ARCHEOLOGY OF THE BATTLES OF FORT RECOVERY, MERCER COUNTY, OHIO: EDUCATION AND PROTECTION

A Cooperative Project with
National Park Service American Battlefield Protection Program
Grant # GA-2255-10-002
Ball State University
Ohio Historical Society
Fort Recovery Historical Society

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Acknowledgements

This project owes its success to a multitude of participants and stakeholders. Many thanks to Co-Principal Investigators Colleen Boyd, Mark Groover, and Mark Hill of the Department of Anthropology, Ball State University. Thanks to the Applied Archaeology Laboratories (AAL) also of the Department of Anthropology, Ball State University with Mark Hill, AAL director, and Christine Keller, AAL archeologist and ABPP project manager. We appreciate Dan Ingram and the Department of History's participation and supervision of an internship. Thanks to Joe LoPilato of Ball State University's Unified Technology Support (UTS) for providing GIS and data modeling resources. Archeologist Melanie Cabak, Department of Anthropology, provided much appreciated survey and report writing assistance at the beginning of the project. Ball State University's Department of Anthropology and department chair Homes Hogue provided the environment of support and collaboration needed to successfully execute a grant of this magnitude.

Ball State University's Sponsored Programs Office worked diligently to prepare and submit the initial grant application. The university's Contract and Grant Office provided grant administration and accounting support to the Applied Archaeology Laboratories during execution of the grant. We appreciate their help.

Thanks to Mark Groover, director of Ball State University's Department of Anthropology field school conducted at Fort Recovery during May and June 2011 with field school participants Ellen Botkin, Amanda Carver, Trey Hill, Anna Kalk, Elodia Leavitt, Eli Orrvar, Dane Rowles, Miranda Taubert, Tye Winker, and Tyler Wolford. Their respect for Fort Recovery's history and their professionalism with members of the public who stopped by excavation units was very much appreciated. The community and museum enjoyed having the field school at Fort Recovery.

This project would not have been possible without the unending support and cooperation from the Fort Recovery State Museum and the Fort Recovery State Historical Society. Nancy Knapke, museum director, was helpful in every way imaginable from planning community involvement, organizing incoming field trips, endlessly promoting the grant activities with the local media and frequently providing cookies to field workers. The Fort Recovery Historical Society and museum employee Kevin Keller gave their wholehearted approval and support to all of the grant activities. Historian, author and Fort Recovery State Museum supporter John Winkler provided historical documentation and research that was critical to our grant.

The Ohio Historical Society (OHS) and the Ohio Historic Preservation Office (OHPO) were invaluable partners throughout the grant process. We appreciated the grant input, site visits and media attention facilitated by Brad Lepper, Roger Norfleet, Linda Pansing, Bill Pickard, and David Simmons of the OHS and David Snyder of the OHPO. Jarrod Burks of Ohio Valley Archaeology, Inc. provided ground-penetrating radar services and we appreciated the interest he took in this project. Thanks to all media outlets who covered this project from beginning to end including Bill Kincaid from The Daily Standard, The Commercial Review, The Mercer County Chronicle, and various Ball State University marketing and media services.

Landowner support was key to the award and execution of this grant. Thanks to all landowners who signed letters of support for the original grant application and allowed us to survey their land: Second National Bank, Ambassador Club, Danny Bechtol, Ben Dues, Dave Kaup, the Fort Recovery Historical Society, Heidi DuHamel, John Kaffenberger, Anne Guggenbiller (Wayne IGA), Art Huelskamp (Broadway Mobile Home Court), Bob Meiring (Fort Recovery Insurance), Mercer Savings Bank, Neal Muhlenkamp, the Ohio Historical Society, Karen Ranly (Fort Fitness) Chris Schoen, Ed Snyder, Irene Stone, Jeff Wendel, and the Village of Fort Recovery. We couldn't have asked for more cooperative, understanding, and interested landowners.

Students from the Ball State University's Departments of Anthropology, History, and Geography participated in every aspect of the project. Thanks to interns Tyler Wolford, Eliot Reed, Jessie Moore, Kristin Kjeldsen, Amanda Carver, Alejandra Fernandez, Elodia Leavitt, and R. Evan Dossey for background research, surveying, data analysis, artifact analysis and report writing. Thanks to graduate assistant Stefan Woehlke and post-graduate assistant Deb Hollon for GIS mapping and data modeling and to post-graduate assistant Eliot Reed for technical report editing. Student employees Kelsey Anderson, Allison Galbari, Trey Hill, Anna Kalk, Kristin Kjeldsen, Victoria Lucas Jessie Moore, Preston Russett, and Tyler Wolford provided countless hours in the field surveying and collecting data, in the lab analyzing data and writing various sections of the report. The enthusiasm and interest of these students was contagious and constantly caused us all to look at the project from a different perspective and view point.

The community of Fort Recovery provided support in numerous ways. Thanks to Randy Diller, village administrator, for assistance with the initial grant application and on-going logistical support throughout the entire grant project. Community members supported the project by attendance at two collector meetings, numerous presentations, visits to the field school site, visits to various geophysical surveying sites throughout town, attendance at the field school open house, and a general appreciation of the goals and objectives of the grant project. Several volunteers helped with metal detecting surveys throughout the summer. Thanks to Jeremy Bubp, Jack Hemmelgarn, Larry Keller, Alan Mark, Dennis Morgan, Jeff Morgan, Tom Reichert, Ken Sowards, Dan Wilker, and John Wolf for their interest, help, advice, and equipment use.

All of this was made possible through the National Park Service American Battlefield Protection Program grant and funding. We very much appreciate the organization of Kristen McMasters, ABPP grant administrator, and the materials and resources that she made available. We express deep gratitude for the availability of the federal funding for this project through the National Park Service.

Acknowledgement of Federal Assistance

This material is based upon work assisted by a grant from the Department of the Interior, National Park Service. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the Department of the Interior.

Preface

In order to provide the most comprehensive project and report possible to the National Park Service (NPS) and other stakeholders interested in the battlefields of Fort Recovery, NPS funding was augmented with matching funds from Ball State University. These matching funds came in the form of unpaid student internships, student independent studies, Masters' thesis projects, graduate assistant tuition waivers, field school course fees and matching research funds from faculty. Both undergraduate and graduate students were involved with the project from its inception. This high level of student involvement served a two-fold purpose: 1) to provide matching funds for additional research to augment the additional American Battlefield Protection Program grant; and 2) most importantly, to provide an opportunity for students to immerse themselves and be an integral part of a large archeological project with important research implications. The primary goals and research questions of this ABPP grant provided the focus for these additional research opportunities.

The following report reflects this collaboration amongst many different faculty and student researchers. Chapters and chapter sections were written to integrate with the entire report but also to somewhat stand alone in their research and conclusions. The chapter sections all expound upon a specific research area that is important to the primary goals of our ABPP grant.

The Historic Context (Chapter II) was researched and written by two graduate student interns and one undergraduate student intern with mentorship, assistance and review from Department of Anthropology and Department of History faculty and staff at Ball State University. This approach allowed us to expand this section and provide wide-ranging and complete historic context for the two battles in the 1790s. It also allowed time for additional research into changes in the landscape that took place after these two battles. This information was important to our ABPP project team as we planned our archeological investigations.

The Research Design and Literature Review (Chapter III) was also heavily supplemented by student researchers. The battlefield boundaries and KOCOA analysis was research and written by a graduate assistant with the fort archeology section written as part of another student's masters' thesis. They were also mentored by and worked in collaboration with faculty and staff in the Department of Anthropology.

The field methods, results and analysis in Chapter IV and Chapter V were heavily supported by student research and field work in the form of five student interns (both graduate and undergraduate) and a graduate independent study student as part of their masters' thesis. Again, all work in the lab and field was supervised and mentored by faculty and staff in the Department of Anthropology. In addition, the entire BSU field school held in May and June 2011 was funded through the university by student course fees. Ten undergraduate and graduate students from the Departments of Anthropology and History participated in the field school and received academic credit for their effort.

