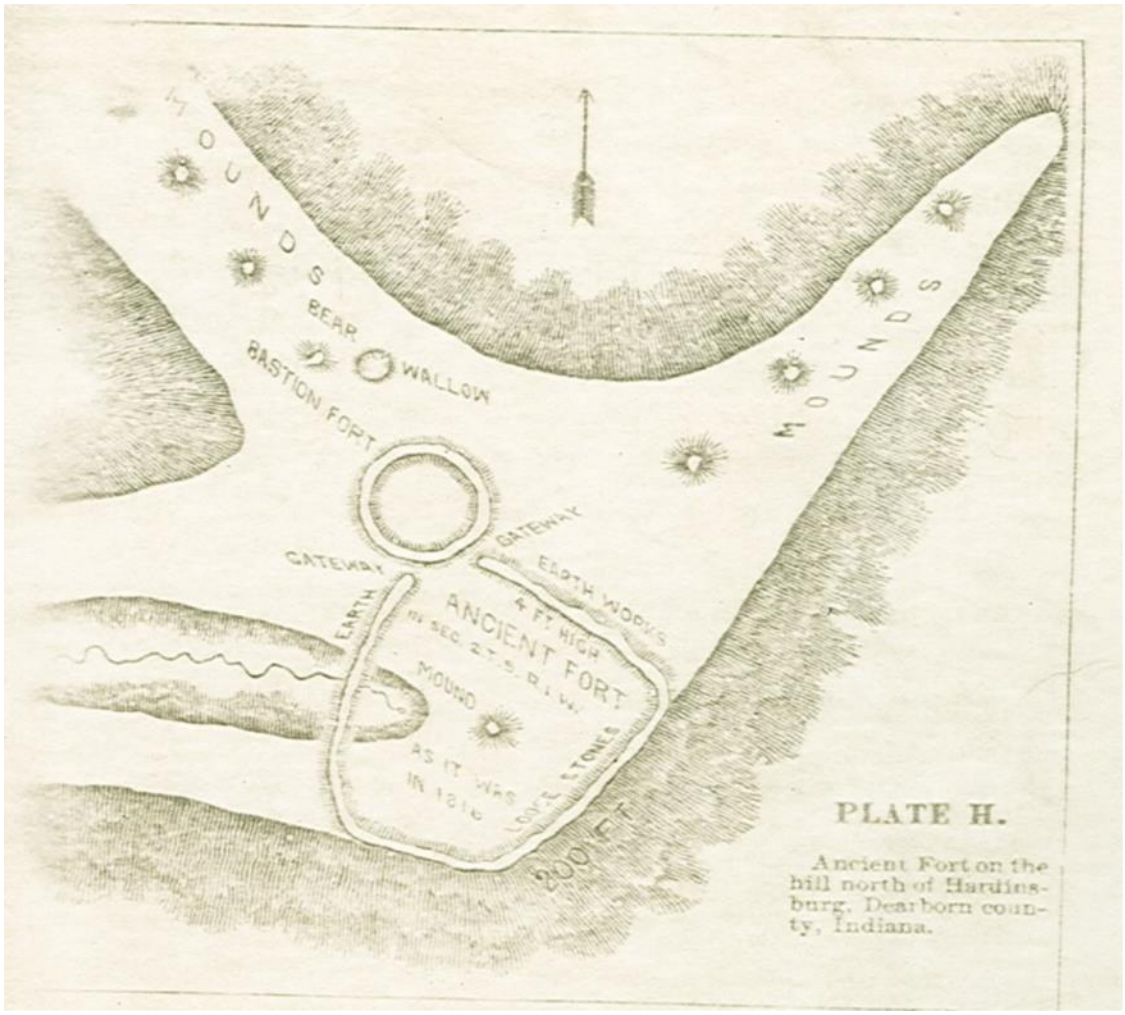


Figure 13: 12D25 as seen on Samuel Morrison's 1816 drawing; Copied from MacPherson (1879:125).

By the early 1900s, archaeological work in Dearborn County had moved well beyond Harrison's preoccupation with hill fortifications. A quarter of a century after the 1878 Geological Report, Warren K. Moorehead published accounts of his work in many states, including Indiana. Within Dearborn County, Moorehead discusses a continuous village site stated to be located from above Lawrenceburg "to within two to three miles of Aurora", containing sherds of pottery,

mussel, and broken stones (Moorehead 1906:60). Also discussed are a small number of mounds that were "opened" to reveal burial remains (Moorehead 1906:60). This site is later referred to as 12O18 by Black (1934). Black's work will be discussed in more depth to follow. As for 12O18, this area seems to be located within Dearborn County, not Ohio County. This area is shown below in Figure 14.

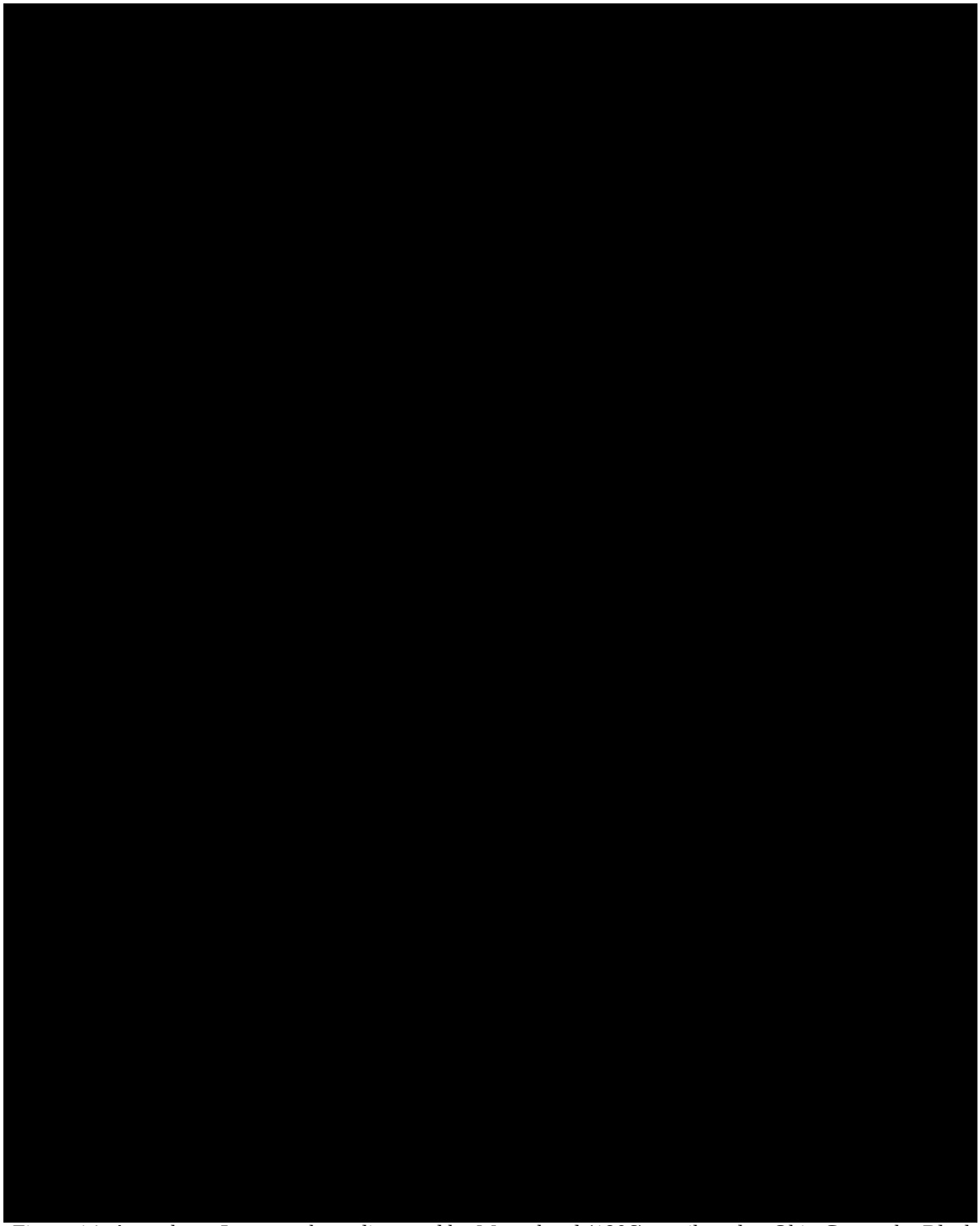


Figure 14: Area above Lawrenceburg discussed by Moorehead (1906), attributed to Ohio County by Black (1934).

The next archaeological work appeared in 1928, when the Bureau of American Ethnology (BAE) published their forty-second annual report. This report contains Myer's "Indian Trails of the Southeast", which discusses very briefly some areas of Dearborn County. Included are notes of "several mounds which once stood near the Ohio River in or immediately around Aurora" (Myer 1928:789). Some of these mounds are most likely the mounds discussed by [redacted] and later attributed by [redacted] to Ohio County, shown in Figure 14 above. [redacted] This enclosure and mound system is actually 12D25/PA-D-019, the Oberting Fort site. [redacted]

Following the BAE report in 1928, the next archaeological survey of Dearborn County occurred in 1933 by Glenn. A Black (Black 1934). This survey focused most heavily on mounds and burials compared to any other kinds of sites. With regard to these Dearborn County mounds, Black makes morphological comparisons to mounds in Ohio such as Seip or mounds from the Mound City Group (Black 1934:187-188). Twelve site types are listed by Black, including earthen mounds, excavated mounds, destroyed mounds, stone mounds, earth circles, hilltop embankments, cemeteries, stone graves, camp sites, village sites, springs, and trails (Black 1934:Figure 1). By today's standards, this separation of different mound types seems unusual. Overall, Black's findings for Dearborn County are listed as 32 earthen mounds, 8 excavated earthen mounds, 7 destroyed earthen mounds, 2 stone mounds, 4 excavated stone mounds, 2 destroyed stone mounds, 15 village sites, 20 camp sites, 12 cemeteries, 2 stone grave sites, 1 hilltop fort (now 12D25), 3 trails, and 1 salt lick (Black 1934:223). Black's survey of the county was instrumental in identifying archaeological sites within Dearborn County. Many of the sites he has identified are of great importance to the county and a few of them are reinvestigated within the current FY13 HPF grant project.

Also associated with Glenn Black (1936) was the "Excavation of the Nowlin Mound" report that was generated from work completed in 1934 and 1935. The report includes information on the pottery completed by James Griffin and Frederick Matson, Jr. (Black 1936:285-296). This report is significant in that it contains contributions from both Black and Griffin. As shown prior, Black's work has been instrumental in identifying the locations of many archaeological resources within not just Dearborn County, but Indiana in general. Griffin became influential later on with many of his works, including "The Fort Ancient Aspect" (Griffin 1966). Griffin's (1966) work concerns the chronological and cultural aspects of what many refer to as the Fort Ancient cultural phenomenon during the Late Prehistoric period of the Eastern Woodlands. In this work, Griffin discusses some sites within Dearborn County such as the State Line site (12D18), Haag site (12D19) and the Jennison Guard site (12D29) (Griffin 1966:184-186). Griffin's interpretation of the site assemblages, coupled with information he attained from Black (1934), leads him to view these specific Fort Ancient sites as belonging to what he describes as the "Madisonville Focus" (Griffin 1966:184). These specific sites are important to our understanding of the Late Prehistoric in Dearborn County and will be discussed in more depth later.

Reidhead's (1981) work is especially important to review for this project, as a considerable component of this work deals with the Haag Site (12D19), a multicomponent site containing a significant Late Woodland/Late Prehistoric component. The Haag Site itself will be discussed in further detail to follow. Indiana University conducted excavations of Haag in 1972

and 1973, also joined by the University of Notre Dame the first summer in 1972 (Reidhead 1981:27). Sections of this report with regard to Haag deal with Late Woodland and Fort Ancient population assessment, activity descriptions, settlement patterns, and seasonality assessments (Reidhead 1981:28-41). For the Late Woodland, it is stated that "all domestic activities were confined to the terraces and floodplains of major streams, and most of these to a few specific sites" (Reidhead 1981:32). As the current FY2013 HPF Grant project is concerned with Late Woodland/Late Prehistoric settlement patterns, this information is of significant note. For the Fort Ancient aspects of Haag, it is stated that the site is not stylistically similar to that of many Madisonville sites even though it is within the geographical confines of this focus (Reidhead 1981:32). This is attributed to "its early positioning within local Fort Ancient" (Reidhead 1981:32). Hence, sites being reinvestigated in the FY13 HPF Grant project containing assemblages similar to Haag could help reveal a Fort Ancient chronological sequence within the county and surrounding area.

In 1989 and 1990, Smith and Tankersly conducted archaeological data base enhancement project in several Southeastern Indiana, including Dearborn County (Smith and Tankersly 1990). The goal of the project was to study caves and rock shelters in Silurian as well as Devonian limestones within the counties as a way of examining how prehistoric peoples utilized these features within Southeastern Indiana. Field survey was conducted at sites 12D18, 12D19, 12D246, 12D301-12D313, 12D316-12D319, and 12D323-12D327 (Smith and Tankersly 1990:6). Thirty-five additional sites were recorded during this survey for Dearborn County (Smith and Tankersly 1990:13).

The next large-scale survey to be conducted in the county was by Parrish and McCord (1995). The project was stated to be "undertaken because fewer than 400 archaeological sites were on record for the county and prior surveys were heavily biased toward stream valleys" (Parrish and McCord 1995:1). Their project included survey of approximately 845 acres of land, as well as speaking with a number of landowners in the county to gain information on the location of archaeological sites within the county. The project was successful in locating 125 previously unreported archaeological sites (Parrish and McCord 1995:iv). Their survey is different from others in that it is almost all-encompassing and explores historic sites, such as the county's mills, in depth (Parrish and McCord 1995:53-74). A number of sites were recorded and surveyed by numerous methods. These results are listed in the table below.

Table 3: Sites Delineated by Parrish and McCord (1995:90, Table 9) Survey

Method	Site Numbers
Non-Systematic Survey	12D98, 12D102, 12D119, 12D481, 12D482, 12D484, 12D485, 12D492, 12D493
Systematic Survey	12D51, 12D123, 12D124, 12D137, 12D145, 12D146, 12D195, 12D196, 12D247, 12D249- 12D271, 12D306, 12D377, 12D379-12D399, 12D401, 12D403-12D429, 12D432-12D462, 12D458-12D470
Collector Interviews	12D123, 12D124, 12D402, 12D471-12D477, 12D480, 12D483, 12D491

Significant Archaeological Sites

A small number of sites have been explored in more depth than others in the county and warrant special mention in this discussion of the archaeological background of Dearborn County. One site, the Oberting Hill Fort (12D25), has already been discussed in detail. Other sites of special mention are all Fort Ancient habitation sites. The first is the Jennison Guard site (12D29), being the only prehistoric National Register site in the county. The site was reported by Glenn Black in the previously discussed 1934 report, noting that the site contained three mounds and a large village component (Black 1934:201). One mound was located on the Guard's property, standing three feet high and fifty feet in diameter (Black 1934:201). The second, located on the Hayes' property, stands six feet high and has a diameter of sixty feet (Black 1934:201). The third was located where the Hayes family built their home, recovering burials whilst placing a new foundation on the spot (Black 1934:201). Burials were stated by Black to also have occurred north of the first mound described (Black 1934:201). At this point in time, shell tempered wares, ground stone celts, and triangular projectile points had been recovered in association with the site, noting that stemmed and notched points were few in number (Black 1934:201). The site has been reinvestigated and materials reanalyzed multiple times since its discovery, revealing that a portion of the site [redacted] is actually a Middle Woodland Hopewell habitation area (Blosser 1996:56). This portion of the site was given a separate site number, 12D246, and is discussed in other works as the Whitacre site (Blosser 1996:56). Recent investigations directed by Robert Cook have revealed that the Fort Ancient site is a large, densely populated circular village dating to the Early Late Prehistoric period (Cook and Martin 2013; Cook and Comstock in press). Both sites still offer much in the way of important data for the Middle Woodland and the Fort Ancient chronological periods.

The Haag site (12D19) was also reported by Black during his 1933 survey (Black 1934:192-194). Like Guard, Haag is a dense, multi-component habitation site. The site was intensively investigated by Van Reidhead (Reidhead 1981; Reidhead and Limp 1974) and has been excavated for research and mitigation purposes a number of times (Cochran et al. 1995; Tomak et al. 1980). The site was occupied during nearly all periods of prehistory, but the most prominent components are from the Late Woodland and Late Prehistoric periods (Tomak et al. 1980; Reidhead 1981). Black (1934:194) noted that the site was "horizontally stratified", based primarily in difference in temper of ceramics. The grit-tempered, cordmarked area corresponds to the Late Woodland occupation and the shell-tempered, plain area corresponds to the Late Prehistoric occupation.

The occupations are intense with many intact features, burials, midden, etc. (Cochran et al. 1995; Reidhead 1981; Tomak et al. 1980). There is an abundance of domestic debris, and Reidhead has used the site to investigate the nature of the difference between local Late Woodland and Late Prehistoric populations and their subsistence strategies. Reidhead tied the transition in food procurement strategies primarily to the increased energy available via maize cultivation leading to decreased importance of faunal resources such as deer. Radiocarbon dates for the site are not precise or reliable indicators of the period of occupation (see Nolan 2012). All three dates have 1σ ranges of >100 years and all dates were run on wood charcoal samples prior to the advent of accelerator mass spectrometry (AMS) dating methods. Griffin (1966) had placed Haag (and all southeastern Indiana Fort Ancient sites) in his Madisonville focus. However, Moore and Raymer (in press:16) associate the Late Prehistoric occupation with the Anderson phase of the Fort Ancient with cross-dates to the Middle Fort Ancient period (AD

1200 – 1400). Moore and Raymer's assignment to the Middle period is based on their own stylistic analysis of the ceramics and cross-dates with accepted chronology in Kentucky. However, the Late Prehistoric ceramics from Haag and several other Fort Ancient sites in southeastern Indiana are very similar to those recovered recently from Early Fort Ancient deposits at the Guard site (12D29) by Cook and colleagues (Cook and Martin 2013).

The last significant site to be included in this discussion is the State Line site, 12D18. [redacted] The site was discovered by Black in 1933 (Black 1934:190-192). Burials have been found at the site, and the assemblages consisting of triangular points and decorated pottery led Black to believe the site contains a Fort Ancient village component (Black 1934:191-192). This has further been supported by some modern salvage excavations (see Vickery et al. 2000). The majority of the site is located on the Ohio side, yet the small portion in Indiana is stated to be "relatively undisturbed" (Vickery et al. 2000:272). Other than the Fort Ancient occupation which predominates the site, there is a small Middle Woodland occupation (Vickery et al. 2000:272). The site has seen much disturbance on the Ohio side, with several major roads, small driveways and historic buildings, and a lake that have all played a role in destroying portions of the site (Vickery et al. 2000:273). The destruction of the site on the Ohio side only adds to the importance of the undisturbed Indiana portion. 12D18 (33Ha58) has been very important for providing information on the Late Prehistoric Fort Ancient and is stated to be "without parallel in at least its local setting, if not in a larger region of the central Ohio Valley" in regard to Fort Ancient complexity (Vickery et al. 2000:315).

There have been a variety of mitigation projects, notably those focused on the development of Argosy (now Hollywood) casino near Lawrenceburg (Creasman et al. 2005; see Table 2). There have also been two recent academic research efforts in Dearborn County have included excavation, one focused on 12D123 and one on 12D29. The research at 12D123 was conducted by Moore and Raymer and consisted of a salvage project of a small portion of a circular village (Moore 2006a, 2006b; Raymer and Moore 2011). While there are no radiocarbon assays from the site, it has been suggested that it is a primarily a Middle (ca. A.D. 1000-1400) period village on the basis of ceramic attributes (Raymer and Moore 2011).

A recent project by Cook (see Cook and Martin 2013) has began to examine the Fort Ancient component of 12D29, a site which previous studies (Blosser 1989, 1996; Kozarek 1987; Reidhead 1975; Whitacre and Whitacre 1986) have focused on the Middle Woodland occupation in the southern portion of the site (12D29S/12D246, also known as the Whitacre site). Very limited excavations of the Fort Ancient component were conducted by Indiana University's Glenn Black Lab (Acc. #6203), although no documentation could be located (Cook and Martin 2013). There are abundant artifacts and faunal remains from this earlier excavation which included eight pit features and three burials. The only other known excavation was conducted by the current property owners which confirmed that a dense Fort Ancient occupation is present (Sedler 1990).

12D29 is proving to be a crucial site for understanding Early (ca. A.D. 1000-1200) period Fort Ancient sites for several reasons, not least of which is that it is a large village. There is also clear evidence here for Mississippian trade items at the beginning of the Fort Ancient period. Lastly, while the village is clearly circular in plan with a housing arrangement arguably similar to SunWatch, the plaza is not well defined and may not be a formal entity at this early village. This situation may be similar to that expressed elsewhere during this time with Emergent Mississippian communities (e.g., Kelly 1990).

Initial excavations in 2012 were funded by the National Geographic Society and focused on a basic question: Why are the structures so clearly defined as magnetic anomalies at this site? To determine this, Cook excavated narrow (1 m) trenches through three structure anomalies, and we quickly learned the answer to our question. The structures were set in basins of varying depths, were burned after their abandonment, and were then filled with trash and buried under alluvial deposits beneath the level of plow disturbance (Cook and Martin 2013). In short, it was an excellent finding from which to investigate a variety of issues. We are returning this summer to excavate a larger portion of a structure and to sample a variety of others.

These sites, specifically those containing Late Woodland/Late Prehistoric components, are of special interest for this project because of our interest in settlement patterns during these periods and the transition between. The knowledge gained by studying these sites gives us a comparative marker to use against the Late Woodland/Late Prehistoric sites that will be reinvestigated during this FY13 HPF Grant project in Dearborn County.

Historical Background

Dearborn County, named after General Henry Dearborn, is the third oldest Indiana County (Henning 1983:xv). The original county boundaries, organized in 1803, were larger than the current boundaries of the county that were set in 1845 (Henning 1983:xv). Lawrenceburg has been the county seat since 1803, with the exception of the years 1836 – 1844 when Wilmington served as the county seat (Henning 1983:xv). Early settlers came to Dearborn County from the east along the Ohio River as early as the 1790s. The 1820s – 1870s experienced more European migration into the county (Henning 1983:xv). In fact, by 1890 the population of the county was nearly five times larger than it was in 1815 (Henning 1983:xvi).

Agriculture has always been important to Dearborn County inhabitants. Henning (1983:xvi) states that "in 1910 there were more than 2,200 farms with an average acreage of 83 acres each". The large number of farms in Dearborn County still exists, though one may notice that the average acreage of many of these farms has been broken up into smaller and smaller land parcels. Industry was also important to Dearborn inhabitants in the 1800s. Dearborn County industries included "distilleries, furniture, glass, pump, and coffin companies, as well as a boatbuilding company" (Henning 1983:xvi). Some of the buildings from Dearborn's early industry are still around today, with a few still operational.

The county experienced the Civil War with the destruction of multiple bridges by the soldiers of John Morgan Hunt (Henning 1983:xvi). Severe flooding has been another hardship that the county has endured, leading to levee and dam construction in the 1900s.

ARCHAEOLOGICAL SURVEY

By Matthew R. Swihart, and Kevin C. Nolan

Introduction

A total of 359.14 acres (145.33 ha) was surveyed at the Phase Ia level during the current project (Table 4). Approximately 345.67 acres (139.89 ha) of agricultural land were surveyed by pedestrian transects in this project across ten survey areas (SAs). Two SAs were subjected to soil phosphate analysis only (13.47 acres, 5.45 ha). One SA was subjected to soil phosphate and pedestrian surveys (11.03 acres, 4.46 ha). The purpose of the pedestrian survey was to reexamine previously identified Late Woodland and Late Prehistoric sites, to identify cultural resources in rapidly developing portions of the county, evaluate their nature, and assess their potential eligibility for the National Register of Historic Places (NRHP). All surveys followed DHPA guidelines for Phase Ia reconnaissance. The soil survey was conducted to examine potential settlement organization data at the aforementioned Late Woodland and Late Prehistoric sites in the county.

Methods

Pedestrian Survey

Of the twelve SAs, ten of them were surveyed using the pedestrian survey method to either reexamine or locate archaeological sites. A number of the sites had previously undergone surface collection in a similar fashion to our pedestrian survey, though sites that had not been recorded with spatial data for artifact collection loci or had not undergone a *systematic* surface collection were reexamined.

Properties were targeted for pedestrian survey based on a multitude of reasons. The first priority was to reexamine Late Woodland/Late Prehistoric sites in the county; four SAs targeted relevant sites. Secondarily, parcels were targeted in areas of rapid development within the county. Attempts were made to gain access to parcels near Aurora and Lawrenceburg to no avail. Other areas were targeted that showed signs of recent residential development and potential for future traffic and development. Third, five land parcels were targeted because they contained data deficient sites, in hopes that the project could further knowledge of these sites. None of the targeted sites could be surveyed due to a combination of land use conditions and the absence of landowner cooperation; we are able to update the records for two of these sites with information gained in discussion with a purported landowner. GIS shapefiles were obtained from Dearborn County GIS Coordinator, Wade Kimmon. The parcel numbers for targeted properties were extracted from the GIS, then compared with state parcel numbers on the website known as Beacon (www.beacon.schneidercorp.com). Contact information for the owners, as well as basic numeric data on parcel size was then obtained. This information was then mailed to the property owners, along with the Dearborn permission forms for soil and pedestrian survey, and a frequently asked questions sheet. The property owners were asked to return the signed forms in an envelope with prepaid postage to the AAL after selecting time ranges that the property was available for survey and whether artifacts were to be returned to the property owner or left to be

curated by the AAL. Property owners (and tenants, if applicable) were then contacted to schedule the date of survey, as well as answer any questions the property owner had about the survey process that would be taking place on their property.

The fields were examined to maintain a minimum of thirty percent surface visibility (30%). Fields falling under this visibility minimum were not surveyed. The field crew members were then spaced no more than ten meters apart and asked to walk in straight transect lines the length of the agricultural fields being surveyed. All prehistoric and historic artifacts were collected. All find locations were mapped with Trimble GeoXT (2800 or 6000 series) GPS devices, post-processed, and uploaded to the GIS. All recorded points are mapped with sub-meter precision. Artifact analysis was supervised and checked by the authors. Further discussion on recovered archaeological material is discussed in the laboratory analysis section of this report.

Soil Survey

Soil collection surveys were conducted on three of the twelve SAs. These included SA1, SA4 and SA5. SA1 was selected for soil survey and analysis for the potential to reveal settlement organization data for site 12D480, reported as a Late Prehistoric camp site in the SHAARD database recorded during the 1995 survey by Parrish and McCord, but never surveyed. SA4 was selected for soil survey and analysis for the potential to reveal settlement organization data for site 12D44, reported as a Late Woodland and Late Prehistoric camp and burial site by Black (1934). This survey area was also selected because of data inconsistencies in the SHAARD database, having placed 12D44 in two different geographic locations. It was hoped that the soil survey could reveal the correct location, organization, and extent of site mapped in SHAARD GIS as 12D44. Lastly, SA5 was selected for the soil survey and associated analysis because of its potential to yield settlement organization data on site 12D396, reported by Parrish and McCord (1995) as a Late Woodland/Late Prehistoric habitation, and 12D397, a small lithic scatter. Through soil survey and soil analysis of these selected sites, we hoped to reveal settlement structure data on the Early Fort Ancient period in Dearborn County with samples from sites within the categories of camp, village, burial, and lithic scatter.

The sediment sampling employed a 10 m x 10 m grid where soil cores were collected at each loci. For each sample location in the grid, one sample was taken from the plowzone with an Oakfield soil probe. The top ~5 cm of each core was discarded and the next ~10 cm of the core was taken back to the laboratory for analysis. All artifacts and soil cores were mapped using sub-meter GPS (Trimble GeoXT 2008 and 6000 series), and data was post-processed using Trimble's Pathfinder software.

Soil samples were collected from approximately five to fifteen centimeters from below the surface (bgs). In floodplain areas, specifically SA1 and SA5, an extra sample was collected from approximately 30-40 cm bgs in every other transect at every other sample location resulting in an ~20 m x ~20 m grid of subsoil samples for alluvial settings.

Table 4: Survey Acreage Totals by Soil Map Units

Symbol	Map Unit Name	Acres	%	SA1	SA2	SA3	SA4	SA5	SA6	SA7	SA8	SA9	SA10	SA11	SA12
AvA	Avonburg silt loam, 0 to 2 percent slopes	7,206.90	3.70%						11.3	7.2	18.1	25.1	10.8	13.8	4.83
Ch	Chagrin silt loam, frequently flooded	1,521.50	0.80%	5	10.4	24.5									
CnC3	Cincinnati silt loam, 6 to 12 percent slopes, severely eroded	2,447.90	1.20%						0.45		4.72	2.73	8.26	0.86	
Ct	Clermont silt loam	5,315.40	2.70%							7.9	6.33	32.9	6.5	17.6	10.5
De	Dearborn silt loam, frequently flooded	2,607.40	1.30%		0.01										
Hu	Huntington silt loam, frequently flooded	3,661.00	1.90%	6				3.4							
Ju	Jules silt loam, frequently flooded	2,834.80	1.40%					4.1							
MaB2	Markland silt loam, 2 to 12 percent slopes, eroded	779.8	0.40%												
MaF2	Markland silt loam, 18 to 35 percent slopes, eroded	698.9	0.40%					1.5							
Or	Orrville silt loam, frequently flooded	891.9	0.50%							0.6	1.11		0.31		
PaE2	Pate silty clay loam, 18 to 25 percent slopes, eroded	4,246.50	2.20%	0											
Pg	Pits, gravel	194.8	0.10%				0								
RoA	Rossmoyne silt loam, 0 to 2 percent slopes	4,138.80	2.10%						0.86						
RoB2	Rossmoyne silt loam, 2 to 6 percent slopes, eroded	6,366.60	3.20%						10	3.1	15.8	18.7	11	6.53	1.87
St	Stonelick sandy loam, frequently flooded	1,787.90	0.90%		13.4	6.98									
WhA	Wheeling silt loam, 0 to 2 percent slopes	250.9	0.10%				4.54								
	Total	196,788.10	100%	11.03	23.80	31.51	4.54	8.93	22.62	18.74	46.05	79.46	36.88	38.73	17.21

Laboratory Methods

Artifact Analysis Methods

Artifact analysis for the Dearborn County Project involves every aspect of analyzing the material collected in the field. This includes spatial analysis, consisting of site delineation, as well as things as simple as cleaning procedures for the artifacts that were collected. Because of this, it could be stated that there are five major steps invoked by artifact analysis for this project. These are the cleaning process, GIS input, site delineation, site numbering conversions, and the physical analysis of the artifacts.

The analysis process begins with two simultaneously occurring steps: cleaning and GIS input. Artifacts brought back to the Applied Archaeology Laboratories are cleaned by a group of undergraduate students assigned to laboratory work for the Dearborn County Project. This consists of using water to clean the artifacts gently with toothbrushes, except on organic material collected or prehistoric pottery. Tooth brushes are also not used on the edges of lithic tools, as the tooth brush bristles could potentially affect the striations and polish that is studied in use-wear analysis (this further analysis could be a later method to be used on materials recovered from sites that underwent the soil phosphate collection surveys).

While the cleaning is occurring, the GPS data collected in the field on the Trimble GPS units is uploaded to the GIS software (ArcGIS 10.1; ESRI 2013). The data undergoes differential correction techniques using the program Pathfinder by Trimble, ensuring accuracy of the collection loci by up to a number of centimeters. These points are crucial when delineating sites, as distance is a major parameter when considering how to group sites.

The third step is the actual site delineation. This is based on a number of factors, the first being the firsthand knowledge of the spatial distribution of artifacts in the survey area in regards to one another. The second factor is determining the amount of distance between artifacts that is selected to define two or more artifacts as a cluster. Clusters are delineated and assigned a site number; isolated finds are also assigned site numbers. The distance parameter is not necessarily arbitrary, though on average is twenty meters (20 m). The third factor occurs during physical artifact analysis, by making sure that two or more artifacts together really can constitute a site based on what the artifacts are. For example, a cluster of prehistoric lithic debitage and diagnostics will not be clustered with historic artifacts found ten meters away, even though it is within the twenty meter buffer set out for cluster delineation.

The fourth step, assigning the numbering system and converting these numbers for site names, begins by exporting the GIS data by site from the ArcGIS program ArcMap to an excel document containing the provenience of the artifacts. This specific provenience is also recorded on the collection bags that contain the artifacts. This process allows for laboratory workers to group the artifacts into specific sites based on their provenience on the site delineation criteria enumerated upon previously. The artifacts are given their first site name based on survey area and site number within that survey area number. An example of this is Sa1-5, where Sa1 stands for survey area one and 5 represents the fifth site defined within survey area one. Once the artifacts are grouped by this site name, the site name is converted into a full field-site identification number sequence, or FSID. This sequence always begins with the accession sequence 13.65, followed by the field site number and then the number of the artifact within that specific site (e.g., 13.65.1.1 represents the first artifact within the first site located in the

Dearborn County Project, or the first artifact from Sa1-1). This is done to maintain continuity between other catalogs, as well for convenience as the FSID is the number sequence inscribed upon the actual artifacts. This is done to ensure that if the artifacts are ever separated from their curation bag that it can be replaced without losing its provenience. Since this process of FSID enumeration begins before the actual, in depth physical artifact analysis, some sites may become void after analysis has determined a site to contain material collected that does not actually constitute an artifact. In these instances, the site is marked as void but the number is still retained to show on the final GIS markup of each survey area which collection loci became nullified. This process was completed for all survey areas with the exception of SA2. Due to the large number of artifacts collected (~ 12,000) and the amount of time available for analysis to be completed, artifacts from survey area two were analyzed sequentially by transect number (for a further discussion on transects, see the pedestrian survey section of the methods section of this report). Each artifact type within a finds bag was given a specific number (e.g., 13.65.2683), starting at one and working consecutively until completion. Within the catalog counts and weights for each type of artifact were recorded for each catalog number along with provenience (e.g., t5-62) and any diagnostic information. SA2 used a unique mass analysis guide not used in the remaining SAs (Table 5).

Table 5: Mass Analysis Attribute Categories for Survey Area 2

Material	Chert		Other lithic			Fauna				Ceramic			
Type	Objective	Detached	FCR	Groundstone	Other	Mammal	Non-mammal	Fish	Shell	Shell	Grit	Grit/Shell	Other
Subtype	Core/Biface	Flake/Shatter									Rim/Neck/Body/Base		
Modified?	Diagnostic?	Yes/No				Yes/No	Yes/No	Yes/No	Yes/No		Decoration?		

The fifth step, the actual analysis of the artifacts, includes defining the artifacts, recording all artifact attributes, determining FSID labeling order of the artifacts, as well as expanding upon the sources used to give chronological dates to diagnostic artifacts. Most definitions of artifacts used in the Dearborn County Project come from Andrefsky's second edition of "Lithics: Macroscopic Approaches to Analysis" (Andrefsky 2005). For determining typology of prehistoric flaked stone artifacts, a flow chart was retained from the Hamilton County FY2012 HPF Project (Swihart and Nolan 2013) for use in the Dearborn County Project (Figure 15).

Diagnostic determinations of projectile points, bifaces, etc. for this project were determined by studying examples from Justice (1987), Prufer and McKenzie (1967), Griffin (1966), Henderson (1992), and Cook and Comstock (2014:In Press). One specific type of unifacial flake tool encountered were bladelets. Multiple blade-core industries exist around the world, yet it must be noted that in the Midwest this artifact type is considered diagnostic of the Middle Woodland period with Hopewell groups (Greber et al. 1981; Montet-White 1963, 1968; Nolan 2005; Nolan et al. 2007; Pi-Sunyer 1965; Ruby 1997).

Numerous attributes of the artifacts were analyzed are recorded for this project. For all artifacts, with the exclusion of those in SA2, the numerical attributes of weight (g), length (mm), width (mm), and thickness (mm) were recorded. Nominal indication by yes or no was completed to state whether length, width, and thickness were complete for each artifact. Groundstone artifacts are recognized by anomalous smoothing of one or more surface by repeated mechanical action. Such artifacts can be minimally modified cobbles used for grinding or pecking, or formally shaped tools. Where a predefined morphological category (e.g., axe, celt, pestle) was

not identifiable, artifacts are simply classed as groundstone based on the observed wear patterning. For prehistoric stone tool artifacts, nominal indication of presence by answering yes or no was used to record signs of utilization, edge modification, as well as denticulation specifically. Also for prehistoric flaked stone implements, the raw material chert type and use of heat treatment of such materials was indicated by using macroscopic and microscopic comparison to the AAL comparative chert collection. Lithic raw material identification procedures are outlined below. Presence of utilization on prehistoric flaked stone implements was also determined by examining their edges for striations, differences in luster, as well as microfractures indicative of utilization.

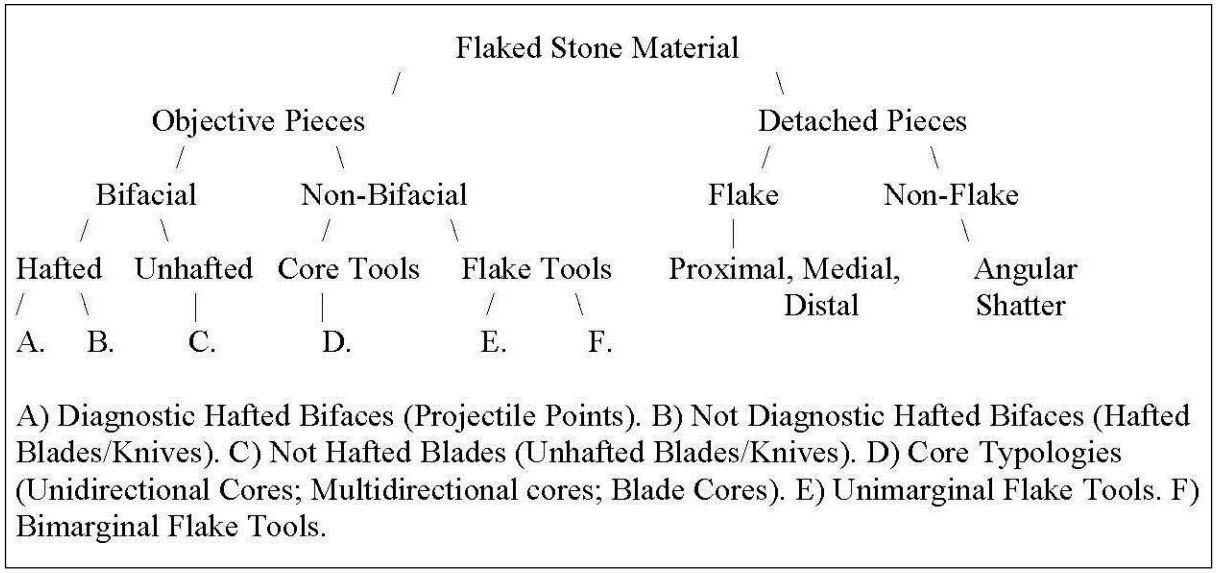


Figure 15: Flow Chart of Flaked Stone Implements.
Adapted from Andrefsky 2005:76 Figure 4.7.

For artifacts from SA2, a mass analysis was conducted. As stated above, this was because of the gratuitous amount of material recovered. Artifact attributes were arranged hierarchically, beginning with recording the material making up the artifact. Material includes chert, non-chert lithics, fauna, and ceramics. The next category recorded was "type". For chert, type includes the choices of objective or detached pieces. In other lithics (non-chert lithics), type includes fire cracked rock (FCR), groundstone, and other. For fauna, type includes mammal, non-mammal, fish, and shell. For ceramics, type was the category used for delineating temper type, including shell, grit, shell and grit, and other. Subtype was the next attribute level, dealing only with chert artifacts and ceramics. For chert artifacts, subtype for objective pieces was either core or bifacial artifacts. For detached pieces, subtype was classified simply as either flake or non-flake shatter. In regard to ceramics, subtype represented to portion of the vessel that the artifact represents, being either rim, neck, body, or base. The last level of analysis was modification, representing whether a chert artifact was diagnostic or not, whether faunal material or other lithic material had been modified at all, or whether ceramics had been decorated. Decoration type (ex. incised or punctated) was recorded in a comments section within the spreadsheet, as well as were attributes such as cordmarking, diagnostic definitions of projectile points, edge modification or chert

artifacts, and so forth. Lastly, one column of the spreadsheet for this survey area was created for recording the chronological period of diagnostic artifacts (see Table 5).

Lithic Identification

By Kevin C. Nolan and Mark A. Hill

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.

First, each artifact is macroscopically identified with probable match categories. Comparisons are made with hand samples and reference manuals (e.g., Cantin 2008) at this stage. Attention is paid to luster, color, patterning, inclusions, 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 10 x to 40 x 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 "microfabric" is perhaps the best way to differentiate chert types and varieties. Microfrabic can only be evaluated under magnification and is best compared among physical specimens. During this stage we select the best match as the most probably source for the unknown specimen. Finally, we revisit Cantin's (2008:Figure 4) 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 is not 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.

There is always the possibility of misclassification with visual identification; however, our procedures are the same for all projects, and replicable across projects that employ the same procedures. 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. Using the criteria and procedures detailed above, our identifications should be taken as an assessment of the geological age and context of the raw material. Rocks of the same age and context have known distributions outside of Indiana and may well find their way into Indiana from another deposit of the same geological formation through natural or cultural processes. Our identifications do not presume mechanism of transport.

Chert identifications were performed by artifact analysts in consultation with Dr. Nolan and Dr. Mark A. Hill. Definitions for standard chippable lithic artifact categories were derived from Andrefsky (2005).

Soils Analysis

After Roos and Nolan (2012), analysis of P uses a molybdate colorimetric method to measure Mehlich-2 extractable phosphorus. Samples were ground and sieved through a 125 µm geological sieve (fine fraction). P was extracted using a 10 percent dilute Mehlich-2 solution and measured using a colorimetric method based on the reaction between extracted P in solution and a molybdate reagent (PhosVer3). Concentrations of P (PO_4) in mg/L are then converted to mg/kg and adjusted for dilution, and recalculated to mg/kg phosphorus based on atomic weight.

For MS analysis, soil samples were ground and sieved through a 1 mm geological sieve to eliminate large inclusions. Each sample was analyzed for mass dependent low frequency, high frequency, and frequency dependent susceptibility via repeated (N = 3) measures using a Bartington MS3 with MS2B lab sensor. Averages for each sample are reported. Care is taken to insure that the sample is measured the same each reading to avoid spurious variation being introduced by differences in orientation of magnetic particles. Anomalous values are discarded before import to the GIS.

Mehlich-2 extraction and quantitative colorimetric measurement was selected from the wide variety of other extraction and measurement methods (see Holliday and Gartner 2007:309-316) as it is a simple, robust procedure performable in a variety of contexts (see Terry et al. 2000), and it is time and cost efficient (Roos and Nolan 2012:31). P concentration and MS values were mapped in the GIS through the recorded GPS coordinates and used for interpolation with ArcMap 10.1 spatial analyst extension (see Nolan 2010).