On-going conference and public presentations that highlight the methods, conclusions and results of the ABPP grant are also heavily supported by student

volunteers and interns, and faculty and staff matching time. Over 15 students and five faculty and staff have participated or will participate in a public presentation or conference that relates directly to the ABPP grant.

Chapter I. Introduction

The purpose of this project was to 1) delineate more clearly and accurately the boundaries of the Battle of the Wabash (1791) and the Battle of Fort Recovery (1794) and 2) through public education and involvement, to diminish threats to the battlefields. The project began with a thorough review of historic sources, collector interviews and oral traditions. The KOCOA (Key terrain, Observation and fields of fire, Cover and concealment, Obstacles, Avenue of approach and retreat) methodology was used to analyze battlefield terrain. The primary field methods included geophysical surveys consisting of metal detector, magnetometer, resistivity and ground-penetrating radar (GPR) used student and volunteer assistance in both the field and lab work. Limited field excavation took place based on the results of the background research, KOCOA analysis, and geophysical results. All data was used to construct a GIS model of the battlefields. Completed maps and brochures featuring newly discovered information will be available to the public via the Fort Recovery State Museum. Public education will continue with preservation-focused presentations at the museum.

Significance of the Battle of the Wabash and the Battle of Fort Recovery

Two significant battles occurred in 1791 and 1794 between American forces and a Native American confederacy at the modern village of Fort Recovery, Ohio. The two battles represented the largest engagements of the American Army and Native American forces in the history of the United States. They were important in defining the course of the infant American nation and eventually led to the loss of significant territory and independence for the Native Americans.

The first battle, known variously as St. Clair's Defeat, Little Turtle's Victory and the Battle of the Wabash, occurred on 4 November 1791. The American Army consisting of approximately 1,400 soldiers was swiftly devastated by a Native American confederacy of approximately 1,500 warriors. Depending on the source, between 600 and 700 American soldiers and an unknown number of camp followers were killed. Between 20 and 150 Native Americans were reportedly killed. The devastating loss of the Army was attributed to a corrupt Army Quartermaster causing subpar supplies, ill-prepared American soldiers, incompetence on St. Clair's part, and the skilled tactics of Mishikinakwa (Little Turtle) of the Miami and Weyapiersenwah (Blue Jacket) of the Shawnee (Barmann and West 1991; Carter 1987; DeRegnaucourt 1996; Guthman 1975; Hall 2008; Howe 1847; Rohr and Meiring 1991; Scranton 1907; Sword 1985; Winkler 2011).

The Native American victory at the Battle of the Wabash ultimately only delayed Euro-American settlement in the region. In 1793, General Anthony Wayne built a fort at the site of the defeat and it was named Fort Recovery. Between 30 June and 1 July 1794 a confederation of over 2,000 Native Americans with British support attacked the fort. Mishikinakwa (Little Turtle) again led the Native American confederation. This time the American forces held, and the Native Americans retreated. The second battle marked the

defeat of the largest Native American force ever assembled. The victory at Fort Recovery and the Battle of Fallen Timbers on 20 August 1794 signaled the end of Indian resistance in Ohio and led to the signing of the Treaty of Greenville in 1795 (Carter 1987; DeRegnaucourt 1996; Hall 2008; Rohr and Meiring 1991; Scranton 1907; Winkler 2011).

Project Goals

The overall goal of this project was to provide information necessary to the protection and preservation of the important physical site of these two battles that helped shape the Northwest Territories. To accomplish this, we proposed a series of research goals and objectives that provide for a more detailed understanding of the battlefield landscape, events, and remaining resources.

A specific set of questions guided this project, including the following:

- What is the overall geographic extent of both battles?
- Can the battles as recorded in historical documents be tied to surviving landforms, features and archeological remains?
- How did the battles progress and can military movements, encampments, forts, and formations be identified that establish the modern battlefield boundaries and key elements?
- What artifacts and landscapes survive from the battles to assist in interpretation and preservation planning?
- What was the location of the original fort, how did the fort's location affect the strategy of the Battle of Fort Recovery, and what is the integrity of the location of the current fort reconstruction?

From our initial research, we know that the first battle in 1791 occurred over a broad geographic area. The second battle in 1794 was centered on the location of the fort, built in 1793, and is subsumed within the area of the first battle. Investigations of these battlefields were accomplished at two levels with correspondingly different questions and methods of analysis.

At the largest scale, research goals focused on identifying defining features of the 1791 and 1794 battles. A defining feature is any natural or manmade terrain feature or structure that influenced battlefield strategy. Defining features can be identified in primary sources including contemporary battle maps, sketches, correspondence, and reports; in secondary sources including synthesized battle maps; and in subsequent county maps, USGS topographic maps, and modern maps and aerial photographs (McMasters 2010). The identification of these features will help address questions of the movements, locations, and formations of combatants – information critical for establishing the overall geographic extent of the battles as well as important landmarks and features that preserve the setting and character of historic events. Important features were characterized using KOCOA military terrain analysis. Categories used in this process include:

K = Key Terrain
O = Observation and Field of Fire
C = Cover and Concealment
O = Obstacle
A = Avenues of Approach and Retreat

More specific field investigations focused on a smaller core area of the two battles. Utilizing historic descriptions, historic maps, and a digital elevation model in GIS, we have identified a 97 acre (39 hectare) core area of the battlefield (Figure 1). Here, research questions focused on identifying features, the locations of combatants, and movements using geophysical methods and limited archeological excavations. Geophysical survey and limited test excavations were used to test sometimes competing interpretations of battlefield features, combatant strategies, and movements.

While much of this core area lays within the developed portion of the modern village of Fort Recovery, Ohio, a 25% sample (24.25 acres) of this area was targeted for investigation using geophysical methods and limited test excavation. The core battlefield area and targeted survey areas are within Section 9, Township 15N, Range 1E in Gibson Township, and Sections 19 and 20, Township 7S, Range 1E in Recovery Township, Mercer County, as shown on the USGS 7.5' Fort Recovery, Ohio Quadrangle. These areas included portions of:

- Ohio Historical Society property (12.41 acres)
- Fort Recovery Historical Society property (0.04 acres)
- Village of Fort Recovery property (4.22 acres)
- Privately owned Ambassador Park (15.5 acres)
- Privately owned mobile home park (1.73 acres)
- Private owned yards and parking lots (1.25 acres)

Landowner permission from 20 property owners was obtained to conduct investigations in the above areas. A research proposal was submitted to and approved from the Ohio Historical Society to conduct archeological investigations on their property. An additional 47 acres of land was available for investigation around the periphery of the core area should research indicate additional key features or elements that extend outside the primary core area. This survey area was flexible enough to respond to information obtained during the course of this project from local historians, collectors, or other sources.

The exact dimensions and location of Fort Recovery, built in December 1793, are unknown and details of the construction, dimensions, and layout of the fort from the limited excavation greatly added to previous research and provided a clearer understanding of the key features and boundaries of the 1794 battle. Compared to the 1791 battle, significantly fewer details and first person accounts survive from the Battle of Fort Recovery in 1794. The original flag staff at the fort was reportedly located in 1836 (Rohr and Meiring 1991; Hall 2008) while the oak-lined well was found and reconstructed in 1936, as was the original walnut surveyor's stake marking the northwest corner of the Greeneville Treaty Line (Flaler 1990; Hall 2008; Rohr and Meiring 1991).

These features anchored geophysical and archeological methods that were used for the limited excavation portion of our testing.

The combination of large scale analysis of the landscape and terrain of the battles and more focused geophysical and archeological investigations in a 97 acre core battlefield area provided the means to address the research questions outlined above.

The subsequent chapters of this report explain this American Battlefield Protection Program grant project in detail. Chapter II addresses the historic context and events that led up to the 1791 and 1794 battles, both from a Native American and Euro-American perspective. Activities on the landscape that occurred years after the battles (community growth, other archeological excavations, fort reconstructions) are also reviewed as they have directly influenced and altered the terrain and landscape of the battlefields. Chapter III contains a literature review on battlefield archeology and military studies of the time period, fort archeology and typology, and an initial KOCOA analysis of the battlefields of 1791 and 1794 based on historical research. Chapter IV details the archeological field methods and results for the Battle of the Wabash in 1791. Based on the results of historical research and archeological results, a comprehensive GIS data model and updated KOCOA analysis concludes this chapter. Similarly, Chapter V covers the archeological research and field methods, results, and GIS modeling and updated KOCOA analysis for the construction of Fort Recovery in 1793 and the Battle of Fort Recovery in 1794. Chapter VI presents interpretations, recommendations and conclusions with a special section on community involvement. Appendices include photos of battle artifacts from this project as well as previous excavations and collections, artifact catalogs, parcel images, detailed geophysical data and images, and GIS model parameters.

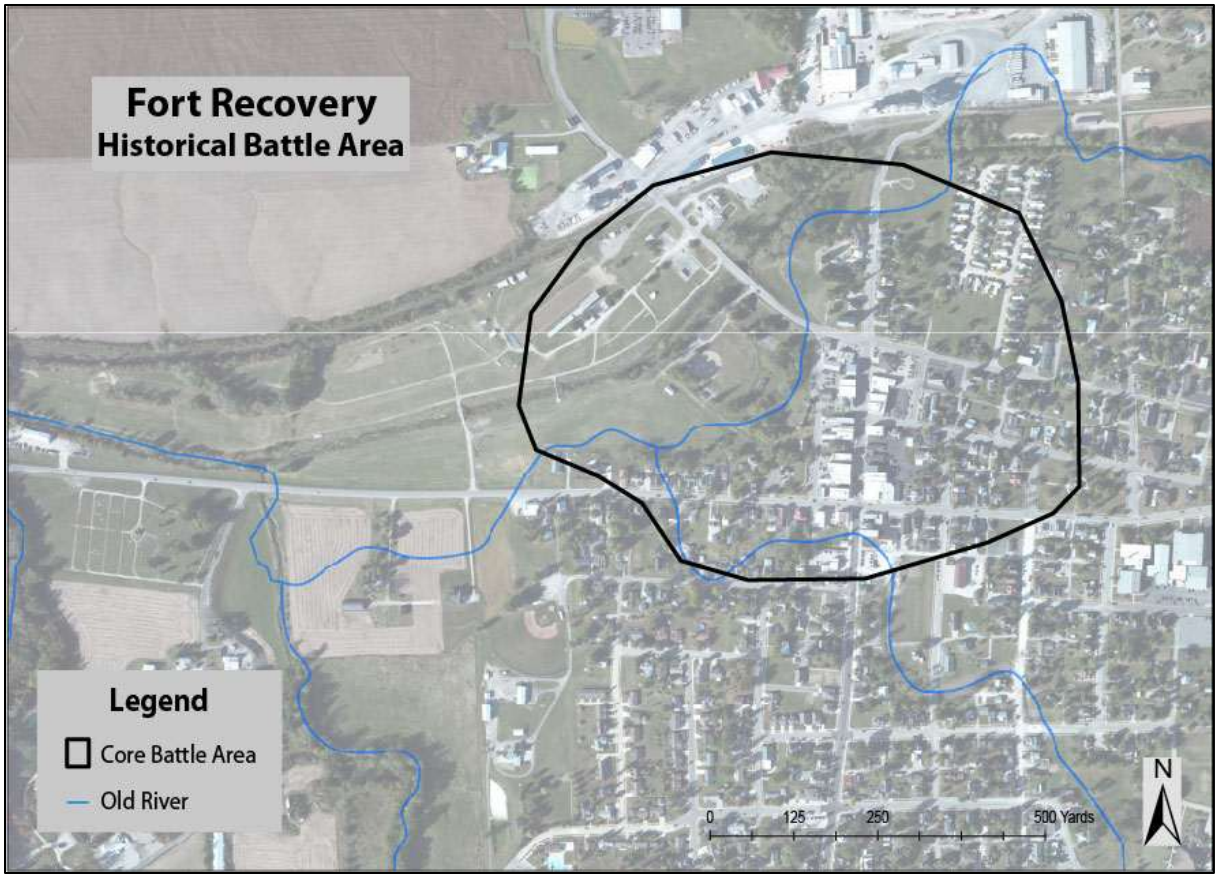

Figure 1: Location of 97 acre core battlefield area.

Chapter II. Historic Context

This chapter addresses the historic context and events that led up to the 1791 and 1794 battles, both from a Native American and Euro-American perspective. Activities on the landscape that occurred years after the battles (community growth, other archeological excavations, fort reconstructions) are also reviewed as they have directly influenced and altered the terrain and landscape of the battlefields.

Northwest Territory during Early Federal Period

By Tyler Wolford

At the close of the Revolutionary War various tribes called the Northwest Territory home. Many of these tribes had moved west from their original homes on the east coast. Other tribes had lived in this region with no contact with the Europeans except traders (Nelson 1992). Many of these tribes who had contact with European traders since the 17th century, were able to switch between the British and French based on the times and prices of their goods (Blasingham 1955). By the time of the 18th century, through the leadership of three important chiefs, Le Gris, Pacan, and Mishikinakwa (Little Turtle), the Miami became an important tribe with influence over other peoples in the region (Carter 1987). The Americans during the Revolutionary War had some success under George Rogers Clark in winning the favor of various tribes in the region. This, however, was quickly undone by the disastrous campaign of the Frenchman, La Balme. What favor had been gained by Clark had been lost by La Balme (Carter 1987).

The Treaty of Paris, which ended the Revolutionary War, ceded the Northwest Territory to the new United States of America. This was a vast amount of land which today comprises five states: Ohio, Indiana, Illinois, Michigan, and Wisconsin (Figure 2). The British, however, had no intention of being so favorable to the new republic. John Mitchell's map of British processions in the New World in 1755 represented the Northwest Territory as much smaller than it was. This vast amount of land represented a golden opportunity for this fledging nation to repay its war debts. The occupants of this land, however, were not consulted in this treaty, regardless of their alliance (Guthman 1975). Different tribes had different perceptions of the treaty. Many tribes were well aware of the consequences of the treaty, knowing now that the British Land Proclamation (1763) and the Treaty of Stanwix (1768) would no longer apply. Many, however, would have had trouble seeing the differences between the Americans and British, seeing the Americans as merely a continuation of the British relationship they had already developed. The major difference between the Americans and the British in the relationship to the Native Americans was that the Americans had the political will to exploit the Northwest Territory in a way the British Empire never did (Countryman 1996).

On 3 June 1784, after essentially disbanding the old Continental army due to fears of the Newburgh Conspiracy, Congress passed a resolution for the establishment of a regiment of 700 soldiers with the intent of policing the Northwest Territory. Despite this resolution, the United States was governed under the Articles of Confederation, which

did not allow the federal government the centralized authority to achieve its goals. The British, realizing the ineffectiveness of the Articles, managed to continue to occupy their forts in the Northwest Territory such as Detroit (Guthman 1975; Kohn 1975).

It will not be until the United States adopted the Constitution as its form of government that these problems would be fully addressed. Under the Constitution the patronage system that made soldiers more dedicated to their State than their superior officer would be abolished. Josiah Harmar was given the task of reorganizing the federal army to reflect the new direction in governance. Despite the change in government, many of basic problems did not disappear; the government still insisted in limiting the military, thus the British continued to feel they were in no danger by not evacuating their forts in the region (Guthman 1975; Kohn 1975).