The results for P and MS were converted to attributes of a point shapefile in ArcMap 10.1. To analyze the distribution trends, raw values for each variable were interpolated using the ESRI kriging function in the geostatistical analyst extension. A semi-variogram model was chosen based on best fit. The spherical semi-variogram model has been shown to fit similar kinds of data previously (Nolan 2014). Various cell sizes and search radii were employed to ensure the robustness of the spatial pattern. The maps presented below were generated with a 10 m cell size, and a variable search radius to include 12 points in modeling each location.

ARCHAEOLOGICAL SURVEY RESULTS

By Matthew R. Swihart, Kevin C. Nolan, and Erin A. Steinwachs

Survey Area 1

SA1 is located in [redacted] as shown on the USGS 7.5' [redacted] Quadrangle map (Figure 16). SA1 was completed on Saturday, October 12, 2013. Two survey methods were employed in SA1. For pedestrian survey, ground surface visibility of the survey area was between 40-65 percent, with areas of agricultural debris impacting visibility. Areas in SA1 that underwent pedestrian survey had previously been planted in beans. Soils analysis was also conducted for SA1. Visibility conditions for the areas surveyed for soils were between 0-65 percent due to a portion of the survey area being a hay field. As soil visibility does not impact the ability to collect soil samples, the hay field having a 0 percent surface visibility does not negate the ability to use this survey method.

SA1 is 11.03 acres (4.46 ha) in area. The northern edge of the survey area is [redacted] from the Whitewater River and the southern edge is at the base of a steep terrace that rises 325 feet above the floodplain. This diversity of surroundings presents a variety of available resources for prehistoric peoples in the area. The soils of SA1 consist of a fine-loamy Eutrudept (Chagrin silt loam, Ch), a fine-silty Hapludoll (Huntington silt loam), and a fine Hapludalf (Pate silty clay loam) (Soil Survey Staff 2012).

This land was targeted for survey because it contains site 12D480 almost in its entirety, 0.07 acres of the original polygon extend on to neighboring parcels. Site 12D480 (the Meyers site) was reported to Parrish and McCord (1995:39) during their survey. Their informant stated there were "dense concentrations of burnt earth, fire-cracked rock and charcoal…" when the field had been plowed (Parrish and McCord 1995:39). The collection that was reported for this area contains diagnostic projectile points ranging from the Late Archaic through the Late Woodland/Late Prehistoric, and includes a number of celts associated with the Late Prehistoric period (Parrish and McCord 1995:39). The area of 12D480 was not surveyed by Parrish and McCord. The landowner's artifact collection constituted the only artifacts known for the site at the time of their survey.

The collection discussed by Parrish and McCord was left to [redacted], the current [redacted] then donated the collection, with the exception of two ground stone tools, to the AAL on October 12, 2013. This collection currently holds two historic water-tumbled marbles, one fragment of historic clear glass, one body sherd of shell tempered incised pottery, eight ground stone tools, eighteen unhafted biface tools, and ninety-seven diagnostic hafted biface tools. The donated collection contains artifacts from the Early Archaic (Kirk Corner Notched) through the Late Woodland/Late Prehistoric (fine triangular points) periods, with the vast majority of points dating to the Late Archaic-Early Woodland interface. Details about the collection can be found in Appendix B.

Nolan and Swihart met with [redacted] to discuss the provenience of the collection, discovering that she knew of a few artifacts that were collected from just outside of the area originally designated as 12D480, yet still on her property. The provenience of this collection became more problematic in the latter half of October, as the owners of SA2 stated that a portion of the [redacted] was most likely from their property, as [redacted] used to collect artifacts on their property. Thousands of shell tempered body sherds were collected from the SA2, yet none were discovered in SA1. There were also no diagnostic points encountered on our

survey in SA1, yet we encountered 47 in SA2 (see Table 7). Whether the [redacted] originates from 12D491 within SA2 or 12D480 within SA1 is unknown.

Figure 16: Locations of SA1, SA2, SA3, and various previously reported archaeological sites.

Survey Area 1 Artifacts

A total of 130 artifacts were recovered from SA1. All of these artifacts are prehistoric artifacts. No temporally diagnostic artifacts were recovered during pedestrian survey of SA1. The artifact types and associated number of each recovered in this survey area are listed below. Individual artifacts are listed in the site summaries located with Appendix F of Volume 2 of this report.

Table 6: Artifacts Recovered from SA1

Prehistoric Artifacts	No.
Angular Shatter	15
Core	10
Core Tool	4
FCR	23
Flake	19
Flake Tool	7
Ground Stone	52
Total	**130**

Figure 17: Survey Area 1 Sites over [redacted] Indiana 7.5 minute USGS Quadrangle

Figure 18: Survey Area 1 Sites over 2005 Aerial Photograph.

Survey Area 1 Sites

Six new archaeological sites were discovered in SA1 (12D636 – 12D641; Figure 17, Figure 18). Site 12D480 was also reinvestigated. Reinvestigation objectives included mapping of soil and artifact distributions as well as updating the site's boundaries. The original acreage total for 12D480 taken from the SHAARD database site polygon measures approximately 3.13 acres with site dimensions of 286.55 m east-west by 48.80 m north-south. Our pedestrian survey updated site boundaries based on the distribution of artifacts and soil phosphate and magnetism to approximately 2.01 acres with site dimensions of roughly 196.35 m by 69.03 m. Artifact-dense regions of 12D480 are located primarily in the middle and western and north to northwestern portions of the original polygon. The original definition of 12D480 by Parrish and McCord (1995) was based on an interview with the landowner and not actual survey or observation of archaeological material at the location. This interview resulted in defining an extremely large, oblong area that does not correspond the anything in the distribution of either anthrosols or artifacts. The preponderance of the collection examined was from a terminal Archaic/Early Woodland occupation with a secondary component of a Late Prehistoric village

(see Appendix B). The site definition was intended to capture the location of the most concentrated cluster of prehistoric activity. As such, we refine the site boundaries of 12D480 to correspond with these primary occupations. Our investigation expands knowledge of the distribution of activity of differing scales over various periods of the archaeological past. To better reflect the variable density of patterning of prehistoric activity on this alluvial setting, we define several new sites, some of which are within the original, overly expansive boundaries of 12D480. Our redefinitions are a better representation of the pattern of prehistoric activity as captured by the archaeological construct of "site" (Dunnell 1992).

Within SA1, 12D480 was the only site identified as a temporally unidentified prehistoric lithic scatter. Sites 12D636 – 12D641 are all temporally unidentified prehistoric isolated finds.

SA1 contained sites located on two different soil associations. Both of these soil associations are frequently flooded (Soil Survey Staff 2012; Figure 6). Site 12D480 is located both sides of the boundary between Huntington silt loam (Hu) and Chagrin silt loam (Ch). Sites 12D636 and 12D641 are located on Chagrin silt loam. The remaining sites, 12D637-12D640, are located on Huntington silt loam only.

All seven sites located in SA1 are comprised of temporally unidentified prehistoric components, giving a prehistoric site density of one prehistoric site per 1.576 acres (0.638 ha). Prehistoric artifacts were encountered in densities of about 11.79 per acre. As stated prior, no historic sites or artifacts were recorded for SA1.

Survey Area 1 Soil Phosphate and Magnetic Susceptibility Results

Soils analysis of SA1 reveals two distinct areas of probable prehistoric activity. These are shown below in Figure 19 and Figure 20. One of these areas corresponds with the artifact collection loci from our pedestrian survey, representing the [redacted] (12D480). The alluvial nature of SA1 led us to collect soil samples from the plow zone as well as the subsoil. For more information on soil survey procedures, refer to the soils analysis section of the laboratory methods portion of this volume.

Of the landowner collection donated to the AAL for SA1, only one artifact has a known provenience. This artifact is an Adena Stemmed point, diagnostic of the Early Woodland Adena cultural phenomenon in the Eastern Woodlands (Justice 1987:192). This projectile point was stated by the landowner to have been found east of their barn, which is very near the highest phosphate enrichment area of our soils analysis and is associated with 12D480. Adena points are stated to "occur as ceremonial grave offerings as well as wasted tools on habitation sites" (Justice 1987:192). A large portion of the artifacts in the landowner collection from SA1 are diagnostic Late Archaic and Early Woodland projectile points. If collected from the newly delineated boundaries of 12D480, this could add further evidence for the temporal designation of the site. Unfortunately, where all other artifacts from the landowner collection originate is not known for certain. As of now, our soils analysis coupled with the artifact analysis suggest the possibility that 12D480 may be rather large habitation of the Early Woodland period. The noticeable enrichment in soil phosphate content, large amounts of fire cracked rock and debitage, as well as the flaked stone tools recovered support this interpretation. However, there are also two distinct soil phosphate patterns. The buried enrichment which dominates the subsoil distribution map represents an earlier depositional event which has been clipped by plowing and drawn into the plowzone. The second (shallower and more recent) pattern located to the north of

this and within the original boundaries of 12D480 is likely a discrete occupation separated in time and space from the earlier (deeper) event. This may be a Late Prehistoric village. The shallow phosphate distribution suggests a faint ring-shaped pattern that is typical of Late Prehistoric villages. Further investigation is clearly needed to clarify the nature of this site.

Magnetic susceptibility (MS) analysis was conducted on the same soil samples analyzed for soil P. The low frequency (LF) mass specific MS enriched area matches the overall orientation of the original SHAARD polygon, but the peaks define a more constricted area of intense activity (Figure 21). The areas of most intense LF MS describes an arc along the southern edge of the original polygon up to the north towards the Whitewater River cutting through the middle of the polygon. The frequency dependent (FD) MS shows a distinct concentration on the southern end of the survey area centered in the same area as the largest peak in LF. Overall, however, there appears to be an extensive area with heat induced magnetism focused at the southern end of the LF MS arc. The soil samples from SA1 have been nearly entirely measured, however, the southern thirty meters has only been completed to a 20 m x 20 m resolution. The trends in distribution at the southern extreme are somewhat generalized.

The relationship between P and MS in SA 1 is very interesting. The extreme phosphate enrichment in the southwest corner of SA1 is not the most enriched in MS, though still high. Both LF MS and soil P exhibit an arc-shaped pattern within the western side of the original SHAARD polygon that overlaps. The eastern side of the arc is weaker in soil P and stronger in LF MS. The western arc is not visible in the LF MS, but relatively strong on P. The eastern low peak in P is not present in the LF MS, but is a narrow ridge in the FD MS. Direct comparison of the two is complicated by the extreme subsoil enrichment of P in the southwest corner which is overshadowing the strong plowzone P signal.

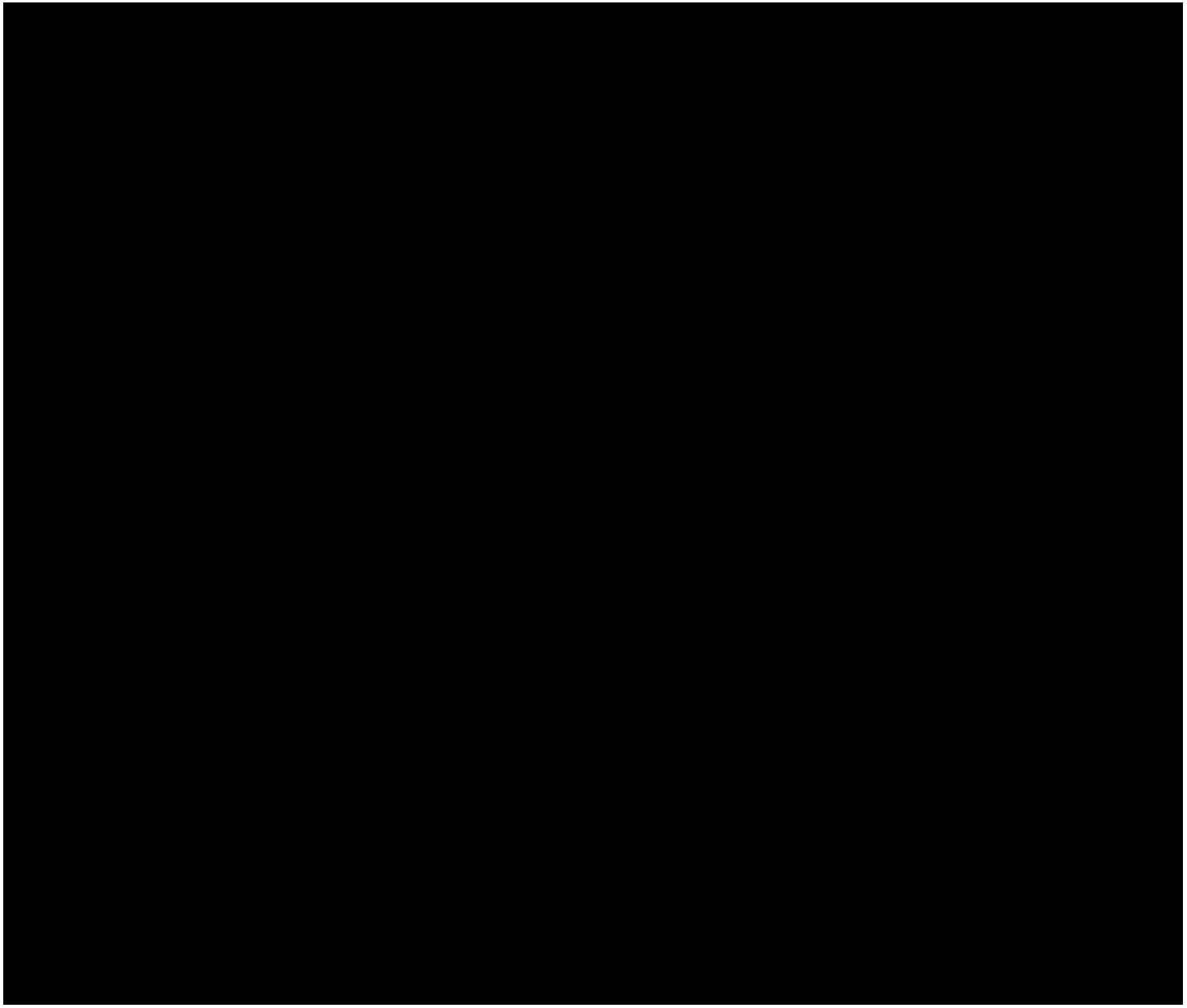


Figure 19: Kriging of SA1 Soils Phosphate in the Plowzone (~5 – 15 cm bgs).

Figure 20: Kriging of SA1 Soils Phosphate from the Subsoil (~30 – 40 cm bgs).

Figure 21: Kriging Surface of SA Low Frequency Mass Specific Magnetic Susceptibility. Units presented in $X * 10^{8}$.

Figure 22: Kriging Surface of the Frequency Dependent Magnetic Susceptibility Distribution in Survey Area 1.

Survey Area 1 Site Recommendations

One site within SA1 warrants further discussion. Site 12D480 is a substantial occupation as indicated by the description given in the original investigation report (Parrish and McCord 1995), the density of FCR and ground stone tools, and the distribution of plowzone and subsoil phosphate and magnetic susceptibility. The site has been heavily impacted by collectors, but our soils analysis indicates that there are is midden at the site and very likely intact subsurface deposits. The exact age of the occupation(s) is unknown. The [redacted] collection holds a majority terminal Archaic/initial Woodland material with a small number of Late Woodland/Late Prehistoric artifacts that may have been collected elsewhere. Where the artifacts originated is unknown. Additional investigation is warranted to verify timing and nature of the occupation(s). Potential exists to contribute much needed information regarding terminal Archaic/initial Woodland transitions, as well as Early Fort Ancient activity in the area. Lastly, any road repairs through the site should be monitored as intact deposits undoubtedly exist beneath the modern road. This site is potentially eligible for listing on the State and National Registers with regard to criterion D, as the site can yield valuable data on the Late Prehistoric in Southeastern Indiana as well as possibly the terminal Archaic/Early Woodland transitional phase.

The remaining sites are isolated finds comprised of temporally unidentified prehistoric artifacts. Sites reported from isolated finds are not generally considered eligible for listing on the National Register of Historic Places. The alluvial setting of the entire survey area and the documentation of subsurface phosphate and MS highlight the possibility of intact subsurface deposits. Subsurface reconnaissance is recommended for the entire area within SA1.

Survey Area 2

SA2 is located in [redacted] as shown on the USGS 7.5' [redacted] Quadrangle map (Figure 16). Pedestrian survey of SA2 took place on Sunday, October 20, 2013 as well as Tuesday, October 22, 2013. Ground surface visibility was between 70 and 90 percent and was in standing corn. The southern extreme of the eastern side of the land parcel was not surveyed, as the agricultural debris left over from the harvest made visibility fall below the requirement. Weather conditions were favorable for archaeological survey.

SA2 is comprised of approximately 21.32 acres (8.63 ha). The soils of SA2 are relatively young characterized as a fine loamy Eutrudept (Ch) and a coarse loamy Udifluvent (Stonelick sandy loam, St). Both of these soil phases are frequently flooded (Soil Survey Staff 2012). The SMU division largely characterizes the topographic situation with the Entisol occupying the north end of the SA most proximate to the river, and the Inceptisol occupying an elevated ridge in the southern two-thirds of the SA. The boundary is also visible on the ground as a noticeable transition to a very high sand content at the bottom of the slope. SA2 is located directly [redacted] of the Whitewater River, [redacted]. This water source would have yielded a variety of resources that would have been available to prehistoric peoples in the area.

SA2 was targeted because it contains a significant portion of 12D491, also known as the [redacted]. The site was recorded as a Fort Ancient village site by Parrish and McCord (1995:38) during their survey of Dearborn County, after being informed by a local artifact collector. Parrish and McCord discuss the [redacted] as being an example of a site where excavation could yield information on the use of salt during the Late Prehistoric period (Parrish and McCord 1995:31). They also mention that the collector who informed them of the site had collected a large amount of material from the [redacted] Lastly, Parrish and McCord strongly recommended that the site undergo further analysis (Parrish and McCord 1995:38).

Though we have not been able to contact Parrish and McCord's informant to view the original documented collection, the current landowners retained a small collection of their own. The current landowner collection was loaned to the AAL for the duration of this project for analysis and photography. The collection includes 11 sherds of shell tempered pottery, one ground/chipped stone axe, one broken tooth, 14 late prehistoric triangular cluster points (Justice 1987:224-230), one flake tool, one flake, one non-artifact limestone rock, and one personal, non-artifact necklace. Of the eleven shell tempered sherds, there is one incised rim fragment with a guilloche design, one body fragment with a guilloche design, three collared rim fragments, four cordmarked body fragments, and two undecorated body fragments. The collection has been photographed (Appendix C) and cataloged with the rest of the artifacts from SA2.

Pedestrian survey in SA2 area yielded an extremely large quantity of artifacts, necessitating the use of a simplified version of the analysis method. This method has been laid out in the Laboratory Methods section of this report (see Table 5).

Survey Area 2 Artifacts

A total number of 11,917 artifacts were collected from SA2, consisting of 11,889 prehistoric artifacts and 28 historic artifacts. Artifact categories and the associated number of

each type of artifact recovered in SA2 are listed below. Individual artifacts are listed in the artifact summary section, Appendix F of Volume 2 of this report.

Table 7: SA2 Artifacts by Category

Prehistoric Artifacts	No.	Historic Artifacts	No.
Angular Shatter	377	Ceramic: Yellowware	1
Biface	36	Ceramic: Redware	4
Bladelet	8	Ceramic: Stoneware	1
Ceramic: Shell Temper	3,411	Ceramic: Whiteware	2
Ceramic: Grit Temper	38	Glass: Clear	5
Ceramic: Shell/Grit	20	Glass: Amber	3
Ceramic: Burnt Clay	1	Metal: Pipe/Fixture	1
Core	449	Nail	1
Core Tool	36	Plastic	8
Diagnostic Biface	46	Asphalt	2
Fauna	1,793		
FCR	53		
Flake	5,209		
Flake Tool	366		
Groundstone	42		
Other Lithics	4		
Total	**11,889**		**28**

Artifacts from SA2 are shown in the various figures below. Included are representative samples of broad categories of artifacts, as well as all diagnostic lithic artifacts and decorated ceramic sherds. Descriptions of SA2 prehistoric and historic artifacts shown in these figures are presented in the artifacts section to follow.

Figure 23: SA2 Historic Artifacts

Figure 24: SA2 Groundstone Tools

Figure 25: SA2 Diagnostic Lithic Artifacts (Part 1)

Figure 26: SA2 Diagnostic Lithic Artifacts (Part 2)

Figure 27: SA2 Biface Tools

Figure 28: Representative examples of SA2 flake tools

Figure 29: Examples of SA2 cores

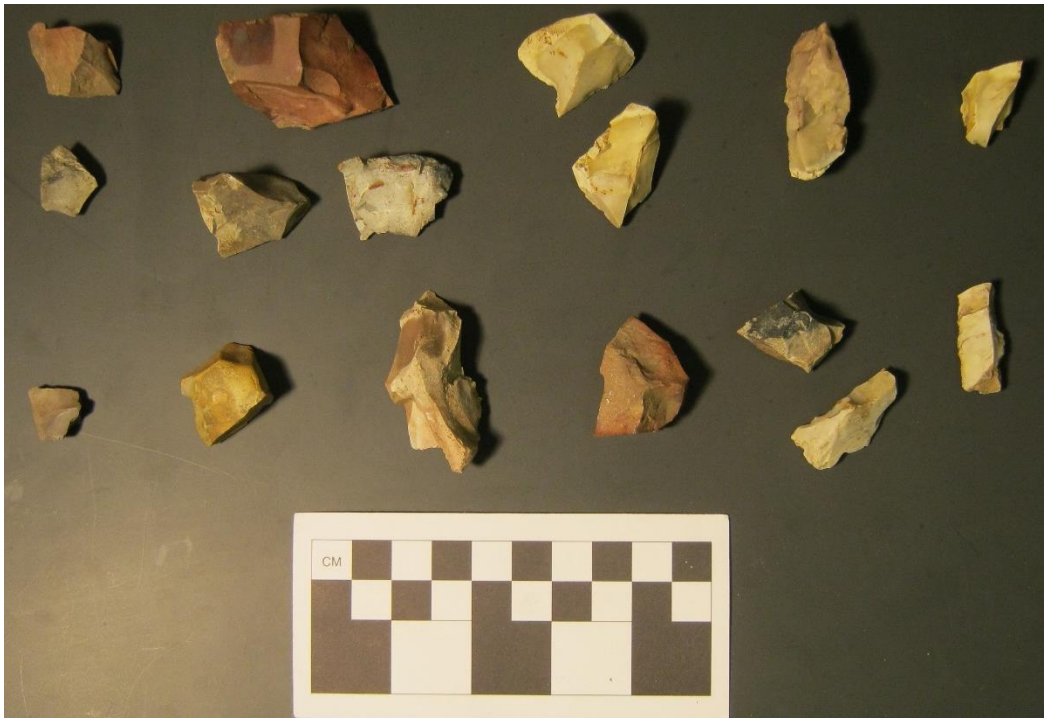


Figure 30: Representative examples of SA2 burnt angular shatter

Figure 31: Representative examples of SA2 flake debitage

Figure 32: Additional representative examples of SA2 flake debitage

Figure 33: Examples of SA2 rim sherds

Figure 34: Additional examples of SA2 rim sherds

Figure 35: Shell tempered rim sherd from SA2

Figure 36: Decorated body sherds from SA2

Figure 37: Additional decorated body sherds from SA2

Figure 38: Additional decorated body sherds from SA2, as well as red slipped sherd (top left)

Figure 39: Representative examples of shell tempered body sherds from SA2.

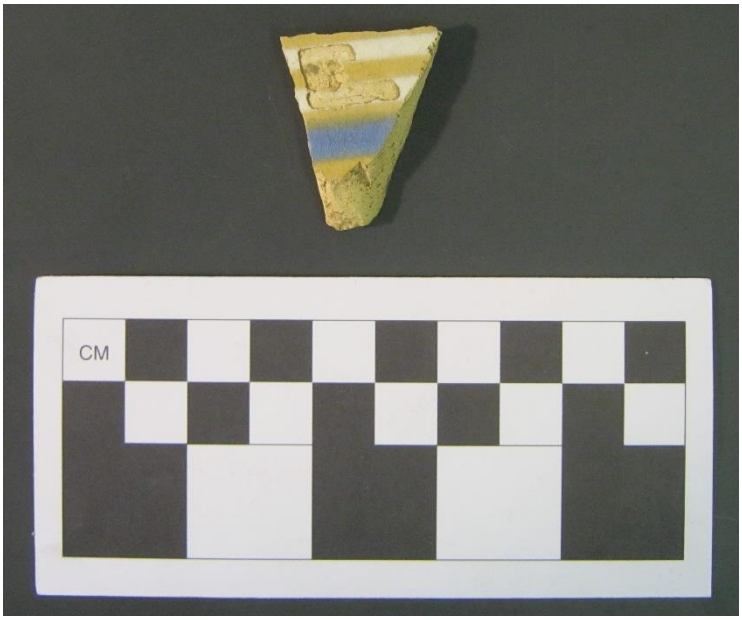


Figure 40: Example of historic yellowware from SA2

Figure 41: Examples of cordmarked body sherds from SA2

Figure 42: Representative Sample of Mammalian Fauna from SA2

Figure 43: Representative Sample of Mammalian Fauna from SA2.

Figure 44: Representative Sample of Mammalian Fauna from SA2.

Figure 45: Representative Sample of Mammalian Faunal Remain Recovered from SA2.

Figure 46: Representative Sample of Mammalian Faunal Remains from SA2.

Figure 47: Representative Sample of Non-mammalian and Miscellaneous/Unidentified Fauna from SA2.

Figure 48: Representative Sample of Mussel Shell Recovered from SA2.

Prehistoric Artifacts

A large variety of prehistoric artifacts representing multiple cultural periods were recovered from SA2. One Raddatz Side Notched projectile point, diagnostic of the Middle Archaic (Justice 1987:67), was recovered from SA2. This lone Archaic artifact was recovered from site 12D491, a multi-component Late Woodland/Late Prehistoric village site.

Eight bladelets were recovered, diagnostic of the Middle Woodland period Hopewell culture in the Eastern Woodlands (e.g., Greber et al. 1981; Nolan 2005; Nolan et al. 2007; Pi-Sunyer 1965). These bladelets were recovered from sites 12D491, 12D642, and 12D646. Another Middle Woodland diagnostic, a Snyders projectile point (Justice 1987:201-204), was recovered from site 12D491. Justice (1987:201) states that these points "appear with the rise of Hopewell ceremonialism".

The vast majority of the diagnostic artifacts recovered from SA2 are of the Late Woodland/Late Prehistoric transitional period. Forty-two projectile points of the Late Woodland/Mississippian Triangular Cluster were recovered from sites 12D491 and 12D642 (Justice 1987:224-230). Also recovered from 12D491 was an expanding stem projectile point, morphologically similar to a Steuben Expanded Stemmed, temporally "diagnostic of the terminal Middle Woodland to early Late Woodland periods" (Justice 1987:208). Lastly, a Fort Ancient knife was recovered from site 12D491. Fort Ancient knives, by name, are diagnostic of the Late

Prehistoric Fort Ancient cultural phenomenon of the Eastern Woodlands (Converse 1963:70; Shane and Murphy 1967:Figure 5).

Thousands of pottery sherds were recovered from SA2 . Three tempering types were recorded: grit, shell, and a grit/shell mixture. Shell/grit and shell tempered pottery sherds occur together in site 12D491. Shell tempered pottery occurs in sites 12D491, 12D643, and 12D651. Grit tempered sherds occur at sites 12D491, 12D643, and 12D646.

A very large number of temporally non-diagnostic prehistoric artifacts was recovered in SA2. Of these non-diagnostic prehistoric artifacts, there are 6,571 lithics. Of these non-diagnostic lithics 479 are tools. These tools are comprised of ground stone tools (8.77%), flake tools (76.41%), core tools (7.51%), and bifacial tools (7.31%). Also recovered was a large quantity of prehistoric fauna, comprised of mammalian (N = 380, 1615 g), non-mammalian vertebrate (N = 110, 131 g), and mussel shell fragments (N = 92, 160 g). Fauna was recovered almost exclusively from 12D491.

Historic Artifacts

Multiple historic artifacts were recovered from SA2, a number (N = 17) of which are temporally diagnostic. One sherd of yellowware ceramic was recovered with a manufacturing date range of 1840 – 1940 (Stelle 2001). Also recovered were two body fragments of whiteware. Whiteware ceramic manufacturing dates to a range of 1820 – Present (Feldhues 1995:6). Four sherds of redware ceramic were recovered. Redware ceramics have a manufacturing date range of 1850 – 1900 (Feldhues 1995:1). The last historic ceramic sherd recovered was a body sherd of stoneware, dating from 1820 – Present (Feldhues 1995:6). Two kinds of historic glass were found, including clear glass and amber glass. The five clear glass fragments recovered date to 1875 – Present (IMACS 1992:472). The three amber glass fragments recovered date to 1860 – Present (IMACS 1992:472). Lastly, one machine cut nail was recovered. The machine cut nail is of a modern variety, dating from around 1830 – Present (IMACS 1992:470).

The historic assemblage recovered from SA2 ranges from around 1820 – Present, yet there is no recognizable, overarching pattern to the historic artifacts recovered when analyzed spatially. No historic homesteads are shown on the topographic map in this area.

Figure 49: Survey Area 2 Sites over [redacted] Indiana 7.5 minute USGS Quadrangle

Figure 50: Survey Area 2 Sites over 2012 Aerial Photograph.

Survey Area 2 Sites

Ten new archaeological sites were recorded in SA2 (12D642-12D651; Figure 49, Figure 50). Site 12D491 was a focus of reinvestigation in this survey area. Reinvestigation objectives included mapping artifact distributions and updating site boundaries. We had originally planned to perform soils analysis at 12D491, but ran out of time and resources. As 12D491 is recorded originally to extend to the west out of SA2, we were only able to reinvestigate a portion of the site. The original definition of the site by Parrish and McCord (1995) was based on an interview with a collector and not any visit to the actual location. This interview resulted in defining an extremely large landform as a single site. The preponderance of the collection examined was from a Late Prehistoric village. The site definition was intended to capture the location of "Fort Ancient" activity on the landscape. As such, we refine the site boundaries of 12D491 to correspond with this primary occupation. Our investigation expands knowledge of the distribution of activity of differing scales over various periods of the archaeological past. To better reflect the variable density of patterning of prehistoric activity on this alluvial setting, we define several new sites that are within the original, overly expansive boundaries of 12D491. Our redefinitions are a better representation of the pattern of prehistoric activity as captured by the archaeological construct of "site" (Dunnell 1992).

This reinvestigation was successful in examining artifact density for the site within our survey area, in turn allowing for the boundaries of the site to be delineated more clearly. The original 12D491 SHAARD database polygon has an area of 29.42 acres. Of this area, our survey area contains the 10.94 acres comprising the furthest northern, eastern, and southeastern edges. Our pedestrian survey places the furthest northern boundary of 12D491 approximately 185.27 m west and 25.25 m further north of its current location as delineated on the 12D491 SHAARD polygon. The furthest eastern portion of the site delineated in our survey places the eastern boundary roughly 185.27 m west of its current position in the SHAARD polygon. It must be stated, however, that 46.72 m of the 185.27 m estimate is no longer tilled agricultural field and did not undergo pedestrian survey.

One site, 12D491, has been identified as a Fort Ancient village containing general artifact classes of lithics, prehistoric ceramics, and prehistoric fauna. One human parietal bone was identified in the field and was not collected. Another human parietal bone was later identified during artifact analysis in the laboratory. NAGPRA guidelines are being followed for the parietal identified during artifact analysis. The Department of Historic Preservation and Archaeology has been notified of each of these human remains and all procedures have been complied with or are in process of being carried out. The Dearborn County Sherriff's office and Coroner were notified for the human remain identified and left in place during survey.

Site 12D651 may be a southern extension of the 12D491 Fort Ancient village, containing general artifact classes of lithics, prehistoric fauna, and prehistoric ceramics. The nature of and the relation between the various Late Woodland and Late Prehistoric activity areas in SA2 warrants further investigation.

One site contained an archaic component. This is identified at 12D491 in a Raddatz projectile point, diagnostic of the Middle Archaic (Justice 1987:67). Three sites (12D491, 12D642, and 12D646) contain a Middle Woodland component, represented by bladelets that are diagnostic of the Middle Woodland Hopewell phenomenon in the Eastern Woodlands (e.g., Greber et al. 1981; Nolan 2005; Nolan et al. 2007; Pi-Sunyer 1965). Three sites have been classified as containing Late Woodland/Late Prehistoric scatters, including sites 12D491, 12D642, and 12D651. One site, 12D643, has been classified as a mixed Woodland and Historic scatter. Two sites, 12D645 and 12D649, have been classified as Historic isolated finds. Site 12D650 is the only site in SA2 classified as an unidentified prehistoric isolated find. Lastly, three sites have been classified as unidentified prehistoric lithic scatters. These sites are 12D644, 12D647, and 12D648.

SA2 contained sites located on two different SMUs, both of which are frequently flooded (Soil Survey Staff 2012). Site 12D491 is located on both sides of the boundary between Stonelick sandy loam (St) and Chagrin silt loam (Ch). Sites Sa2-2 (12D643) through Sa2-5 (12D646) and Sa2-7 through Sa2-11 (12D648-12D652) are located on Chagrin silt loam only. The remaining site, Sa2-6 (12D647) is located on Stonelick sandy loam only.

SA2 has nine sites containing a prehistoric component, giving a prehistoric site density of one prehistoric site per 2.64 acres (1.07 ha). Prehistoric artifacts were encountered in densities of about 499.54 per acre. This survey area also contained three sites with a historic component. This gives a historic site density of one historic site per 7.93 acres (3.21 ha). Historic artifacts were encountered with densities of 1.18 per acre.

In addition to our reconnaissance, we examined the LiDAR data available through IndianaMap and downloadable from OpenTopo. Within the boundaries of the original 12D491 SHAARD polygon there is a large rise to the west of SA2 on the lower portion of the same

floodplain ridge as the cluster of artifacts we define as 12D491 (Figure 51). The raw elevation and hillshading of the digital elevation surface shows the rise, which is up to 1.6 m (5 ft) tall and 130 m (427 ft) long, but the contrast is low. Reclassifying the display spectrum to use unique colors for each elevation value clearly shows the contrast between the contours of the possible mound and the surrounding topography (Figure 52). The age of the mound is unknown, but the feature is approximately the same size as the Late Prehistoric village to the east (what we redefined as 12D491). Given the abundance of Hopewell activity (i.e., multiple bladelet sites and the Snyders point, and possibly the some of the grit tempered ceramics) within SA2, it is possible that this represents a Middle Woodland mound. The owner of the current house lot adjacent to SA2 informed Swihart and Nolan that a large hill on the adjacent property (formerly owned by the same family) had been substantially plowed down and that a burial had been removed from the hill at some time prior to their taking ownership of the property. This is likely the same burial referenced by Parrish and McCord (1995) as coming from 12D491. More investigation of this possible mound is warranted to determine its nature, period of use, and association with the myriad sites scattered around the neighboring lowlands.

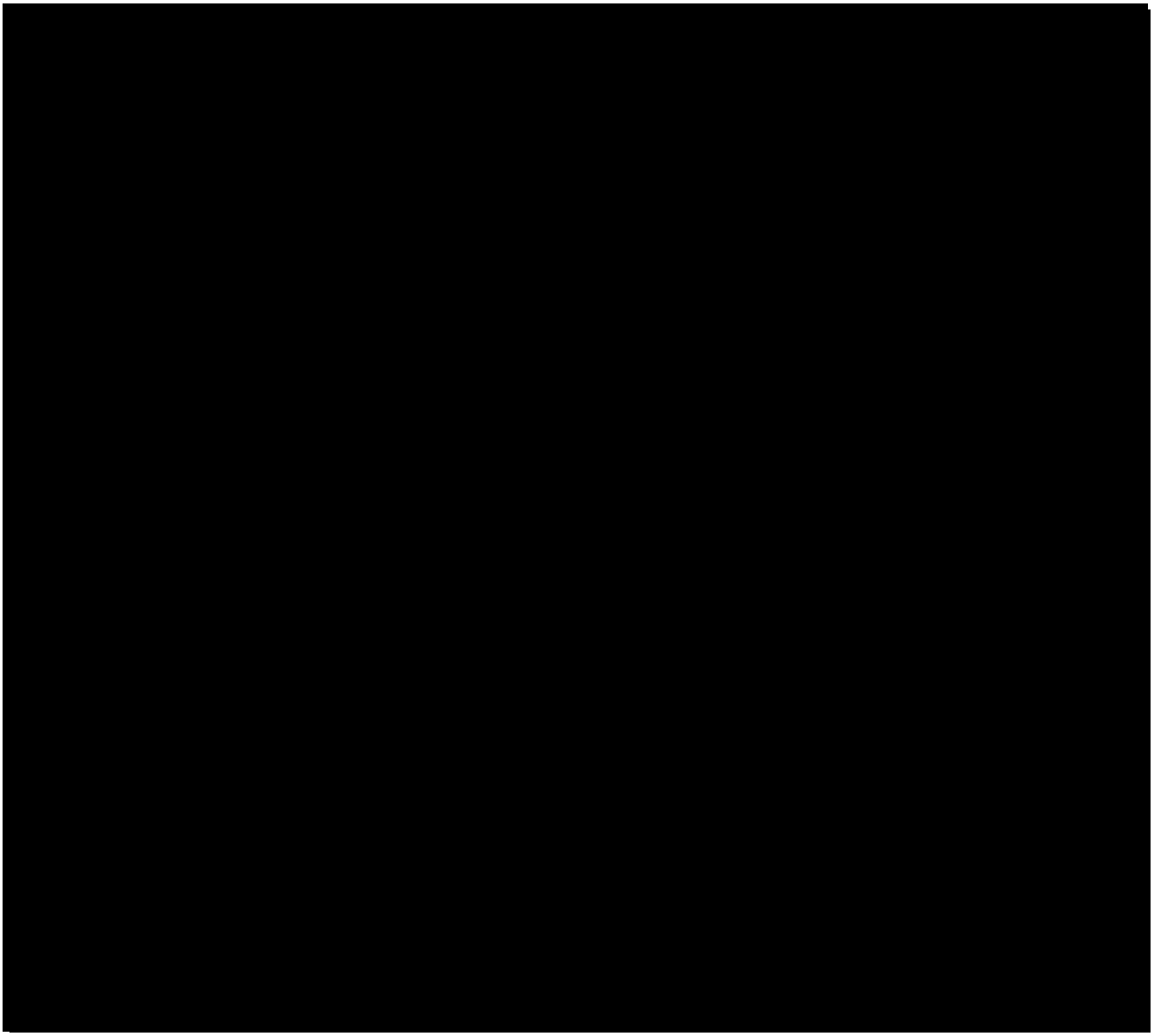


Figure 51: LiDAR Generated Elevation Surface for 12D491 and Surrounding Environment.
Note the large, oval rise just southwest of the heaviest concentration of artifacts.

Figure 52: Reclassified LiDAR Elevation Data for the 12D491 Vicinity.
Displaying the elevations as unique colors highlights the discontinuity of the possible mound west of SA2.

Survey Area 2 Spatial Analysis

Due to the extremely large quantity of artifacts recovered from SA2, we undertook a GIS spatial analysis using ArcMap 10.1 in an attempt to discover community organization patterns at 12D491 and neighboring sites. Surface data has proven effective in yielding crucial information for interpreting community patterns at other Late Prehistoric villages in the region (e.g., Hawkins 1998; Nolan 2010, 2011b). Three methods including density, interpolation, and cluster and outlier analysis were used during the spatial interpretation of SA2. Kernel density was used to calculate a magnitude per unit area from point data based on frequency for all major artifact classes including total artifacts (Figure 53), lithics (Figure 55), ceramics (Figure 58), fauna (Figure 65), groundstone and FCR (Figure 67), and historic artifacts (Figure 68). In addition to the broad artifact classes, density maps were created for a few subsets of the ceramic class including rims (Figure 60), decorated ceramics (Figure 62), and grit temper pottery (Figure 64).

The kriging method of interpolation, used to create a raster surface from point data, was used for two sets of interpolations. The first interpolation used a variable search radius using the closest 12 points. The second used a fixed search radius of 20m with a maximum of 6 points. These different search radii were chosen and displayed together (one with a 40% transparency) to create a more comprehensive understanding and interpretation of the variability in the data. A composite interpolation was created for all major artifact classes including all artifacts (Figure 54), lithics (Figure 56), ceramics (Figure 59), and fauna (Figure 65). In addition, composite interpolations were created for a few subsets of ceramic artifacts including rims (Figure 61) and decorated ceramics (Figure 63).

Historic artifacts (Figure 68) were represented by frequency maps because of the small number of total artifacts found; there was no distributional pattern or cluster present. In addition to the initial maps, diagnostic maps were made for all Middle Woodland and Late Prehistoric artifacts. The Middle Woodland map consists of the density of all lithics and the location of each Middle Woodland bladelet and a single Snyders point (Figure 69). There is no significant pattern or cluster of Middle Woodland artifacts. The Late Prehistoric map consists of the density of shell temper pottery and the location of all triangular points (Figure 70). Maps depicting the location of all bifaces over total lithic density (Figure 57) and the location of grit temper ceramics over total ceramics density (Figure 64) were also created to better describe the assemblage.

Cluster and outlier analysis utilizes Anselin Local Moran's I statistic to identify statistically significant hot spots, cold spots, and spatial outliers within the data based on frequency. The clusters of high values are represented by the black sections, clusters of outliers (high values surrounded by low values) are represented by the yellow sections, and clusters of low values are represented by the blue sections (Figure 71).

The entire SA2 survey area is represented by a black boundary line throughout the analysis. Both density and interpolation analyses were used to represent broad and fine grained spatial patterns. The density maps show survey area trends and highlight a highly concentrated area on the east section of SA2 within all distributions. Within the highly concentrated section, the west half is the most dense area (Figure 53, Figure 55, Figure 56, Figure 57, Figure 58, Figure 60, Figure 62, Figure 64, Figure 65, and Figure 67). The interpolation maps show the distributional variation and more or less dense areas within the west half (Figure 54, Figure 56, Figure 59, Figure 61, Figure 63, and Figure 66). It is important to look at both kinds of distributions in order to gain an understanding of SA2 as a whole as well as to understand the distributional variability within the densest area of the survey area. Based on the density and interpolation maps, within the densest area of SA2 there is considerably more dense side (west). After talking with the landowners, this difference in density between the west and east halves does not appear to be prehistoric. Just outside of the SA2 boundary line on the east section of the dense area is a hayfield that is no longer used for cultivation. In the past when this field was tilled the landowners had many requests to collect in this area and over the years they decided not to farm that area anymore because of the amount of artifacts that had been turned up. The less dense east side of SA2 is right next to the hay field and probably has less artifacts because of the amount of material previously collected from that section over time (Figure 72).