During this period, Pacan, a Miami chief tried in various occasions to establish a peace with the United States. The various meetings between Pacan, Josiah Harmar, American Major Hamtramck, and the British commissioner for Indian Affairs, Alexander McKee, were overshadowed the various raids and attacks between Kentucky and Indian territory. As a young Mishikinakwa (Little Turtle) came to establish himself, the Miami would decide that Ohio would be the limit of American settlement. St. Clair's final offer for peace talks was not accepted; it was now evident that "Kekionga was the center of the alliance of tribes that had constructed by the Miami triumvirate (Carter 1987:78)."

With the continued calls for aide from the Kentucky settlers, the first military expedition by the United States government under the Constitution was the campaign of Josiah Harmar. To the United States, and especially Secretary of War Knox, Harmar's campaign was a way to avoid open war, not start it. Knox believed the Native Americans could be dealt with by means of bribery; he thought renegade Indians caused the troubles, not the tribes themselves. It was certain that Knox did not believe this campaign would result in war (Kohn 1975). The so-called "peace mission" of Harmar would be one of the first tests of Mishikinakwa's (Little Turtle) leadership. Mishikinwakwa, with the aide of British intelligence, knew when the army would arrive and had a counter plan prepared. He ordered Kekionga razed and the people evacuated. Harmar ordered Colonel Hardin to quickly pursue the Miami with a squad of 600 light troops in hopes of catching them before they could evacuate all of their villages. Little Turtle's forces were able to evade Harmar and Hardin for many more days. With a few warriors acting as decoys, Little Turtle was able to lure Hardin into an ambush. He would do the same to Ensign Phillip Hartshorn, who was sent out to scout by Harmar. After these defeats Harmar ordered everything in the evacuated villages not destroyed to be put to the torch. Many smaller villages and crops were destroyed. Despite this Harmar wanted to try one more attack to catch the Native Americans off guard. He sent 400 men under Major John Palsgrave Wyllys back to the destroyed villages. While they did catch the Native Americans in the villages and Wyllys' plan for encirclement was sound, his officers disobeyed orders and just like the two previous engagements, the army was divided and defeated by the Native Americans. After this defeat Harmar decided to retreat. The Native Americans had successfully repulsed the American expedition. Mishikinwakwa had successfully "forced their opponents to engage in the kind of warfare in which they excelled, had inveigled the militia officers to move into the position chosen by Little Turtle, the Miami Chief, for a

perfect ambush, and had further enticed the brash militia officers into splitting their forces thus favoring the well-concealed Indian warriors (Guthman 1975:195).

Figure 2: Map of Northwest Territory.

Native American Confederacy

By Eliot Reed

Since the time of first contact with Europeans, Native Americans struggled in their attempt to maintain cultural practices and control traditional lands. Throughout the five hundred year history of European presence in North America, Native people have made significant attempts to resist whites' desire for land and resources through their persistent push from the Atlantic seaboard westward into the heart of the continent. During the eighteenth century a significant amount of armed Indian resistance occurred.

Native participation in military conflicts like The French and Indian War (1754 – 1763) and The American Revolutionary War (1775 – 1783) have traditionally been understood as conflicts between European and colonial powers in which indigenous

peoples allied themselves with the side supporting Indian interests. Yet, not all Native peoples maintained consistent interests, and therefore participated in these conflicts many times on opposing sides. As the United States developed as an independent nation and pushed further west across the Appalachian Mountains, military conflicts between Native populations and American forces became more common. Furthermore, scholarship has produced insight into the motivation and rationale behind Native American participation in military conflicts during the eighteenth century (Calloway 1995; Dowd 2004).

Participation in warfare by Native Americans is now commonly understood through the lens of resistance. Native participation in conflicts between competing groups of Europeans should not be understood as simply Indian assistance or support, but demands the understanding that indigenous people acted on their own accord and in their own interests to protect unique lifeways, lands and resources. As more scholars engage indigenous North American history, a different and more complex understanding of Indian agency developed – specifically in regard to warfare and resistance. Scholars practicing ethnohistory have been particularly influential through their contribution to the study of Native – U.S. and Canadian relations. Through an attempt to interpret history from Native American perspectives, the challenges faced by indigenous peoples of North America have become exceedingly more apparent. In fact, Native participation in the two full-scale European / American wars of the eighteenth century ultimately proved to harm the position and social standing of Indians throughout North America (Calloway 1995; Dowd 2004).

Native Americans that cooperated militarily with Europeans were rarely rewarded for their sacrifice. As a result of their participation, particularly the alliance formed between a major indigenous contingency and the British during The Revolutionary War, Native people were excluded from any developments as outcome to the American victory. Many Native Americans suffered greatly due to the Revolution; families, tribal groups, homes and crops were all destroyed as a result of the fighting. Yet, even as the Natives suffered, new communities and socio-cultural groups were created from the devastation and displacement (Richter 2003). Differing Native peoples came together and constructed new communities and developed new cultural identities. Much like Native people had done in response to the devastating death tolls caused by disease, Indian people joined together in order to maintain and preserve their way of life and resist the further encroachment of whites. Previously, Indian leaders like Metacomet (King Phillip) and Pontiac led Native Americans in armed resistance against European expansion and influence, and in the late eighteenth century the stage was set for the organization of a large pan-Indian confederacy (Calloway 1995; Dowd 1993; Dowd 2004; Richter 2003).

The Northwest Indian Confederacy consisted of an inter-tribal force of warriors from the far reaches of the Northwest Territory and included groups that had already been removed from their traditional lands east of the Appalachian Mountains (Figure 3). The Indians, realizing that the result of the Revolution and the Treaty of Paris (1783) ignored their interests and rejected their right to land west of the Appalachian Mountains, joined together to organize a confederacy that would represent all tribes concerned with the encroachment of whites into Indian Territory. In September 1783, the eastern tribes of

the Iroquois, Wyandot, and Delaware met with the western tribes of the Miami, Shawnee, Ojibwa, Ottawa, Wabash, and Potawatomie at Sandusky on the shore of Lake Erie. Members of these communities believed that their unification was the only way they could relate to the new and expanding American nation (Miller 2009).

The Northwest Indian Confederacy, sometimes referred to as the Miami Confederacy, was organized in a manner which gave all parties involved an equal voice and influence. No absolute leader ruled over the Confederacy and decisions were made through the consensus of all the representatives from the allied tribes. Individuals within the military force of the Confederacy accepted responsibility as soldiers during the long and dangerous campaigns due to a structure of kinship, which is foundational in Native American political organization. All members of the Confederacy understood themselves in relationship to their position within this kinship system (e.g. grandfather, uncle, brother, etc.). The majority of council members agreed that the Treaty of Fort Stanwix (1768), which named the Ohio River as the boundary between Indians and whites, be recognized as the official border separating the two groups. Americans, ignoring this previous agreement, began to treat with smaller groups of Natives, namely Iroquois, Wyandot and Delaware, eventually gaining access to the Ohio Territory through the Treaty of Fort McIntosh (1785), land north of the Ohio River through the Treaty of Fort Finney (1786), which was signed only by members of the Shawnee (Eid 1993; Miller 2009).

The Americans were able to manipulate the cooperation of the Confederacy due in part to the need of Natives to participate in hunting excursions and poor weather conditions, which made travel and the gathering of all council representatives impossible at times. The Americans capitalized on the Native's need to hunt and difficulty traveling and entered into negotiations with only select groups of the Confederacy. Because none of the treaties that ceded land in the Ohio Territory or areas north of the Ohio River were signed and agreed upon by all the representatives of the council, they were rejected by the Confederacy. Yet this rejection did not prevent Americans from settling the region. The movement of the American army into the Ohio Territory and the construction of military outposts along the northern route originating at Fort Washington (present day Cincinnati) illustrated to the Native American that the newly formed United States had no intention of honoring past treaties. The early campaigns of Charles Scott and James Wilkinson destroyed many Miami towns and crops in present day Indiana, which led the Confederacy to organize a military force and attack the advancing Americans (Eid 1993; Miller 2009).

After the successful resistance of the American army under the command of both Harmar and St. Clair, the Confederacy established a headquarters during the fall of 1792 at the confluence of the Maumee and Auglaize Rivers. Called The Glaize (modern day Defiance, Ohio), this area not only functioned as a meeting place for all the council members of the Confederacy, but also functioned as a multi-cultural and multi-ethnic community that included seven Native villages and a trading town. The geographic location of The Glaize was strategically chosen due to its proximity to other Indian towns and communities, and in large part to the trade traffic that occurred on the rivers (Figure 4). Additionally, The Glaize was centrally located between Detroit to the northeast, a

British outpost that supplied the Confederacy with weapons and ammunition, and the American outpost Fort Jefferson to the south (Tanner 1978).

The Glaize exemplifies the ability of Natives peoples to join together in a time of social and cultural turmoil, and functioned as a headquarters for the Native resistance and military planning. Because of the concentration of Confederacy forces based at the Glaize, the community became the main target for General Anthony Wayne and his newly formed legion. The meeting of the Grand Council at The Glaize began on 30 September 1792, and included more tribes than those who participated in the Battle of the Wabash nearly a year earlier. Council members represented Native American groups from all over the region including: Shawnee, Delaware, Wyandot, Miami, Munsee, Nanticoke, Connoy, Mahigan, Ottawa, Potawatomi, Chippewa, Cherokee, Creek, Sauk, Quiatenon, Fox, the Seven Nations of Lower Canada, and Six Nations (Tanner 1978).

While the Confederacy equally represented all tribes, differences in opinion of how to deal with the encroaching Americans threatened to divide the tribes. From the time immediately following the Native American victory over General Arthur St. Clair and the American army at the Battle of the Wabash in 1791, disagreement among members of the Confederacy began to surface between the eastern and western tribes. The Native Americans from the east, having been pushed west out of their homelands by American settlers sought to treat with the Americans in hopes that a deal could be struck between the two groups. The western tribes, those that had not yet lost their land, supported efforts to resist all white encroachment upon their lands. The internal divisions within the Native American Confederacy led to a number of factors that eventually resulted in the inability of the Confederacy to successfully resist American forces and white advancement (Nelson 1992).

As political and strategic differences persisted among commanders within the Confederacy, military leadership shifted between the Battle of the Wabash in 1791 and the later Battle of Fort Recovery in 1794. Additionally, American military forces developed into a much more organized and well-trained force under the command of General Anthony Wayne. Yet, ultimately the divisions among the members of the Confederacy proved too much. At the Battle of Fort Recovery, traditional Native American military tactics were largely ignored and replace by a day and a half long period of short wave attacks on the American fortified structure. Many accounts of the battle report the Confederacy fighting a two front war – one front was attacking Fort Recovery while taking fire from fellow Natives in the rear. This Indian on Indian violence resulting from tribal feuds occurring during the organization of Confederacy forces in preparation for military action further exemplifies the deterioration of Native cooperation (Nelson 1992).

Figure 3: Northwest Indian Confederacy - Tribal Territories (based on Gallatin 1836; Shetrone and Sherman und., Sturtevant 1967).

Figure 4: Native American villages of the 1790s (based on Shetrone and Sherman und.).

Native American Battle Strategies

By Eliot Reed

The Native American warriors fighting on behalf of the Northwest Indian Confederacy maintained a structure that mirrored the tribal councils first organized at Sandusky in 1783. Men from all tribes of the Confederacy typically participated in major military engagements, specifically battles with the newly formed United States Army. While the tribal councils at The Glaize allowed for the participation of all representatives, a certain hierarchy in the form of leadership and ranking was present within the Indian fighting force.

It is traditionally understood that Indian military forces were commanded by leaders selected by the tribal council decision based on the individual's prior military experience, ability to lead groups of warriors, and their aptitude for military tactics and strategy. Throughout the majority of literature focusing on the military resistance of the Northwest Indian Confederacy, the Miami war chief Mishikinakwa (Little Turtle) is consistently named as the leader of Confederacy forces. Other major Confederacy leaders include the Shawnee chief Weyapiersenwah (Blue Jacket) and Buckongahelas of the Delaware (Anson 1970; Carter 1987; Sugden 2003; Winkler 2011).

While it is difficult to determine the exact structure of the Confederacy military, multiple sources explain that Indian forces were typically organized into small bands of twenty warriors, normally consisting of fighters from the same tribe. Usually four members of these groups were responsible for hunting and preparing food for the entire group. These small, self-reliant units not only helped to maintain organization but also enabled the Indians to move quickly and easily. Native Americans in the Northwest Territory and the Ohio Country were exceptional pedestrians – a factor that certainly influenced Confederacy tactics (Anson 1970; Carter 1987; Winkler 2011).

Native Americans were masters of negotiating the landscape in order to move efficiently between villages and towns as well as tracking animals during a hunt. The forests of the Northwest Territory were striped with trails and pathways that functioned like an interstate system connecting Natives to all corners of their territory (Figure 5). These trail systems, usually only twelve to eighteen inches in width, were likely used by Confederacy cadres as they quickly moved in single file throughout the area. In addition to Natives' exceptional ability to cover considerable distances in a single day, Indians are frequently described as using a skulking style during battle (Carter 1987; Dunbar 1915).

The "skulking Indian" is often used to describe the movement and combat style of Native Americans. Typically used by military opponents as a pejorative description of cowardice, Indians made extensive use of cover during battle. Skulking must be reinterpreted and understood as an extremely effective military tactic. Traditionally, Native warfare consists of aggressive and offensive maneuvering. A large number of recorded conflicts between Native Americans and whites resulted in Natives firing the first shot. Referred to as indirect assault, traditional Native American assault tactics include: ambushes, raids, the destruction of unguarded outposts or structures, and the attack of reinforcement and supply lines. Major Ebenezer Denny recounted Confederacy movements and tactics during the Battle of the Wabash:

> The enemy from the front filed off to the right and left, and completely surrounded the camp, killed and cut off nearly all the guards, and approached close to the lines. They advanced from on tree, log, or stump to another, under comer of the smoke of our fire. The artillery and musketry made a tremendous noise, but did little execution. The Indians seemed to brave everything, and when fairly fixed around us they make no noise other than their fire, which kept up very constant and which seldom failed to tell, although scarcely heard (Denney 1859:165).

Confederacy attacks were swift and fierce, and the use of cover was essential to Native strategy, made possible by their excellent mobility – a mobility that influenced the type of weaponry used by the Confederacy (Keener 1999; Malone 1991).

Traditional Native American weaponry was most certainly used by Confederacy warriors in battle, yet European weapons enabled Indians to inflict heavier casualties against their enemies. Throughout the Indians Wars the Northwest Indian Confederacy was supplied with weapons and powder through British outposts that remained in the territory. The main British outpost at Detroit supplied the Native Americans with the majority of their firearms. The .75 caliber British Land Pattern musket, better known as the "Brown Bess", was a favorite of Confederacy warriors. Native fighters loaded these guns with a variety of shot, typically one large ball and several smaller ones. Additionally, Confederacy warriors tended to be accurate shooters, especially in comparison to early American soldiers. Major Jacob Fowler describes the accuracy of Native American shooting during the Battle of the Wabash, "…I saw an Indian break for a tree about forty yards off, behind which he landed and fired four times, bringing down his man at every fire, and with such quickness as to give me no chance to take sight in the intervals of his firing" (Howe 1847:227). Experience gained hunting moving targets aided in the Native's ability to aim and consistently hit their target. For close range and hand-to-hand combat Native fighters carried knives, clubs, and tomahawks that were lightweight and wielded quickly. Native American mobility and masterful command of their weapons led to quick and deadly strikes resulting in the major Confederacy victory at the Battle of the Wabash in 1791 (Howe 1847:227; Keener 1999; Winkler 2011).