Within the denser west side, some distinct patterns became visible with the more fine-grained (6 point) interpolation. In the ceramic interpolation a higher concentration of artifacts is present in the southwest section of the high density area (Figure 59). The interpolation of rims is similar to the rim density map and shows only one high concentration area of rims (Figure 61).

However, it also shows a very low concentration of rims in the eastern part of the high density area. The fauna interpolation shows a similar pattern of one or two high concentrated areas of faunal remains within the higher density area (Figure 66).

In the total artifact interpolation, lithic interpolation, biface interpolation, and decorated ceramic interpolation there is a clear crescent or "c" shaped pattern with four extremely dense spots (Figure 54, Figure 56, Figure 57, and Figure 63). This pattern extends slightly into the less dense east areas on the north and south side of the crescent. In addition to this pattern being visible in these artifact class maps, it is also visible within the triangular points and shell temper pottery distribution (Figure 69). The groundstone/FCR density map also shows a crescent or "c" shaped pattern, but is more abundant in the northern and southern areas of the high density area (Figure 67). The grit temper pottery does not show the same distribution and instead is concentrated in the southern part of the high density area and is also along the western edge (Figure 64).

In addition to the crescent or "c" shaped pattern in the total artifact, biface, decorated ceramics, ground stone/FCR, and Late Prehistoric diagnostic interpolations, there is a clear area with very low density present. Although this area is visible in each of these maps, it is very clear in the biface frequency, lithic density, rim density, decorated ceramic interpolation and density, Late Prehistoric diagnostic, and ground stone/FCR maps. Because there seemed to be a partial circular pattern with a low density area in the center, the cluster and outlier analysis was used to identify areas of high and low significance. The partial circular pattern, along with very low density area is also apparent is the cluster pattern. On the west side of the high density area, there is a large cluster represented by the black areas. Curving around to the north and south there clusters of high values surrounded by low values represented by the yellow areas. In the middle of the crescent shaped distribution, there is an area of no significance (Figure 71).

These patterns are apparent in many artifact classes, and show up within the Late Prehistoric diagnostic map while the historic, Middle Woodland, and grit temper ceramics maps do not show any such patterning. Site 12D491 within SA2 appears to be representative of a Late Prehistoric circular village similar to numerous other roughly contemporary settlements (e.g., Cook 2008; Cook and Martin 2013; Dorwin 1971; Heilman et al. 1988; McCullough 2005; Means 2007; Nolan 2010, 2011b; Nolan and Cook 2010; Pollack and Henderson 1992; Redmond 1994). It is important to keep in mind the fact that the east side of this village area was heavily collected in the past and therefore has an overall lower density. However, the pattern still persists and there is a very low density area in the center.

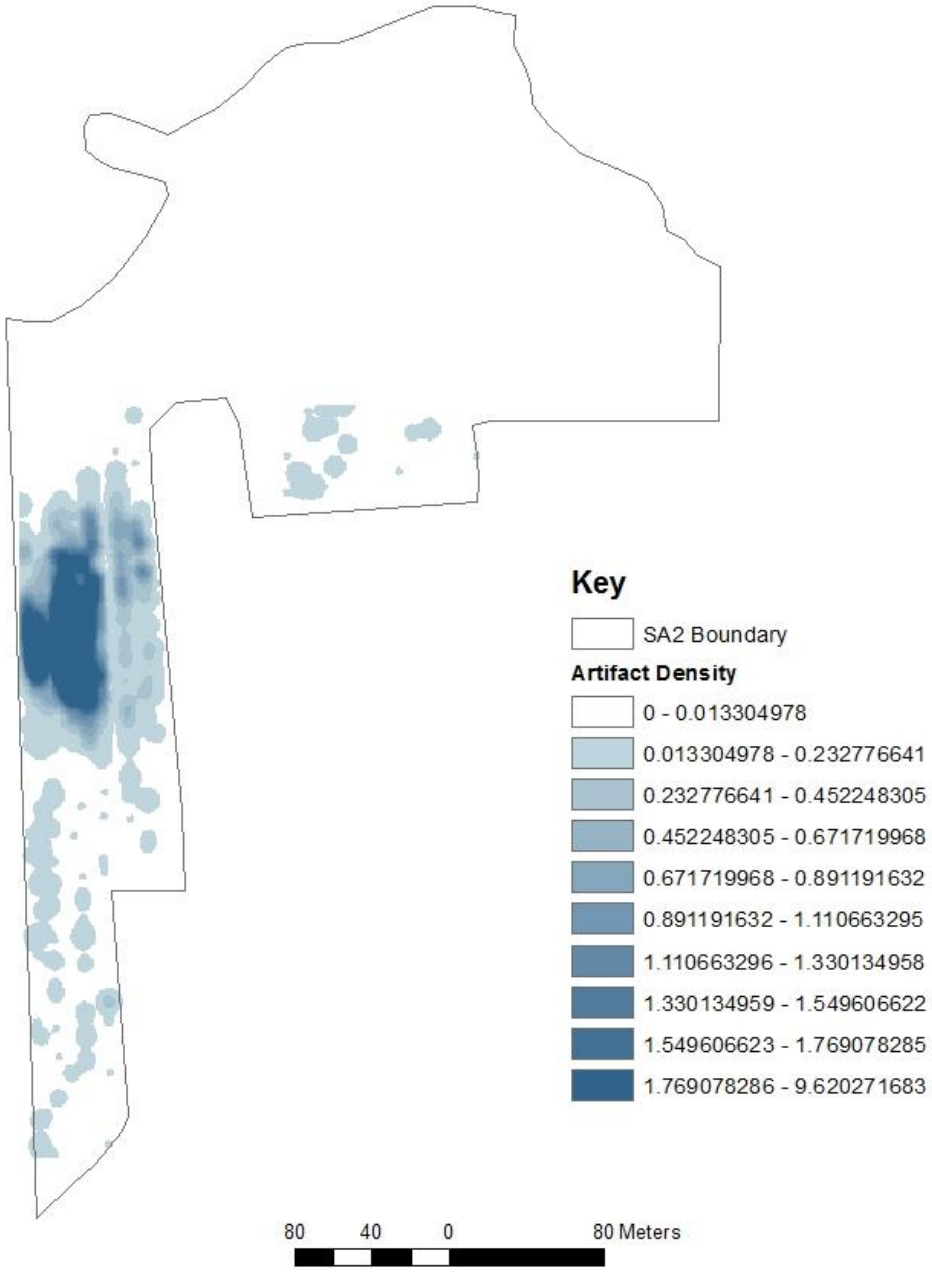


Figure 53: Density of all SA2 artifacts

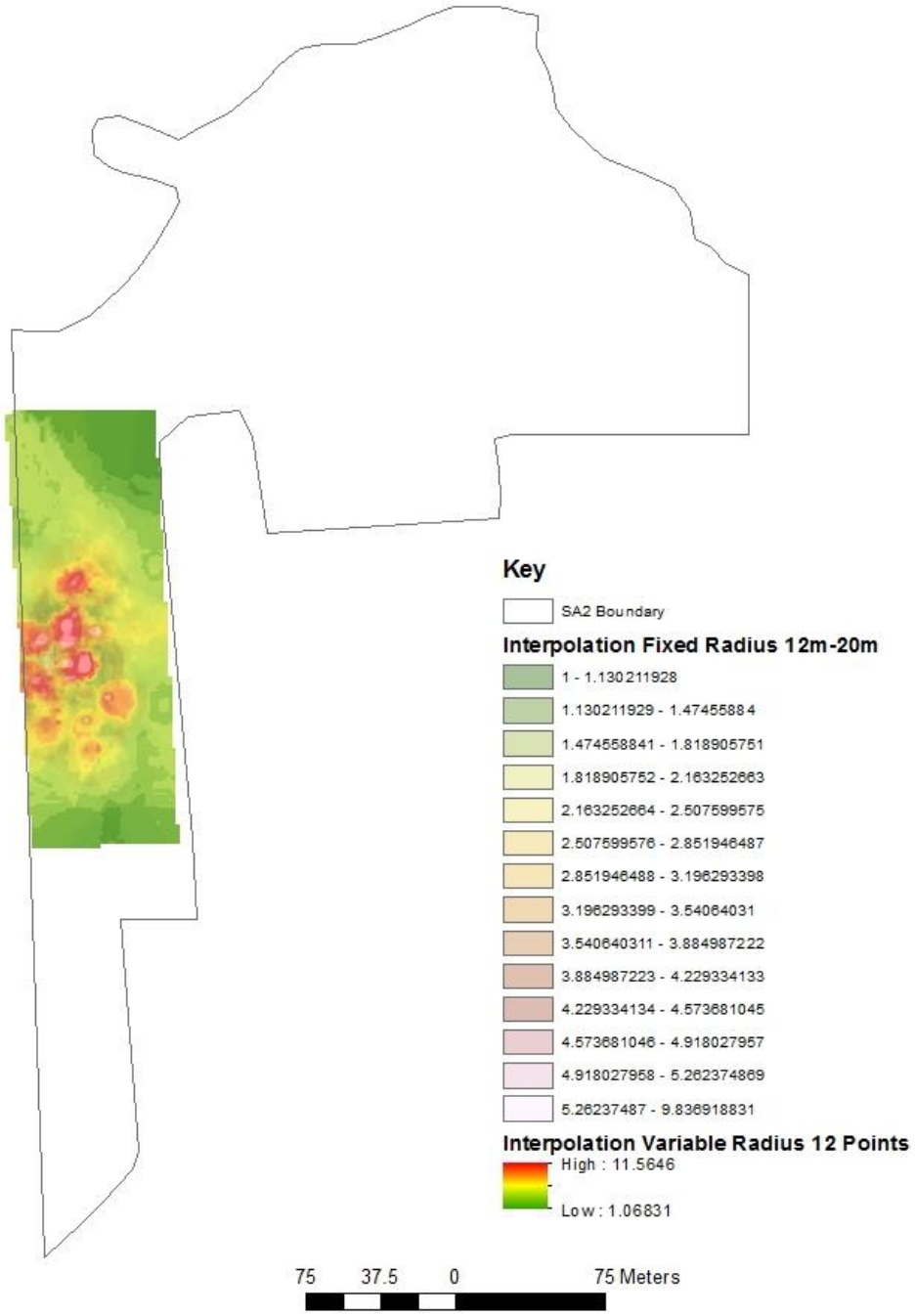


Figure 54: Composite interpolation of all SA2 artifacts

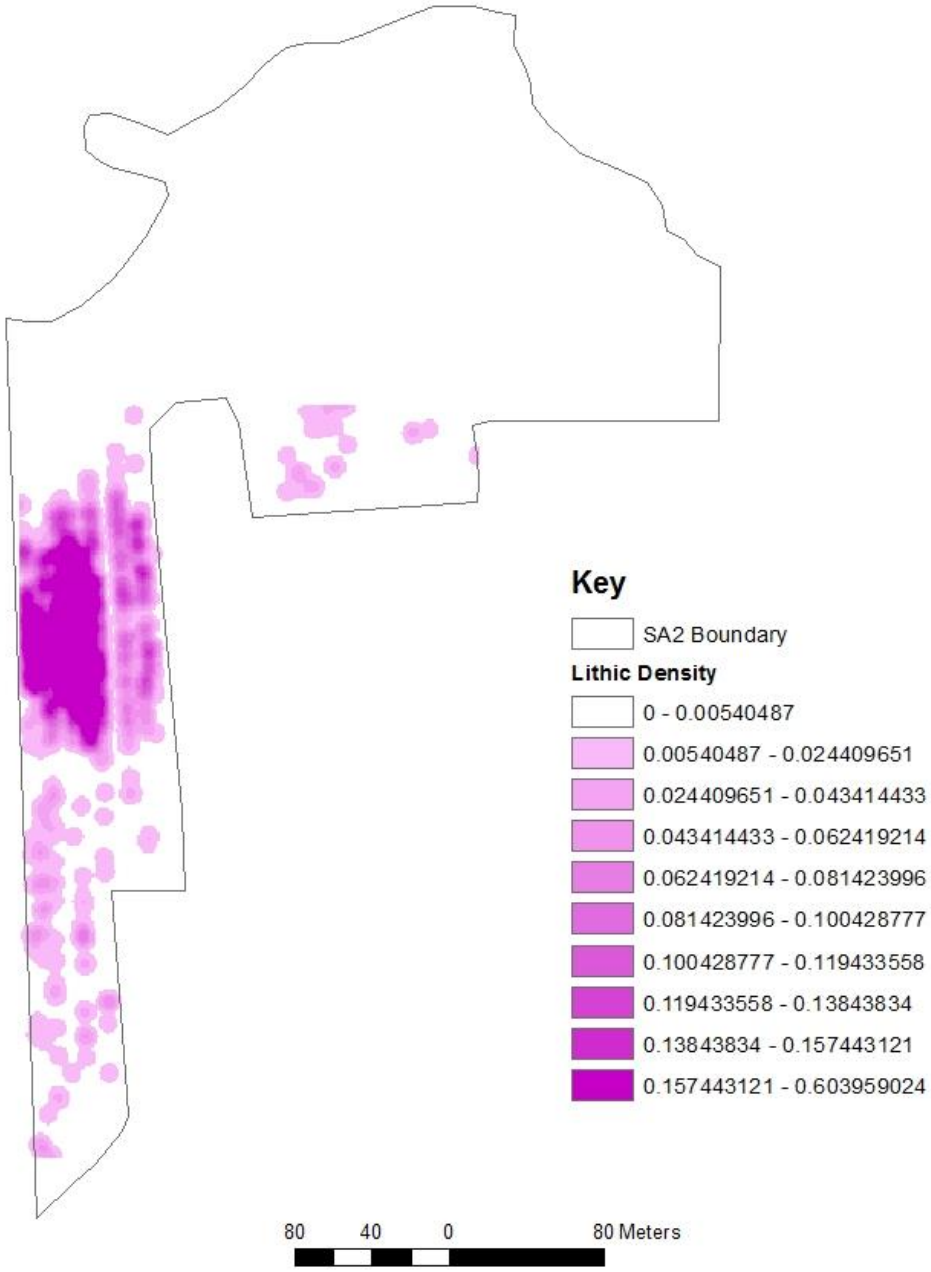


Figure 55: Density of all SA2 lithics

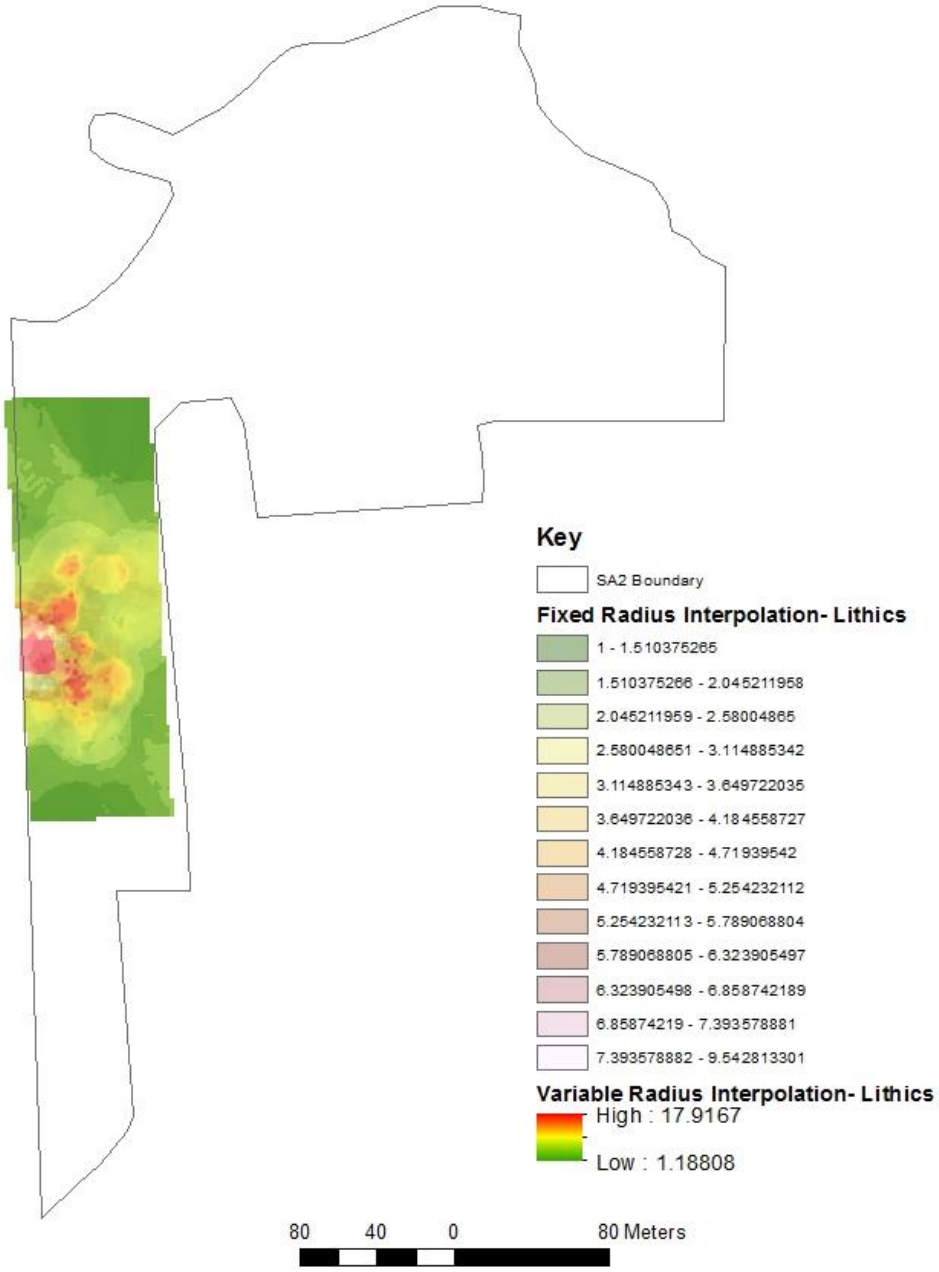


Figure 56: Composite interpolation of all SA2 lithics

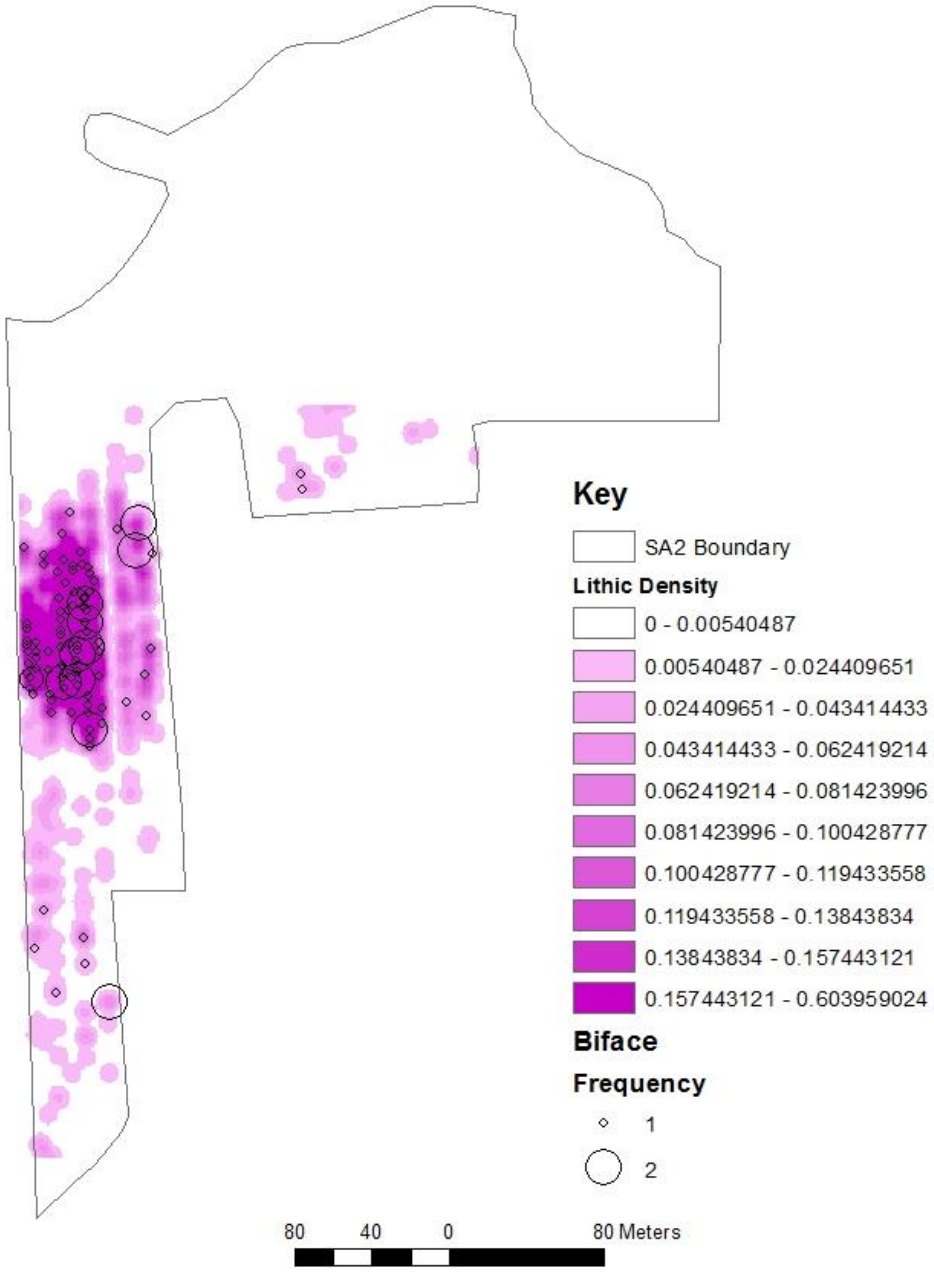


Figure 57: Presence of all SA2 bifaces and lithic density

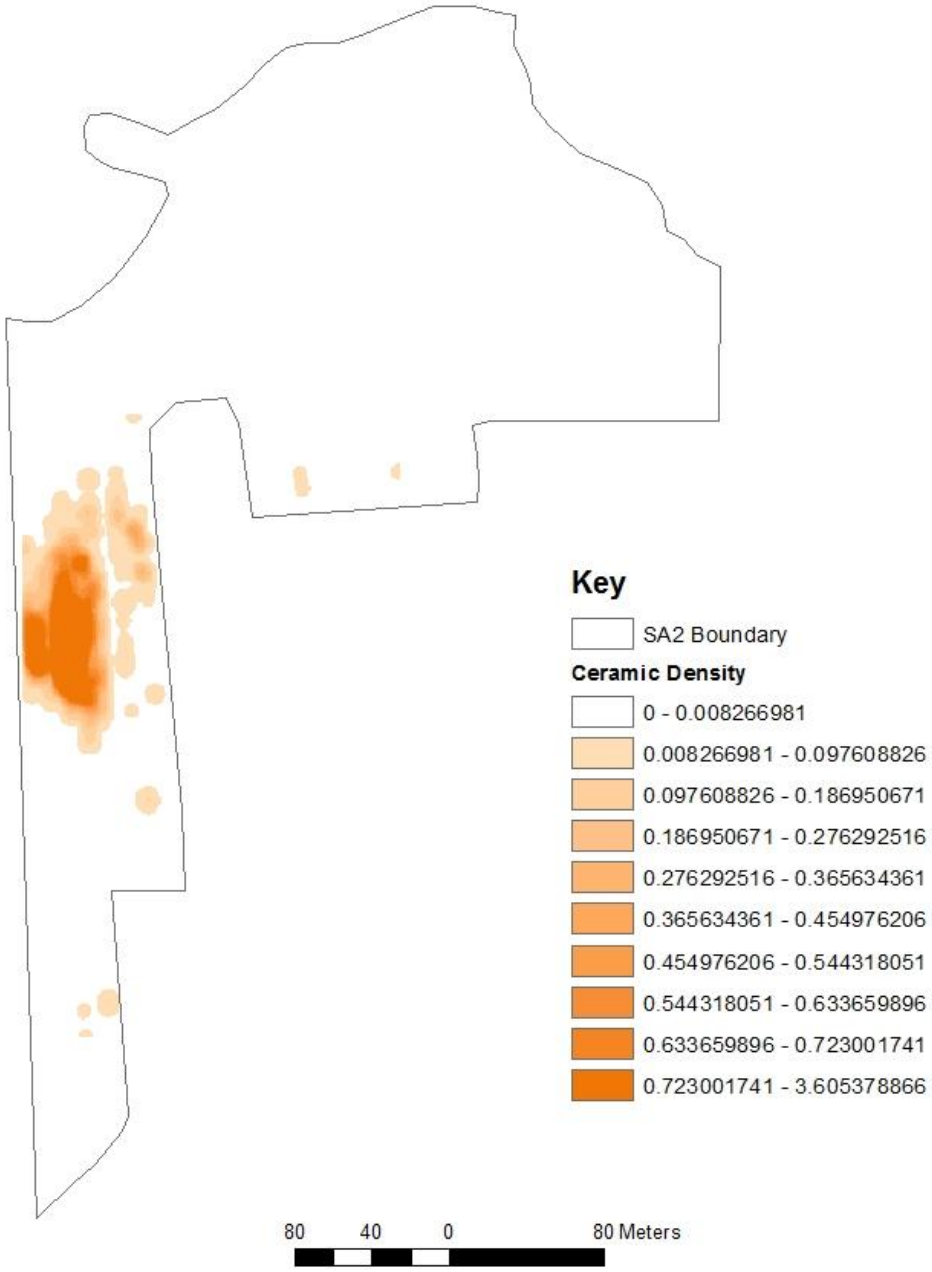


Figure 58: Density of all SA2 ceramic sherds

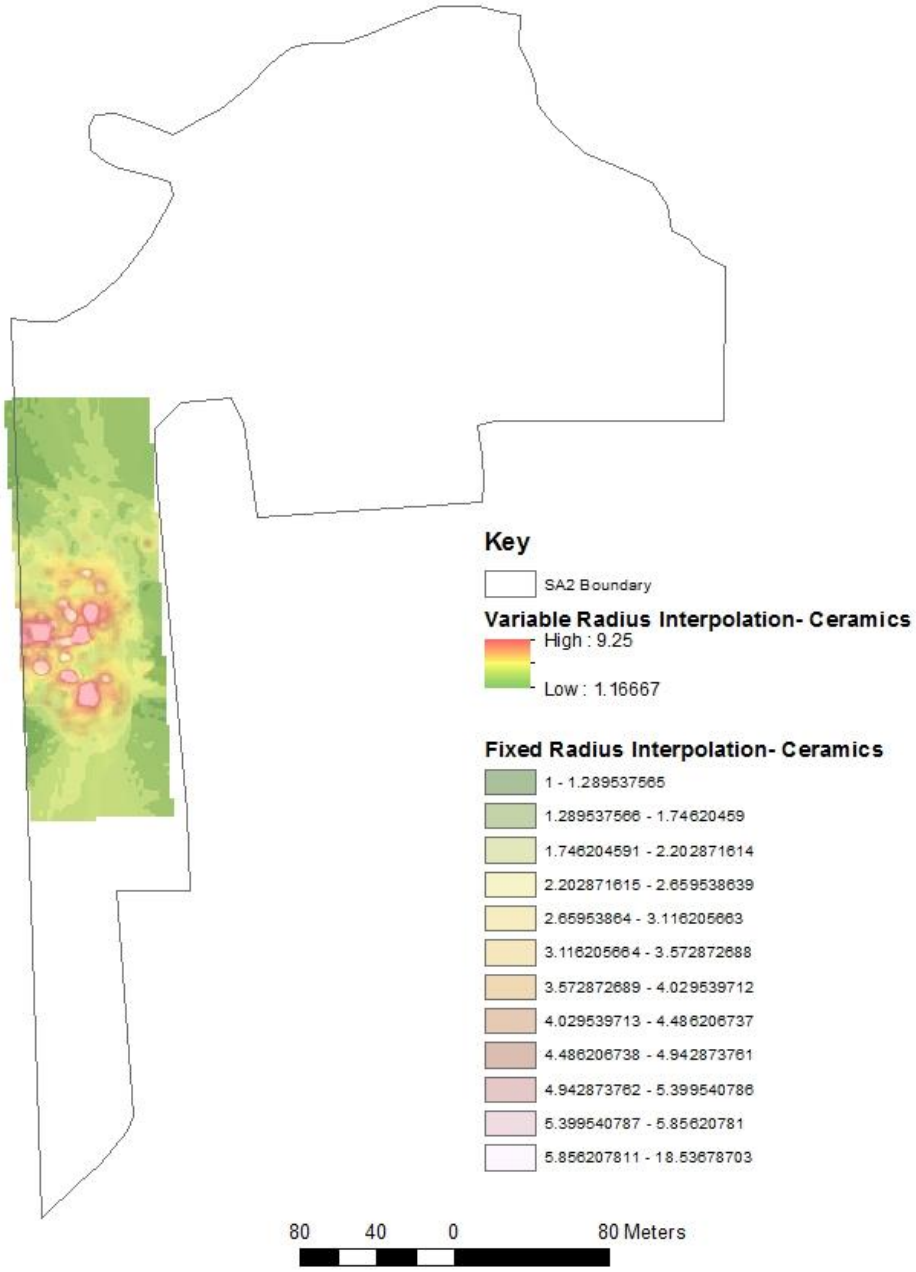


Figure 59: Composite interpolation of all SA2 ceramics

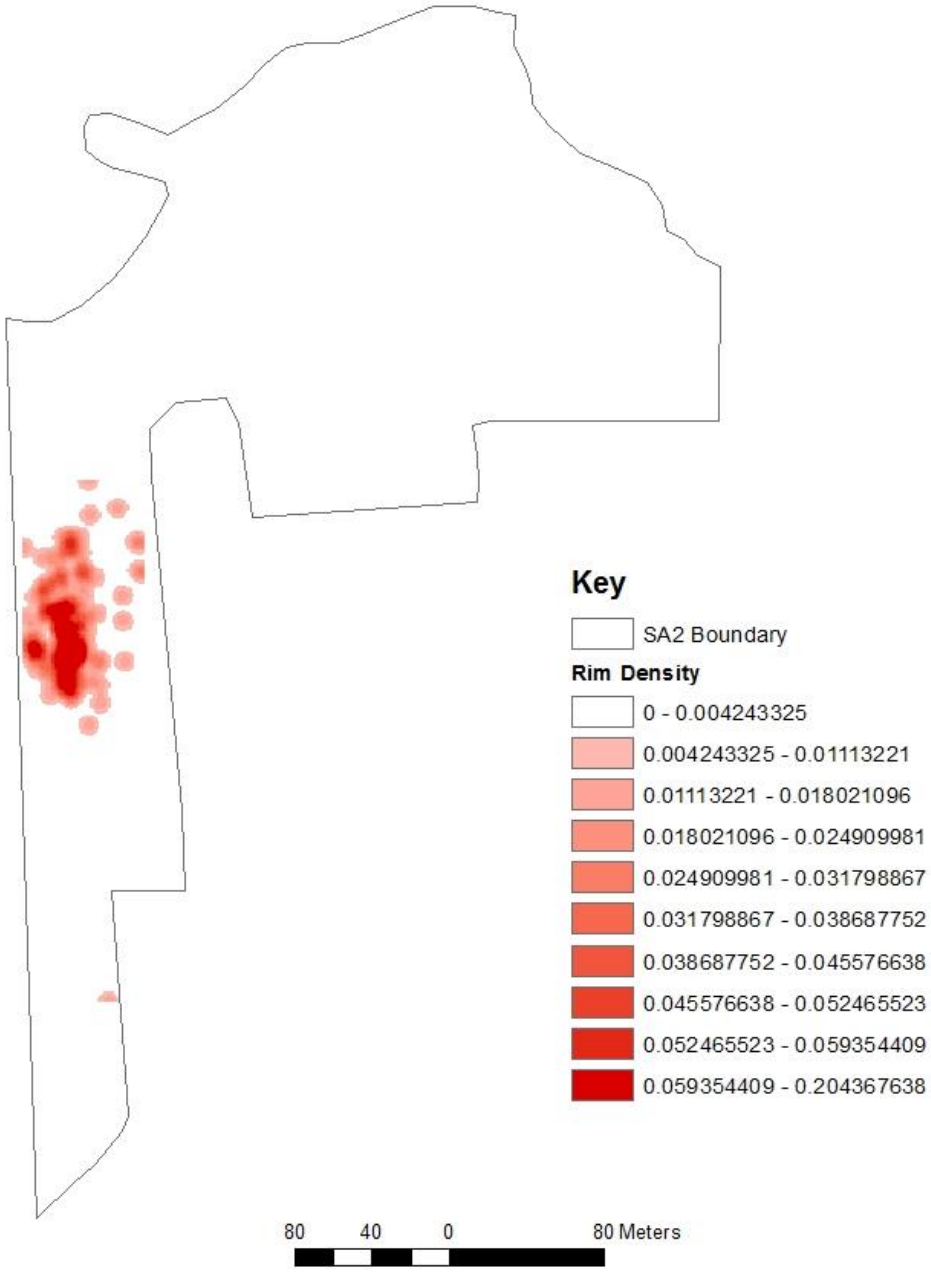


Figure 60: Density of all SA2 rim sherds

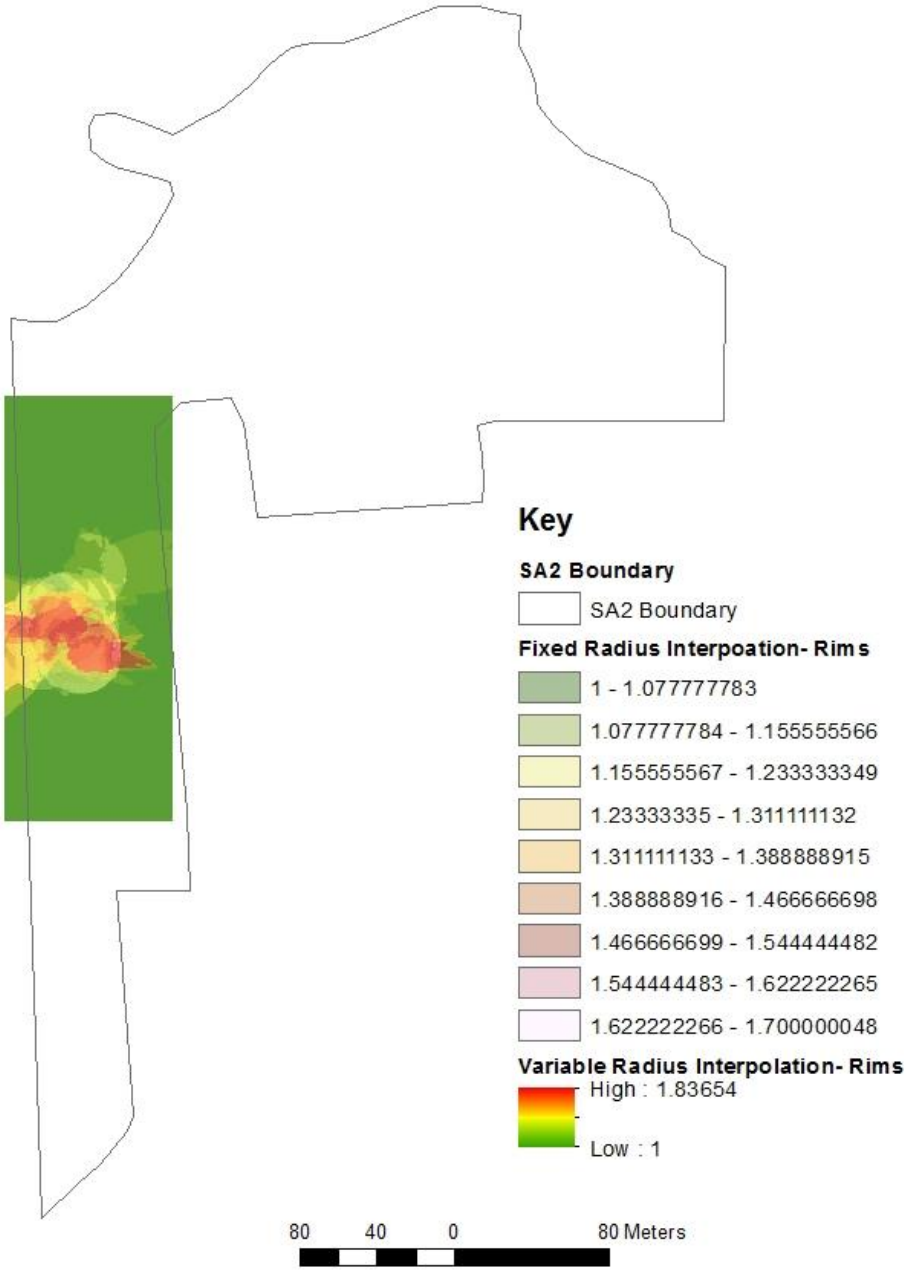


Figure 61: Composite interpolation of all SA2 rim sherds

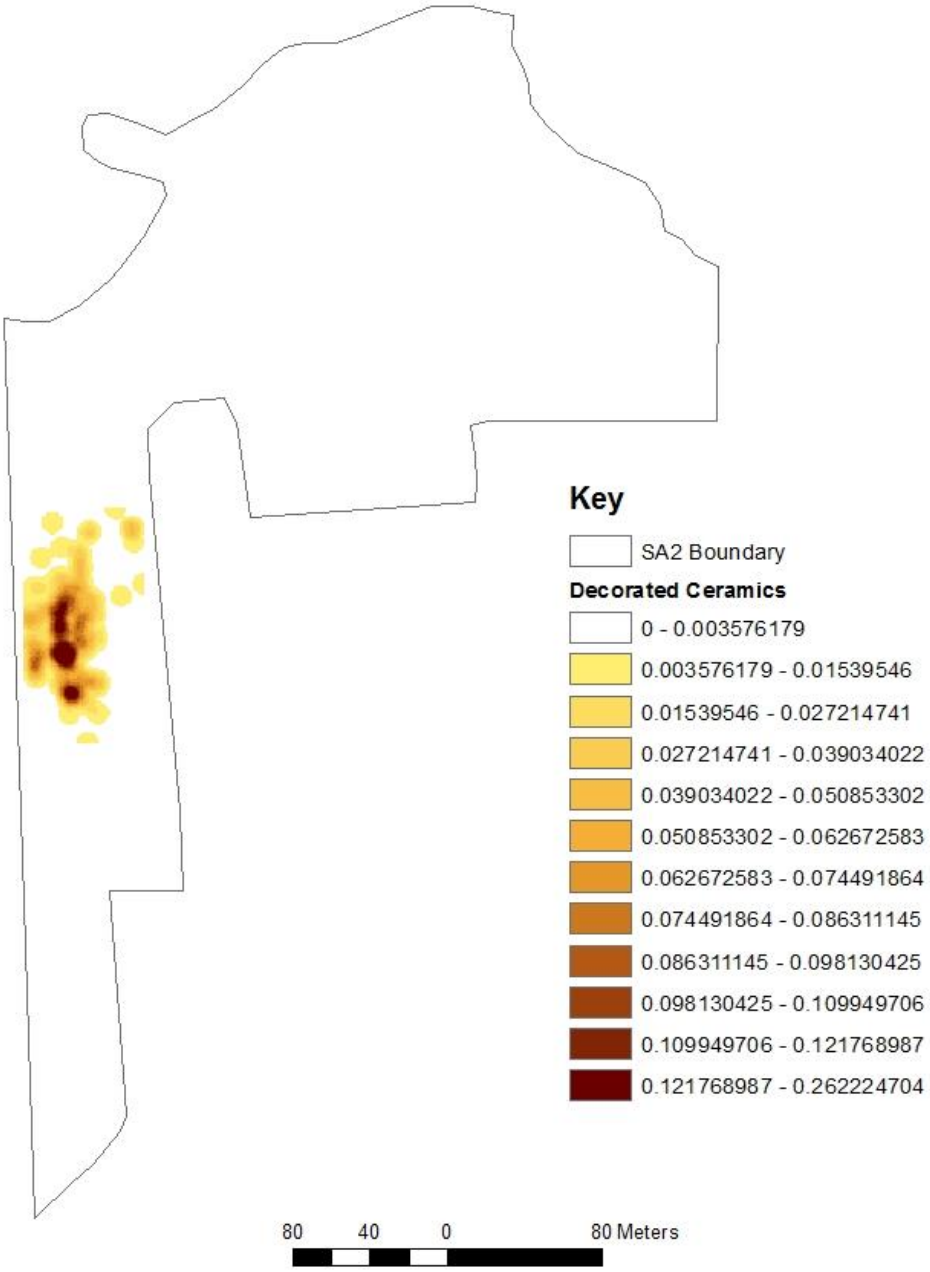


Figure 62: Density of all SA2 decorated rim sherds

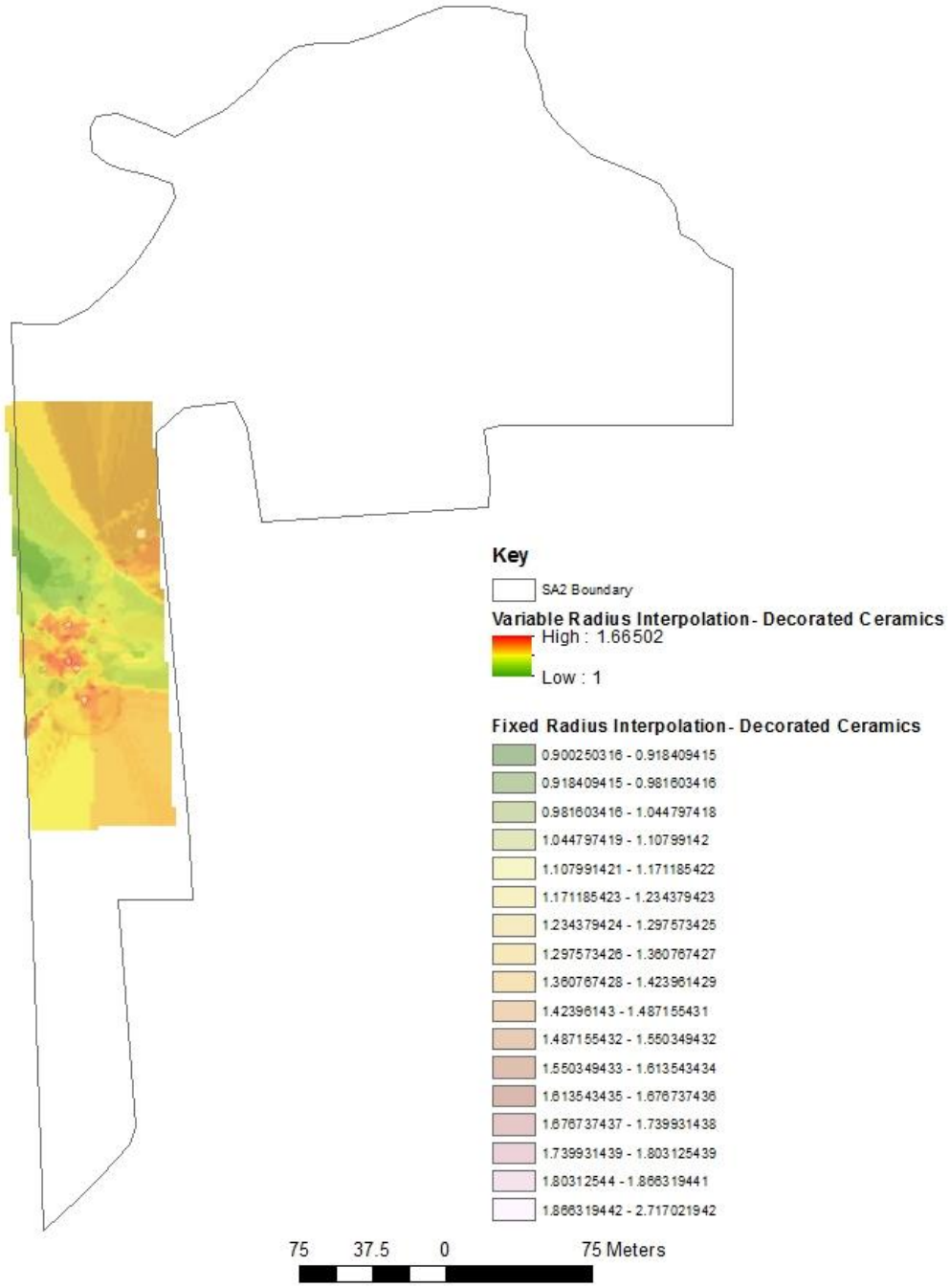


Figure 63: Composite interpolation of all SA2 decorated ceramics

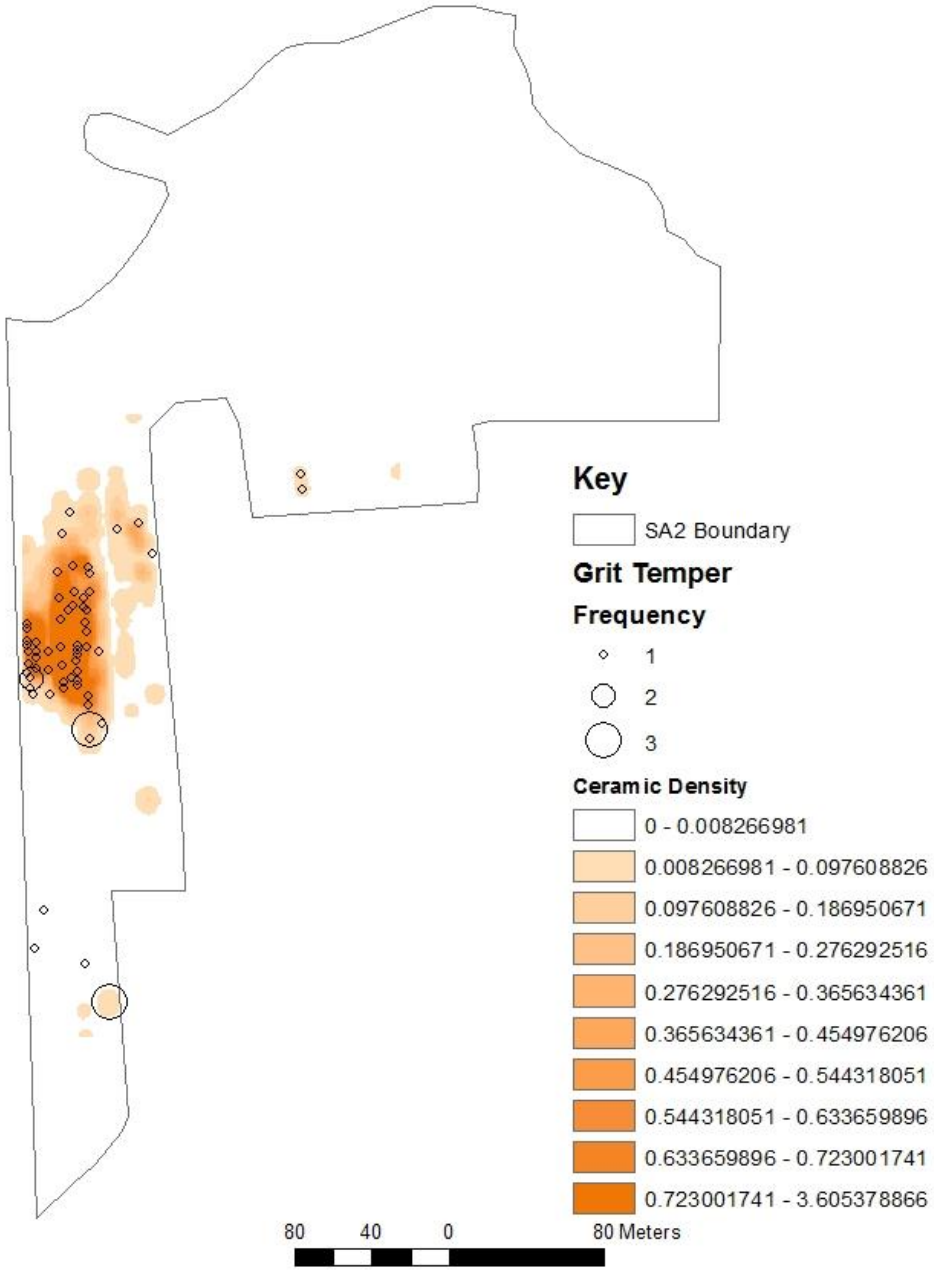


Figure 64: Presence of all SA2 grit temper ceramics and ceramic density

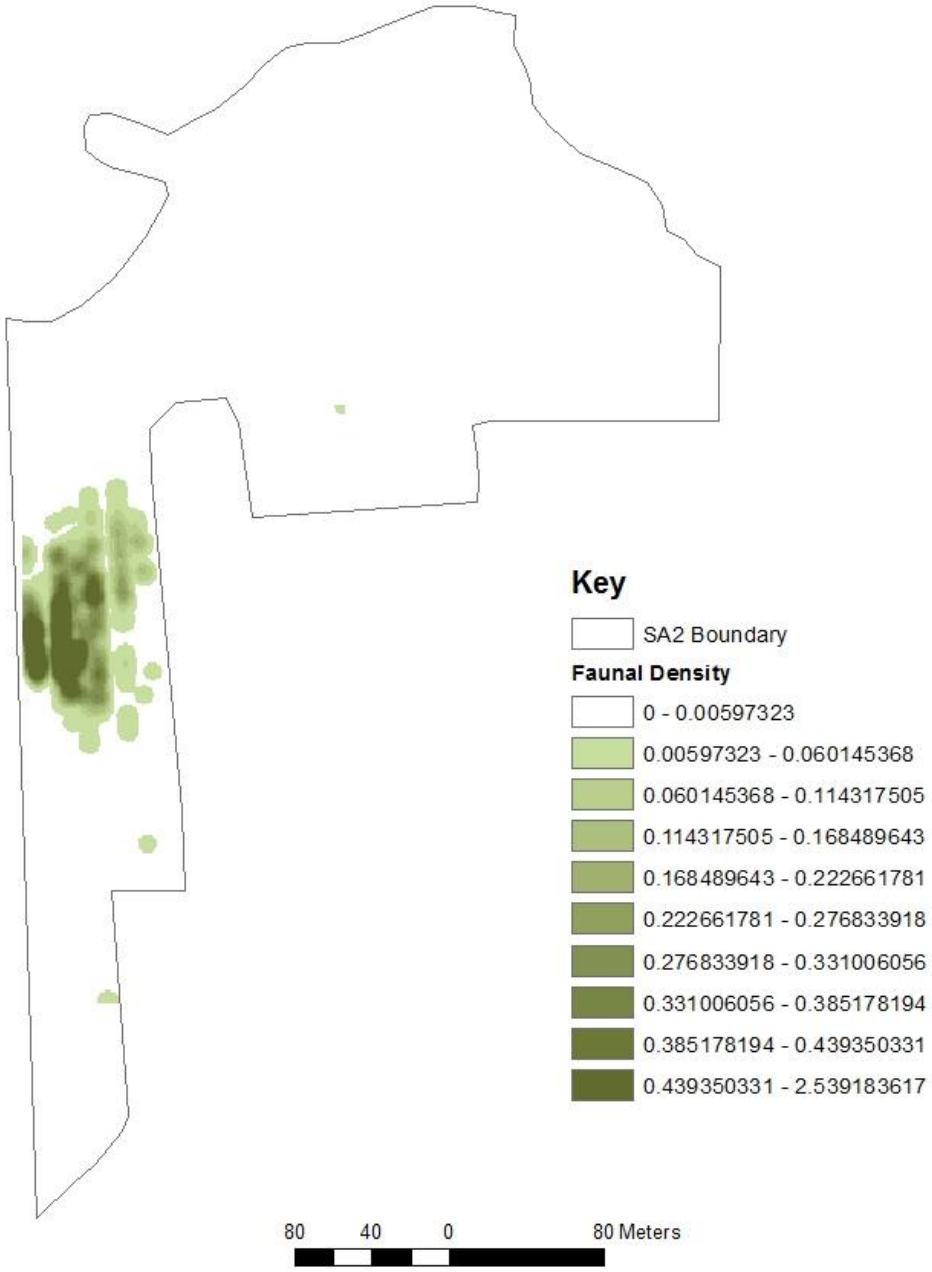


Figure 65: Density of all SA2 faunal material

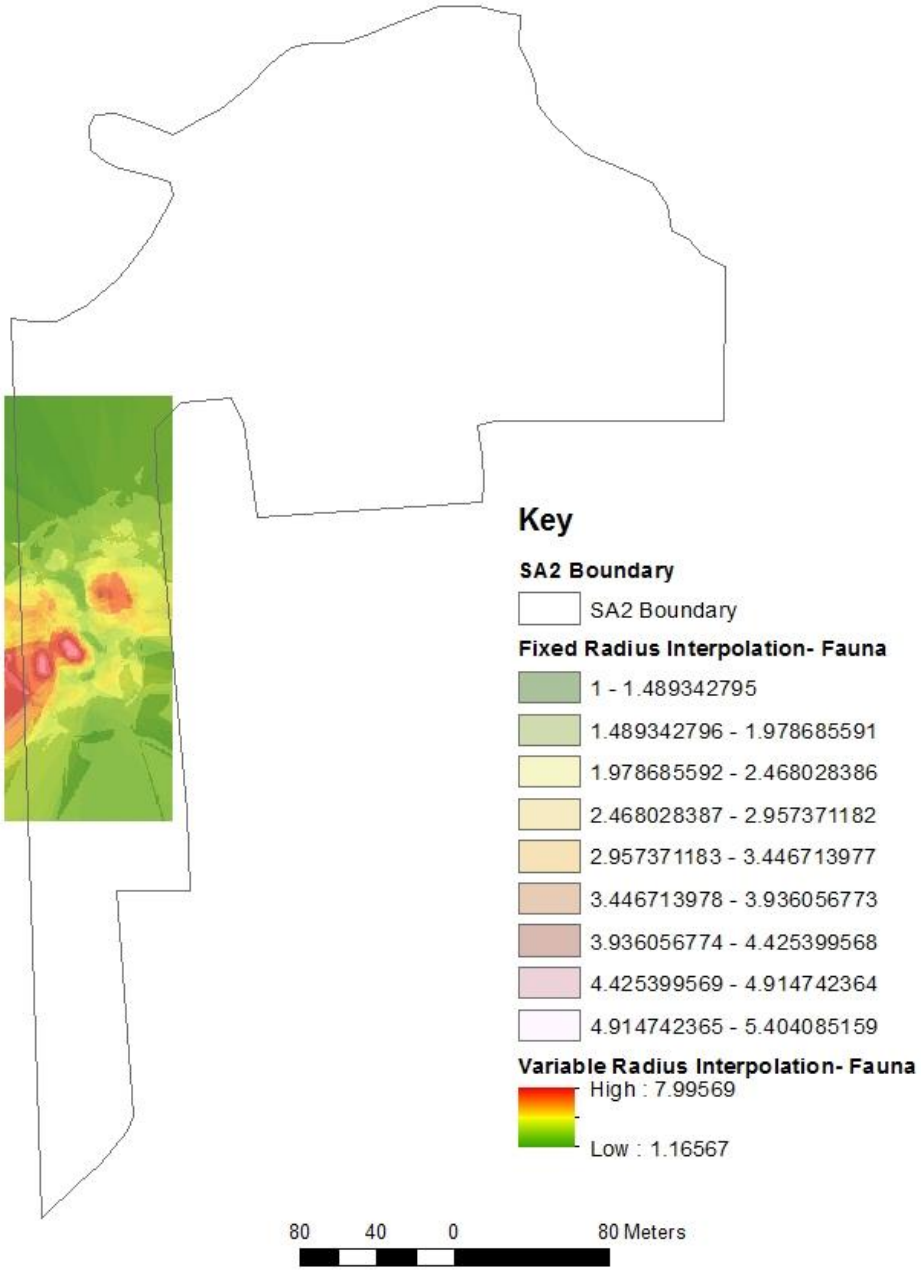


Figure 66: Composite interpolation of all SA2 faunal material

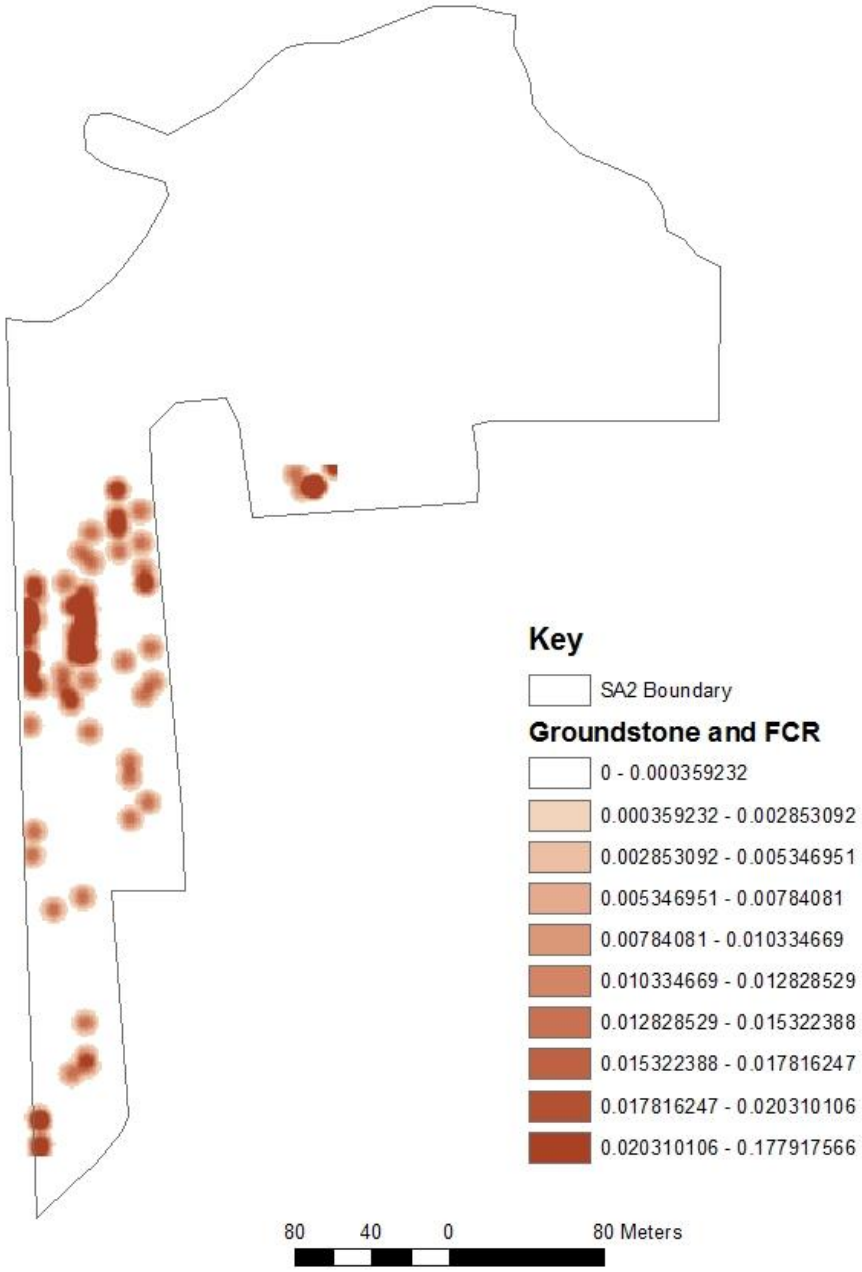


Figure 67: Density of all SA2 ground stone artifacts and fire-cracked rock

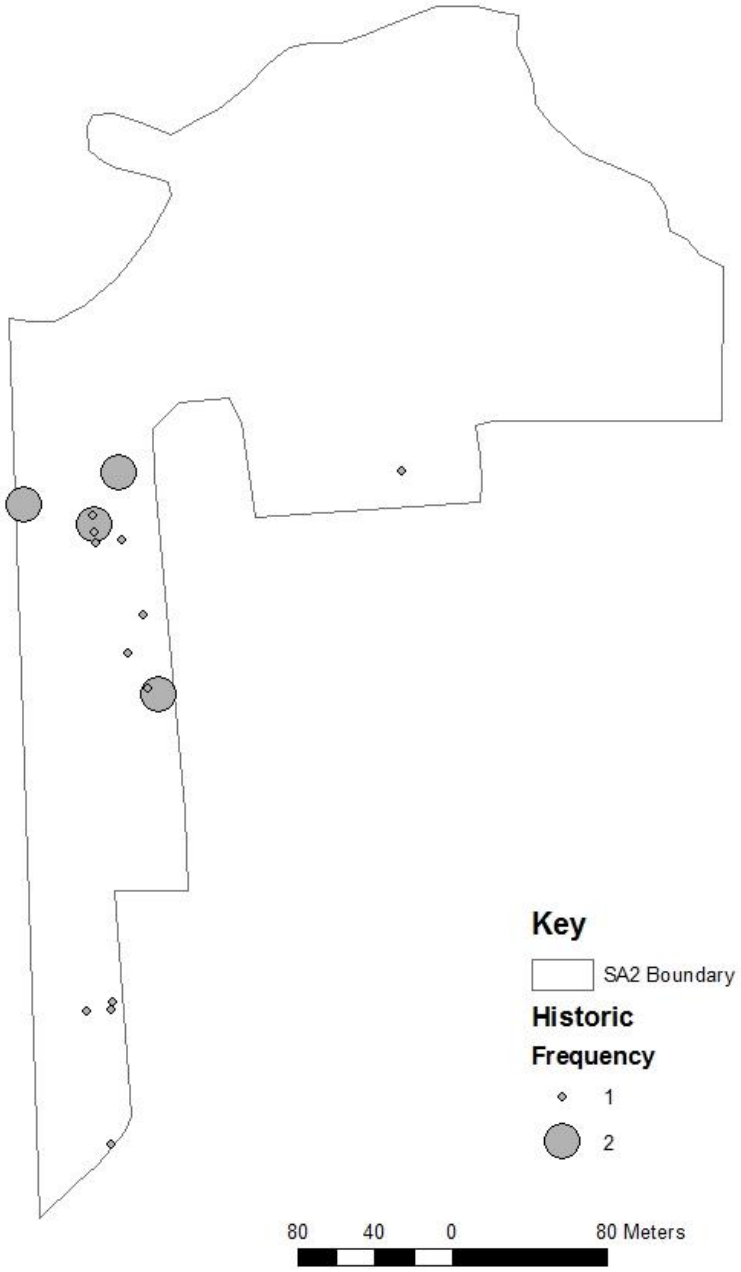


Figure 68: Presence of all SA2 historic artifacts

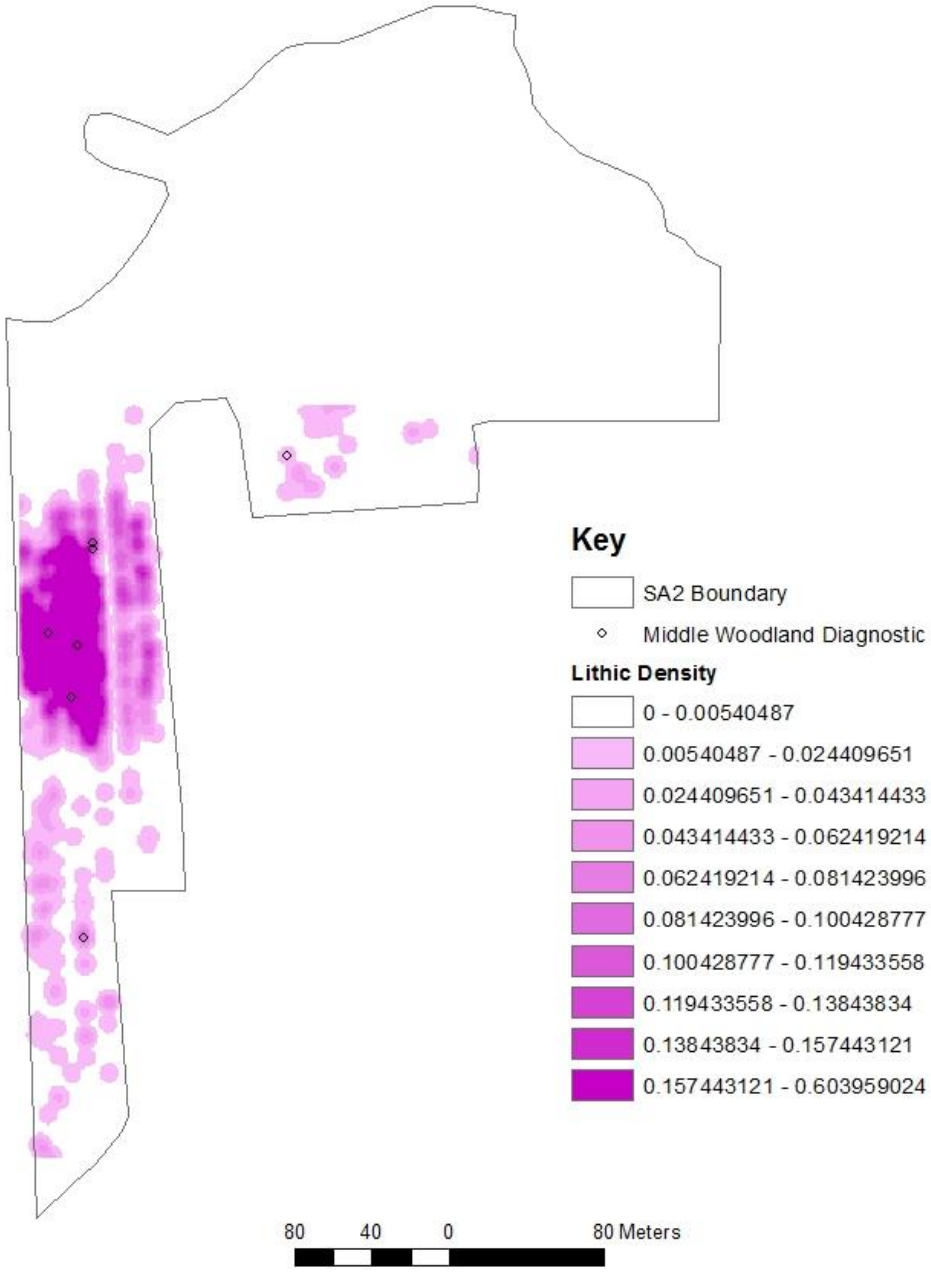


Figure 69: Presence of all SA2 Middle Woodland diagnostic artifacts and lithic density

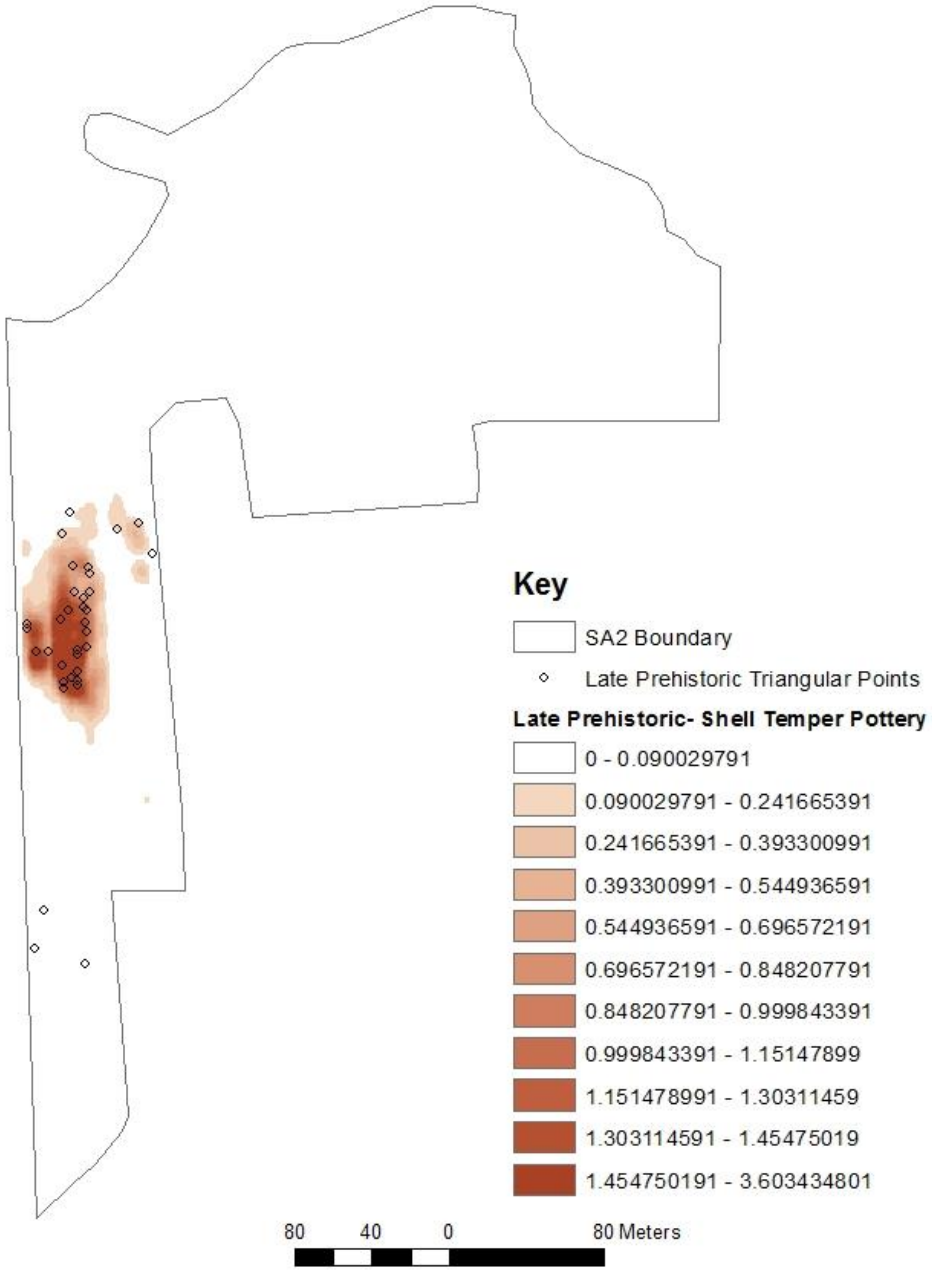


Figure 70: Presence of all SA2 Late Prehistoric diagnostics including triangular points and shell temper pottery

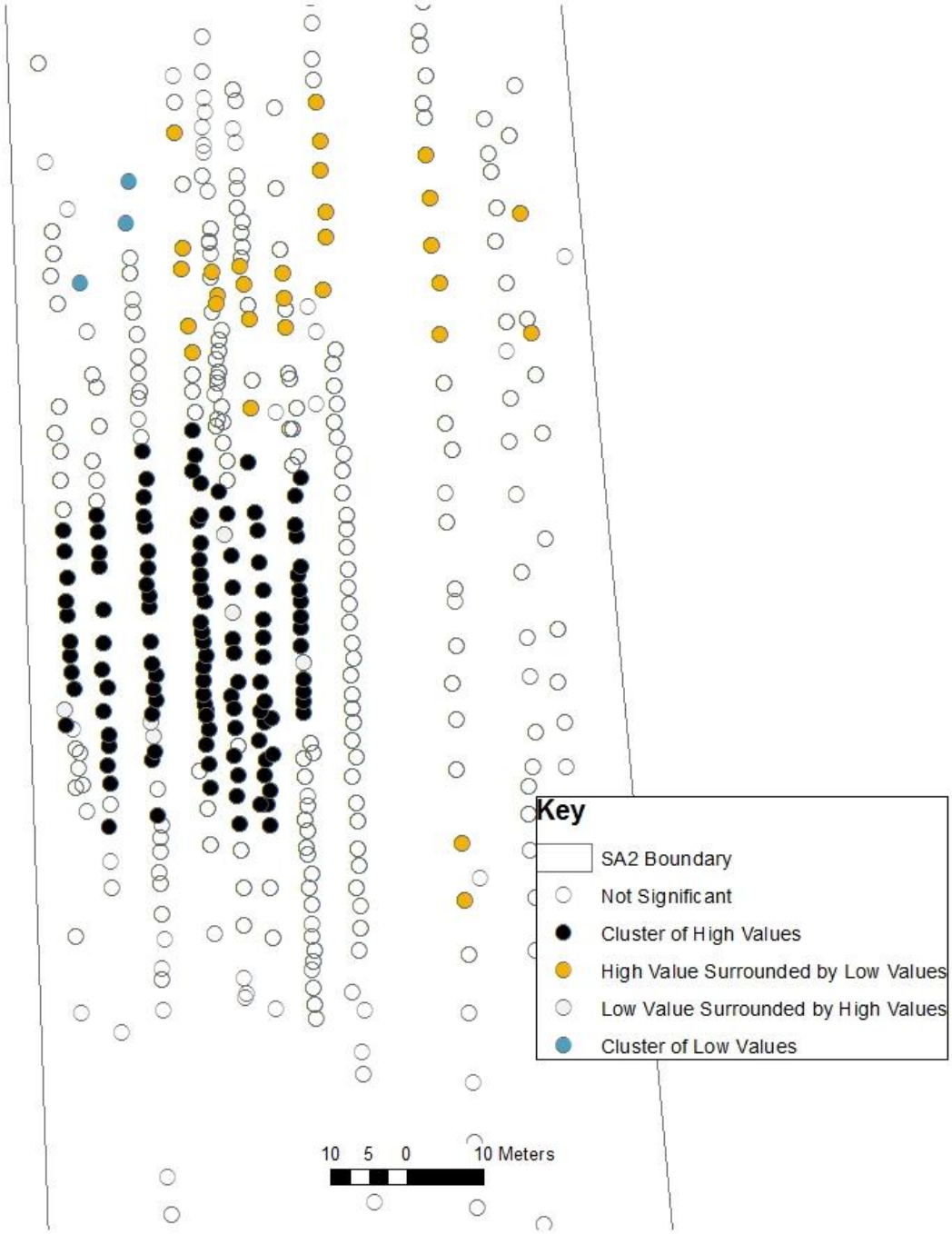


Figure 71: Representation of high and low cluster values within all SA2 find locations

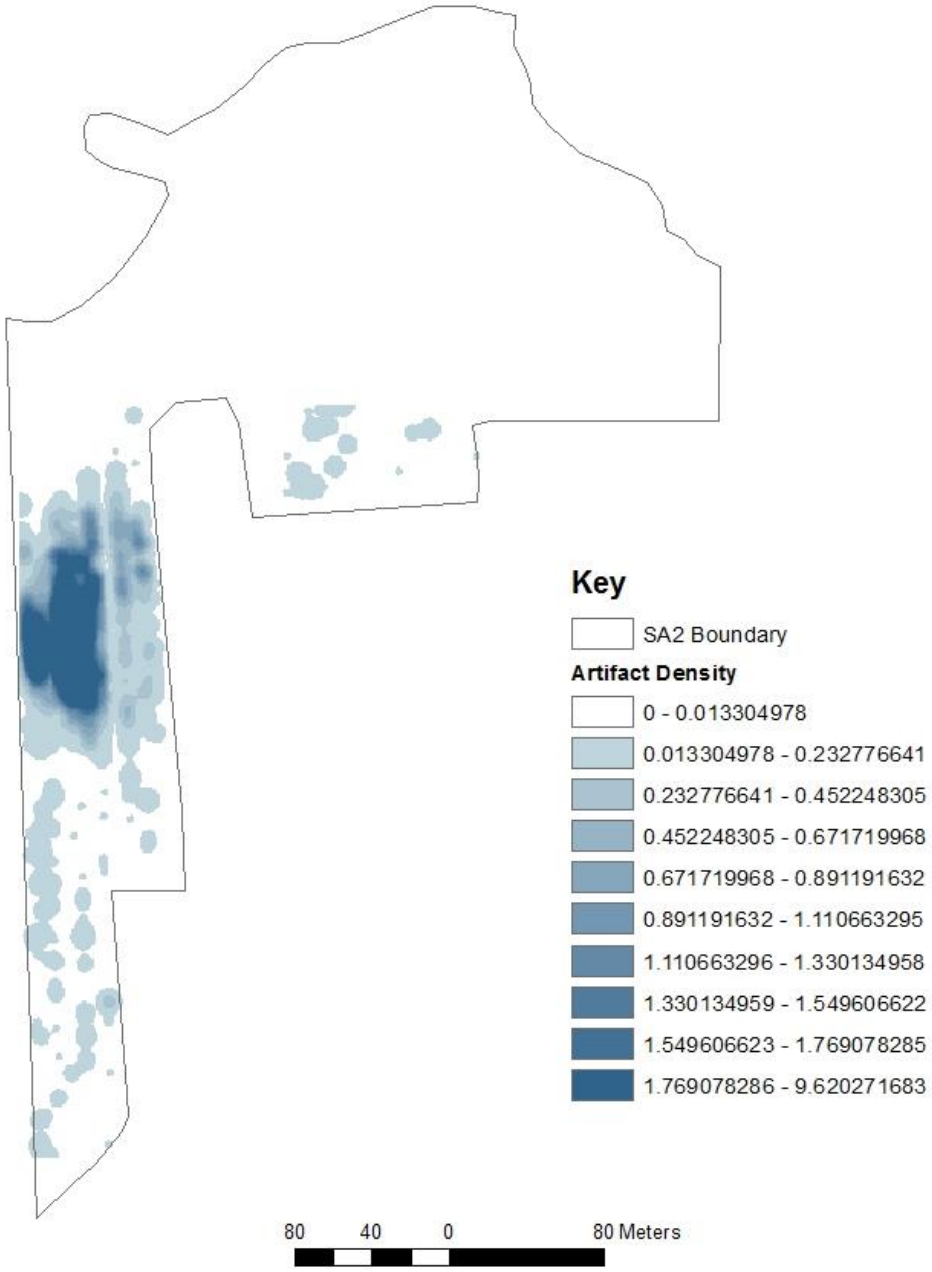


Figure 72: All SA2 artifact density showing the most dense western section, least dense eastern section, and hayfield location

Survey Area 2 Site Recommendations

Multiple sites require further discussion with regard to significance. 12D491 is potentially eligible for listing on the Indiana Register of Historic Sites and Structures and the National Register of Historic Places. Our analysis of the voluminous amount of cultural material on the surface illustrates that this site a substantial occupation and a great example of a circular Late Prehistoric village. The so called "Fort Ancient" village represents a recognizable type of site that is replicated with various interpretations of the theme over space and through time. Despite these variations, the type itself is recognizeable as a physical manifestation of social relations and regional patterns of interaction and social structure. The structure of these occupations is an important medium through which regional culture was both reproduced and manipulated by individual agents. The organization of the various components of the village provides clues as to social complexity and internal power relations within the community (Cook 2008; Graybill 1981; Henderson 1998; Means 2007; Nolan 2010; Pollack and Henderson 1992). The stereotypical representative of this type is the reconstructed village of SunWatch, located in Dayton, Ohio (Cook 2008; Heilman et al. 1988). More recent investigations have documented early establishment of this "type" of community in southeastern Indiana (Cook and Martin 2013; Nolan and Cook 2010), most notably at the Guard site in Dearborn County (12D29). That this pattern is arguably established in the Middle Ohio River Valley in the 11th and 12th century A.D. in Dearborn and neighboring counties, makes the examples of this site type in southeastern Indiana of prime importance for understanding the origin and development of this type of community in the region. All other examples must be understood in the context of these Indiana sites. Examples of this type in Dearborn County are therefore of special importance as representatives of the type and for understanding changes in social organization and complexity in the greater Middle Ohio River Valley on the periphery of the Mississippian world (Cook and Martin 2013; Cook and Farhger 2009; Nolan and Cook 2010). Therefore examples of this type which retain integrity are of high value for both their information potential relevant to research questions of critical regional importance and as representatives of this key site type in the region.

Site 12D491 and emerging studies in the area have the potential to substantially alter our understanding of the timing and development of what is generally recognized as Fort Ancient. This site and similar sites in the area are being found to date to earlier than previously thought and likely played an important role in the development of social complexity and interaction during the Late Prehistoric period (Cook 2008; Cook and Martin 2013; Nolan and Cook 2012). Due to the alluvial setting of the site, we recommend further testing and subsurface reconnaissance before any kind of development, especially in the area covered by the Entisol. Given the extreme density of sites and artifacts in the general area, there are almost certainly undetected sites and activity areas buried below historic and recent alluvium. Future investigations of 12D491 should include gradiometry and targeted excavation. The site can yield crucial data on the formation of the Fort Ancient cultural phenomenon, is representative of a type (see e.g., National Parks Service 1995:18), and undoubtedly contains intact subsurface deposits, including the possibility of burials. For these reasons, 12D491 is eligible for listing on the State and National Registers under criteria C and D.

12D642 is a lithic scatter containing multiple temporally diagnostic artifacts. Included in these are three Late Woodland/Late Prehistoric triangular projectile points and a bladelet diagnostic of the Middle Woodland (Nolan 2005). Fire cracked rock and a diverse assemblage of lithic materials indicate that subsurface deposits are likely. 12D642, though containing no pottery, is a Late Woodland site with the potential to inform our understanding of the transition

from Woodland to Mississippian influenced cultures, making it potentially eligible for listing on the State and National Registers under Section 106 criterion D. The bladelet fragment in a non-mound context indicates a component of Middle Woodland Hopewell activities. The Hopewell component of this site may be associated with the other bladelets and bladelet fragments found at other sites in the survey area, as well as the newly discovered mound located approximately 55.7 meters to the west (see Figure 51 and Figure 52). As subsurface deposits are likely intact, such Middle Woodland materials would also yield valuable information on the relationship between Southeastern Indiana Hopewell and the Scioto Hopewell phenomenon in nearby Ohio. This would again make site 12D642 eligible under criterion D. Further testing and subsurface reconnaissance is recommended.

12D643 is comprised of a multicomponent scatter of artifacts, in which a majority of these (91.3%) are prehistoric. Within this assemblage are examples of grit tempered and shell tempered pottery, representing the transition from the Woodland to the Late Prehistoric periods. The alluvial setting of the site location, as well as the presence of fire cracked rock, indicate the possibility of intact subsurface deposits. This site may have the potential to yield information on the transition from Woodland to Mississippian cultures, making it potentially eligible for listing on the State and National Registers under criterion D.

12D644 is a lithic scatter comprised mainly of flaked stone debitage. Though the alluvial setting suggests the possibility of intact subsurface deposits, no fire cracked rock or evidence of further subsurface features was observed during pedestrian survey. Other sites recorded in very close proximity to 12D644 do show such evidence, however. 12D644 could be associated with these proximate sites. Further testing and subsurface reconnaissance is recommended in this area to resolve the possibility of intact subsurface deposits at this site. Further testing may reveal the site's potential to yield important information on the Late Prehistoric in Southeastern Indiana, as is the case with the aforementioned near proximity sites. Until such time, the assemblage from 12D644 alone does not appear to make the site eligible for listing on the State or National Registers because the site is not representative or associated with a type and does not yield data that is significant for filling any data deficiencies.

12D646 is a prehistoric scatter comprised of lithic and ceramic material. The grit tempered ceramics represent the Woodland period, compounded by a bladelet diagnostic of Hopewell phenomenon of the Middle Woodland (Nolan 2005). This Hopewellian component may be associated with the newly discovered mound to the west. Due to the alluvial setting of the site, subsurface reconnaissance is recommended to resolve the possibility of intact subsurface deposits. This site is potentially eligible for listing on the State and National Registers under criterion D, as the site may yield important information about the relationship between Southeastern Indiana Hopewell and Scioto Hopewell in nearby Ohio.

12D651 is a Late Woodland/Late Prehistoric scatter. Due to the alluvial setting of the site, subsurface reconnaissance is recommended to resolve the possibility of intact subsurface deposits. The site is located less than ten meters from 12D491, a potentially eligible Fort Ancient village. The assemblage of 12D651 is comprised of the same types of artifacts as 12D491, with the exceptions of a lower quantity and no diagnostic lithic artifacts. Similar extensions of activity areas have been found associated with other Late Prehistoric villages in the Middle Ohio River Valley (see Nolan 2010). As the site may contain intact subsurface cultural deposits and may be a southern extension of 12D491, the site may yield significant information on Fort Ancient settlement patterns and the Late Prehistoric in Southeastern Indiana. If the site is determined to be a southern extension of the 12D491 village constituting a regular pattern of

activity organization across a region during the time period, 12D651 may also be representative of a prehistoric type. These distinctions make 12D651 potentially eligible for listing on the State and National Registers under criterions C and D.

Lastly, the northern portion of SA2 characterized as an Entisol should be subjected to subsurface reconnaissance. No prehistoric artifacts were recovered from this SMU, and the few historic artifacts that were recovered are likely very recent detritus washed onto the surface by recent flooding. Given the extremely high density of artifacts and sites in the whole survey area, it is very likely that existing sites remain to be documented below the accumulating alluvium.

The remaining sites not discussed in detail here are not considered eligible for the NRHP and therefore do not warrant further work beyond a general subsurface reconnaissance for the area.

Survey Area 3

SA3 is located in [redacted] as shown on the USGS 7.5' [redacted] Quadrangle map within the SA1 section of this report (Figure 16). Pedestrian survey of SA3 took place on Saturday, November 2, 2013. Ground surface visibility during pedestrian survey was between 45 and 85 percent in a harvested corn field. Agricultural debris from the harvest were the only factors impacting visibility. Weather conditions were favorable for archaeological survey.

SA3 is comprised of approximately 31.5 acres (12.75 ha). SA3 soils are characterized as a fine loamy Eutrudept (Ch) and a coarse loamy Udifluvent (St). These soils are young and frequently flooded (Soil Survey Staff 2012). SA3 is located directly north of the Whitewater River, in some areas immediately adjacent to the river. This water source would have yielded a variety of resources that would have been available to prehistoric peoples in the area.