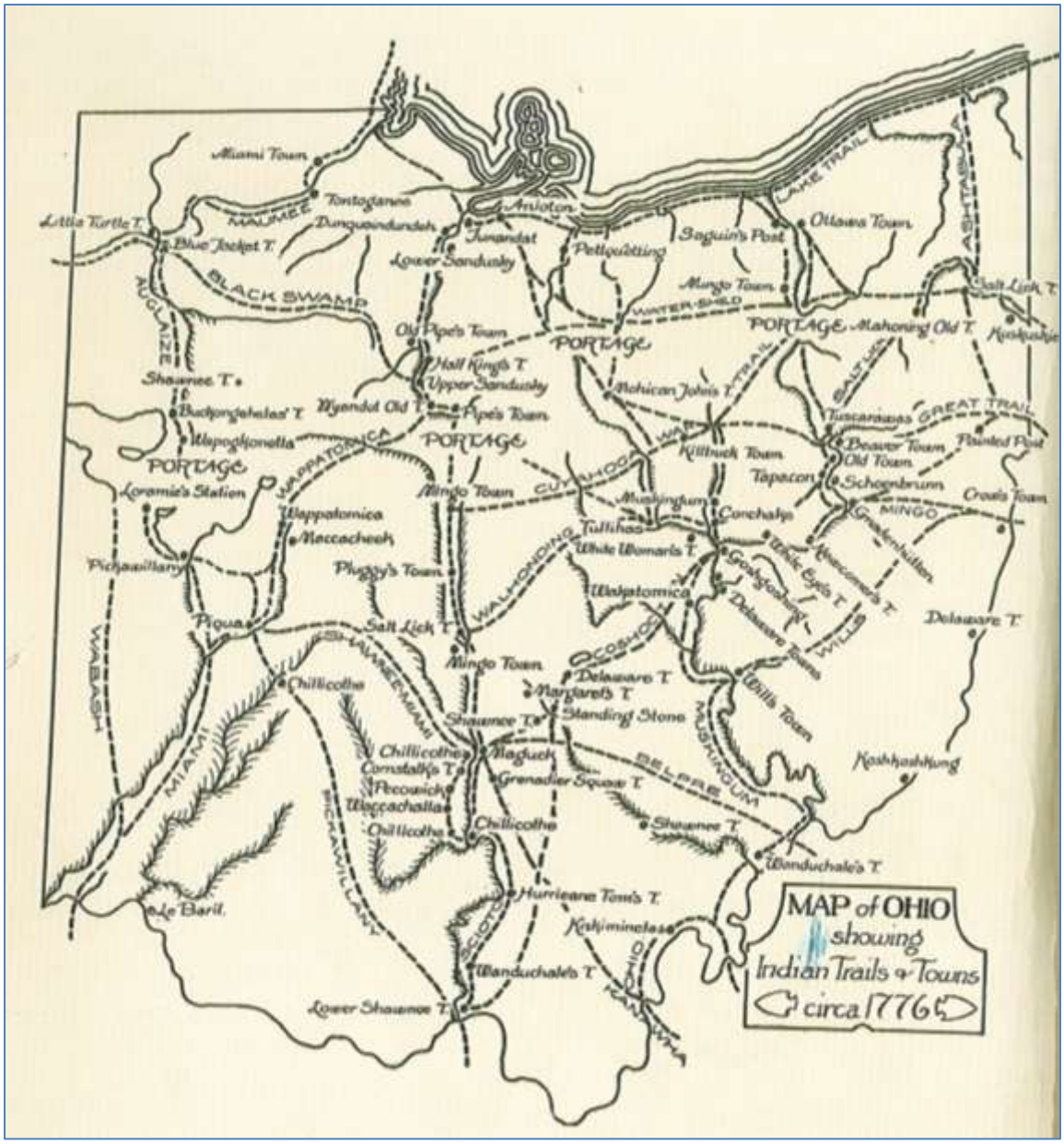

Figure 5: Native American trails and towns circa 1776 (Wilcox 1933).

Chains of Forts in Northwest Territory

Forts built by the U.S. Army represented the juxtaposition of Native American and United States lands. Increasing attacks by Native American raiding parties against white settlers required the existence of a reliable defense. An extensive Native American capital, Kekionga, located at the forks of the Maumee River (present day Ft. Wayne, Indiana) also demanded the presence of a substantial military fortification in the area (Figure 6). Major General Josiah Harmar was the first to attempt the task of creating a line of defensive fortifications. However, Harmar was defeated in the fall of 1790, south

of Kekionga and was forced to retreat approximately one hundred and fifty miles back to Fort Washington (Wilson 1950).

Territorial Governor Arthur St. Clair was chosen by President Washington to replace Harmar to build a line of fortifications in the Northwest Territory. Learning from Harmar's mistakes, St. Clair proposed that each fort should be built within a day's travel of one another, in order to avoid the long and arduous retreat experienced by Harmar. St. Clair had an impressive military career; however Washington was unaware of personal, financial, and political strains which were burdening St. Clair. These problems have been used to explain his later defeat (Wilson 1950).

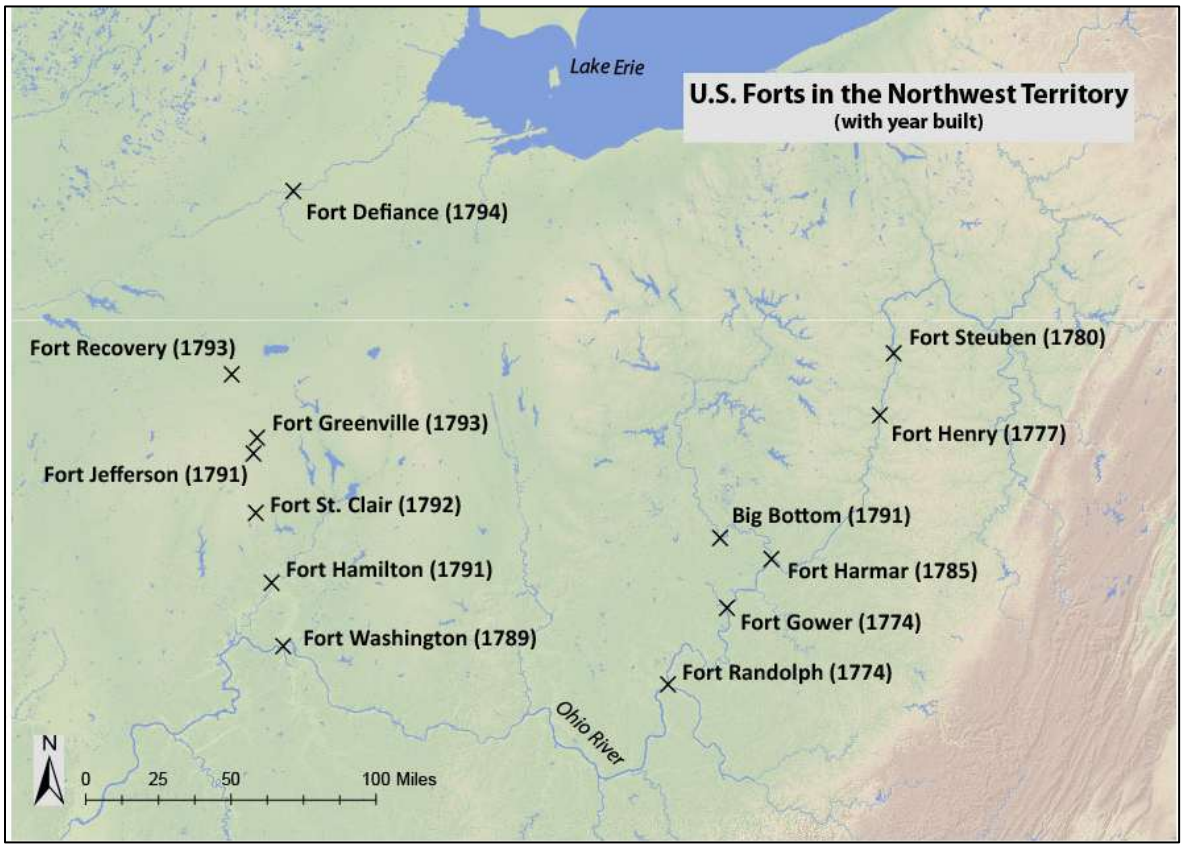

Figure 6: Chain of United States Forts in Northwest Territory (based on Shetrone and Sherman und., The Historical Marker Database).