This land was selected as a target for survey due to its location very close to three targeted Late Woodland/Late Prehistoric sites: 12D591, 12D620, and 12D629. Permission was sought for the land these three sites are reported to be located on, yet this permission was not granted. The SA3 field was selected for survey in this project because of its close proximity to these three sites as well as its position directly north of 12D491. [redacted] As the property had never been systematically surveyed before, no archaeological site information existed for the property prior to this survey and the landowner did not know of any sites on his property.

Survey Area 3 Artifacts

A total of 303 artifacts were collected in total from SA3. This consisted of 276 prehistoric artifacts and 27 historic artifacts. Artifact categories and the associated number of each type of artifact recovered in SA3 are listed in Table 8. Individual artifacts are listed in the artifact summary section, Appendix E of Volume 2 of this report.

Table 8: SA3 Artifacts by Category

Prehistoric Artifacts	**No.**	**Historic Artifacts**	**No.**
Angular Shatter	22	Ceramic: Yellowware	1
Biface	4	Ceramic: Whiteware	2
Core	19	Clay Pigeon	6
Core Tool	1	Coal	5
Diagnostic Biface	1	Modern Fauna	2
FCR	24	Rubber	11
Flake	156		
Flake Tool	19		
Groundstone	30		
Total	**276**		**27**

Prehistoric Artifacts

Within SA3, only one diagnostic prehistoric artifact was recovered. From site 12D661 a Chesser Notched projectile point of the terminal Middle Woodland through Late Woodland periods was recovered (Prufer and McKenzie 1967:55; Justice 1987:213-214). All prehistoric artifacts recovered from SA3 are lithics. Tools comprise 19.93 percent of the prehistoric assemblage and 64.49 percent are debitage. The remaining portions consist of cores (6.88%) and fire cracked rock (8.70%).

Historic Artifacts

Multiple temporally diagnostic historic artifacts were recovered from SA3. At site 12D661, three historic ceramics were recovered. One body fragment of yellowware dating to a range of 1840 – 1940 has been documented (Stelle 2001). Also recovered were two body fragments of whiteware. One of these body fragments also contains a blue transfer pattern. Whiteware ceramics date to a range of 1820 – Present (Feldhues 1995:6). The blue transfer pattern dates "from the first half of the 19th Century" (IMACS 1992:473). These combined dates would presumably place the historic component at 12D661 to the early – mid-19th Century.

Figure 73: Diagnostic Historic Artifacts Recovered from SA3.

Figure 74: Survey Area 3 Sites [redacted], Indiana 7.5 minute USGS Quadrangle

Figure 75: Survey Area 3 Sites over 2012 Aerial Photograph.

Survey Area 3 Sites

Twenty-one previously unrecorded archaeological sites were discovered in SA3 (Figure 74, Figure 75). These sites consist of 12D652 through 12D672. A previously located site, 12D109, is listed as being located just beyond the far eastern edge of the survey area. No material related to this site was encountered during this survey. Evidence could exist for this site further to the east.

These sites range from isolated finds to a very large lithic scatter. Seven sites have been classified as unidentified prehistoric isolated finds, including the following: 12D653, 12D655, 12D659, 12D664, 12D665, 12D666, and 12D670. Ten sites have been classified as unidentified prehistoric lithic scatters. These sites include 12D652, 12D654, 12D656, 12D657, 12D658, 12D660, 12D662, 12D667, 12D669, and 12D671. One site, 12D672, has been identified as a historic scatter. Three sites have been identified as multicomponent scatters. Sites 12D663 and 12D668 contains temporally unidentified prehistoric artifacts and historic artifacts. Site 12D661 contains evidence of the Middle Woodland – Late Woodland period, as well as historic artifacts. No isolated historic artifacts were recovered in SA3.

SA3 contained sites located on both of the SMUs present. Sites 12D660, 12D662, and 12D664 – 12D666 are all located on Stonelick sandy loam (St). The remaining twenty-one sites are all located on Chagrin silt loam (Ch).

SA3 has twenty sites containing a prehistoric component, giving a prehistoric site density of one prehistoric site per 1.58 acres (0.64 ha). Prehistoric artifacts were encountered in densities of about 8.76 per acre. This survey area also contained four sites with a historic component. This gives a historic site density of one historic site per 7.86 acres (3.18 ha). Historic artifacts were encountered with densities of 0.86 per acre.

Survey Area 3 Site Recommendations

One site from SA3 requires further examination. 12D661 is a large and highly varied lithic scatter with a small historic component. The site contains a diagnostic Chesser Notched projectile point of the terminal Middle Woodland through Late Woodland periods (Prufer and McKenzie 1967:55; Justice 1987:213-214). Fire cracked rock and the alluvial setting of the site suggest intact subsurface deposits may exist. Valuable information about the Middle Woodland/Late Woodland transition in Southeastern Indiana could be attained at this site, making it potentially eligible for National Register of Historic Places under criterion D. We recommend further testing.

Further, SA3 is within an alluvial setting with frequently flooded entisols and inceptisols. For this, we recommend Phase Ic subsurface reconnaissance for before any kind of development. We would also note that the lowest landform did not yield any sites, possibly due to being buried by recent alluvium.

The remaining sites not discussed in detail here are not considered eligible for the NRHP and therefore do not warrant further work beyond a general subsurface reconnaissance for the area.

Survey Area 4

SA4 is located in [redacted] as shown on the USGS 7.5' [redacted] Quadrangle map below (Figure 76). SA4 was the first of this project to employ only the soil survey, as it is located in a [redacted]. This survey was conducted on Sunday, November 10, 2013. Ground surface visibility of SA4 was zero percent, as the ground was either grass covered [redacted] In instances [redacted] footprints would impact the collection of a soil sample, crew members adjusted their collection loci to the nearest undisturbed area for their soil samples. This was usually less than one meter away from the original sample target. Weather conditions were favorable for archaeological survey.

SA4 is comprised of approximately 4.54 acres (1.84 ha). SA4 is comprised in its entirety of Wheeling silt loam soils (WhA), a fine loamy Hapludalf which is not subjected to flooding or ponding (Soil Survey Staff 2012). It is located directly northwest of Laughery Creek and is in most instances less than fifty meters (horizontally) away from it. This water source would have yielded a variety of resources that would have been available to prehistoric peoples in the area.

This area was originally chosen as a possible survey target because it contained one of two SHAARD polygons for site 12D44, a previously recorded Late Woodland and Late Prehistoric site. Now known as the Bratfish III site (Anslinger 1993), it was originally recorded by Black before this name was given (Black 1934:204-205). Black records the site's location as being [redacted] where a number of graves had been recovered (Black 1934:204, emphasis added). Black attributed the burials to prehistoric Native American groups, stating that burials were located very near a "prehistoric Indian village" and that some Native American artifacts had been found with or very near the graves (Black 1934:205). Located northeast of SA4, [redacted] is the mound (12D45) that Black discusses as having an associated village (Black 1934:205). [redacted] Black never detailed the location of the village, though he did note that he observed artifacts within gardens and freshly excavated graves. No ceramics were observed in the area of 12D45, while the site below the terrace (12D44) did contain ceramics.

Thus we had questions as to the true location of site 12D44. The SHAARD database shows 12D44 in two different locations approximately 284 m apart. As our survey is focused primarily on the Late Woodland/Late Prehistoric periods, it was crucial to discover which location for 12D44 contains evidence of Late Woodland/Late Prehistoric activities. The location described by Black (1934:204-205) was resurveyed and partially mitigated by Anslinger (1993). This is undoubtedly the location of the original site as discovered and described by Black. What seems most likely is that the SHAARD polygon on top of the terrace represents the village associated with site 12D45 as discussed by Black (1934:205), or it is a completely fortuitous duplication error. Because of this information, our investigation has switched focus from 12D44 to 12D45.

Ultimately, 12D45 was chosen as a site for soil collection survey for two reasons. First, for the potential settlement organization information that could be revealed for Late Woodland/Late Prehistoric sites in this area. Second, to attempt to correct the ambiguous data on the location of 12D44 already discussed.

Figure 76: Location of SA4 on USGS 7.5' [redacted] map.

Survey Area 4 Soil Phosphate and Magnetic Susceptibility Results

Soils analysis in SA4 revealed areas of probable prehistoric activity. These areas are shown in Figure 77 below. [redacted] Care was taken to core samples from areas that showed no signs of disturbance. As a result, some collection loci occur a number of meters away from originally planned. This does not have an effect on the results that were obtained, however. For more information on soil survey procedures, refer to the soils analysis section of the laboratory methods portion of this volume.

After measurements were taken in the laboratory values were assigned to the attributes of each sample point and ESRI's kriging function of ArcMap 10.1 was used to create a surface of

phosphate concentration in the soil revealing multiple areas of probably prehistoric activity. Three distinct areas showed considerable increases in phosphate content, where two of these areas appear to slightly overlap at a range of 13.726 – 18.712 mg/kg. These areas are in the east/northeast of the survey area.

Figure 77: SA4 Soils Analysis Kriging Results.
Note the graduated point symbols represent the measurements taken and the continuous surface represents the geostatistical trend surface. Kriging is capable of accounting for measurement errors, here represented by sampling of likely disturbed sediment within our grid.

These areas in the east/northeast of SA4 are approximately 106.31 m from the mound that is correctly designated as part of site 12D45 in SHAARD GIS. These areas may also represent the remaining village portion of site 12D45, based on the deposition and morphology of the phosphate signatures in the soil. All areas of increased phosphate deposition are roughly circular to ovate in shape. The third anomaly on the far western edge of the survey area is separated by a lack of phosphate deposition roughly 33.65 meters wide. This anomaly may represent an entirely

different unrecorded site. Alternatively, the discontinuity in phosphate enrichment may be caused by the earlier [redacted] We have demonstrated that even in poorly documented sites, heavily disturbed and closed to intensive traditional archaeological methods that we can still see the invisible remnant signature of human activity on the landscape.

Figure 78: Kriging Surface for Low Frequency Mass Specific Magnetic Susceptibility.

Magnetic Susceptibility readings have only been completed for a 20 m x 20 m grid (with allowances for disturbed soil) for SA4. The LF MS distribution (Figure 78) largely overlaps with the soil P map (Figure 77), though there are differences. The southwestern peak in LF MS is west of (behind) the nearby peak in P, and the enrichment in MS in the northern end overlaps and extends forward of the soil P peak. It must be noted that the MS pattern is more generalize than the P pattern; overall there is good agreement between the two patterns.

The frequency dependent (FD) MS (Figure 79) shows a pattern very similar to that of soil P. The differences are similar to the differences observed in LF MS; thermally induced MS

overlaps, but is often to the west of (behind) the peaks in P enrichment. Again, these are coarser patterns and some of the difference in the respective surfaces may be to mismatch in scale; however, the different location of focus for activity is not likely to change dramatically with the scale difference.

Figure 79: Kriging Surface of Frequency Dependent Magnetic Susceptibility for SA4.

Survey Area 4 Site Recommendations

When recorded by Black (1934:204-205), site 12D44 was stated to contain multiple burials with associated "aboriginal artifacts". The collections from this investigation list flaked stone debitage, a diagnostic projectile point, a celt, and fire cracked rock accompanying these burials. Further review of the Black survey and associated report reveal that the area on top of the terrace identified in the SHAARD database as 12D44 is actually the village extension discussed by Black with regard to 12D45. As this is now known, we recommend SHAARD records be changed to reflect this information.

Our reinvestigation has further delineated the boundaries and activity areas of 12D45. It is probable that the anomalous concentrations of phosphate and MS (especially FD) represent prehistoric activity associated with Black's original observations of village debris. [redacted] Regardless, roads and unused areas still remain that are within the newly delineated activity areas of the site. Subsurface features may be present in these areas, including the possibility of prehistoric burials. Soil analyses of 12D45 show the existence of the village discussed by Black (1934:205). The temporal aspects of the site are yet to be discovered. No pottery was observed by Black in his survey, suggesting the possibility of Archaic or Woodland influences. Significant data may be recovered from this site with regard to Archaic or Woodland habitation areas, making the site eligible for listing under criterion D. Further interment and excavation for cemetery uses within and near the site boundaries that have been defined here should be archaeologically monitored.

Survey Area 5

SA5 is located in [redacted] as shown on the USGS 7.5' [redacted] map below (Figure 80). SA5 was the second survey area to employ only the soil collection survey, as the parcel had already been surveyed by Parrish and McCord (1995). The soil collection survey was conducted on Sunday, November 10, 2013. Weather conditions were favorable for archaeological survey.

SA5 is approximately 8.93 acres (3.61 ha) in size, containing two previously recorded archaeological sites. The soils of SA5 are characterized as a fine Hapludalf (Markland silt loam, MaF2), a fine silty Hapludoll (Hu), and a coarse silty Udifluvent (Jules silt loam, Ju). The Mollisol and the Entisol are frequently flooded (Soil Survey Staff 2012). We would note a strong contrast between the SMU for Markland (Hapludalf) and the on-the-ground topography; the steep slope indicated is not present within the survey area and it is therefore unlikely that the Hapludalf extends into SA5. SA5 is also located on the north and west bank of a bend of Tanners Creek, ranging in distance from 63 meters to less than 15 meters from the creek's edge.

This area was chosen for soil collection survey in order to recover possible information on prehistoric settlement organization of site 12D396. Site 12D396 was reported as a lithic scatter during the 1994 Dearborn County Survey conducted by Parrish and McCord (1995). The site contained 113 artifacts with one Middle Woodland diagnostic projectile point and two Late Prehistoric diagnostic projectile points (Parrish and McCord 1995:B34-B35). Parrish and McCord (1995:B35) recommend 12D396 for additional testing and subsurface reconnaissance. Also located within SA5 is site 12D397 with an assemblage of a biface fragment and a solitary flake (Parrish and McCord 1995:B35). Site 12D396 is located on all three soil phases of the survey area, whereas site 12D397 is located on only Jules silt loam. No artifactual remnants of these sites was encountered or collected during our soil collection survey, though the farmer told Nolan and Swihart that he intentionally moldboard plows this field for artifacts. The farmer also reported that north of SA5 and east of the current cultivation boundary there is a large burned area with lots of FCR and other signs of burning. Swihart and Nolan examined the area in the closing minutes of the day and could not find any artifacts or other signs of burning.

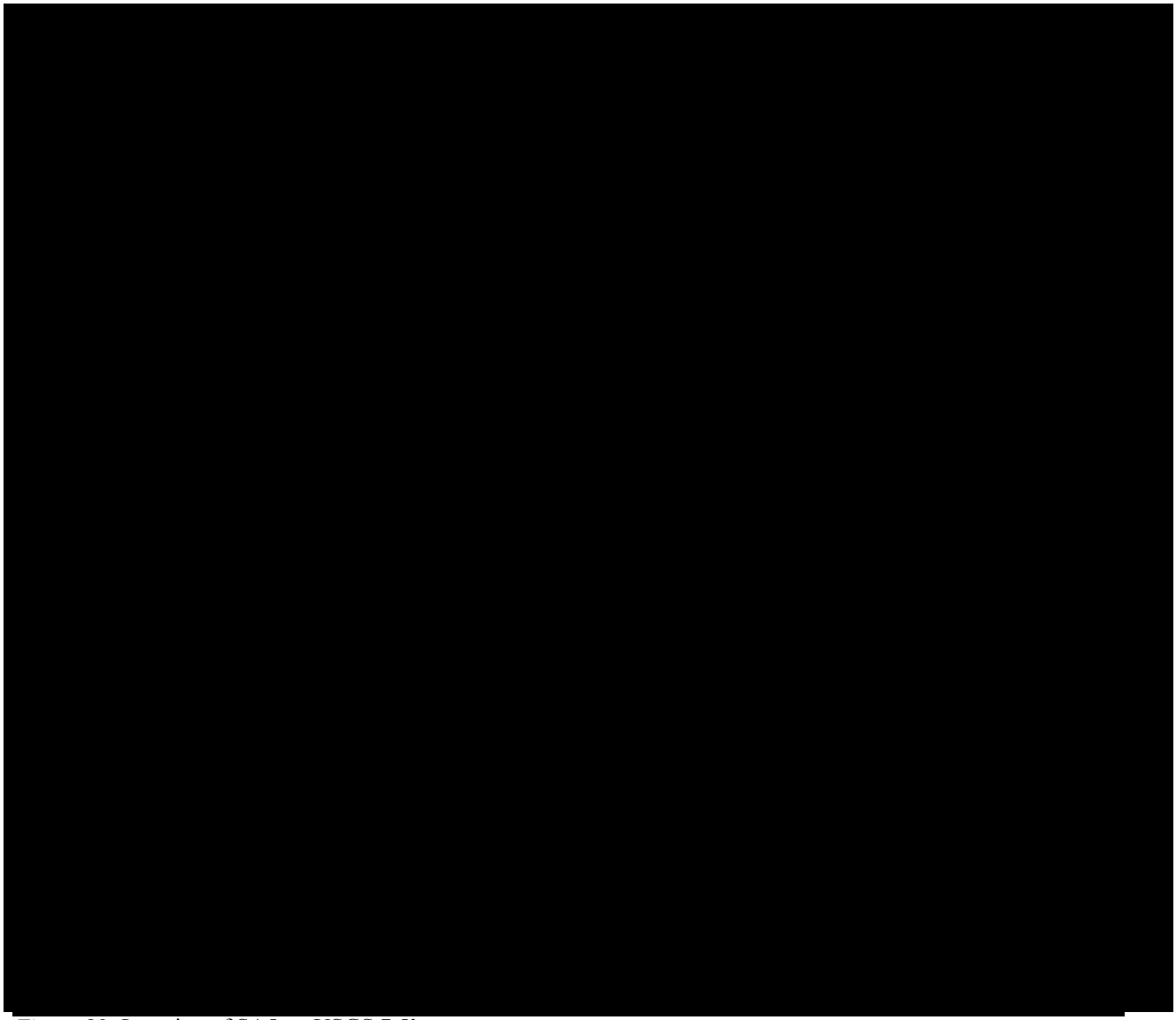


Figure 80: Location of SA5 on USGS 7.5' [redacted] map.

Survey Area 5 Soil Phosphate and Magnetic Susceptibility Results

Soils analysis in SA5 has quite clearly revealed the boundaries and morphology of site 12D396, the lithic scatter reported by Parrish and McCord (1995:B34-35). Geostatistical models (kriging) of phosphate concentration reveals an oval-shaped midden ring of roughly 186 m by 151 m. Diagnostics of the Late Prehistoric were recovered at this site (Parrish and McCord 1995:B34-B35). The morphology of the phosphate concentration in the modeled surface Late Prehistoric diagnostics suggest that 12D396 may be a Late Prehistoric village, possibly associated with the ill-defined Fort Ancient taxon (see Nolan and Cook 2012). A small lithic scatter, 12D397, also exists within the bounds of a slightly elevated area of phosphate concentration. This area, however, is not nearly as elevated in phosphate content as 12D396, and shows no distinct morphology. These areas can be seen in Figure 81 below. What is intriguing is that this small site possesses a phosphate signature indicating some deposition of organic material, possibly butchery (Costa et al. 2013).

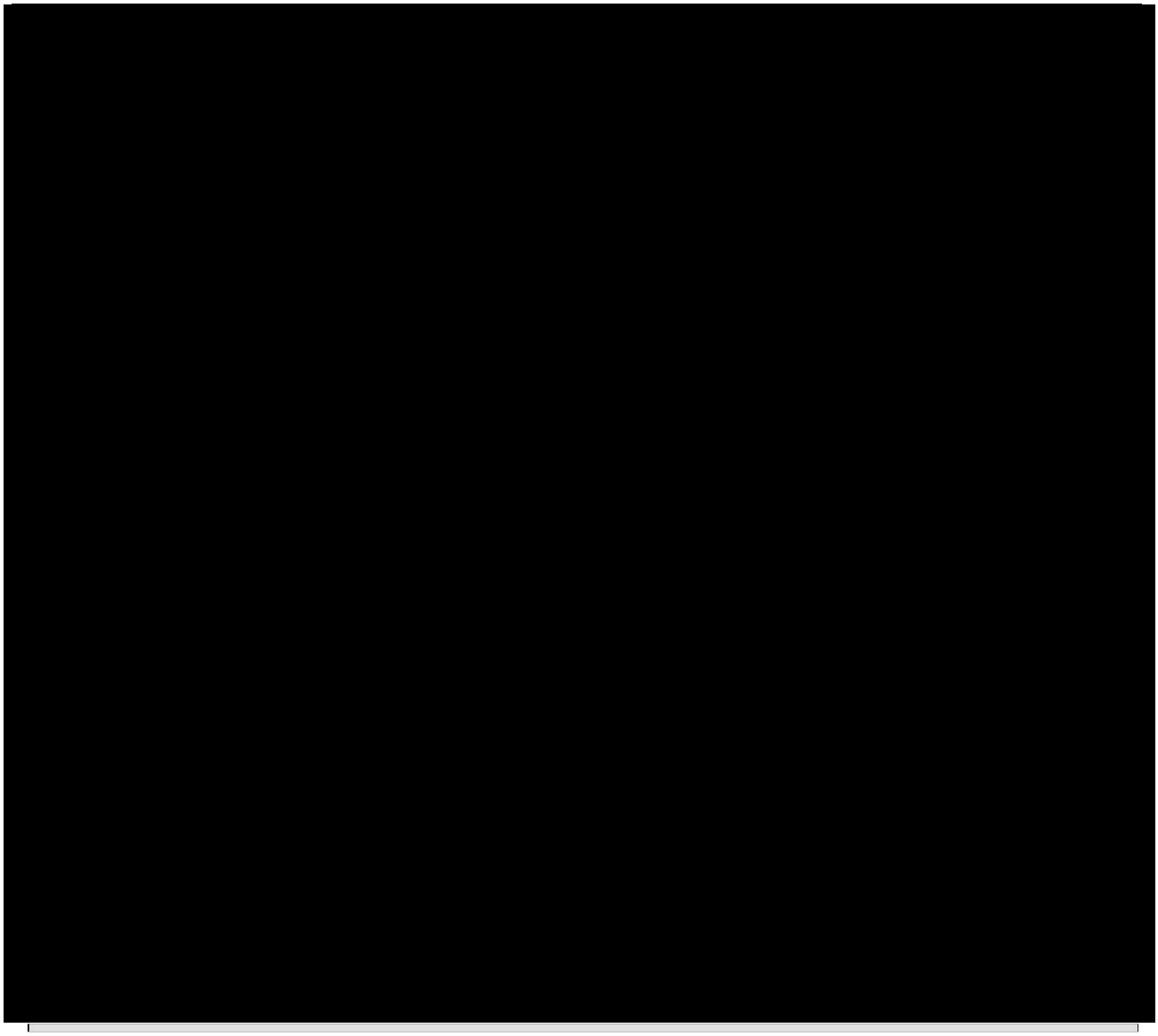


Figure 81: Kriging Surface for Plowzone Soil Phosphate at SA5.

Due to the alluvial nature of the setting, samples were taken from the subsoil (~30-40 cm bgs) in a 20 m x 20 m grid within SA5 for phosphate analysis. The distribution of subsoil P is very similar to the plowzone P signature, including a modes local elevation associated with 12D397 (Figure 82). This indicates that there are still intact deposits associated with both lithic scatters in SA5, and the actual function of one is far from clear given the evidence recovered to date.

Figure 82: Kriging Surface for Subsoil Phosphate Concentration in SA5.

Magnetic susceptibility (MS) has only been completed for a 20 m x 20 m grid and so patterns are somewhat coarser than that presented above for phosphate. The low frequency (LF) mass specific MS is presented in Figure 83. The highest peak in LF matches that for phosphate (cf. Figure 81); however, the overall shape of the distribution is different. MS and P do not map the same processes. MS has two general components (see Tite and Mullins 1971). Frequency dependent (FD) MS is a direct estimate of superparamagnetic particles created through intense heat (Dearing et al. 1999). Figure 84 shows the distribution of FD in SA5. The distribution of heat-induced magnetism follows nearly the same distribution as the phosphate for 12D396. Further, an area near 12D397 also shows a modest increase from background FD. An ephemeral lithic scatter which has both a chemical and magnetic signature. The precision of the mapping of the location of the artifacts from 12D397 is not known; however, there is a persistent chemical

and magnetic residue of whatever activities took place there. What those activities were is not known, and unknowable from a single surface survey.

Figure 83: Kriging Surface of Low Frequency Mass Specific Magnetic Susceptibility (X) for SA5. Units presented in $X * 10^8$.

Figure 84: Kriging Surface of Frequency Dependent Magnetic Susceptibility for SA5. Units presented as percent of low frequency MS.

Survey Area 5 Site Recommendations

12D396 was originally labeled as indeterminate for listing on the State and National Registers, as well as necessitating further testing and subsurface reconnaissance (Parrish and McCord 1995:B-35). Our soil analyses have further delineated the boundaries of this site, as well as areas where subsurface features may be present and, more importantly, undisturbed. 12D396 is potentially eligible for listing on the NRHP under criterion D, as this site can yield significant data on the transition between the Late Woodland and Late Prehistoric, Late Prehistoric settlement patterns, and the Late Prehistoric in Southeastern Indiana in general. The Fort Ancient village is also representative of a type and its morphological comparison with other Fort Ancient villages in Southeastern Indiana and surrounding regions make it eligible for listing under criterion C. We recommend further testing and subsurface reconnaissance due to the alluvial setting of the site location, as buried and intact deposits are most likely present.

Survey Area 6

SA6 is located in [redacted] as shown on the USGS 7.5' [redacted] map below (Figure 85). Only pedestrian survey was employed in SA6, as no previous site data existed to indicate Late Woodland or Late Prehistoric land use in the area. The fields that collectively make up this survey area had been previously harvested of their bean crop, leaving agricultural debris behind. Due to this agricultural debris, ground surface visibility was between 45 and 70 percent. The pedestrian survey of SA6 occurred on the morning of Saturday, November 16, 2013. Weather conditions were ideal for archaeological survey.

In total, the three fields of SA6 amount to 42.28 acres (17.11 ha). The five SMUs in SA6 are characterized as fine silty Glossaqualfs (Clermont silt loam, Ct; Avonburg silt loam, AvA), and fine silty Fragiudalfs (Rossmoyne silt loam, RoB2 and RoA; Cincinnati silt loam, CnC3). No SMUs in SA6 are listed as flooding or ponding (Soil Survey Staff 2012). The closest source of water is Blue Creek. At a distance ranging from approximately [redacted] this water source would have been available as a resource for prehistoric inhabitants near SA6.

SA6 was the first of this project to have been targeted for data enhancement for Dearborn County. As this portion of the county is developing quickly and archaeological data is lacking, the area selected for SA6 was a good candidate for data enhancement.

Survey Area 6 Artifacts

No artifacts, historic or prehistoric, were discovered in SA6.

Survey Area 6 Sites

No new archaeological sites were recorded for SA6, and no previously recorded archaeological sites are within or near SA6.

Survey Area 6 Site Recommendations

No archaeological sites were discovered in this survey area. No further work is recommended for SA6.

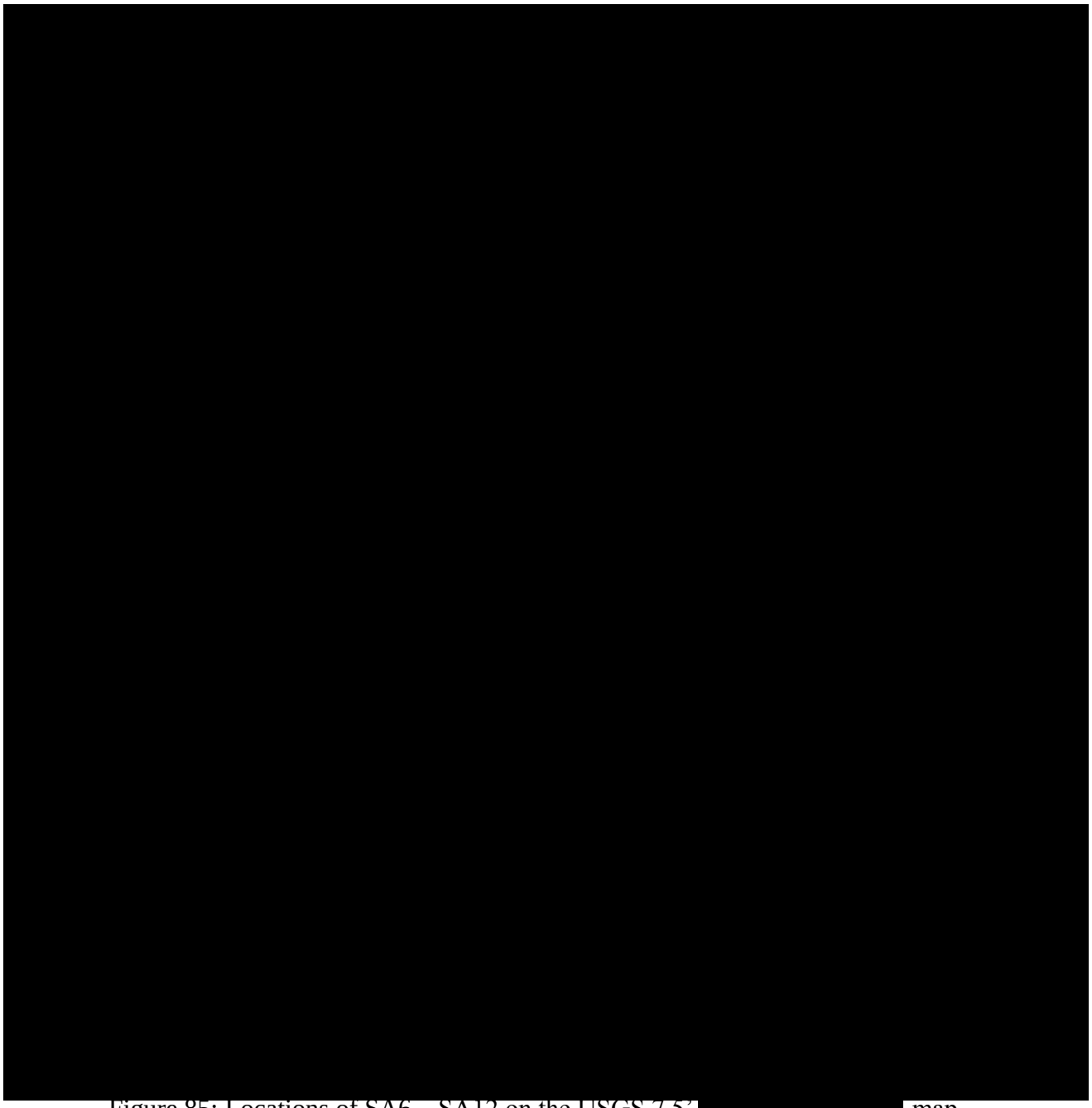


Figure 85: Locations of SA6 – SA12 on the USGS 7.5' [redacted] map.

Survey Area 7

SA7 is located in [redacted] as shown on the USGS 7.5' [redacted] map (Figure 85). Only pedestrian survey was employed in SA7. The field making up SA7 had been previously harvested of its bean crop, leaving behind some agricultural debris. Due to this debris, ground surface visibility was visually estimated to be between 45 and 70 percent. The pedestrian survey of SA7 occurred in the early afternoon of Saturday, November 16, 2013. Weather conditions were ideal for archaeological survey.

In total, SA7 is 18.74 acres (7.58 ha) in size. Within SA7 the soils are characterized as fine silty Glossaqualfs (Ct and AvA), a fine silty Fragiudalf (RoB2), and a fine loamy Endoaquept (Orrville silt loam, Or). Of the four SMUs, only Orrville silt loam (Inceptisol) experiences frequent flooding. No soil associations in SA7 experience ponding (Soil Survey Staff 2012). The closest source of water that would have been available to prehistoric inhabitants of this area would have been Blue Creek, [redacted] from SA7. Currently there is a drainage ditch along the northern border that bisects the Orrville SMU.

SA7 was one of numerous in this project to have been targeted for data enhancement for Dearborn County. The area surrounding SA7 is experiencing development. This development, in addition to lacking archaeological site information for this portion of the county, made SA7 a good candidate for data enhancement.

Survey Area 7 Artifacts

Two historic artifacts were collected in total from SA7. No prehistoric artifacts were observed or recovered in SA7. Artifact categories and the associated number of each type of artifact recovered in SA7 are listed in Table 9. Individual artifacts are listed in the artifact summary section, Appendix E of Volume 2 of this report.

Table 9: SA7 Artifacts by Category.

Historic Artifacts	**No.**
Glass: Clear	1
Ceramic: Whiteware	1
Total	**2**

Prehistoric Artifacts

No prehistoric artifacts were recovered in SA7.

Historic Artifacts

One fragment of historic clear glass was recovered at site 12D674 (Figure 87). Also recovered at this site was one body sherd of stoneware, weighing about 10.6 g. This stoneware is temporally diagnostic, with a range of manufacture of 1870 – 1920 (Stelle 2001). No other temporally diagnostic historic artifacts were recovered in SA7.

Figure 86: Temporally diagnostic historic ceramics from SA7, SA8, SA9, SA10, and SA11

Figure 87: Non-diagnostic artifacts from SA7 and SA8

Survey Area 7 Sites

One archaeological sites was identified in SA7, 12D674 (Figure 88, Figure 89). 12D674 was a small historic scatter consisting of two artifacts. No previously recorded archaeological sites are within the area of SA7. Site 12D674 was located on Clermont silt loam (Ct) soil in the western portion of the survey area.

SA7 has zero sites containing a prehistoric component. One site with a historic component was encountered, yielding a historic site density of one site per 18.74 acres (7.58 ha). Historic artifacts were encountered with densities of 0.107 per acre.

Survey Area 7 Site Recommendations

Sites comprised of very small historic scatters offer very little information at all, especially with regard to any type of significant person, event, structural or archaeological type. These types of sites are not generally considered for listing on the NRHP. The frequently flooded inceptisol (Or) are poorly drained soils with redox characters prevalent, the potential for buried deposits is low, and any such deposits are unlikely to be the variety generally considered eligible for the NRHP. No further work is recommended in SA7.

Figure 88: Survey Area 7 Sites over [redacted] Indiana 7.5 minute USGS Quadrangle

Figure 89: Survey Area 7 Sites over 2012 Aerial Photograph.

Survey Area 8

SA8 is located in [redacted] as shown on the USGS 7.5' Spades Quadrangle map (Figure 85). Only pedestrian survey was employed in SA8. The multiple fields making within SA8 had been previously harvested of its corn, leaving behind agricultural debris. Due to this debris, ground surface visibility was visually estimated to be between thirty-five and seventy percent. The pedestrian survey of SA8 occurred in the afternoon of Saturday, November 16, 2013. Weather conditions were slightly overcast, yet still good for archaeological survey.

In total, SA8 is 46.05 acres (18.64 ha) in size. The soils of SA8 are characterized as fine silty Glossaqualfs (AvA, Ct), fine silty Fragiudalfs (CnC3, RoB2), and a fine loamy Endoaquept (Or). The Orrville silt loam (Inceptisol) SMU is frequently flooded but experiences no ponding (Soil Survey Staff 2012). None of the other soil associations experience flooding or ponding (Soil Survey Staff 2012). The closest sources of water are Blue Creek [redacted] the Eastern Fork of Tanners Creek [redacted] The antiquity and nature of these channels prehistorically is unknown; however, the local topography is carved around these intermittent flows indicating at least some of the prehistoric inhabitants would have had access to their waters.

SA8 was one of numerous in this project to have been targeted for data enhancement in Dearborn County. The area surrounding SA8 is experiencing development. This development, in addition to lacking archaeological site information for this portion of the county, made SA8 a good candidate for data enhancement.

Survey Area 8 Artifacts

Six artifacts were collected in total from SA8. This consisted of two prehistoric artifacts and four historic artifacts. Artifact categories and the associated number of each type of artifact recovered in SA8 are listed in Table 10 (Figure 86 and Figure 87). Individual artifacts are listed in the artifact summary section, Appendix E of Volume 2 of this report.

Table 10: SA8 Artifacts by Category.

Prehistoric Artifacts	**No.**	**Historic Artifacts**	**No.**
Flake	2	Ceramic: Stoneware	2
		Ceramic: Whiteware	1
		Plastic	1
Total	**2**	Total	**4**

Prehistoric Artifacts

Two flakes were identified from SA8 (Figure 87). These were recovered from sites 12D675 and 12D678. No temporally diagnostic prehistoric artifacts were recovered from SA8.

Historic Artifacts

One fragment of plastic and one body sherd of whiteware ceramic was recovered from site 12D677 (Figure 86 and Figure 87). Whiteware ceramics have a manufacturing range of 1820 – Present (Stelle 2001). The plastic fragment is not temporally diagnostic. The remaining two historic artifacts are two body fragments of stoneware ceramics from 12D676. One stoneware sherd contains a Bristol slip and Bristol glaze, manufactured post-1890 (Stelle 2001). The other stoneware sherd contains an Albany slip with salt glaze that date to 1780 – 1940 (Stelle 2001). No other historic artifacts were recovered in SA8.

Survey Area 8 Sites

Four archaeological sites were identified and recorded in SA8 (12D675-12D678; Figure 90, Figure 91). 12D675 (Sa8-1) is an unidentified prehistoric isolated find located on Avonburg silt loam. Sites 12D676 and 12D677 were located on Rossmoyne silt loam (Sa8-2 and Sa8-3). Site 12D676 (Sa8-2) and 12D677 (Sa8-3) are both small historic scatters. 12D678 (Sa8-4) is an unidentified prehistoric isolated find located on Cincinnati silt loam.

Figure 90: Survey Area 8 Sites over [redacted] Indiana 7.5 minute USGS Quadrangle

Sites 12D6767 and 677 are near a former standing structure mapped on the 1958 USGS [redacted] Indiana 7.5 minute quadrangle (see Figure 92). The structure is no longer extant, though the outbuildings associated with it are still present (cf. Figure 90 and Figure 91). Site 12D677 is

especially associated (spatially) with the former structure. According to the 1875 atlas of Dearborn County, this plot was owned by [redacted] (Lake and Griffing 1875:9) and shows a structure in the same approximate location as the now disappeared structure shown on the USGS maps. [redacted] and his relatives are not mentioned in the history of the county or the history of Jackson Township presented by Lake and Griffing (1875:8, 10, 16). The 1899 atlas shows the shows the same property still in the [redacted] family, owned by [redacted] (Gridley 1899:28). The structure is represented in the same place on this map. However, the collection neither site shows signs of significant information potential associated with the initial time period of occupation. Further, the [redacted] family does not appear to represent a significant family in the history of the county or the township. The [redacted] name is mentioned only once in the 1885 history of Dearborn County (Weakley, Harraman & Co. 1885:709) as the maiden name of [redacted] wife of [redacted] in southern [redacted] Township. The [redacted] family name makes no appearance in the 1915 county history (Shaw 1915).

SA8 has two sites containing a prehistoric component, giving a prehistoric site density of one prehistoric site per 23.03 acres (9.32 ha). Prehistoric artifacts were encountered in densities of about 0.043 per acre. This survey area also contained two sites with a historic component. This gives a historic site density of one historic site per 23.03 acres (9.32 ha). Historic artifacts were encountered with densities of 0.087 per acre.

Figure 91: Survey Area 8 Sites over 2012 Aerial Photograph.

Survey Area 8 Sites Recommendations

None of the sites encountered during our survey of SA8 are considered eligible for the NRHP. This is because the site assemblages reveal no significant information on any significant people, events, historic/archaeological structures or types, or significant data for research. Even with the spatial association of 12D676 and 12D677 with a historic house, there is no indication that the archaeological deposits have the potential to provide significant information about the early settlement history of [redacted] Township. The artifacts associated with these sites are generic or modern and do not fit with the timing of the early settlement indicated on the 1875 or 1899 atlases. Further, the original owners appear to have played no significant role in the history or the county or the township. Therefore, these sites are not deemed to be eligible under any of the NRHP criteria. The frequently flooded inceptisol within the survey area is recommended for subsurface reconnaissance as buried deposits have potential to exist. Aside from this, no further testing is recommended in SA8.

Survey Area 9

SA9 is located in [redacted] Township in [redacted] as shown on the USGS 7.5' [redacted] Quadrangle map (Figure 85). Pedestrian survey was the only method employed at SA9. The field making up SA9 had been previously harvested of its bean crop, leaving behind agricultural debris. Due to this debris, ground surface visibility was visually estimated to be between 45 and 80 percent. The pedestrian survey of SA9 occurred in the morning of Friday, December 20, 2013. Weather conditions were slightly overcast, yet still good for archaeological survey.

In total, SA9 is 79.47 acres (32.16 ha) in size. The soils of SA9 are characterized as fine silty Glossaqualfs (Ct, AvA) and fine silty Frgiudalfs (RoB2, CnC3). None of the SMUs in SA9 experience flooding or ponding (Soil Survey Staff 2012). The nearby water sources for SA9 are similar to SA8; the unnamed tributary to East Fork Tanners Creek is the most proximate [redacted] Eagle Creek is [redacted], and Tanners Creek [redacted]

SA9 was one of numerous in this project to have been targeted for data enhancement in Dearborn County. The area surrounding SA9 is experiencing development. This development, in addition to lacking archaeological site information for this portion of the county, made SA9 a good candidate for data enhancement.

Survey Area 9 Artifacts

One historic artifact was collected from SA9 (Figure 86). No prehistoric artifacts were observed, recorded, or collected. Artifact categories and the associated number of each type of artifact recovered in SA9 are listed in Table 11. Individual artifacts are listed in the artifact summary section, Appendix E of Volume 2 of this report.

Table 11: SA9 Artifacts by Category.

Historic Artifacts	**No.**
Ceramic: Stoneware	1
Total	**1**

Prehistoric Artifacts

No prehistoric artifacts were discovered in SA9.

Historic Artifacts

One historic artifact, a body fragment of stoneware ceramic, was the only recovered artifact in SA9 (Figure 86). This was from site 12D679. The stoneware contains an Albany slip interior and a salt glazed exterior. Manufacturing years for this type of stoneware range from 1780 – 1940 (Stelle 2001). No other artifacts were recovered in SA9.

Figure 92: Survey Area 9 Sites over [redacted], Indiana 7.5 minute USGS Quadrangle

Figure 93: Survey Area 9 Sites over 2012 Aerial Photograph.

Survey Area 9 Sites

One archaeological site was identified and recorded in SA9, 12D679 (Figure 92, Figure 93). Site 12D679 is a historic isolate on Avonburg silt loam (Sa9-2). As only one historic site exists, the historic site density of SA9 is one historic site per 79.5 acres (32.16 ha). Historic artifacts were encountered in densities of about 0.013 per acre. No prehistoric sites or prehistoric artifacts were observed or recorded for SA9.

Also, one previously recorded site is located within SA9 in the drive entrance to the modern barn. This site, 12D249, is reported to have been a cabin from GLO records (Maust and Cochran 1989). No evidence of this site was visible during pedestrian survey. The 1875 atlas (Lake and Griffing 1875:9) shows the lot owned by [redacted]" and in 1899 it was owned by [redacted] (Gridley 1899:28). In 1875 there was a structure mapped in the approximate location of the current driveway and the structure mapped on the 1958 USGS 7.5 minute quadrangle. Site 12D249 is in this same approximate spot, and, as stated above, no sign of this site or structure was encountered within the survey area. The site and the structure are outside the boundaries of the surveyed area. Whether or not there is any remnant of this site and structure archaeologically remains to be seen and is beyond the scope of this project.

Survey Area 9 Sites Recommendations

12D679 is an isolated find yielding no significant information on any significant person, event, historic structure, archaeological type, or archaeological research question. Isolated finds are not generally considered eligible for listing on the NRHP. No further work is recommended.

Survey Area 10

SA10 is located in [redacted] as shown on the USGS 7.5' [redacted] Quadrangle map (Figure 85). Pedestrian survey was the only method employed at SA10. The field making within SA10 had been previously harvested of its bean crop, leaving behind agricultural debris. Due to this debris, ground surface visibility was visually estimated to be between 60 and 80 percent. The pedestrian survey of SA10 occurred in the afternoon of Friday, December 20, 2013. Weather conditions were overcast with a light drizzle, yet still good for archaeological survey.

In total, SA10 is 36.87 acres (14.92 ha) in size. The soils of SA10 are characterized as fine silty Glossaqualfs (Ct, AvA), and fine silty Frgiudalfs (RoB2, CnC3) and a fine loamy Endoaquept (Or). The Inceptisol (Or) experiences frequent flooding; none of the other SMUs in SA10 experience flooding or ponding (Soil Survey Staff 2012). The nearby water sources for SA10 are similar to SA8; the unnamed tributary to East Fork Tanners Creek [redacted] Eagle Creek is [redacted] and Tanners Creek is [redacted]

SA10 was one of numerous in this project to have been targeted for data enhancement in Dearborn County. The area surrounding SA10 is experiencing development. This development, in addition to lacking archaeological site information for this portion of the county, made SA10 a good candidate for data enhancement.

Survey Area 10 Artifacts

Three historic artifacts were collected in total from SA10 (Figure 86). No prehistoric artifacts were recovered from SA10. Artifact categories and the associated number of each type of artifact recovered in SA10 are listed in Table 12. Individual artifacts are listed in the artifact summary section, Appendix E of Volume 2 of this report.

Table 12: SA10 Artifacts by Category.

Historic Artifacts	**No.**
Ceramic: Whiteware	3
Total	**3**

Prehistoric Artifacts

No prehistoric artifacts were discovered in SA10.

Historic Artifacts

All three historic artifacts recovered from SA10 are whiteware ceramics (Figure 86). One sherd is the outer edge of a plate (Figure 86). Whiteware ceramic manufacturing range is from 1820 – Present (Stelle 2001). All three whiteware sherds were recovered in site 12D680.

Figure 94: Survey Area 10 Sites over [redacted] Indiana 7.5 minute USGS Quadrangle

Figure 95: Survey Area 10 Sites over 2012 Aerial Photograph.

Survey Area 10 Sites

One archaeological site was identified and recorded in SA10, 12D680. The site is a historic scatter located on Rossmoyne silt loam near the border with Clermont silt loam. While the artifacts were found in two places separated by a moderately wide distance, these finds are lumped under a single site number as they were all discovered on a side slope angling down to the local unnamed drainage that defines the eastern border of SA10. It is unlikely that any of these artifacts originated in their find spot and reasonably probable that they are related to the same suite of behaviors. SA10 contained 1 sites with a historic component. This gives a historic site density of one site per 36.87 acres (14.92 ha). Historic artifacts were encountered with densities of 0.081 per acre.

Survey Area 10 Sites Recommendations

Small historic scatters such as 12D680 yield no significant data, historically or archaeologically. These artifacts cannot be associated with any significant event, person, historic

structure or archaeological type. Generally, these sites of types are not considered eligible for the NRHP. No further work is required.

Survey Area 11

SA11 is located in [redacted] Township in [redacted] as shown on the USGS [redacted] map (Figure 85). Pedestrian survey was the only method employed at SA11. The field making up SA11 had been previously harvested of its corn crop, leaving behind agricultural debris. Due to this debris, ground surface visibility was visually estimated to be between 40 and 80 percent. The pedestrian survey of SA11 occurred in the afternoon of Friday, December 20, 2013. Weather conditions were overcast with a light drizzle, yet still good for archaeological survey.

In total, SA11 is 38.72 acres (15.67 ha) in size. The soils of SA11 are characterized as fine silty Glossaqualfs (Ct, AvA), and fine silty Frgiudalfs (RoB2). None of the SMUs in SA11 experience flooding or ponding (Soil Survey Staff 2012). Blue Creek [redacted] is the closest source of water, [redacted] Blue Creek and its minor streams would have provided resources for prehistoric peoples in the area.

SA11 was one of numerous in this project to have been targeted for data enhancement in Dearborn County. The area surrounding SA11 is experiencing development. This development, in addition to lacking archaeological site information for this portion of the county, made SA11 a good candidate for data enhancement.

Survey Area 11 Artifacts

One historic artifact was recovered from SA11 (Figure 86). No prehistoric artifacts were recovered in this survey area. Artifact categories and the associated number of each type of artifact recovered in SA11 are listed in Table 13. Individual artifacts are listed in the artifact summary section, Appendix E of Volume 2 of this report.

Table 13: SA11 Artifacts by Category.

Historic Artifacts	**No.**
Ceramic: Whiteware	1
Total	**1**

Prehistoric Artifacts

No prehistoric artifacts were recovered from SA11.

Historic Artifacts

One historic artifact, a body sherd of whiteware ceramic, was recovered from SA11 (Figure 86). Whiteware has a manufacturing date range of 1820 – Present (Stelle 2001). No other historic artifacts were recovered in this survey area.

Survey Area 11 Sites

One site, 12D681, was recorded in SA11. The site is a historic isolated find comprised of the artifact discussed above. Site 12D681 is located on Clermont silt loam (Ct) soil that is poorly drained but does not experience frequent flooding or ponding. The one historic site gives a

historic site density of one historic site per 38.72 acres (15.67 ha). Historic artifacts were encountered in densities of 0.026 per acre.

Figure 96: Survey Area 11 Sites over [redacted] 7.5 minute USGS Quadrangle

Figure 97: Survey Area 11 Sites over 2012 Aerial Photograph.

Survey Area 11 Site Recommendations

12D681, the only site within SA11, is a historic isolated find. Isolated finds are generally not considered eligible for listing on the NRHP. As the site yields no significant information on significant people, events, historic structures/archaeological types, or archaeological research data, 12D681 is not eligible for listing. No further work in SA11 is recommended.

Survey Area 12

SA12 is located in [redacted] as shown on the USGS [redacted] Quadrangle map (Figure 85). Pedestrian survey was the only method employed at SA12. The SA12 field had been previously harvested of its corn crop, leaving behind agricultural debris. Due to this debris, ground surface visibility was visually estimated to be between thirty and fifty-five percent. The pedestrian survey of SA12 occurred in the afternoon of Friday, December 20, 2013. Weather conditions were overcast with a light drizzle, yet still good for archaeological survey.

In total, SA12 is 17.21 acres (6.96 ha) in size. The soils of SA12 are characterized as fine silty Glossaqualfs (Ct, AvA), and fine silty Frgiudalfs (RoB2). None of the SMUs in SA12 experience flooding or ponding (Soil Survey Staff 2012). The closest source of water to SA12 is Blue Creek to the west by approximately 1,112.81 meters.

SA12 was the last of numerous in this project to have been targeted for data enhancement in Dearborn County. The area surrounding SA12 is experiencing development. This development, in addition to lacking archaeological site information for this portion of the county, made SA12 a good candidate for data enhancement.

Survey Area 12 Artifacts

No artifacts, historic or prehistoric, were collected in total from SA12.

Survey Area 12 Sites

No archaeological sites were recorded for SA12. No previously recorded archaeological sites are within the area of SA12. Sites 12Fr251, 12D449 – 12D452 are located nearby along the same tributary stream in similar settings to SA12. These sites are all isolated finds (flakes and 1 biface fragment) and one small (12Fr251) lithic scatter. None of the sites in the area are considered eligible for the NRHP.

Survey Area 12 Site Recommendations

No archaeological sites were discovered in this survey area. The sites in the general area are not considered significant, and no further work is recommended for SA12.

FAUNAL ANALYSIS OF 12D19 AND 12D491
By S. Homes Hogue

Introduction

The aim of this research is to investigate the faunal materials recovered from the 1993 and 1994 field work conducted at the Leonard Haag site (12D19) and the 2013-2014 surface collections at site 12D491. The main focus of the analysis is to provide information on diet and faunal exploitation at the two sites. Other questions relevant to this research include:

- What habitats do the identified fauna prefer and can this information provide insights on human behavior at the sites?
- How does bone preservation compare at the two sites?
- How has preservation and different collection methods affected animal representation in the collections?
- What bone modifications are present?

When considering the fauna data from the two sites, recovery methods employed must be considered. At site 12D19 faunal materials recovered in 1994 were from stripped midden (Trench A) context (Cochran et al. 1995). This midden trench stripped in 1994 by Cochran et al. (1995) was screened using ¼ inch screen. Cochran et al. (1995) report that that the Trench A back dirt pile was fully screened during their field work, though there was evidence that the area had been visited by collectors when archaeologists were not present (Cochran et al. 1995: 18). Because of time constraints, only a portion of these materials were reviewed for this report. For the faunal materials analyzed from the Trench A back dirt pile, the sample of the collection includes 2,249 bones weighing 1,825.93 grams. While this collection represents only a sample of the total materials recovered from Trench A, the materials are considered representative of the fauna that was exploited during the site's occupation. Appendix I provides details on the analysis of this sample.

During the 2013-2014 surface collection at site 12D491, the field crew was instructed to pick up all materials that were identified during a pedestrian survey. The number of animal bones recovered and analyzed for this report totaled 1,555 and weighed 1,615.69 grams (see Figure 42 - Figure 48). A detailed list of the collection is provided in Appendix J.

Methods

The faunal analysis was conducted in the Department of Anthropology, Ball State University using comparative faunal collections available in the department. The fauna materials were analyzed by M. L. Neiberg (graduate student) and S. Homes Hogue using standard methods discussed in Davis (1987), O'Conner (2000), and Reitz and Wing (1999). Attempts were made to identify each specimen to species and minimally to class. If class could not be determined, then the specimen was placed in a category labeled miscellaneous unidentified. If preservation permitted the element type/landmark (femur, facet, etc.), side (right or left), and section (epiphysis, proximal, distal, etc.) were recorded. This enabled the researches to the minimum number of individuals (MNI) to be estimated (see Grayson 1973). The back dirt pile collection

and the surface collection were deemed "single" proveniences and therefore Grayson's (1973) Minimum Distinction Method was employed. Unfortunately this method yields a smaller MNI than if distinct proveniences (features, strata, etc.) could have been identified. Weight to the nearest .01 gram was recorded for all specimens. A numbered scale (ranging from 1 to 4) was employed to quantify the degree of fragmentation and bone preservation. For each specimen the following codes were used to record the percentage of a given skeletal element that is present; 1 (>75%), 2 (> 50% < 75%), 3 (> 25% < 50%), and 4 (<25%). Modifications were recorded and included broad categories of burning, gnawing, and cut marks. Bone modifications such as burning and gnawing can provide information on depositional processes. For example the presence of gnawed bone may indicate that the bone was not buried soon after processing and was exposed to dogs and rodents. Burned bone is modified by exposure to fire during preparation or after discard. Cuts are defined as shallow incisions on the bone surface generally associated with cutting meat around the joint area. Worked bone is human modification of bone not associated with food preparation (Reitz and Weinand 1995). For example certain bones of deer and turkey may be fashioned into tools such as deer awls and tubular beads.

Identified Fauna

Table 14 provides a summary of the analysis for site 12D19. The number of animal bones examined totaled 2,249 and weighed 1,825.93 grams. The 12D491 faunal analysis is presented in Table 15. For this site 1,555 bones were collected weighing 1,615.69 grams. A short description of the animals identified at the sites follows. Between the two sites, eight mammal species, four aves species, two reptile species, one amphibian genus, and one pisces species were identified.

Mammals

Wild Mammals

Several wild mammals most probably used for food were identified in the 12D19 and 12D491 sites. Both sites had deer (*Oldocoileus virginianus*), raccoon (*Procyon lotor*), and fox squirrel (*Sciurus niger).* Site 12D19 also had eastern cottontail (*Sylvilagus floridanus*), beaver (*Castor Canadensis*), red fox (*Vulpes vulpes*) and coyote (*Canis latrans*). Most of these mammals can be found in forest habitats, but several are more likely to occupy specific areas of the forest. Deer prefer the edge of deciduous forests and open forests as well as farmlands and bushy areas (Whitaker 1997). Raccoons favor bottomland forests along marshes, streams and rivers as well as agricultural and wooded urban sites. The eastern cottontail also occupies a variety of habitats, particularly deciduous forests, overgrown fields, and forest edges and has become commensal with humans around farms and in some urban areas (Choate et al. 1994). Squirrels prefer wooded areas, particularly those without dense underbrush, and will either make their own nest or nest in tree holes (Whitaker 1997). Beavers are an exception and are generally found in "rivers, streams, marshes, lakes and ponds" (Whitaker 1997: 569).

Several wild mammals were identified at 12D19 and are not presumed to have been used for food, such as the beaver (*Castor Canadensis*), red fox (*Vulpes vulpes*) and coyote (*Canis latrans*), and may have been hunted for their pelts. Both animals can be found in wooded areas

but will also occupy brush lands and other flat areas as well as field edges (Choate et al. 1994; Whitaker 1997).

A humerus from an eastern or common mole (*Scalops aquaticus*) was recovered from the surface collection at site 12D491. Their habitat preferences include fields, damp woods, and swamplands (Whitaker 1997).

Aves

Aves identified in the collections included, turkey (*Meleagris gallopavo*), Canada Goose (*Branta canadensis*), Belted Kingfisher (*Ceryle alcyon*) and Killdeer (*Charadruis vociferous*). Only turkey (*Meleagris gallopavo*) was the only species identified at the 12D491 site. Wild turkey prefers forest habitats, specifically oak woodlands and mixed pine-oak forest and Canada goose (*Branta canadensis*) are often seen near water and in open grasslands and fields (Bull and Farrand 1994). Killdeer (*Charadruis vociferous*) are associated with open areas which include plowed fields and short grass prairies (Bull and Ferrand 1994). The Belted Kingfisher (*Ceryle alcyon*) is usually seen along rivers and lakes (Bull and Farrand 1994) in Indiana.

Reptiles

One reptile species, box turtle (*Terrapene carolina*) was identified in both collections. Box turtles are associated with fresh water habitats and moist forested areas and floodplains (Behler and King 1979). For site 12D19, a constrictor species was also identified in the collection. Often these species occupy abandoned fields and grasslands (Behler and King 1979).

Amphibians

Only site 12D19 fauna contained amphibian species. The toad was likely an American Toad (*Bufo americanus*) which can be found in a variety of habitats that yield a wealth of insects and moistness (Behler and King 1979). Some species of toads can have a hallucinogenic effect (Cyphors et al. 2005) in Mesoamerica but whether they were used in this context in the Midwest is unknown.

Pisces

There was one fish species identified in the 12D19 faunal collection, the remains of what is thought to be channel catfish (*Ictalurus punctatus*). These are freshwater fish that prefer rivers and creeks with slower moving currents over sand or gravel. The channel catfish can grow to a length of 1.2m and a weight of 26.3kg (Boschung et al. 1983). Other fish species are present at 12D19 but the lack of time and resources made specific identification unachievable.

Results

12D19

The back dirt pile at site 12D19 yielded much larger elements that were more easily identified to species than the surface collected fauna recovered from 12D491. Table *14* presents the summary of the faunal analysis.

Deer was the most represented species with five MNI. Deer MNI was based on the presence of 4 distal adult tibia and seven different immature elements. Other mammal species included raccoon (n=1; weight = 14.94 gms), fox squirrel (n = 1; weight =.31 gms), Eastern cottontail (n=2; weight = .45 gms) beaver (n =2; weight = 1.67 gms), red fox (n =3; weight = 3.8 gms) and coyote (n= 2; weight = 9.81).

Mammal dominated the collection representing 74.93 percent of the sample weight. Fifty-eight percent (58.01%) of the mammal bones could not be identified to species. The average size for mammal elements was 3.05.

Aves totaled 6.9 percent of the total number of bones and 5.04 percent of the total bone weight. Species identified included turkey (n = 54; weight = 51.17 gms), Canada goose (n = 1 weight = 4.89), belted kingfisher (n = 1; weight = .02 gms) and killdeer (n = 1; weight = .55 gms). The average size for fragments was 3.4.

Reptiles included box turtle (n = 6; weight= 7.35 gms) and constrictor species represented by three vertebra (weight = .62). Reptiles were relatively scarce representing less than one percent of the total bones and weight. Two species were identified, the Eastern box turtle and a constrictor species. Miscellaneous unidentified bones represented 13.8 percent of the total number and 6.7 percent of the total weight. The fragment average size was 2.2 but this is due to entire vertebra being present for constrictor species.

A right and a left femur of a toad were identified in the sample and were relatively complete with more than 75 percent present. Like reptiles, amphibian represented less than one percent of the bones and total weight.

Miscellaneous unidentified bones represented 62.16 percent of the total number and 19.2 percent of the total weight. Bone size averaged less than 25 percent or a 4 on the scale.

Modifications were dominated by burned bone but two deer bones (proximal radius and a calcaneus fragment) had been cut and one turkey femur shaft may have been cut for a bead. Only 6.75 percent of the collection sample specimens had been burned representing 5.26 percent of the total weight.

Table 14: Trench A Sample from 12D19

Common Name	Genus, Species	MNI #	MNI %	Number of Bones	Weight gms	Average Fragment Size
Mammals						
Deer	*Odocoileus virginianus*	5	26.3	236	917.49	2.9
Deer burned				17	53.93	4
Raccoon	*Procyon lotor*	1	5.26	10	14.94	1.44
Fox Squirrel	*Sciurus niger*	1	5.26	3	0.31	3

Eastern Cottontail	*Sylvilagus floridanus*	1	5.26	2	0.45	1
Beaver	*Castor canadensis*	1	5.26	2	1.67	3.5
Red Fox	*Vulpes vulpes*	1	5.26	3	3.8	1
Coyote	*Canis latrans*	1	5.26	2	9.81	1.5
Unidentified mammal				295	285.11	3.86
Unidentified mammal burned				85	80.79	4
Total Mammal		**11**	**57.86**	**655**	**1368.3**	**3.05**
Aves						
Turkey	*Meleagris gallopavo*	1	5.26	54	51.17	3.27
Canada Goose?	*Branta canadensis*	1	5.26	1	4.89	1
Belted Kingfisher?	*Ceryle alcyon*	1	5.26	1	0.2	2
Killdeer ?	*Charadruis vociferus*	1	5.26	1	0.55	4
Unid aves				99	34.98	4
Unidentified aves burned				1	0.37	4
Total Aves		**4**	**21.04**	**157**	**92.16**	**3.4**
Reptile						
Eastern Box Turtle	*Terrapene carolina*	1	5.26	6	7.35	4
Constrictor	Colubrid sp.	1	5.26	3	0.62	1
Total Reptile		**2**	**10.52**	**9**	**7.97**	**2.2**
Amphibian						
Toad	*Bufo americanus ?*	1	5.26	2	0.21	1
Total Amphibian		**1**	**5.26**	**2**	**0.21**	**1**
Pisces						
Channel Catfish?	*Ictalurus punctatus*	1	5.26	4	0.76	2
Unid Pisces				24	5.87	1.88
Total Pisces		**1**	**5.26**	**28**	**6.63**	**1.92**
Unidentified						
Miscellaneous unidentified				1264	308.78	4
Miscellaneous unidentified burned				134	41.88	4
Total Miscellaneous Unidentified				**1398**	**350.66**	**4**
Sample Total		**19**	**99.94**	**2249**	**1825.93**	
Total Unburned bone				**2097**	**1729.75**	
Total Burned Bone				**152**	**96.18**	

12D491

Table 15 presents the data for the 12D491 site fauna collection. For site 12D491 mammal species identified included deer (n = 248; weight = 578.55 gms), raccoon (n=1; weight = 5.65 gms), fox squirrel (n = 1; weight =.31 gms) and common mole (n= 1 weight = .35). Mammal, especially deer, dominated the collection. Eighty-one percent of the fauna were identified as mammal and this represented 90.77 percent of the total weight of the collected bone.

At least four deer were identified in the collection represented by three right adult astragali and two immature epiphyses from different bone elements. Deer represented 15.9 percent of the total bones and 35.8 percent of the total weight. For small mammals only one element was identified for each of the species so each represents one individual.

Much of the mammal bones (80.07 %) could not be identified to species. This is expected given the taphonomic processes involved in disturbed and plowed fields where bones are impacted by heavy machinery and weather erosion. The average fragment size for the mammal bone was 3.67. Several fragments were relatively complete (astralagi for example) but most of the elements had been reduced to less than 25 percent of their original size.

Aves totaled one percent of the total number of bones and .42 percent of the total bone weight. The only species identified was turkey. Fragment size for aves was 4 or less than 25 percent.

Reptiles were better represented with 4.2 percent of the total bones and 2.1 percent of the total weight. The only species identified was the Eastern box turtle. Fragment size averaged 3.98 for reptiles.

Miscellaneous unidentified bones represented 13.8 percent of the total number and 6.7 percent of the total weight. Bone size averaged less than 25 percent or a 4 on the scale.

Burning is the most prevalent modification recorded at site 12D491 and represented 27.5 percent of the total bones and 11.6 percent of the total weight. Only one unidentified bone showed evidence of cutting from area T6-601.

Table 15: Surface Collection Faunal Materials from 12D491

Species	Genus, Species	MNI #	MNI %	Number of Bones	Weight gms	Average Fragment Size
Mammals						
Deer	*Odocoileus virginianus*	4	44.4	106	387.71	3.12
Deer burned				2	6.54	4
Probably deer				140	184.3	3.81
Raccoon	*Procyon lotor*	1	11.1	1	5.65	4
Fox squirrel	*Sciurus niger*	1	11.1	1	0.31	2.5
Eastern mole	*Scalops aquaticus*	1	11.1	1	0.35	1
Unidentified mammal				675	736.16	4

Unidentified mammal burned				334	145.61	4
Total Mammal		**7**	**77.7**	**1260**	**1466.63**	**3.67**
Aves						
Turkey	*Meleagris gallopavo*	1	11.1	3	1.71	4
Unidentified aves				11	4.76	4
Unidentified aves burned				1	0.33	4
Total Aves		**1**	**11.1**	**15**	**6.8**	**4**
Reptiles						
Eastern Box Turtle	*Terrapene carolina*	1	11.1	63	33.06	4
Box turtle burned				1	0.5	4
Unidentified turtle				1	0.26	3
Total Reptile		**1**	**11.1**	**65**	**33.82**	**3.98**
Unidentified						
Miscellaneous unidentified				124	73.08	4
Miscellaneous unidentified burned				91	35.36	4
Total Miscellaneous Unidentified				**215**	**108.44**	**4**
Sample Total		**9**	**99.9**	**1555**	**1615.69**	
Total Unburned bone				**1126**	**1427.35**	
Total Burned Bone				**429**	**188.34**	

Discussion

The analysis of the faunal materials recovered from 12D19 and 12D491 yielded some interesting results. Deer was the dominate food source at both sites. At site 12D19 turkey was the next important food source while at 12D491 it was the box turtle. Figure 98 provides a summary of the percentage of bone by weight for each class identified for the sites. The higher frequency of turtle at site 12D491 is probably due to differential preservation of bird and turtle shell exposed to surface activities.

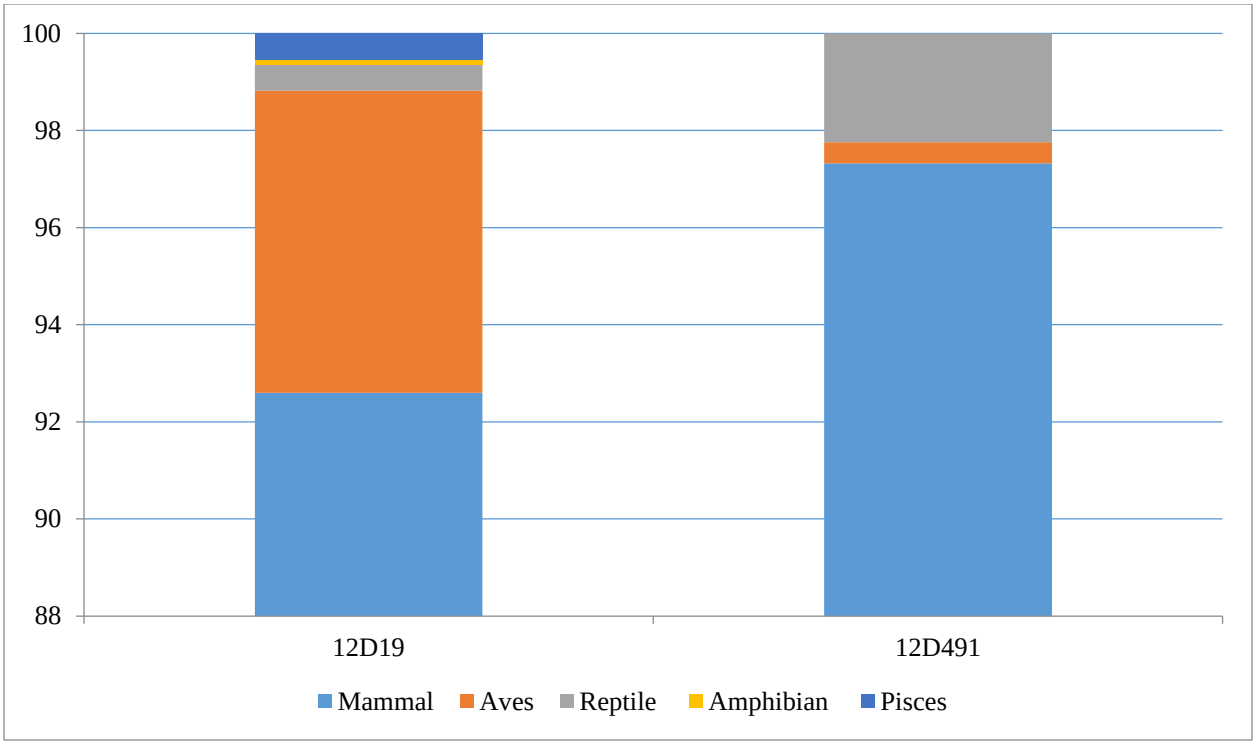


Figure 98: Percentages of animal class represented at each site by weight.

The animals identified at the two sites are found in a variety of habitats including agricultural fields, forest edges, forests, lakes, rivers, and scrubby brush. The presence of a variety of small mammals that prefer disturbed or open fields is expected given that agriculture played a major role in subsistence at the two sites. Hogue (2003) developed a small-mammal model for understanding landscapes altered by human activities. She concludes that a higher frequency of small mammals will be present at archaeological sites where human disturbance, predominately agriculture, exists. Small mammals are defined as species weighing 5 kg (11 lb) or less. Because they reproduce faster (r-selection) they are very adaptable to new and changed environments especially those altered through human activities (Hogue 2003). Table 16 provides a list of the small mammals identified at the two sites and their habitat preferences. Aves and reptile species are also included as well to provide corroborative support for habitats used. As expected, most of the small mammals, aves, and reptiles identified are associated with forest edge and cleared and old fields. This finding, while preliminary at best, provides indirect evidence for altered landscapes at the sites.

Table 16: Preferred Habitats for Small Mammals Identified at 12D19 and 12D491

Small mammal	Hardwood Forest	Pine-Oak	Forest Edge	Cleared Fields	Old Field	Grassy	Scrubby/Bush
Fox Squirrel	X	X					
Eastern Mole	X	X	X	X	X	X	X
Raccoon	X		X	X	X		
Eastern Cottontail	X		X			X	X

Red Fox		X		X	X	
Turkey	X	X				
Canada Goose				X	X	X
Killdeer				X		X
Constrictor					X	X

Adapted from Hogue 2003.

The absence of amphibian and fish at 12D491 is likely due to bias resulting from pedestrian surface collection where individuals recover bones that are visible on the ground surface. The ¼ inch screening method used at 12D19 would recover a greater number of bones from smaller animals. Another factor to consider is bone density. Deer, for example, is a large mammal and has a skeleton that is dense therefore individual elements are less likely to be eroded or fragmented. This factor could partially explain the high number of deer bones compared to other animals and miscellaneous specimens present at the 12D491 site.

When bone fragmentation is considered, larger fragments are associated with the fauna recovered from 12D19 back dirt. This finding is expected given that heavy machinery associated with modern agricultural activities and weathering likely damaged much of the bone recovered at 12D491. Figure *99* compares the different average sizes for each class and unidentified category. Fragmentation for the two sites is similar for both aves and miscellaneous unidentified. Bird bones, because of their hollow structure, are more likely to splinter and fragment relative to larger animals especially mammals. One interesting finding is that site 12D19 yielded far more miscellaneous unidentified bones (62.16%) than 12D491 (13.8%). This difference is undoubtedly due to the ¼ screening which would recover greater amounts of smaller fragmented bone than pedestrian survey.

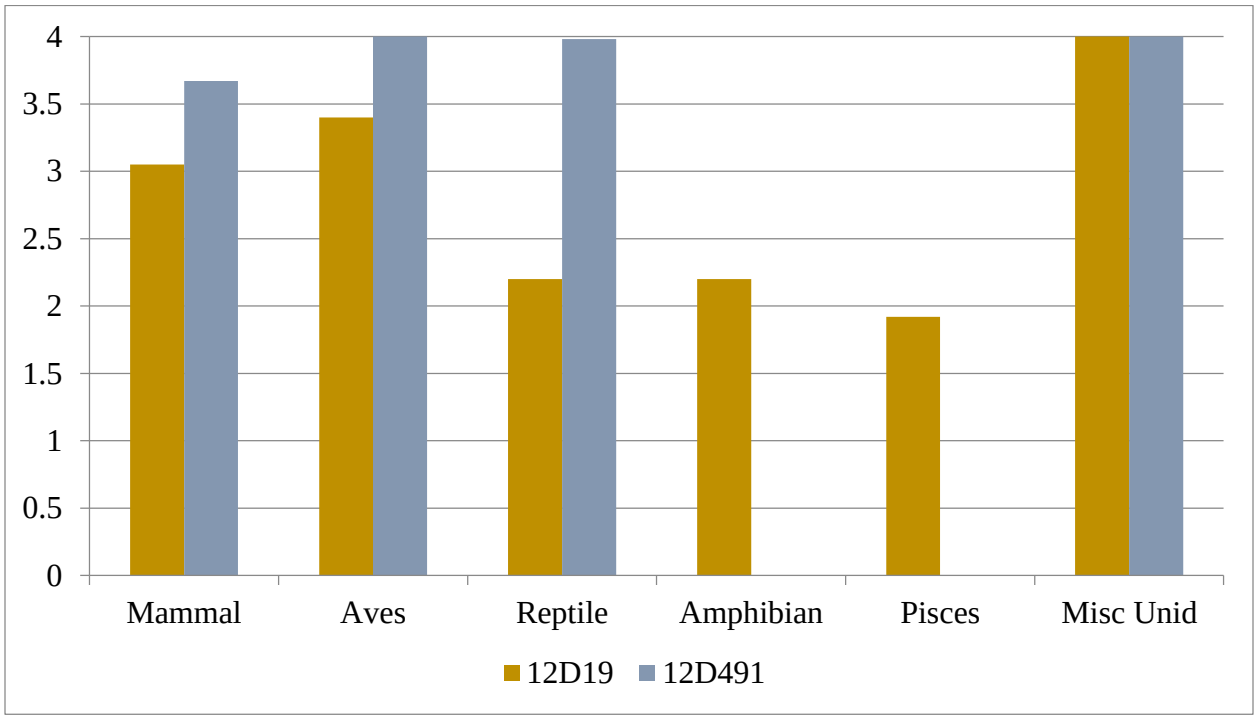


Figure 99: Average fragment sizes for animal class identified at the two sites.

Burning was the most common modification observed in both collections. Figure *100* compares the percentages of the total specimens and total weight for non-burned and burned bone. Interestingly the percentage by weight is nearly identical for the two sites but when the total numbers of burned bones is compared between the sites, 12D19 has noticeably less.

Burning tends to increase the frequency of fracturing in a bone by increasing brittleness (Lyman 1994). Because of this, burned bone is less likely to be identified than unmodified bone. Some research has shown that carbonized remains are more resistant to degradation because microorganism feed on organic matter (Lyman 1994). This may in part explain why there is a higher frequency of burned bone represented in the surface collection at 12D491 as burned bone within the ground and on the surface would not have been affected by microorganisms in the same way as unburned bone.

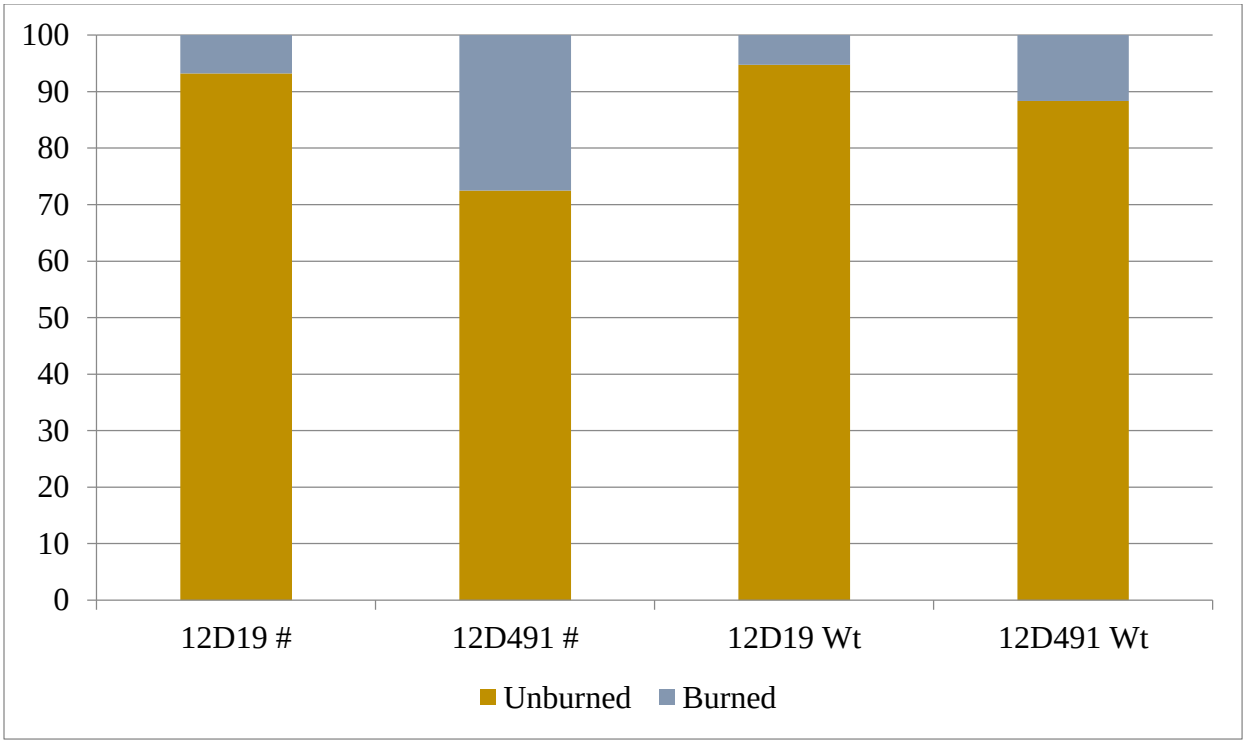


Figure 100: Comparisons of burned and unburned bone at 12D19 and 12D491.

Conclusions

This research has compared faunal materials from two Early Fort Ancient occupations in Dearborn County. It has provided information on resource preferences and landscape alterations. Bone preservation and modifications were also considered. One conclusion drawn from the research is ¼ inch screening may increase species representation in the collection where smaller bones of birds, amphibian, and fish are more likely to be recovered. Surface collections,

however can provide a preliminary profile of the types of animals exploited. Future work to complete the analysis of fauna form 12D19 is planned and hopefully a better understanding of these sites will be forthcoming.

OBERTING-GLENN SITE (12D25) SCAMMYHORN COLLECTION

By Kevin C. Nolan

Context

During the grant period the unexpected opportunity to examine a previously unknown collection from the Oberting-Glenn (12D25) site arose. In December of 2013, the Ohio Archaeological Council (OAC) became aware of an apparent auction of archaeological materials, including human remains. The provenience of the materials was not known initially. The auction had taken place prior to the OAC becoming officially aware. Fortunately, Robert (Bob) Genheimer, George Rieveschl Curator of Archaeology, Cincinnati Museum Center, had become aware of the auction prior to the date of sale. Human remains were present in the collection and photographs on the auctioneer's website. Genheimer and the CMC contacted the auctioneer to have the human remains removed from auction; the remains were donated to the CMC by the Scammyhorn family. The rest of the collection was purchased in lots by the CMC at the auction. All archaeological material were successfully procured by the CMC and some of the Scammyhorn library. Genheimer and the CMC staff and volunteers are in the process of cataloguing the collections for curation.

Scammyhorn Investigations of Oberting-Glenn

Richard "Dick" Scammyhorn was an amateur archaeologist who worked for dozens of years with the Cincinnati Museum Center (CMC; formerly Cincinnati Museum of Natural History) as a volunteer on many archaeological projects with Charles Oehler in the 1970s and 1980s. Mr. Scammyhorn was "unofficial photographer and mapper" for the CMNH investigations at State Line (33Ha58/12D18) (Genheimer personal communication, June 2014). Over the years Mr. Scammyhorn accumulated a diverse collection of archaeological literature and artifactual materials, some apparently in concert with CMC investigations he participated in (Turpin, State Line, Clough Creek, Martin Mound of the Turner Earthworks). Mr. Scammyhorn was a firefighter with training as a surveyor. He was well respected by his professional colleagues and a capable field archaeologist. Most of Mr. Scammyhorn's collections were from surface work. There were apparently investigations, however, that he conducted independent of the CMC staff that included excavation (Robert A. Genheimer, personal communication, December 10, 2013). Mr. Scammyhorn's investigations at the Oberting-Glenn site apparently overlap in time with his involvement in the CMNH investigations at State Line (Genheimer personal communication, June 2014). The Scammyhorn Collection consists of materials from several southwestern Ohio sites, and a rather extensive collection from the Oberting-Glenn Site (12D25). The Oberting-Glenn site collection was apparently amassed without cooperation or knowledge of the CMC staff (Genheimer, personal communication, December 2013). However, at least one other CMNH volunteer (Arlene Basham) participated in Scammyhorn's investigations at Oberting-Glenn. Ms. Basham is assisting Genheimer and CMC in sorting through the documentation and materials from the site (Genheimer personal communication, June 2014). Scammnyhorn's investigations were at least partially undertaken while the landowner was clearing the hilltop, and Mr. Scammyhorn conducted some salvage

investigations. However, not all the investigations appear linked to salvage, but the reason and purpose for individual bouts of investigation has not been determined from the notes yet.

The Collection

On January 14th, 2014 Kevin C. Nolan visited the CMC to perform a cursory examination of the Scammyhorn Collection. There are 29 containers of material. Not all are the same size, but most are packed full of stuff (Figure 101). There are two plastic crates full of records (Figure 101a). One contains folders of general background maps, historical and prehistorical background material, auditors maps, copies of topos, and (most importantly) field notes and maps. Scammyhorn's maps are detailed and included front sites, back sites, station locations, orientations, relationships (degrees and distance) among landmarks, datum stakes, etc.

The earliest notes seem to indicate investigations starting in the late 1970s, and continuing into the mid 1980s, with some later work, at least reestablishing damaged datums, in 1993. Notes on one of the maps dated to September 25th, 1981 indicates that the land had been "farmed into the early 1900s and fauna both wild and domestic inhabited the entire hilltop. The site has been disturbed extensively during the past 10 years by the owner clearing the hill top of trees and grape vines and other wild flora…" Another note indicates that Scammyhorn visited the [redacted] photograph their private collection in 1976 with Charles Oehler (then Curator of Archaeology, Cincinnati Museum of Natural History). The location and condition of [redacted] collection is unknown, and only Scammyhorn's notes and photographs of the collection are in the possession of the CMC. Genheimer (personal communication, December 2013) believes that Scammyhorn's initial investigations were sort of salvage associated with damage caused by land clearance activities. Indeed some of the photographs show heavy equipment being used to clear brush from the surface (Figure 102). This appears to be the earliest direct involvement with the site.

Land clearance and surface disturbance was fairly widespread, but covering an unknown extent (Figure 103). I have yet to find a map that show the area churned up. There is a surface collection by sectors referenced in the notes and photographs. While I have not yet deciphered the locations of the sectors, this stage of investigation may have begun concurrently with the observation of land clearance described in the previously mentioned 1981 note. Photographs of Mr. Scammyhorn on and around the heavy equipment shown in Figure 102 hints at his presence and possible help with the clearance (see Appendix K). The presence of pin flags in the disturbed area (Figure 103) hints at a grid being established. Some of the maps have surface finds mapped, but I have not had time to tease out what is mapped and what is not. The case for the surface collection being the initial stage associated with the landowner's clearing the hilltop of vegetation is bolstered by the photographs of what is apparently the owner's collection from the hilltop being grouped in the same binder with the artifacts from the surface sectors (Figure 104 - Figure 111).

Examination of the diagnostics from the landowner collection (Figure 104) and the surface collection (Figure 105Figure 111) reveal a very diverse history of use of the site. Artifacts range from Early Archaic through Late Prehistoric. A relatively large proportion of the pictured artifacts are Late Archaic/Early Woodland, with many Middle Woodland Bladelets, and

a surprising quantity of Late Woodland/Late Prehistoric triangular points. Groundstone tools also comprise a surprising proportion of the collection including grooved axes, gorgets, and celts.

The next series of investigations I will discuss are two sets of excavations, one of the "Point Mound" in 1982 and one of the "Spring Trench" in 1985-86. There are multiple other apparent investigations, but the details of these are not clear at the present time. The Point Mound location and dimensions are relatively well documented, though details of the complete excavation have not been disentangled yet. Likewise the Spring Trench excavations feature prominently in photos and maps and has obvious artifacts assemblages associated with it in the current state of the collection. Other investigative activities that will still need to be deciphered are the 1981 Circle and Road Survey (possibly just map surveying), the 19th Century Historic House Site excavations (1983), Southwest Wall Excavation (possible pavement discovered, 1980-81), Mound A and Charnel House (1984), and a variety of survey and mapping bouts.