Fort Jefferson

By Jessie Moore

Fort Jefferson was one link in a chain of the many forts that extended across the western edge of the Northwest Territory and played an important role in the Battle of the Wabash in 1791. Fort Jefferson represented the most northern and most isolated military post at the time of its construction in October 1791. It was used primarily as a storage

depot and supplementary defense up until the end of General Anthony Wayne's campaign. The isolated fort was the site of several smaller Indian raids and ambushes in 1792 and 1793, resulting in at least 17 casualties. In all the years of occupation, roughly 30 men died from sickness or wounds at Fort Jefferson. One casualty included Captain Shaylor's son; he was killed on an unauthorized hunt as supplies were low and wildlife was abundant (Seiler 1989; Simmons 1992; Williams 2005; Wilson 1950).

Improvements were made to the fort to improve security – including the construction of additional blockhouses and the clearing of additional land surrounding the fort. A house was also constructed for Brigadier General James Wilkinson and his family within the center of the fort. The house featured a large building with a sloping roof, dormers, and a cupola. Fort Jefferson was ultimately decommissioned in the summer of 1796 after the construction of Fort Greeneville by General Anthony Wayne. The fort was burnt to the ground to avoid Native American use (Seiler 1989; Simmons 1992; Williams 2005; Wilson 1950).

General Arthur St. Clair's army first occupied the area of Fort Jefferson on 13 October 1791 as part of his campaign against the Native Americans. It was reached after leaving Fort Hamilton, 44 miles to the south, on 4 October. This distance is a bit longer than the typical day's travel; however the natural terrain made it impossible to build a fort sooner. It was not until an Indian trail was discovered that St. Clair's army could advance more than six miles a day. Eventually St. Clair's scouts identified a rounded gravel knoll as the future location of Fort Jefferson. The location was criticized as being too low lying however it was growing late in the year and St. Clair was forced to make a decision. The site was deemed more suitable than other locations due to its close proximity to a nearby stream and spring, as well as adequate foraging area for the severely undernourished livestock (Williams 2005; Wilson 1950).

Fifteen to twenty acres of forest were cleared in preparation for the structure with Major Ferguson in charge of directing construction. Supply shortages forced workers to fashion the fort out of only eight axes and one cross cut saw. The fort was modeled after one of two popular construction styles of the time, a square structure with horizontal curtains. This construction style was chosen as opposed to the other popular style of the picket enclosure because it was more substantial. The curtains were 114 feet long, formed from the exterior walls of barracks and storerooms, while blockhouses were placed at all four corners. Two cannons were placed in the northeast and the southwest blockhouses allowing cannon cover for all sides of the fortification. The fort was named after Secretary of State Thomas Jefferson on 23 October 1791 (Seiler 1989; Williams 2005; Wilson 1950).

Due to the lack of materials and supplies only 200 men were able to remain occupied during the construction of the fort. Idle time combined with low rations and cold weather resulted in low morale for the army at Fort Jefferson. Three militia members attempted to leave, claiming their enlistment was up. They were tried and hung for desertion (Williams 2005).

St. Clair's men pushed northward from Fort Jefferson to build the next link in the chain of forts on 24 October 1791. Captain Shaylor and Lieutenant Bradley were left in command of about 100 men unable to travel at Fort Jefferson.

Battle of the Wabash

By Jessie Moore and Tyler Wolford

Marching from Fort Jefferson, St. Clair's American Army, numbering approximately 1,200 to 1,400 soldiers with an estimated 200 to 250 camp followers, arrived on the banks of the Wabash River (originally thought by St. Clair to be the St. Mary's River) on 3 November 1791. This location was only 29 miles north of Fort Jefferson, but took St. Clair's men 11 days to reach this point due to the heavily forested and swampy terrain. Although everyone was aware that there were Indians in the area, the army made camp without erecting any kind of fortifications. General St. Clair, in his letter to Washington, insisted that he "had determined to throw up a slight work" in the morning, but was interrupted by the attack (Smith 1881:263). Under the command of Colonel Oldham, the Kentucky militiamen were sent across the river to camp. The remainder of the army camped on the triangle of land that lay between the Wabash River and a creek (Buck Run) that flowed into the river. The heavy artillery was stationed along the high eastern bank of the river and outposts of men were set up to the north, south, and east of the main camp (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Smith 1881; Winkler 2011).

Figure 7 and Figure 8 show the encampment of St. Clair's Army as drawn by Lieutenant Ebenezer Denny and Winthrop Sargent who were both present at the battle. Colonel Oldham's Kentucky Militia, numbering 260 men, were camped 300 yards beyond the Wabash River on high, uncleared ground. Between the militia and St. Clair's main camp lay the Wabash River, within a 30-foot deep ravine. Gibson's 2nd Levy Regiment formed the camp's 350 yard-long front side along the Wabash River. This front side included Major Thomas Patterson's New Jersey Battalion (190 men), Major John Clark's Western Pennsylvania Battalion (270 men) and Major Thomas Butler's Eastern Pennsylvania Battalion (210 men). Forming the rear side of the camp was Major Jonathon Heart's 2nd Infantry Regiment and Lieutenant Colonel William Darke's 1st Levy Regiment. Units included Heart's 2nd Infantry Regiment (250 men), Major Henry Gaither's Maryland Battalion (200 men), and the Virginia Battalion (150 men). Because the high ground was so small, the north and south sides of the camp were only 70 yards wide. Camped on the north side were 60 rifleman and 30 dragoons, with an additional 30 dragoons on the south side. 220 men were dispersed in six outposts encircling the north, east, and south side of the main camp (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Sargent 1924; Smith 1881; Winkler 2011). Not among these was St.Clair's First Regiment, which he had sent before the battle to pursue deserters. In his letter to Washington he considers the meaning of their absence:

> "I am not certain, sir, whether I ought to consider the absence of this regiment from the field of action as fortunate or otherwise. I am inclined to think it was fortunate; for I very much doubt, whether, had had it been in the action, the fortune of the day had been turned, and if it had

> not, the triumph of the enemy would have been more complete, and the country would have been destitute of the means of defense" (Smith 1881:265).

General Butler had ordered a reconnaissance party formed the night before the battle to investigate the area and prevent Indians from stealing horses. The party, led by Captain Slough, observed three major bands of Indians, fired on one group, and returned with the sure notion that an attack would occur the next morning. This was reported to Colonel Oldham, who agreed. Yet, this information never made it to General Butler or St. Clair. Once Captain Slough arrived at General Butler's tent, the sentry "thanked [him] for [his] attention and vigilance, and said, as [Captain Slough] must be fatigued, [he] had better go and lie down" (Smith 1881:635). Instead of pushing the issue, Captain Slough fell asleep only to be awoken by the beginning of the battle the next morning.