The mound labeled Point Mound is a small mound on the southeastern prominence of the site. Scammyhorn made a variety of maps (from sketch to survey quality) of this mound and its dimensions. This mound is the only topographic feature obviously visible in the LiDAR data. Excavation apparently commenced in 1982. The major discovery if this is excavation is an Adena burial with pottery included. The ceramics are typical thick Early Woodland variety (Figure 112 - Figure 116). One sherd is particularly interesting (Figure 116). The sherd exhibits coarse, smoothed over cordmarking on the interior surface. The exterior surface exhibits a thin, red layer, apparently devoid of temper. I am not familiar with any other examples, though (much thinner) slips are known on Early Woodland sherds in the Lake Erie Basin (Brian Redmond, personal communication January 15th, 2014).

Another "Adena" feature was discovered approximately 180 ft (55 m) north of the Point Mound which included FCR, burnt limestone, and several post molds. It is not clear yet why Scammyhorn identified this as an "Adena" feature, but it is possible that more pottery was recovered. There is a partially refit pot that does not have a labeled provenience in the collection (Figure 117Figure 120). This vessel also has a portion coated in the thin red layer. Whether this is from the Point Mound burial feature, the "Adena" feature, or another location is not known at this time.

The Spring Trench is Scammyhorn's investigation of the source of an apparent spring near the center of the southern portion of enclosure. This investigation employed a backhoe and extended down to ~11 ft (~3.4 m) (Figure 121). Woodland artifacts were recovered from this feature at considerable depth (Figure 122).

Outside the enclosure to the northeast Scammyhorn investigated two mound-like areas. The mound closes to the enclosure was labeled Mound A, and is associated with a possible charnel house as described in the notes. While all the notes have not been scrutinized, it is possible that this is where several of the additional burials came from. There are at least five burials in the collection. At least one burial exhibits cutmarks on the long bones near the articular ends and around the scalp. None of the burials were examined in detail, and which

remain belong where has not been determined. However, it is clear that there are burials in multiple places and possibly associated with multiple periods of use.

The above summary is only the most cursory and tentative statement that can be made about Richard Scammyhorn's investigations at the Oberting-Glenn site (12D25). It is clear that the site was intensively and extensively used for most of the period of human occupation of the region. All of the photographs taken during my visit to the CMC are included in Appendix K. I have not had time to fully examine all of the notes or maps documented therein, and did not even have opportunity to document the whole of the site records. The Scammyhorn investigation of Oberting-Glenn was a substantial undertaking and promises much useful information. I hope that, with the help of the CMC and volunteers who were present during the investigations, the full detail of these investigations can be incorporated into our collective knowledge of this significant site.

Figure 101: The Scammyhorn Collection at the Cincinnati Museum Center Curation Facility.
A) shows documentation bins and file folders in forefront and to the right including several binders of slides and field photos, fieldnotes, and surveyor maps. B) show the auction lot boxes from the back which include soil samples

Figure 102: Clearing of the West Wall Area in 1980(?). Original photograph by R. Scammyhorn.

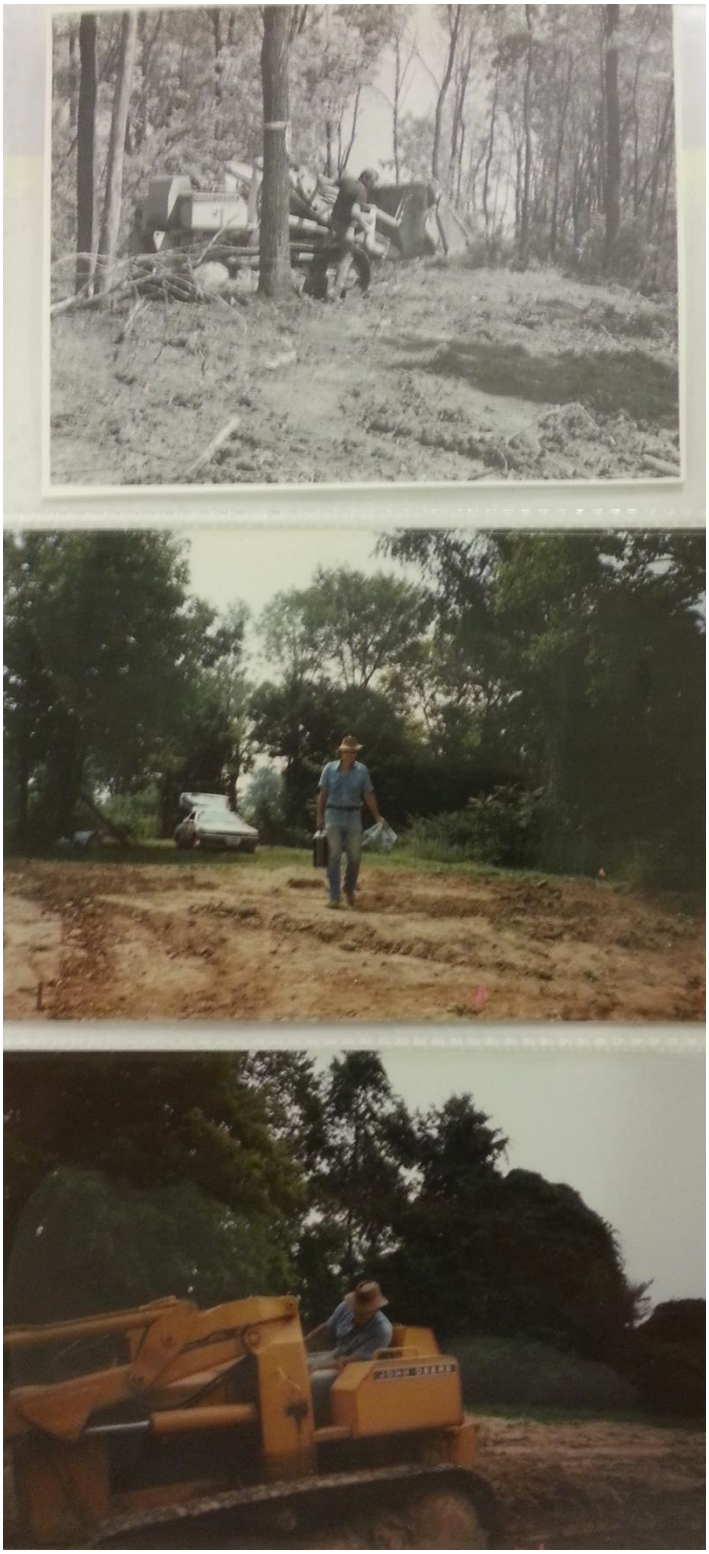


Figure 103: Clearing of the Western Enclosure Area and Possible Surface Survey Grid Establishment. Note pin flags in the central photograph. The individual pictured is R. Scammyhorn in all three photos.

Figure 104: Examples of Artifacts from the Glenn Collection for the Oberting-Glenn Site.
Original photos by R. Scammyhorn.

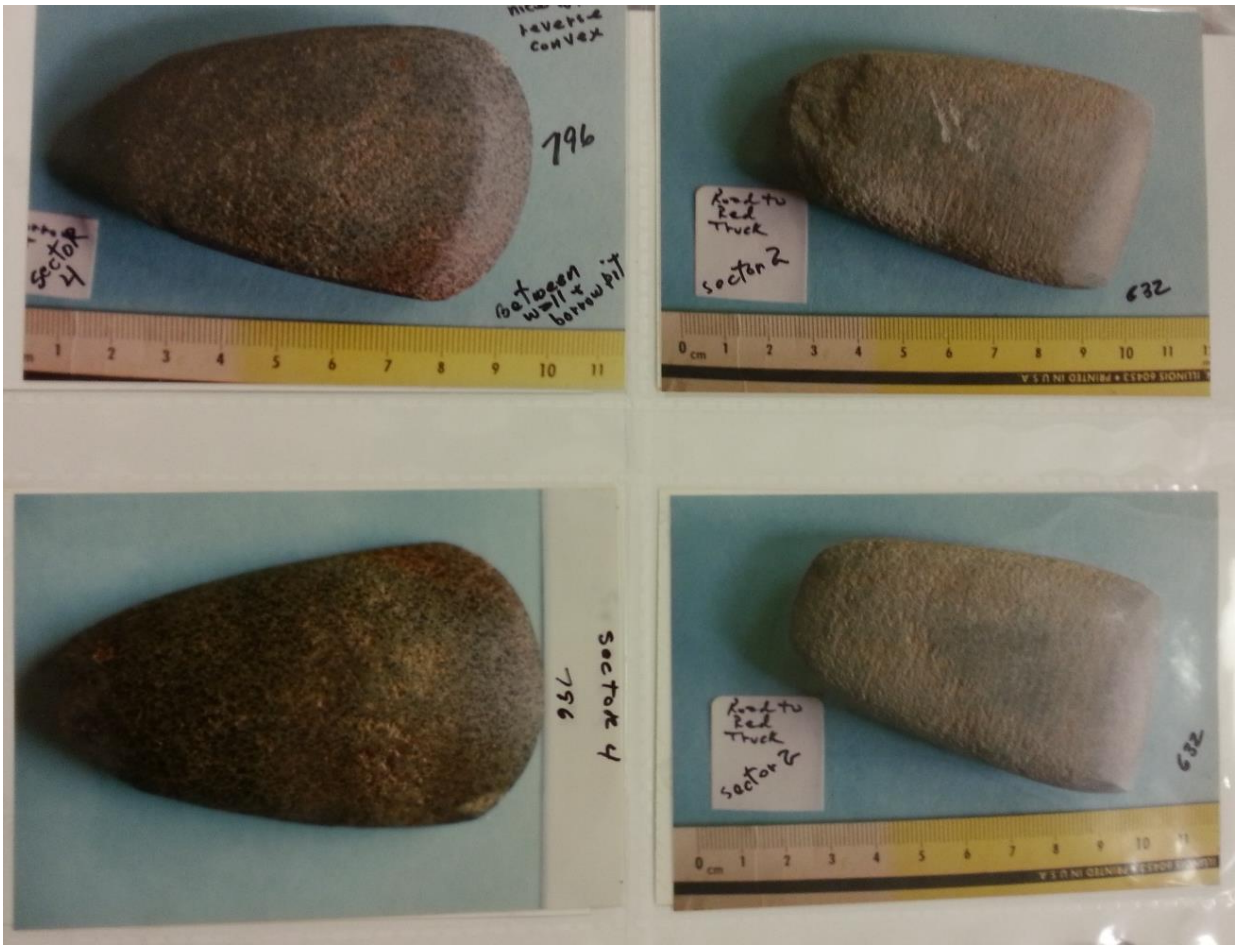


Figure 105: Sample of Artifacts Collected from the Surface of the Oberting-Glenn Site by R. Scammyhorn. Original photographs by R. Scammyhorn.

Figure 106: Sample of Artifacts Collected from the Surface of the Oberting-Glenn Site by R. Scammyhorn. Original photographs by R. Scammyhorn.

Figure 107: Sample of Artifacts Collected from the Surface of the Oberting-Glenn Site by R. Scammyhorn. Original photographs by R. Scammyhorn.

Figure 108: Sample of Artifacts Collected from the Surface of the Oberting-Glenn Site by R. Scammyhorn. Original photographs by R. Scammyhorn.

Figure 109: Sample of Artifacts Collected from the Surface of the Oberting-Glenn Site by R. Scammyhorn. Original photographs by R. Scammyhorn.

Figure 110: Sample of Artifacts Collected from the Surface of the Oberting-Glenn Site by R. Scammyhorn. Original photographs by R. Scammyhorn.

Figure 111: Sample of Artifacts Collected from the Surface of the Oberting-Glenn Site by R. Scammyhorn. Original photographs by R. Scammyhorn.

Figure 112: Rimsherd from the Point Mound Burial Feature.

Figure 113: Rim Sherd from the Point Mound Burial Feature.


Figure 114: Body Sherd from the Point Mound Burial Feature.


Figure 115: Body Sherd from the Point Mound Burial Feature.

Figure 116: Interior Cordmarked Body Sherd with Red Exterior Layer from Point Mound Burial Feature.

Figure 117: Rim Sherd from Refit Adena Vessel

Figure 118: Profile of Refit Section of Adena Vessel

Figure 119: Exterior of the Refit Adena Vessel Section.
Note reddish orange color on the bottom left. See Figure 120 for close up.

Figure 120: Close-up of Reddish Coloration on Refit Adena Vessel.
See Figure 119 for context.

Figure 121: Spring Trench Excavations.
Original photographs by from R. Scammyhorn Collection.

Figure 122: Artifacts Recovered from Spring Trench Excavation. Top row is a single rimsherd recovered from the west wall of the trench on November 24th, 1985 at a depth of 4.5 ft (~1.4 m). Bottom is a biface recovered May 17th, 1986 at a depth of 7.84 ft (~2.4 m), possibly Wyandotte chert.

SUMMARY AND CONCLUSIONS

By Matthew R. Swihart and Kevin C. Nolan

Phase 1a survey of 359.14 acres (145.33 ha) has yielded significant information for multiple sites within Dearborn County, Indiana. Through pedestrian survey, we have located 45 previously unrecorded archaeological sites and gathered vital supplementary data on two previously recorded archaeological sites. Through our soils analysis, we have gathered vital supplementary data on four previously recorded archaeological sites. On average, we encountered a site density of one archaeological site per 7.18 acres (0.14 ha). Prehistoric artifacts (N = 12,297) were encountered substantially more frequently than historic artifacts (N = 66). Overall, we encountered an artifact density of 1 artifact per 0.03 acres (34.42 artifacts/acre) within Dearborn County. This density is heavily biased by the Late Prehistoric village site 12D491, which yielded 11,917 artifacts. By removing SA2, the artifact density within our survey becomes 1 artifact per 1.33 acres (.75 artifacts/acre). This bias was to be expected however, as our preliminary targeting of sites was aimed toward previously recorded sites of the Late Woodland/Late Prehistoric transitional period, including villages.

Our pedestrian survey yielded diagnostic artifacts of the following periods: Middle Archaic, Middle Woodland, Late Woodland, and Late Prehistoric. Multiple cultural periods are represented in landowner collections obtained for this project as well. These include the Early Archaic, Middle Archaic, Late Archaic, Terminal Archaic, Early Woodland, Middle Woodland, Late Woodland, and Late Prehistoric. Artifact assemblages from pedestrian survey and landowner collections both contain historic artifacts ranging from the early to mid-19th century through modern period. A majority of the newly identified archaeological sites in this project are comprised of small, temporally unidentified prehistoric lithic scatters and isolated prehistoric and historic finds. These types of sites are not generally considered considered eligible for the NRHP. Nine sites, however, are considered to retain vital information for significant archaeological research questions within southeastern Indiana. A few of these sites also represent good examples of prehistoric site types. For this, these nine sites are potentially eligible for the NRHP under criterion D and in select instances criterion C.

Some interesting observations about site distribution emerge from our survey of Dearborn County. The first deals with site location with regard to the upland and lowland regions of the county. Within the uplands, we encountered an average site density of one archaeological site per 31.54 acres. Within the lowlands, this average site density increases considerably to one site per 1.84 acres. This is all the more intriguing as 283.88 acres (79.04%) of our survey occurred within the uplands, compared to 75.26 acres (20.96%) in the lowland areas. A majority of the sites within the lowlands were prehistoric, with a few being able to be placed temporally in the Late Woodland/Late Prehistoric. This information fits well with that of Reidhead for these periods. Reidhead stated that for the Late Woodland, "all domestic activities were confined to the terraces and floodplains of major streams, and most of these to a few specific sites" (Reidhead 1981:32). All sites that we discovered or had previously been reported as Late Woodland/Late Prehistoric in our surveys were located within floodplains or directly above major sources of water on their associated terraces. Within Dearborn County specifically, our research shows that Laughery Creek, Tanners Creek, and the Whitewater River were important sources of water for Late Woodland/Late Prehistoric peoples.

Our survey also contains a bias for artifact distribution. As stated above, within SA2 we encountered the previously recorded site of 12D491, also known as the Kocher site. This survey

area contained multiple other sites that may be considered to be extensions of the 12D491 village. The artifacts of SA2 alone (N = 11,917) represent 96.39% of all the artifacts recovered during this project. However, this bias in our project may not be as problematic for helping determine the average artifact density or site densities for the county. Multiple other Late Prehistoric villages exist within Dearborn County. Keeping this in mind, our findings combined with other systematic surveys of the county show that artifact distributions are higher in some areas of the county compared to others, as should be expected for any area archaeologically.

With regard to soil associations, our survey areas were located within three of the six shown in Figure 4 of the soil section of this volume. SA6 – SA12 were located on Cobbsfork-Avonburg-Rossmoyne, representing 279.34 acres (77.78%) of our total survey acreage. Following this, SA1 – SA3 were located on soils of the Sawmill-Lawson-Genesee association. This represents 66.33 acres (18.47%) of our total survey acreage. Lastly, SA4 and SA5 were located on soils of the Huntington-Newark-Woodmere association, representing 13.47 acres (3.75%) of our total survey acreage. This was to be expected however, as per our reasons for targeting different parcels of land. Our primary objective was researching Late Woodland/Late Prehistoric sites, specifically Fort Ancient sites, carried out in this project through our research of SA1 – SA5. Permission to survey land with previously recorded sites of these chronological periods was limited, however, and we surveyed the sites that we were able to attain permission for. This accounted for approximately 79.8 acres (22.22%). Next, we moved to our secondary objective to target areas of development within the county. These areas are in the northwestern portion of the county, represented by the Cobbsfork-Avonburg-Rossmoyne soils of SA6 – SA12. These objectives explain why some landforms and soils are underrepresented in our survey.

As for targeting Late Woodland/Late Prehistoric sites, our sampling procedures and selection of sites worked quite well with regard to representation. Previously recorded Late Woodland/Late Prehistoric sites are located in heavy clusters in the southeastern – eastern portions of the county, with a small cluster in the southern portion of the county and a small cluster in the northeastern portion of the county (Figure 123). SA1-SA3 targeted the northeastern portion of the county, adding data to sites 12D480 and 12D491 which had previously been reported as Late Prehistoric sites, as well as recording the terminal Middle Woodland – Late Woodland site 12D661. SA4 and SA5 represent the clustering of Late Woodland/Late Prehistoric sites within southeastern – eastern portions of the county. For this, we further gained valuable information on the Late Prehistoric village 12D396 through our soils analysis. Our soils analysis also helped to resolve SHAARD data inconsistencies for 12D44, which had been reported as a Late Prehistoric site, as well as relocating the village extension of 12D45 which at current is temporally unidentified.

Our selection of the northwestern portion of the county also has information to add to our understanding of Late Woodland/Late Prehistoric site distribution in the county. SA6 – SA12 in the northwestern portion of the county contained no evidence of Late Woodland/Late Prehistoric sites. This further substantiates that if there are Late Woodland/Late Prehistoric sites within this portion of the county, they are likely very few in number. Though modern county boundaries should not be used as markers for prehistoric peoples, information for where sites are less dense, for any cultural period, is beneficial information when one keeps the larger region in mind.

Finally, we have demonstrated several important methodological issues that highlight the importance of non-traditional archaeological data generation techniques when attempting to understand the record through reconnaissance. First, our survey of 12D480 illustrates that heavily collected sites may not present obviously on the surface. The assemblage collected gives

little insight into the nature of the occupation of the location and a cursory examination under poor conditions could miss much of the fragmentary FCR and groundstone tools that were collected. Only with the addition of soil chemical and geophysical analysis does the true nature of the site become apparent, revealing a surprising buried site not represented in the artifact assemblage, but bubbling up just below the plowzone.

Our survey of 12D491 and the spatial analysis conducted reveals many clusters (households?) within the overwhelmingly dense and continuous mass of artifacts. This detail is only possible with detailed recording of find locations in the field. When artifacts are massed by site provenience information is erased, and valuable data lost. This point is also highlighted by our re-examination of 12D396. This site was surveyed by Parrish and McCord in 1994 yielding 113 artifacts. No note of artifact distribution is revealed in the report, the site form, or the notes and field maps on file at AAL for the project. The site was recommended as potentially significant, but in the absence of distributional data, precisely what type of site was found was completely unknown. With the quantity of artifacts recovered a clear pattern may not have been possible. This issue is compounded by the fact that the farmer collects artifacts from this setting regularly. When we add in the soils analysis (especially the soil P, see Figure 81) it becomes glaringly apparent that the community was organized in a circular/oval fashion. The soil P reveals several peaks in the deposition of organic waste, and the FD MS (Figure 84) also reveals the concentration of activities associated with burning. Thus we begin to see a pattern of the organization of activities within the community without turning a single shovel. Supplementing these data sets with accurate distributional data at the site level can further reveal details of activity patterning (Nolan 2010).

This leads directly into perhaps the most surprising result of all. Just outside of 12D396 is a small lithic scatter with only two artifacts recovered on the surface: 12D397 (Parrish and McCord 1995). Such sites are often written off as non-significant because they lack intact subsurface features and therefore lack information potential. The reasoning for this assertion is weak, at best. Our soils analysis of SA5 included 12D397; this small, insignificant lithic scatter has a soil phosphate signature both in the plowzone and, especially the subsoil (Figure 81Figure 84and Figure *82*). The argument that small lithic sites without FCR are unlikely to have intact features seems less tenable given this information. This discovery highlights primarily what we *do not* know about small, low density lithic sites.

A rival for the most surprising result of the survey is our soils analysis at 12D44/45 in the [redacted]. [redacted] very densely packed with [redacted] leaving little undisturbed soil. Black (1936) found this site (12D45) to be rich in village debris near the mound, but a full-scale traditional archaeological investigation of the site is now precluded. However, through our application of geochemistry and geophysics we are able to document the organization and extent of previous midden where no previous distributional information was available (Figure 77). This distributional pattern is not explicable by variable density of [redacted], or the presence of [redacted], or any other readily apparent feature of historic land use. Further, the FD MS (Figure 79) shows that the spikes in P are also grossly correlated with peaks in fire-induced MS. Even when the site has been nearly entirely destroyed, the methods employed here can reveal surprising and crucial details about the nature and distribution of activity.

These methodological considerations raise the question: are “traditional” methods alone sufficient to a reasonable and good faith effort to identify cultural resources?

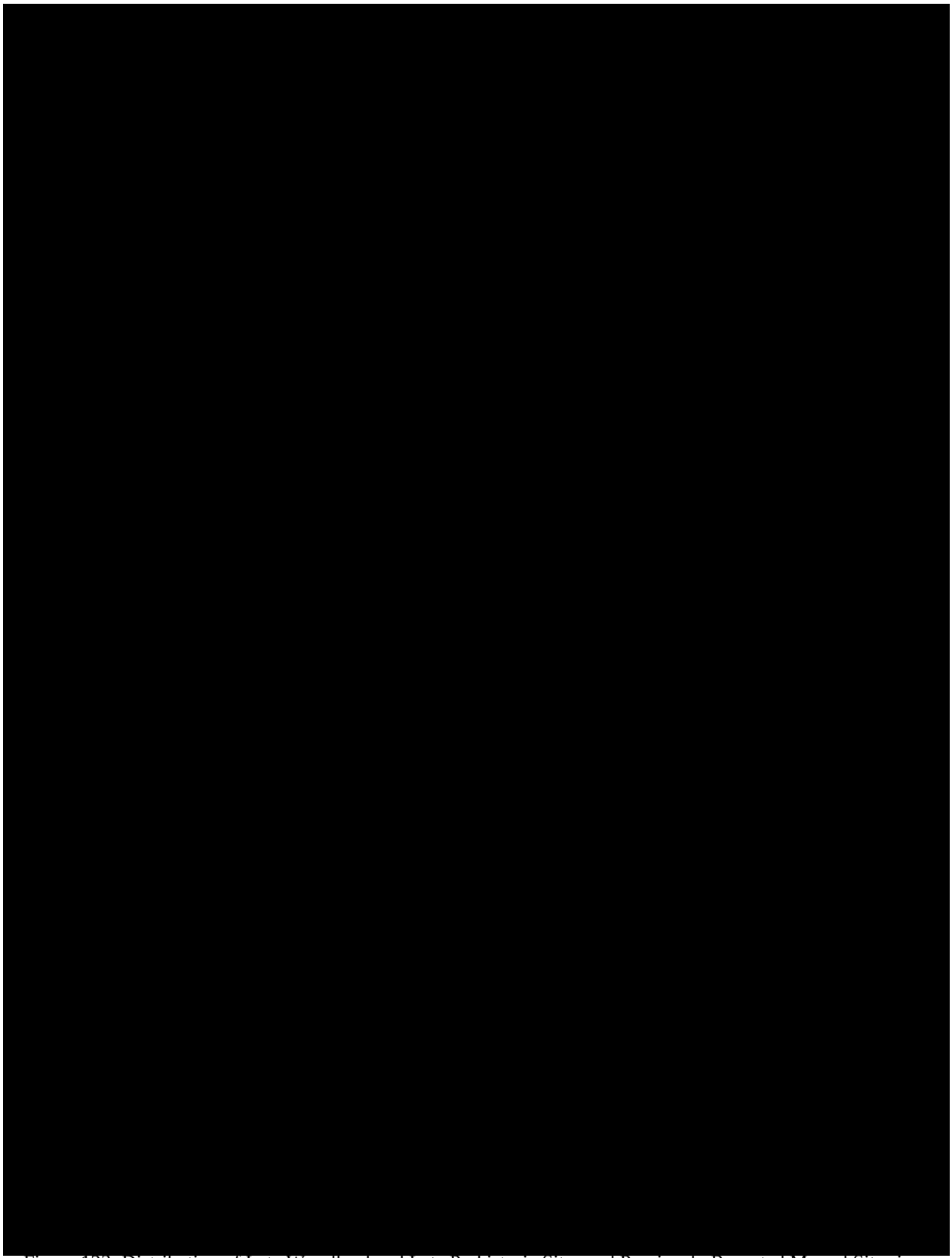


Figure 123: Distribution of Late Woodland and Late Prehistoric Sites and Previously Reported Mound Sites in Dearborn County.

Works Cited

Adams, Brian

2003 Phase Ia Archaeological Reconnaissance for a Proposed Telecommunications Tower in Dearborn County, IN. Department of Anthropology at the University of Illinois

Adderley, Anthony

2012a Archaeological Literature Review and Field Reconnaissance of the Larry Smith Spoil Site for INDOT Contract R-30956 in Dearborn County, Indiana. Access Cultural and Environmental Solutions, LLC.

Adderley, Anthony W.

2012b Archaeological Literature Review and Field Reconnaissance Short Report Proposed Albert Gordon Spoil and Borrow Site for INDOT Contract R-34476 in Dearborn County, Indiana. Access Cultural and Envrironmental Solutions.

Adderley, Anthony W.

2012c Archaeological Literature Review and Field Reconnaissance Short Report Additional Area for the Proposed Larry Smith Spoil Site for INDOT Copntract R-30956 in Dearborn County, Indiana. Access Cultural and Environmental Solutions, LLC.

Adderley, Anthony W.

2012d Archaeological Literature Review and Field Reconnaissance Short Report Additional Area Required for the Proposed Albert Gordon Spoil and Borrow Site for INDOT Contact R-34476 in Dearborn County, Indiana. Access Cultural and Environmental Solutions.

Adderly, Anthony W.

2012 Archaeological Literature Review and Field Reconnaissance Short Report Proposed Larry Smith Spoil Site for INDOT Contract R-30956 in Dearborn County, Indiana Access Cultural and Environmental Solutions LLC.

Andrefsky, William Jr.

2005 *Lithics: Macroscopic Approaches to Analysis*. Cambridge University Press, Cambridge, U.K.

Angst, Mike and Cochran, Donald R.

1994 Archaeological Field Reconnaissance Lawrenceburg Wastewater Treatment Plant Dearborn County, Indiana. Ball State University Muncie, IN, 47306.

Anslinger, C. Michael

1990a Archaeological Records Review, Reconnaissance and Recommendations, Proposed Laughery Valley Development (High Ground Tract) near the Town of Aurora, Dearborn county, Indiana. Indiana State University Anthropology Labratory.

Anslinger, C. Michael

1990b Archaeological Records Review, Reconnaissance and Recommendations, Proposed Marina Development on an Unnamed Tributary of Laughery Creek, Dearborn County, Indiana. Indiana State University.

Anslinger, Michael C.

1993 Bratfish: A Stratified Prehistoric Site in the Central Ohio Valley, Dearborn County, Indiana. Indiana State University Anthropology Labroratory Technical Report

Arthur, Sarah, and Zoll, Mitchell

1998 Scott and McMannman Properties Dearborn County, Indiana. Ball State University.

Baltz, Christopher J.

1985a An Archaeological Reconnaissance of th Proposed Housing Project in Lawrenceburg, Dearborn County Indiana. Glenn A. Black Laboratory of Archaeology Indiana University.

—

1985b An Archaeological Reconnaissance of the Propcsed Replacement of County Bridge #19, Dearborn County, Indiana. Glenn A. Black Laboratory of Archaeology Indiana University.

—

1985c An Archaeological Reconnaissance of the Proposed Housing Development in Aurora, Dearborn County, Indiana. Glenn A, Black Laboratory of Archaeology Indiana University.

—

1988 An Archaeological Reconnaissance Survey of the Proposed Realignment of County Bridge #26 Over the North Fork of Hogan Creek, Dearborn County, Indiana. Glann A. Black Laboratory of Archaeology Indiana University.

Baltz, Christopher J., Jackson, Kenneth E., Kozarek, Sue Ellen, and Gray, Marlesa A.

1989 A Report of Phase I Archaeological Survey of 3.19 Acres in Lawrenceburg, Dearborn County, IN.

Barber, Jennifer L.

2006a Interim Report: Phase II Archaeological Investigation of Site 12D580 for the Proposed New and Redesigned Gaming and Parking Facilities, Argosy Lawrenceburg Casino Dearborn County, Indiana. Cultural Resource Analysts, Inc. .

—

2006b Interim Report: Phase II Archaeological Investigations of Site 12D582 for for Proposed New and Redesigned Gaming and Parking Facilities, Argosy Lawrenceburg Casino, Dearborn County, Indiana. Cultural Resource Analysts, Inc. .

—

2006c Interim Report: Phase II Archaeological Investigations of Site 12D583 for the Proposed New and Redesigned Gaming and Parking Facilities, Argosy Lawrenceburg Casino, Dearborn County, Indiana. Cultural Resource Analysts, Inc. .

—

2006d Interim Report: Phase II Archaeological Investigations of Site 12D586 for the Proposed New and Redesigned Gaming and Parking Facilitys Argosy Lawrenceburg Casino, Dearborn County, Indiana. Cultural Resource Analysts, Inc. .

Barber, Jennifer L.

2006e Interim Report: Phase II Archaeological Investigation of Site 12D506 for the Proposed New and Redesigned Gaming and Parking Facilities Argosy Lawrenceburg Casino, Dearborn County, Indiana. Cultural Resource Analysts, Inc. .

—

2010 Phase II Assessment of Historical Archaeological Sites for the Argosy Lawrenceburg Casino Expansion Project, Dearborn County Indiana. *In* Prepared for Penn National Gaming Inc. and U.S. Army Corps of Engineers, Vol. II. Lawrenceburg,IN: CRA.

Barber, Jennifer L. and Morgan, Vera

2005 Phase I Archaeological Investigations for the Proposed New and Redisigned Gaming and Parking Facilities, Argosy Lawrenceburg Casino, Dearborn County, Indiana. U.S. Army Corps of Engineers, Louisville District.

Barton, David

1980 I.S.H.C. Contract R-12376, Dearborn County, Indiana, Our Project Number ESI-1440A. Resource Analysts, Inc.

Baudendistel, Andrew D.

2008 Protecting Indiana's Only Earthen Native American Fort. Northern Kentucky University.

Beard, Thomas C.

1990a Achaeological Field Recinnaissance Project ST-024-8 S.R. 56 Landslide Correction about 1.5 miles south of U.S. 50 near Aurora, Dearborn County, Indiana.

—

1990b Archaeological Field Reconnaissance Project RS-7915 Wilson Creek Road Improvements Dearborn County, Indiana. .

—

1990c Archaeological Field reconnaissance Project ST-5015 S.R. 48 Improvement from S.R. 148 to U.S, 50 Dearborn County, Indiana.

—

1992 Archaeological Field Reconnaissance Project RS-8558 Construction of a Bridge over Laughery Creek at Hartford, Dearborn and Ohio Counties, Indiana.

Beard, Thomas C.

1990d Archaeological Field Reconnaissance Project BRZ-9915 Bridge Replacement Over North Hogan Creek on North Hogan Road in Dearborn County, Indiana.

—

2004 Phase Ia Archaeological Field Reconnaissance: INDOT Project No. I-275-2 Two Excess Land Parcels along I-275 and US 50 in Dearborn County, Indiana Landmark Archaeological and Environmental Services, Inc. .

Behler, John L. and F. Wayne King

1979 *National Audubon Society Field Guide to North American Reptiles and Amphibians*. Alfred A. Knopf: New York.

Bennett, Stacy N.

2000a Phase Ia Archaeological Field Reconnaissance: Proposed Borrow Pit for the Greendale Levee Improvement Project in Greendale, Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc.

Bennett, Stacy N.

2000b Phase Ia Archaeological Field Reconnaissance: Proposed Borrow Pit for R-24291, the Wedening of SR 48 in Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc.

Bennett, Stacy N. and Plunkett, Jeff

2000c Phase Ia Archaeological Field Reconnaissance Proposed Waste Area for Contract R-24291, the Widening of SR 48 in Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

Bennett, Stacy N., and Plunkett, Jeff

2001 Phase Ia Archaeological Field Reconnaissance: Proposed West Lawrenceburg Levee in Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

Bergman, Christopher A.

2001 Phase 1c deep testing proposal for PSEG gas line. BHE Environmental.

Black, Glenn

1934 Archaeological Survey of Dearborn and Ohio Counties. *Indiana Bulletin* 11(7).

1936 Excavation of the Nowlin Mound. *Indiana History Bulletin* 13(7).

Black, Max and Zoll, Mitchell

2003 Bridge replacement on SR 1 over Salt Fork Creek INDOT project #STP-269-1, Des. No. 0100343 Dearborn County, Indiana: Archaeological Field Reconnaissance Ball State University.

Blanton, David

1999 A Phase Ia Literature Review and Reconnaissance Survey of a Proposed Intersection Improvement at State Road 1 and Georgetown Rowd (INDOT Project No. STP-8715, Des. No. 9405840) in Lawrenceburg and Miller Townships, Dearborn County, Indiana. INDOT.

Blosser, Jack K.

1989 *Mica Working at the Jennison Guard Site: A Middle Woodland Village in Southeastern Indiana*. Master's Thesis, Department of Anthropology, University of Cincinnati.

1996 The 1984 Excavation at 12D29s: A Middle Woodland Village in Southeastern Indiana. In *A View from the Core: A Synthesis of Ohio Hopewell Archaeology*, edited by P. Pacheco, pp. 54-68. Ohio Archaeological Council Columbus.

Boschung, H. T., J. D. Williams, D. W. Gotshall, and D. K. Caldwell

1983 *National Audubon Society Field Guide to North American Fishes, Whales, and Dolphins*. Alfred A. Knopf: New York.

Bradbury, Andrew P.

1997 Archaeological Subsurface Investigations at the Proposed Retail Facility, U.S. 50 and U.S. 50 Connector to I-275, Dearborn County, Indiana. Cultural Resource Analysts, Inc.

Breetzke, David

2005 Phase I Cultural Resources Report for Cincinnati Bell Wireless' Tower CN-460 in West Harrison, Dearborn County, Indiana. Environment and Archaeology, LLC.

Brown, Joel

2008 Proposed Brogan/Scholle Wireless Cell Tower, Attachment 9. Archaeological Division of EMH&T.

Bubb, Louis

2014 Phase I Field Reconnaissance for the North Dearborn Water Corporation: Two Upgraded Water mains & Two Proposed Generator Sites to be Located in Dearborn & Franklin Counties, Indiana. 106 Consulting LLC.

Buehrig, Jeanette

1989 Archaeological Field Reconnaissanc Lawrenceburg Housing Dearborn County, Indiana. Ball State University

Bull, J. and J. Farrand

1994 *National Audubon Society Field Guide to North American Birds*. Alfred A. Knopf: New York.

Cantin, Mark

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. Presetation at the Spring Membership Meeting of the Indiana Archaeology Council, Strawtown, Indiana.

Carmany, Karstin and Martin, Andrew V.

2001 Archaeological records Review and Phase Ia Field Reconnaissance for Aurora West Site Beanstalk Land Development Corporation, LLC Site #IN-0007 6647 US 50 Dearborn County Indiana. Sagamore Environmental Services, Inc. .

Carson, Catherine A., Plunkett, Jeffrey A.

2004 Phase Ia Archaeological Field Reconnaissance: Proposed Road Imporvements to SR 56 from Rising Sun to Aurora, Dearborn and Ohio Counties, Indiana. Landmark Archaeological and Environmental Services, Inc. .

—

2005a Archaeological Records Check: Proposed Waste Disposal Area Along US 50 Near the Town of Lawrenceburg, Dearborn county, Indiana. Archaeological and Environmental Services, Inc. .

—

2005b Phase Ia Archaeological Field Reconnaissance: Proposed Waste Disposal Area Along US 50 Near the Town of Greendale, Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

Carson, Catherine A., Plunkett, Jeffrey A.

2001 Archaeological Records Check: Rehabilitation of Conwell Street in the Town of Aurora, Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

Choate, J., J. Jones, and C. Jones

1994 *Handbook of Mammals of the South-Central States*. Louisiana State University Press: Baton Rouge

Clay, R. Berle, et al.

2005 The Argosy Lawrenceburg Casino Archaeological Project, Volume Eleven: Summary of the Prehistoric Archaeology. Cultural Resource Analysts, Inc.

Clay, R. Berle, and Deborah L. Rotman

2004 The Argosy Lawrenceburg Casino Archaeological Project, Volume Ten: Summary of the Historical Archaeology. Cultural Resource Analysts, Inc.

Cochran, Donald R.

1986 Revised Archaeological Field Reconnaissance S.r. 1 from I-74 to 0.5 Mile North of Southgate (Project MARS-4315) Dearborn County, Indiana. Ball State University, Muncie, Indiana, 47306.

Cochran, Donald R., Angst, Michael G., and McCord, Beth K.

1995 Mitigating Damage at the Haag Site (12D19). Ball State University, Muncie, IN, 47306.

Cook, Robert A.

2008 *SunWatch: Fort Ancient Development in the Mississippian World*. University of Alabama Press, Tuscaloosa.

Cook, Robert A., and Kristie R. Martin

2013 Early Village Life in Southwestern Indiana: Summary of the 2012 OSU Excavation and Preliminary Artifact and Ecofact Analyses at the Fort Ancient Component of the Guard Site (12D29), Dearborn County, Indiana. The Ohio State University.

Cook, Robert A. and A. Comstock

2014 Toward More Continuous and Practical Artifact Analyses: Defining and Learning from Key Dimensions of Fort Ancient Triangular Projectile Points in the Miami Valleys. *Midcontinental Journal of Archaeology*, in press.

Costa, Jucilene Amorim, Marcondes Lima da Costa, Dirse Clara Kern

2013 Analysis of the spatial distribution of geochemical signatures for the identification of prehistoric settlement patterns in ADE and TMA sites in the lower Amazon Basin. *Journal of Archaeological Science* 40:2771-2782.

Creasman, Steven D.

1995a Preliminary Report on the Archaeological Subsurface Reconnaissance of the Argosy Gaming Company Wetland Mitigation Area, Lawrenceburg, Dearborn County, Indiana. Cultural Resource Analysts, Inc.

Creasman, Steven D.

1995b Archaeological Subsurface Reconnaissance of the Ameristar Casino Development, Lawrenceburg, Dearborn County, Indiana. Cultural Resource Analysts, Inc. .

Creasman, Steven D., Barber, Jennifer L., and Morgan, Vera E.

2006 The Proposed New and Redesigned Gaming and Parking Facilities, Argosy Lawrenceburg Casino, Dearborn County, Indiana: Management Summary for Archaeological Resources Cultural Resource Analysts, Inc. .

Creasman, Steven D., Jonathan P. Kerr, and Deborah L. Rotman

2005 The Argosy Lawrenceburg Casino Archaeological Project, Dearborn County, Indiana. Volume One: Background, Environmental and Cultural Overview, and Methodology for Data Analyses. Cultural Resource Analysts, Inc.

Creasman, Steven D., and Deborah L. Rotman

2003a The Argosy Lawrenceburg Casino Archaeological Project, Volume 9: The Biger-Gould-Disque House Site (12D520). Cultural Resource Analysts, Inc.

—

2003b The Argosy Lawrenceburg Casino Archaeological Project, Volume Seven: The Macy House Site (12D502). Cultural Resource Analysts, Inc.

Creasman, Steven D., and Deborah L. Rotman

2003c The Argosy Lawrenceburg Casino Archaeological Project, Volume Eight: The Pfalzgraf-Oberting-Pheister House Site (12D507). Cultural Resource Analysts, Inc.

Creasman, Steven D., et al.

2004 The Argosy Lawrenceburg Casino Project, Volume Six: Phase II Investigations at the Crontz House Site (12D505), the Tousey-Hofenbeader-Mohr House Site (12D508), the Knotty Pine Saloon Site (12D515), The Wedenstaedt House Site (12D516), the Kiger-Stockman-Christian House Site (12D517), and the Autenreich-Reagan House Site (12D521). Cultural Resource Analysts, Inc.

Cyphus, Ann, Belem Zúñiga, and Anna Di Castro

2005 Another Look at Bufo marinus and the San Lorenzo Olmec. *Current Anthropology* (Supplement) 46: 129-133.

Davis, Simon J. M.

1987 *The Archaeology of Animals*. Yale University Press: New Haven.

Dearing, J.A., R.J.L. Dann, K. Hay, J.A. Lees, P.J. Loveland, B.A. Maher, and K. O'Grady

1999 Frequency-dependent susceptibility measurements of environmental materials. *Geophysical Journal International* 124:228-240.

Dorwin, John T.

1971 *The Bowen Site: An Archaeological Study of Culture Process in the Late Prehistory of Central Indiana*. Prehistoric Research Series Vol. IV No. IV. Indiana Historical Society, Indianapolis.

Duddleson, Ryan J.

2009 Phase II Archaeological Evaluation of Four Archaeological Sites for the Proposed Tanner's Creek Landfill Project Lawrenceburg and Center Townships, Dearborn County, Indiana November, 2009. JFNew.

Duerksen, Ken and Bergman, Christopher A.

1995 Phase Ii Archaeological Eligibility Study of site 12D430, Near Lawrenceburg, Dearborn County, Indiana. Cultural Resources Program.

Dunnell, Robert C

1992 The Notion Site. In *Space, Time, and Archaeological Landscapes*, edited by Jacqueline Rossignol and LuAnn Wandsnider, pp. 21-41, Plenum Press, New York.

ESRI

2013 ArcGIS Desktop: Release 10.1. Environmental Systems Research Institute, Redlands, California.

Fabyan, E.J.

1980 Archaeological Reconnaissance of Indiana State Highwya Commission Project: RS-5615 ( ), Structure: 46-15-2106, S.R. 46, Dearborn County, Indiana. Archaeological Consultant.

Feldhues, William J.

1995 Guide to Identifying and Dating Historic Glass and Ceramics. Archaeological Resources Management Service. Ball State University, Muncie, Indiana.

French, Shawn J.

1990 An Archaeological Reconnaissance of the Proposed Replacement of Bridge No. 23 (Project No. BRZ-9915) on Cold Springs Road over Hogan Creek, Northweat of Dillsboro, Dearborn County, Indiana. Indiana University Laboratory of Archaeology.

Gammon, J. R. and S. D. Gerking

1966 Fishes. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 401-425. Indiana Academy of Science, Indianapolis, Indiana.

Gibson, Jennifer L.

1998 Phase Ia Archaeological Field Reconnaissance: INDOT Project ST-4315 (B); Sale of Land Parcel 9B Along SR 1, Near Saint Leon, Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

Gray, Henry H. and Kim Sowder

2002 PHYSIOGRAPHY_SR61_IN: Physiographic Regions of Indiana (Indiana Geological Survey, 1:500,000, Polygon Shapefile) Geospatial_Data_Presentation_Form: Map. Indiana Geological Survey, Bloomington, Indiana.

Grayson, D.K.

1973 On the Methodology of Faunal Analysis. *American Antiquity* 38:432-439.

Greber, N'omi, Richard S. Davis, and Ann S. Dufresne

1981 The Micro Component of the Ohio Hopewell Lithic Technology: Bladelets. In *The Research Potential of Anthropological Museum Collections*, edited by A. E.

Cantwell, J. B. Griffin, and N. A. Rothschild, pp. 489-528. Annals of the New York Academy of Sciences 376. New York.

Green, Rich and Gleason, Jay

2006 Noninvasive Subsurface Imaging to Determine the Extents of the St. John Lutheran Cemetery in Dearborn County, near Sunman, Indiana (Summary of Stage I Investigation). Historic Archaeological Research

Greenlee, Rachael J.

2007 An Archaeological Assessment for the Pavement Resurfacing of SR148 from Maple Street to US 50 (INDOT Des. No. 0711012) in the town of Aurora, Dearborn County, Indiana.

Gridley, Albert T.

1899 *Atlas of Dearborn County, Indiana*. Wm. B. Burford, Indianapolis.

Griffin, J. B.

1966 *The Fort Ancient Aspect: Its Cultural and Chronological Position in Mississippi Valley Archaeology*. Universtity of Michigan, Museum of Anthropology, Ann Arbor, MI.

Guendling, Randall L.

1980 I.S.H.C. Contract R-12376, Our Project Number ESI-1440. Archaeological & Environmental Surveys.

Guendling, Randall L., and Cheryl A. Munson

1977 An Archaeological Reconnaissance of Projects RS-8315 (RRS-988(1) and RS 988(2)), Dearborn County, Indiana. Glenn A. Black Laboratory of Archaeology, Indiana University.

Gutschick, Raymond C.

1966 Bedrock Geology. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 401-425. Indiana Academy of Science, Indianapolis, Indiana.

Hawkins, Rebecca A.

1998 Coming Full Circle: Plowzone Assemblages and the Interpretation of Fort Ancient Settlement Structure. In *Surface Archaeology*, edited by AP Sullivan III, pp. 91-109. University of New Mexico Press.

1999 Preliminary Report on the Locus 1A Salvage Archaeology Project for the Three Rivers Development in Dearborn County, Indiana, 2/15/99 to 2/23/99 Algonquin Consultants, Inc. .

2000 Phase I Survey of a Proposed Wellfield Dearborn County, Indiana. algonquin Archaeological Consultants, Inc. .

Hawkins, Rebecca A. and Walley, Scott A.

2000 Phase Ic Deep Testing of a Proposed Wellfield, Dearborn County, Indiana. Algonquin Archaeological Consultants, Inc. .

Haywood, Norman A.

1995 A Phase IC Subsurface Archaeological Reconnaissance for the Proposed Argosy Gaming Facility in the City of Lawrenceburg, Dearborn County, Indiana. Cultural Resources Program

Heilman, James M., Malinda C. Lileas, Christopher Turnbow (eds.)

1988 *A History of 17 years of Excavation and Reconstruction – A Chronicle of 12*PthP *Century Human Values and the Built Environment, Volume I: Excavation*. Dayton Museum of Natural History, Dayton, Ohio.

Henderson, A. Gwynn (editor)

1992 *Fort Ancient Cultural Dynamics in the Middle Ohio Valley*. Monographs in World Archaeology No 8. Prehistory Press, Madison, Wisconsin.

Henderson, A. Gwynn

1998 *Middle Fort Ancient Villages and Organizational Complexity in Central Kentucky*. Unpublished Ph.D. Dissertation, Anthropology, University of Kentucky.

Henning, Lisbeth

1983 Dearborn County Interim Report: Indiana Historic Sites and Structures Inventory. Division of Historic Preservation and Archaeology, Department of Natural Resources. Indiana State Museum, Indianapolis Indiana.

Hogue, S. Homes

2003 The Application of a Small Mammal Model in Paleoenvironmental Analysis. In *Blackland Prairies of the Gulf Coastal Plain Culture, Nature, and Sustainability.* Edited by E. Peacock and T. Schauwecker, pp.48-63. The University of Alabama Press, Tuscaloosa.

Holliday, Vance T. and William G. Gartner

2007 Methods of Soil P Analysis in Archaeology. *Journal of Archaeological Science* 34:301-333.

Holycross, David N.

1998 Archaeological Records Review, Reconnaissance, and Recommendation Project STP-269-1, Des. 9405850, Intersection Improvement On SR 1, Dearborn County, Indiana. Indiana State University Labratory of Archaeology.

IMACS

1992 Intermountain Antiquities Computer System (IMACS) User Guide. Bureau of Land Management.

Jackson, Christopher

2005 A Phase Ia Archaeological Literature Review and Reconnaissance Survey for the Proposed Recocation of Wilson Creek in the City of Aurora, Lawrenceburg Township, Dearborn County, Indiana. Archaeological consultants of the Midwest, Inc. .

—

2006a A Phase Ic Archaeological Investigation for the Prioposed Realignment of Wilson Creek, Lawrenceburg Township, Dearborn County, Indiana. Archaeological Consultants of the Midwest, Inc. and Army corps of engineers

Jackson, Christopher and Vosvick, Jamie

2006b A Phase Ia Archaeological Literature Review and Reconnaissance Survey for the Proposed Lawrenceburn connector from State Road 1 to State Road 48, Lawrenceburg Townships, Dearborn County, Indiana. Archaeological Consultants of the Midwest, Inc. and INDOT.

Jones, James R.

1981 An Archaeological Reconnaissance of Areas to be Impacted by a Proposed Barge Fleeting Facility at Aurora, Dearborn County, Indiana (ORLOP-FP 81-IN-270). Indiana State University.

—

1983a An Archaeological Reconnaissance of the Proposed Borrow Pit 83-08, North of Guilford, Dearborn County, Indiana. Indiana University.

Jones, James R.

1983b An Archaeological Reconnaissance of the Proposed Hubbell to Blue Creek Transmission Line, Franklin and Dearborn Counties, Indiana. Indiana University Labratory of Archaeology.

Jones, James R., III

1983c An Archaeological Reconnaissance of the Propose Borrow Pit, B-13873, North of Aurora, Dearborn County, Indiana. Glenn A. Black Laboratory of Archaeology, Indiana University.

Justice, Noel

1987 *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States*. Indiana University Press, Bloomington, Indiana.

Keane, Dan and Zoll, Mitch

1995 Archaeological Records Review Guilford Covered Bridge over Drainage Ditch Dearborn County, Indiana. Ball State University, Muncie, IN, 47306.

Kearney, Janis K.

1992a An Archaeological Reconnaissance of the Proposed Location for the Public Service Indiana District Office Located on the West Side of Aurora, Dearborn County, Indiana. Glenn A. Black Labratory of Archaeology Indiana University.

Kearney, Janis K. and Bailey, Amy B.

1992b An Archaeological Reconnaissance of the Proposed Villiage Apartments of Lawrenceburg, Located on the Northwest Side of Lawrenceburg, Dearborn County, Indiana. Glenn A. Black Laboratory of Archaeology Indiana University

Kearney, Janis K. and Peebles, Christopher S.

1993 An Archaeological Reconnaissance of the Proposed Borrow Pit (Contract No. R-20379) Associated with the Sight Distance Correction of SR 48 Located East of Kyle, Dearborn County, Indiana. Glenn A. Black Laboratory of Archaeology Indiana University.

Keener, Craig

2002 An Archaeological Field Reconnaissance (Phase Ia) of the Proposed 900 m2 (10,000 ft2) Cellular Wireless Cell Tower (Aurora Site #Cin-AAHM75) in Hogan Township, Dearborn County, Indiana Ohio Valley Archaeological Consultants, LTD. .

Keener, Craig S.

2000 An Archaeological Fiel Reconnaissence (Phase Ia) of the Proposed GTE Cell Tower (Site 01-1566/St. Leon) in Kelso Township, Dearborn County, Indiana. Federal Communications commission, Professional Archaeological Services Team.

Kelly, John

1990 Range Site Community Patterns and the Mississippian Emergence. In *The Mississippian Emergence*, edited by Bruce Smith, pp. 67-112. Smithsonian Institution Press, Washington, D. C.

Kerr, Jonathan P., and Creaseman, Steven D. `

2007 Interim Report: Phase II Archaeological Investigations of Site 12D509, Locality F for the Proposed New and Redesigned Gaming and Parking Facilities, Argosy Lawrenceburg Casino, Dearborn County, Indiana Cultural Resource Analysis, Inc. .

Kerr, Jonathan P., and Paul D. Bundy

2010 Archaeological Investigations Within the Proposed Argosy Lawrenceburg Casino Expansion Project Area in Dearborn County, Indiana. Volume I: Prehistoric Sites. Cultural Resource Analysts, Inc.

Kerr, Jonathan P., and Steven D. Creasman

2003 The Argosy Lawrenceburg Casino Archaeological Project, Volume Five: The Keller Site (12D511). Cultural Resource Analysts, Inc.

—

2004 The Argosy Lawrenceburg Casino Archaeological Project, Volume Three: The Old Town Site (12D376). Cultural Resource Analysts, Inc.

—

2004a The Argosy Lawrenceburg Casino Archaeological Project, Volume Four: The Keller Site (12D509). Cultural Resource Analysts.

Kerr, Jonathan P., Creasman, Steven D.

2004b The Argosy Lawrenceburg Casino Archaeological Project, Volume Two: The Levee Site (12D363). Cultural Resource Analysts, Inc.

King, Brad

2009 Archaeological Field Reconnaissance Rehabilitation of State Line Road, Salt Fork Road and Jamison Drive in Bright, Indiana Dearborn County, Indiana. Pioneer Consulting Services, Inc. .

King, Brad and Zoll, Mitchell K.

2004 Archaeological Field Reconnaissance Aurora Sub- District Excess Land Sale Dearborn County, Indiana. Ball State University, Muncie, IN, 47306.

Kozarek, S.E.

1987 *A Hopewellian Homestead in the Ohio River Valley.* Master's Thesis, Department of Anthropology, University of Cincinnati.

Kreinbrink, Jeannine

2001a Addendum to Report for Archaeology Investigations at a Temporary Haul Road and Borrow Area for the PSEG Lawrenceburg Energy Facility Lawrenceburg, Dearborn County, Indiana. Natural & Ethical Environmental Solutions.

Kreinbrink, Jennine

2001b Archaeology Investigation Temporary Haul Road and Borrow Area for the PSEG Lawrenceburg Energy Facility Lawrenceburg, Dearborn county, Indiana. Natural & Ethical Environmental Solutions.

—

2005a Deep Testing , Geomorphology Study Report 11 Acre Perfect Project Area Dearborn County, Indiana. Natural & Ethical Environmental Solutions.

—

2005b Phase II Evaluation of Site 12D372 Dearborn County, Indiana. Natural & Ethical Environmental Solutions.

—

2006 Phase I Archaeological Survey of 6.37 Acres, Lawrenceburg, Dearborn County Indiana. Natural & Ethical Environmental Solutions.

—

2010 Report for Phase II Archaeology Evaluation at Site 12D-0591 Dearborn County, Indiana. Natural & Ethical Environmental Solutions

Lake, D.J. and B.N. Griffing

1875 *Atlas of Dearborn County, Indiana*. Lake, Griffing & Stevenson, Philidelphia, Pennsylvania

Landmark Archaeological and Environmental Services

1994 Archaeological Records Check Project ST-4315 (B) Sale of Excess Land Parcel 37 along SR 1 in Dearborn County, Indiana. Landmark Archaeological and Environmental Services

Laswell, Jeffrey L., and Miller, Shaun A.

2008 An Archaeological Records Check Assessment Report: Additional Information for the Acquisition of Two Residential Parcels, Dode 3988, Located 2.3 km (1.4 miles) north of the town of Greendale (Des. No. 0810291) as part of the State Road 1 and Georgetown Road Intersection Improvement Project (Des. No. 9405840) Dearborn County, Indiana. Cultural Resources Section INDOT.

Lyman, R. Lee

1994 *Vertebrate Taphonomy*. Cambridge Manuals in Archaeology. Cambridge University Press: Cambridge.

MacPherson, James C.

1879 *Archaeology*. In Eighth, Ninth, and Tenth Annual Reports of the Geological Survey of Indiana. Indianapolis Journal Company.

Mankowski, George L and Pope, Melody K.

2001 Phase Ia Archaeological Reconnaissance for the Loren Ellis Development Project Dearborn County, Indiana. Glenn A. Black Labratory of Archaeology

Marinaro, Michael P.

1995 Argosy Casino Lawrenceburg, Indiana. American Consulting Engineers, Inc. .

Martin, Andrew

1998 County Farm Site Dearborn County, Indiana Archaeological Records Review. Ball State University, Muncie, IN, 47306.

Martin, James, Zoll, Mitchell K.

2002 Aurora Tower Dearborn County, Indiana Archaeological Field Reconnaissance. Ball State University, Muncie, IN.

Maust, Lisa and Donald Cochran

1989 *Historic Sites from the General Land Office Surveys: An Indiana Survey*. Reports of Investigation 25, Archaeological Resource Management Services, Ball State University, Muncie, Indiana.

McCord, Beth

2008 Archaeological Field Reconnaissance SR 56 Pavement Replacement Des. No. 0300510 Dearborn County, Indiana. Ball State University,Muncie, IN, 47306.

McCullough, R. G.

2005 *Late Prehistoric Archaeology of a Frontier*. Archaeological Survey, Indiana University- Purdue University Fort Wayne.

McCullough, Robert G., and McCullough, Dorthea

2007 Phase Ic Archaeological Investigations for the Bridge Replacement on State Road 1 over Salt Fork Creek, INDOT Project STP-269-1(009), Des. 0100343, Dearborn County, Indiana. Indiana University-Purdue University Fort Wayne

McCullough, Robert, and Dorotheas McCullough

2013 An Archaeological Records Review and Phase Ia Field Reconnaissance of Approximately 5 acres for a Proposed Fill Site Near Aurora, Dearborn County, Indiana (Des. No. 0300510). McCullough Archaeological Services LLC.

Means, Bernard K.

2007 Circular Villages of the Monongahela Tradition. The University Alabama Press, Tuscaloosa.

Melhorn, W. 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.

Miller, Donald A. and Bergman, Christopher A.

2001 Additional Phase Ia Cultural Resources Survey and Phase Ic Subsurface Reconnaissance Report of Williams Gas Pipeline Texas Gas' Proposed PSEG Lawrenceburg Lateral Project in Dearborn County, Indiana. BHE Environmental, Inc. .

Miller, Donald A., and Christopher A. Bergman

2001 Phase Ia Cultural Resources Survey of Williams Pipeline - Texas Gas Proposed PSEG Lateral Project in Dearborn County, Indiana. BHE Environmental, Inc. .

Miller, Shaun A.

2006 An Archaeological Assessment for the Improvement of SR 56 through the Town of Aurora, Dearborn County, Indiana; INDOT Des. NO. 0600260. INODT.

—

2008 An Archaeological Records Check and Phase Ia Reconnaissance: Environmental Mitigation of Three Riparian Buffer Sites near Lawrenceburg for Mitigation of SR 48 (Des. No. 07). Cultural Resources Secion Office of Environmental Services Indiana Department of Transportation.

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

2011 Slide correction on SR 62 in Dearborn County, Indiana. INDOT.

Montet-White, Anta

1963 Analytical Description of the Chipped-stone Industry from Snyders Site, Calhoun County, Illinois. In *Miscellaneous Studies in Typology and Classification*, Anthropological Papers No. 19, Museum of Anthropology, The University of Michigan, Ann Arbor.

1968 *The Lithic Industries of the Illinois Valley in the Early and Middle Woodland Period.* Anthropological Papers, Museum of Anthropology, University of Michigan, No 35, Ann Arbor.

Moore, Christopher R.

2006a Salvage Investigations at Site 12D123, a Middle Fort Ancient Anderson Phase Village in Southern Indiana. Paper presented at the 52nd Midwest Archaeological Conference, Champaign-Urbana, Illinois.

2006b Site 12D123: The Anderson Phase in Indiana. Paper presented at the 122nd Annual Meeting of the Indiana Academy of Science, Muncie, Indiana.

Moore, Christopher R. and C. Martin Raymer

in press A Survey of Fort Ancient Sites in Southeastern Indiana. Submitted for publication in an edited volume on Indiana Archaeology, edited by Timothy Baumann

Moorehead, Warren K.

1906 Excavations at the Mouth of the Wabash. *Phillips Academy Department of Archaeology Bulletin* 3:54-86

Mullett, Amanda N.

2009 Paleoindian Mobility Ranges Predicted by the Distribution of Projectile Points Made of Upper Mercer and Flint Ridge Flint. Master's Thesis, Department of Anthropology, Kent State University.

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, Cheryl A.

1986 Project No. IR-74-4( )17, Weigh Station modernization located 0.5 miles west of the Ohio/Indiana State Line on I-74, no additional right-of-way required, Dearborn County, Indiana. Glenn A. Black Laboratory of Archaeology, Indiana University.

—

1988a 87-IN-314, Installation of a public recreation area including campsites, floating walkway, boat docks, and a floating fuel dock/service building on the right bank of Tanners Creek approximately 0.5 mile upstream from its mouth at the Ohio River, Mile 494.6, Lawrenceburg, Dearborn County, Indiana. Glenn A. Black Laboratory of Archaeology, Indiana University.

Munson, Cheryl Ann

1980 HUD Grant Application, Soybean Processing Pkant Dearborn County/per phone conversation. Indiana University Labratory of Archaeology.

—

1988b Project No. MARS-8315, Landslide correction on SR 48 about 0.5 mile north of US 50, new permanent right-of-way, Lawrenceburg, Dearborn County, IN. Indian State University.

Myers, Jeffery A.

1981 Archaeological Survey of Bridge No. 105 Dearborn County, Indiana. Resource Analysts, Inc.

Myer, William

1928 Indian Trails of the Southeast. *Forty-Second Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution*. United States Government Printing Office, Washington.

National Parks Service

1995 Technical Information on the the [sic] National Register of Historic Places: survey, evaluation, and preservation of cultural resources. *National Register Bulletin 15*. Cultural Resources, National Parks Service, U.S. Department of the Interior, Washington, D.C.

Natt, Wendy L.

1998 Archaeological Surface Reconnaissance fo Two Dirt Disposal Sites in Lawrenceburg, Dearborn County, Indiana. Glenn A. Black Labroratory of Archaeology Indiana University.

Natural & Ethical Environmental Solutions, LLC

2001 Phase I archaeological testing at three proposed overhead transmission tower locations. Natural & Ethical Environmental Solutions, LLC.

Newman, James E.

1966 Bioclimate. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 171-180. Indiana Academy of Science, Indianapolis.

Nickell, Allan K.

1981 *Soil Survey of Dearborn and Ohio Counties, Indiana*. United States Department of Agriculture, Washington, D.C.

Nolan, Kevin C.

2005 *The Ohio Hopewell Blade Industry and Craft Specialization: A Comparative Analysis*. Master's Thesis, Department of Anthropology, Kent State University.

2010 *Multi-Staged Analysis of the Reinhardt Village Community: A Fourteenth Century Central Ohio Community in Context*. Doctoral Dissertation, Department of Anthropology, The Ohio State University, Columbus.

2011a Archaeological Field Reconnaissance Waste site for the INDOT B-28869-A contract Dearborn County, Indiana. Applied Archaeology Laboratories, Department of Anthropology, Ball State University.

2011b Distributional Survey of a Fort Ancient Village in Pickaway County, Ohio: Summary of 2007 Reinhardt Site Survey. *Midcontinental Journal of Archaeology* 36(1):105-130.

2014 Prospecting for Prehistoric Gardens: Results of a Pilot Study. *Archaeological Prospection* 21(2):147-154.

Nolan, Kevin C. and Robert A. Cook

2010 An Evolutionary Model of Social Change in the Middle Ohio Valley: Was Social Complexity Impossible During the Late Woodland but Mandatory During the Late Prehistoric? *Journal of Anthropological Archaeology* 29:62-79

2012 A Method for Multiple Cost Surface Evaluation of a Model of Fort Ancient Interaction. Manuscript prepared for *Least Cost Analysis of Socionatural Landscapes: Archaeological Case Studies*, edited by DA White, and S Surface-Evans, pp 67-93, plate 5. University of Utah Press.

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* 32:297-329.

O'Brien, Patrick K.

1997a Archaeological Reconnaissance of the Proposed Bright Park Development, Dearborn County, Indiana. Glenn A. Black Labroratory of Archaeology Indiana University.

—

1997b Surface and Subsurface Archaeological Reconnaissance of 31 acres of the Ohio River Floodplain near Aurora, Dearborn County, Indiana. Indiana University.

O'Brien, Patrick K.

1995 Archaeological Records Review for the Lawrenceburg Levee Walk: Project No. STP 9915-15, Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc.

O'Conner, Terry

2000 *The Archaeology of Animal Bones*. Texas A & M University Press: College Station.

Olmanson, Thor A.

2000 Phase Ic Archaeological Subsurface Reconnaissance Summary Report: Proposed Borrow Pit for Greendale Levee Improvement Project in Greendale, Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc.

—

2001 Phase Ic Archaeological Reconnaissance Within the Floodplain of the Great Miami, Whitewater, and Ohio River Confluence Area in Greendale, Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc.

Pace, Robert E.

1982 Archaeological Reconnaissance, Dillsboro Wastewater Works, Dearborn County. Indiana State University Anthropology Laboratory.

Parrish, Cindy K., and Donald R. Cochran

1993 Archaeological Field Reconnaissance Riverfront Development Project Dearborn County, Indiana. Archaeological Resource Management Services, Ball State University.

Parrish, Cindy K., Cochran, Donald R.

1994 Archaeological Field Reconnaissance St. Leon Sewer Project Dearborn County, Indiana. Ball State University, Muncie, IN, 47306.

Parrish, Cindy K., and Steven D. Creasman

1996 Phase II National Register Evaluation of Site 12D363 and 12D367 Argosy Lawrenceburg Casino Development, Dearborn County, Indiana. Cultural Resource Analysts, Inc. .

Parrish, Cindy K. and Beth K. McCord

1995 *An Archaeological Survey of Dearborn County, Indiana*. Archaeological Resources Management Service Reports of Investigation 41. Muncie, Indiana.

Patton, Robert B.

2007 Greendale Towne Center Project -- Archaeological Reconnaissance and Archival Review of the Bowell Property, Lawrenceburg Township, Dearborn County, Indiana. BHE Environmental

Peebles, Christopher S.

1994 Proposal for a Phase 1a and 1b Surface and Subsurface Archaeological Reconnaissance Surveys of One Hundred Thirty-five Acres Within the Ohio River Floodpalin to be Utilized for the Boomtown Landing Project, Lawrenceburg, Dearborn County, Indiana. Indiana University.

Peterson, Ryan J and King Wetzel, Melinda J.

2006 Guard Family Cemetery (Site 12D529) Boundry Delineation, Lawrenceburg Township, Lawrenceburg, Indiana. AMEC Earth & Environmental

Petty, R.O. and M.T. Jackson.

1966 Plant Communities. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 264-296. Indiana Academy of Science, Indianapolis, Indiana.

Pirkl, Mary E., and Patrick K. O'Brien

1996 Subsurface Archaeological Investigations for Seven Proposed Deadmen Locations Near Aurora, Dearborn County, Indiana. Glenn A. Black Laboratory of Archaeology

Pi-Sunyer, Oriol

1965 The Flint Industry. In *The McGraw Site: A Study in Hopewellian Dynamics*, edited by O. H. Prufer, pp. 60-89. Cleveland Museum of Natural History, Scientific Publications 4(1).

Plamann, Daniel

1978 Report on the Preliminary Archaeological Resources Assessment for Indiana State Highway Commission Project F-257-1(2), the S.R. 262 Bridge over Laughery Creek in Dearborn and Ohio Counties, Indiana. Ball State University.

Plunkett, Jeffrey A.

2001a Archaeologial Summary Report Phase Ia Archaeological Field Reconnaissance and Phase Ic Archaeological Subsurface Reconnaissance: Proposed Detention Basin for the West Lawrenceburg Levee Project in Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

—

2001b Archaeological Summary Report Phase Ia Archaeological Field Reconnaissance and Phase Ic Archaeological Subsurface Reconnaissance: A Portion of the West Lawrenceburg Levee Project Located Between Wolf Creek and a Large Ash Settling Pond in Dearborn County, IN. Landmark Archaeological and Environmental Services, Inc. .

—

2001c Archaeological Summary Report Phase Ia Archaeological Field Reconnaissance: Additional Portions of the West Lawrenceburg Levee Project in Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

—

2001d Phase Ia Archaeological Field Reconnaissance and Phase Ic Archaeological Subsurface Reconnaissance: Final Three Portions of the West Lawrenceburg Levee Project in Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc.

—

2005 Archaeological Proposal and Authorization Request Phase II Archaeological Test Excavation of Site 12D587 in Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

—

2008 Phase Ia Archaeological Field Reconnaissance and Phace Ic Archaeological Subsurface Reconnaissance: Proposed Ash Landfill Project for American Electric Power's Tanners Creek Plant in Lawrenceburg, Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc.

—

2009 Phase II Archaeological Test Excavation: Sites 12D475, 12D610, and 12D612 in Dearborn County, Indiana. Accidental Discoveries, LLC.

Plunkett, Jeffrey A.

2007 Archaeological Investigations around the Eastern Cemetery (12D603) at the St. John Lutheran Church in Dearborn County, Indiana. Landmark Archaeological and Environmental Services, Inc. .

Plunkett, Jeffrey A. and Carson, Catharine A.

2006 Phase Ia Archaeological Field Reconnaissance: Proposed Bank Stabilization Project along Tanners Creek in Dearborn County, Indiana. Landmark Archaeological and Environmental Servicees, Inc. .

Pollack, David, and A. Gwynn Henderson

1992 Towards a Model of Fort Ancient Society. In *Fort Ancient Cultural Dynamics in the Middle Ohio River Valley*, edited by AG Henderson, pp. 281-294. Monographs in World Archaeology No. 8, Prehistory Press, Madison, Wisconsin.

Prufer, Olaf H., and Douglas H. McKenzie

1967 *Studies in Ohio Archaeology*. The Press of the Western Reserve University, Cleveland.

Raymer, C. Martin and Christopher R. Moore

2011 A Consideration of the Social and Historical Context of Site 12D123, a Middle Fort Ancient Circular Village in Dearborn Count, Indiana. Paper presented at the 57th Annual Meeting of the Midwest Archaeological Conference, La Crosse, Wisconsin.

Redmond, Brian G.

1994 The Archaeology of the Clampitt Site (12 Lr 329), an Oliver Phase Village in Lawrence County, Indiana. Research Reports, No. 16. Glenn A. Black Laboratory of Archaeology, Indiana University.

Reidhead, Van A.

1975 Jennsion Guard Site, Dearborn County, Indiana. U.S. Department of the Interior, National Park Service. Prepared by Van A. Reidhead, Indiana University, Bloomington, Indiana.

1981 A Linear Programming Model of Prehistoric Subsistence Optimization: a Southeastern Indiana Example. Prehistory Research Series, Vol. 6(1). Indiana Historical Society, Indianapolis.

Reidhead, Van A. and W. Fredrick Limp

1974 The Haag Site (12D19): A Preliminary Report. Indiana Historical Society, Archaeological Bulletin 1: 4-18.

Reitz, E. J. and D. C. Weinand

1995 Vertebrate Fauna from the Nathaniel Russell House. In *Initial Archaeological Testing: The Nathaniel Russell House.* Archaeological Contributions 24, The Charleston Museum, Charleston, South Carolina.

Reitz, E. J. and E. S. Wing

1999 *Zooarchaeology*. Cambridge University Press.

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.

Richardson, John W.

1981a An Archaeological Reconnaissance of a Proposed Borrow Pit in Dearborn County, Indiana. Indiana University.

—

1981b Cultural Resources in Areas to be Impacted by the Construction of the Proposed Aurora Municipal Airport, Dearborn County.

Riegel, Veronica A.

1994 A Phase I Survey of City-owned Property in the New Street Area of Lawrenceburg, Indiana for the City of Lawrenceburg 3D/Environmental.

Roos, Christoper I. and Kevin C. Nolan

2012 Phosphates, Plowzones, and Plazas: A Minimally Invasive Approach to Infer Settlement Structure of Plowed Village Sites in the Midwestern USA. *Journal of Archaeological Science* 39(1):23-32.

Ruby, Bret J.

1997 The Mann Phase: Hopewellian Subsistence and Settlement Adaptations in the Wabash Lowlands of Southwestern Indiana. PhD. Dissertation, Indiana University, Bloomington.

Rue, David J and Bergman, Christopher A.

1990 Phase IB Archaeological Survey (Deep Trenching) of a 3.19 acre Tract on the Ohio River Alluvium in Lawrenceburg, Dearborn County, Indiana. 3D/Environmental Services, Inc. .

Schaal, L.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.

Schneider, Nicole and Zoll, Mitchell

2006 Archaeological Subsurface Reconnaissance Proposal Project STP-269-1(009); Des. No. 0100343 SR 1 over Salt Fork Creek Dearborn County, Indiana. Ball State University, Muncie, IN, 47306.

Schurr, Mark R.

1989a An Archaeological Reconnailssance Survey for Project No. B-16461, Proposed Borrow Pit for the Replacement of Bridge No. 103 Located in Secion 35 at the Base of a Hill and West of the Proposed Bridge Structure on North Dearborn Road, Southwest of Dover, Dearborn County, Indiana. Indiana University.

Schurr, Mark R.

1989b An Archaeological Reconnaissance Survey for Project: RS-5015 SR 48 Sight Distance Correction at the Intersection with Possum Ridge Road, Dearborn County, Indiana. Indiana University.

Sedler, Michael

1990 Plan for Archaeological Investigation of the Guard Site 12D29, Dearborn County. Submitted to the Department of Historic Preservation and Archaeology, Indianapolis, Indiana.

Shaw, Archibald
1915 History of Dearborn County, Indiana. B.F. Bowen, Indianapolis.

Shurig, D. G.
1970 *Engineering Soils Map of Wabash County, Indiana*. Purdue University, West Lafayette, Indiana.

Smith, Edward and Kenneth B. Tankersley
1990 Archaeological Site Data Base Enhancement for Southeastern Indiana: Dearborn, Jefferson, Jennings, Ohio, Ripley, Scott and Switzerland Counties. Prepared for the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology, Indianapolis, Indiana.

Smith, Aaron Zoll, Mitchell

1999 Trail Development Project Dearborn County, Indiana Archaeological Field Reconnaissance. Ball State University, Muncie, IN, 47306.

Snell, Samuel P., and Chanchani, Samiran

2010 Phase Ia Archaeological Records Check and Disturbance Assessment for a Proposed Vehicle Maintenance and Storage Facility in Clay Township, Dearborn County, Indiana. Federal Transit Administration, ASC Group, Inc. .

Snyder, Jim

2007 Phase Ia Archaeological Survey for the Proposed SR 1 Bridge Widening over I-74, (Des. No. 0300719) Kelso township, Dearborn County, Indiana. ASC Group, Inc. and INDOT.

Soil Survey Staff 2012

Soil Survey Staff 2013

Stafford, Russell C.

1990 Archaeological Reconnaissance and Recommendation, Logan Electrical Substation, Dearborn County, Indiana. ISU Anthropology Laboratory

—

1995 An Archaeological Subsurface Reconnaissance of the Boomtown Landing Temporary River Boat Casino Site, Dearborn County, Indiana. Indiana State University Anthropology Laboratory

Stallings, Nancy Ross

1990 Cultural Resources Survey for Proposed Construction of Facilities for the Transco/Texas Gas/CNG Northeastern Project (Main Line System Expansion), Indiana. WAPORA, Inc.

Stallings, Nancy Ross, David A. Frantz, and Jennine Kreinbrink

1990 Phase I Cultural Resources Report for Section 4 (9.1 miles) of Texas Gas Transmission Corporation's Proposed Mainline Loop Natural Gas Pipeline in Dearborn County, Indiana. WAPORA, Inc.

Stallings, Richard and King, Timothy

1991 Addendum to Phase I Cultural Resources Report for Section 4 (9.1 miles) of Texas Gas Transmission Corporation's Proposed Mainline Loop Natural Gas Pipeline in Dearborn County, Indiana. WAPORA, Inc. .

Stelle 2001 This was a citation included in the artifact analysis sheets saved by Erin Steinwachs.

Stillwell, Larry N.

1999 An Archaeological Field Reconnaissance of a Proposed Elevated Water Storage Tower and Associated Water Lines in St. Leon, Dearborn County, Indiana. Archaeological Consultants of Ossian.

—

2001a An Archaeological Field Reconnaissance of a Proposed Cellular Phone tower (Project #01510102-A) near Guilford, Dearborn County, Indiana. Archaeological Consultants of Ossian

—

2001b An Archaeological Field Reconnaissance of a Proposed Cellular Phone Tower (Project #IN-00077) near Lawrenceburg, Dearborn County, Indiana. Archaeological Consultants of Ossian.

—

2002 An Archaeological Field Reconnaissance of a Proposed Medical Facility Expansion in Lawrenceburg, Dearbotrn County, IN. Archaeological Consultants of Ossian.

—

2003 An Archaeological Field Reconnaissance of aroposed Cellular Phone Tower (Project #IN-0925) near Guilford, Dearborn County, Indiana. Archaeological Consultants of Ossian

—

2005 An Archaeological Field Reconnaissance of the Proposed North Dearborn Road Improvements in Dearborn County, Indiana. Archaeological Consultants of Ossian

—

2006 An Archaeological Field Reconnaissance of the Proposed Bridge over Tanners Creek (Des. No. 0600726) in Lawrenceburg, Dearborn County, Indiana. Archaeological Consultants of Ossian.

—

2007a An Archaeological Field Reconnaissance of a Proposed Cellular Phone Tower (Project #017-7E053) in Wilmington, Dearborn County, Indiana Archaiological Consultants of Ossian

—

2007b An Archaeological Field Reconnaissance of a Proposed Cellular Phone Tower (Project #IN-0625) in Lawrenceburg, Dearborn County, Indiana. Archaeological Consultants of Ossian.

—

2007c An Archaeological Field Reconnaissance ofa Proposed Disposal Area Contract No. R-27982 in Greendale, Dearborn County, Indiana. Archaeological Consultants of Ossian.

—

2008 An Archaeological Field Reconnaissance of the Stone Trust Property in West Harrison, Dearborn County, Indiana Archaeological Consultants of Ossian

—

2009 An Archaeological Field Reconnaissance of teh Proposed Lesko Park Trailway Improvements (Des. No. 0710986) in Aurora, Dearborn County, Indiana. Archaeological Consultants of Ossian.

—

2010 An Archaeological Fiel Reconnaissance of a Proposed Water Line in Dillsboro, Dearborn County, Indiana. Archaeological Consultants of Ossian.

—

2011a Archaeological Field Reconnaissance of the Proposed Replacement of Bridge No. 138 over Tanner's Creek (Des. No. 1006518) in Guilford, Dearborn County, Indiana. Archaeological Consultants of Ossian.

Stillwell, Larry N.

2011b Archaeological Field Reconnaissance of teh Proposed Replacement of Bridge No. 55 over Tanner's Creek (Des. No. 1005702) in Guilford, Dearborn County, Indiana. Archaeological Consultants of Ossian.

Stone, Jane, and Haywood, Norman A.

1996 Phase Ib and Ic Subsurface Archaeological Investigations for the Walnut Street Bus Turnaround and City Dock, Lawrenceburn Township, Dearborn County, Indiana United States Corps of Engineers.

Stropes, Dan

1996 Phase I Archaeological Investigation of a Possible Mound Located in the Hidden Valley Lake Area Dearborn County, Indiana. Natural Resources Consulting.

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, Reports of Investigations 82, Ball State University. Muncie, Indiana.

Terry, RE, SD. Nelson, J Carr, J Parnell, PJ Hardin, MW Jackson, and SD Houston

2000 Quantitative phosphorus measurement: A field test procedure for archaeological site analysis at Piedras Negras, Guatemala. *Geoarchaeology* 15:151-166.

Tite, M. S. and C. Mullins

1971 Enhancement of the Magnetic Susceptibility of Soils on Archaeological Sites. *Archaeometry* 13:209-219.

Tolonen, Anthony S.

1996 Phase I Cultural Resources Report of the Proposed Wilson Creek Realignment Aurora, Lawrenceburg Township Dearborn County, Indiana. KEMRON Environmental Services, Inc. .

Tomak, Curtis H.

1978 A Preliminary Assessment of the Archaeological Resources of Area of State Highway Project F-257-1(1), Dearborn and Ohio Counties, Indiana.

—

1979 An Archaeological Records Check for Indiana State Highway Project F-24-8(1) in Dearborn, Ohio and Switzerland Counties. Indiana State Highway Commission.

—

1980 An Archaeological Records Check and Recommendations for State Highway Project RS-5615( ), 46-15-2106, Dearborn County, Indiana. Indiana State Highway Commission.

—

1985 Archaeological Work for Indiana Department of Highways Project F-044-0(4) in Dearborn County.

—

1990 Archaeological Recommendations for Indiana Department of Transportation Project I-275-2(2) in Dearborn County.

—

1997a An Archaeological Assessment for INDOT Project FA-325, Parcel 2, US 50, Dearborn County

Tomak, Curtis H.

1997b Placement of a power line over the Haag Site, 12D19, Dearborn County. INDOT.

Tomak, Curtis H., Norma J. Tomak and Van A. Reidhead

1980 The Earlier Archaic Components at the Leonard Haag Site, Dearborn County, Indiana. Journal of Alabama Archaeology 26(1).

US Army Engineer District, Louisville

1985 An Archaeological Reconnaissance of Proposed Disposal Tract U-2159 at Tanners Creek, Lawrenceburg, Dearborn County, Indiana. US Army Engineer District, Louisville.

USDA-NRCS, USGS, and EPA
2010 Watershed Boundary Dataset for Indiana. Available URL: "http://datagateway.nrcs.usda.gov" Accessed 4/21/2013.

Vickery, Kent D.

1996 Flint Raw Material Use in Ohio Hopewell. In *A View from the Core: A Synthesis of Ohio Hopewell Archaeology*, pp. 108-127. Ed. Pacheco, the Ohio Archaeological Council, Columbus, Ohio.

Vickery, Kent D., Ted S. Sunderhaus, and Robert A. Genheimer
2000 Preliminary Report on Excavations at The Fort Ancient State Line Site, 33Ha58, in The Central Ohio Valley. In *Cultures Before Contact: The Late Prehistory of Ohio and Surrounding Regions*, pp. 272-328, edited by RA Genheimer. Ohio Archaeological Council, Columbus, Ohio.

Walley, Scott A.

2000a Feature Recovery at 12D115 Dearborn County, Indiana Algonquin Archaeological Consultants, Inc. .

Walley, Scott A.

2000b Phase I Archaeological Survey of the Proposed Site for the PSEG Lawrenceburn Energy Facility, Dearborn County, Indiana.

Walley, Scott A. and Hawkins, Rebecca A.

1997 Phase I-A Survey of Proposed Sewer Corridor, Harrison Township, Dearborn County, Indiana. Algonquin Archaeological Consultants, Inc. .

Walley, Scott A., and Kreinbrink, Jeannine

2000c Feature Recovery at 12D373, 12D531, and 12D532 Greedale, Dearborn County, Indiana. Algonquin Archaeological Consultants, Inc. .

Waters, Nikki A., and Zoll, Mitchell

1999 Tri-Township Water Line Project Dearborn County, IN. Ball State University, Muncie, IN, 47306.

Wayne, William J.
1966 Ice and land. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 21-39. Indiana Academy of Science, Indianapolis, Indiana.

Webster, J. Dan
1966 Birds. In, *Natural Features of Indiana*, edited by Alton A. Lindsey, pp. 452-473. Indiana Academy of Science, Indianapolis, Indiana.

Westermeier, Scott, and Mitchell Zoll

1997 Dillsboro Sewer Project Dearborn County, Indiana Archaeological Field Reconnaissance. Ball State University, Muncie, IN, 47306.

Whalen, Christina L., and Zoll, Mitchell

2003 Aurora Downtown Streetscape Dearborn County, Indiana Archaeological Records Review Ball State University, Muncie, IN, 47306.

Whitaker, J. O.

1997 *National Audubon Society Field Guide to North American Mammals*. Alfred A. Knopf: New York.

Zoll, Mitch

1991 Archaeological Field Reconnaissance Improvement of SR 1 from SR 46 to Southgate Dearborn and Franklin Counties, Indiana. Ball State University.

Zoll, Mitchell

1993 North Dearborn Road Improvements Dearborn & Ripley Counties, Indiana. Ball State University.

1997 State Road 56, Dearborn County Bridge # 95 Dearborn and Ohio Counties, Indiana: An Archaeological Records Check. Ball State University, Muncie, IN, 47306.

—

1999 Logan Elderly Housing Project Dearborn county, Indiana. Ball State University, Muncie, IN 47306.

—

2000 Spectra Site Cell Tower Dearborn County, Indiana. Ball State University, Muncie, IN, 47304.

—

2005 Archaeological Field Check Rehabilitation of Bridge 56-58-4439 on SR 56 Project No.: ST-9999(112); Des. No. 0201245 Ohio and Dearborn Counties, Indiana. Ball State University, Muncie, Indiana, 47306.

Zoll, Mitchell K., and Joseph M. Verbka

1994 Archaeological Field Reconnaissance Ameristar Casino - Lawrenceburg Dearborn County, Indiana. Archaeological Resources Management Service Ball State University.