Meanwhile, the Northwest Indian Confederacy of Delaware, Miami, Shawnee, Mingo, Wyandots, Cherokees, Ottawa, Ojibwe, and Potatawatomi under the command of Mishikinakwa (Little Turtle) and Weyapiersenwah (Blue Jacket) were assembling northwest of the encamped militia and planning their attack. George Ash, a Caucasian who had been captured then adopted into the Shawnee, gives a vivid account of the preparations and battle from the perspective of the Confederacy. According to Ash, Weyapiersenwah (Blue Jacket) gave a speech before the battle praying that "[our Great Father above] will be with us to-night, and (it was now snowing) that tomorrow he will cause the sun to shine out clear upon us, and we will take it as a token of good; and we shall conquer" (Langdon 1829). The record of Ash's tale, recorded by his son, mentions, "some ceremony that I did not we understand" (Langdon 1829). If the hypothesis provided by William Heath, namely that William Wells wrote the "Fort-Wayne Manuscript," is correct, than its ethnographic information on the Miami can help illustrate a possible ceremony that George Ash may have witnessed. The document discusses the highly ritualistic nature of war according to the Miami, such as the use of the "war budget," a bag of sacred items given to each warrior before battle (Heath 2010:182). While William Wells and George Ash participated in different parts of the Confederacy, their accounts demonstrate the Confederacy's preparations before the battle. The Native Americans then formed a crescent on high ground northwest of St. Clair's Army, with each tribe positioned in the crescent having specific duties (Figure 9). The center of the crescent attacked the militia while the two ends of the crescent were attacking the assembled outposts, their objective being to encircle St. Clair's camp (Denny 1859; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

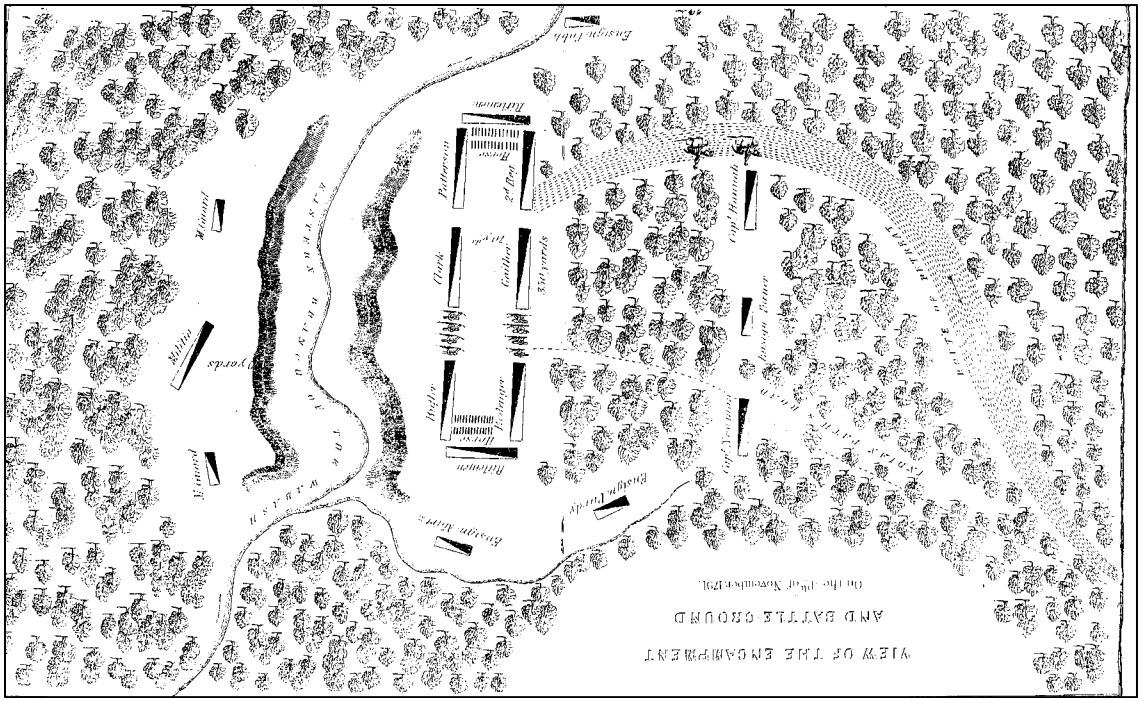

Figure 7: View of the Encampment and Battleground (Denny 1859).

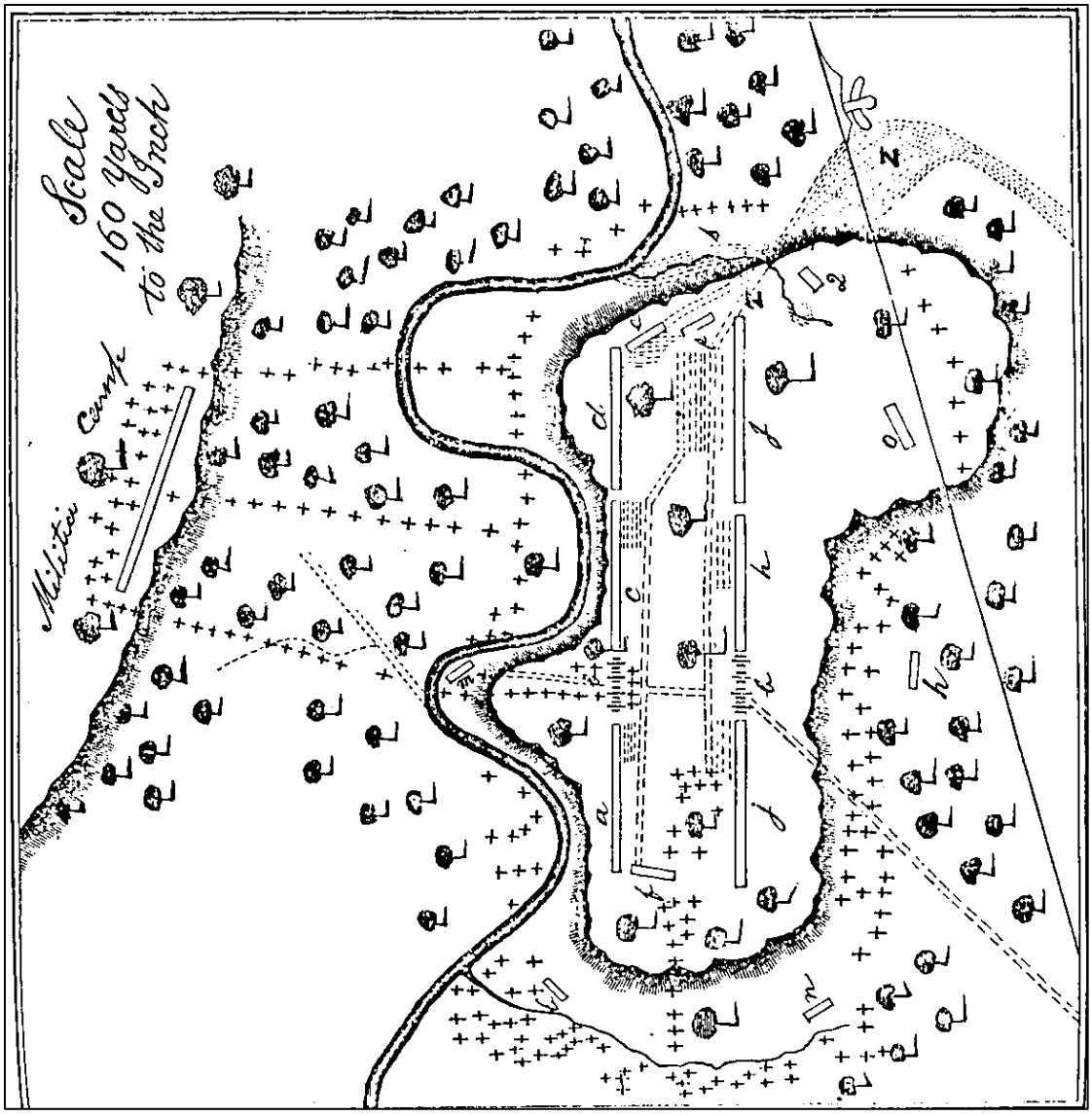

Figure 8: Map of Battle of the Wabash (Sargent 1924).

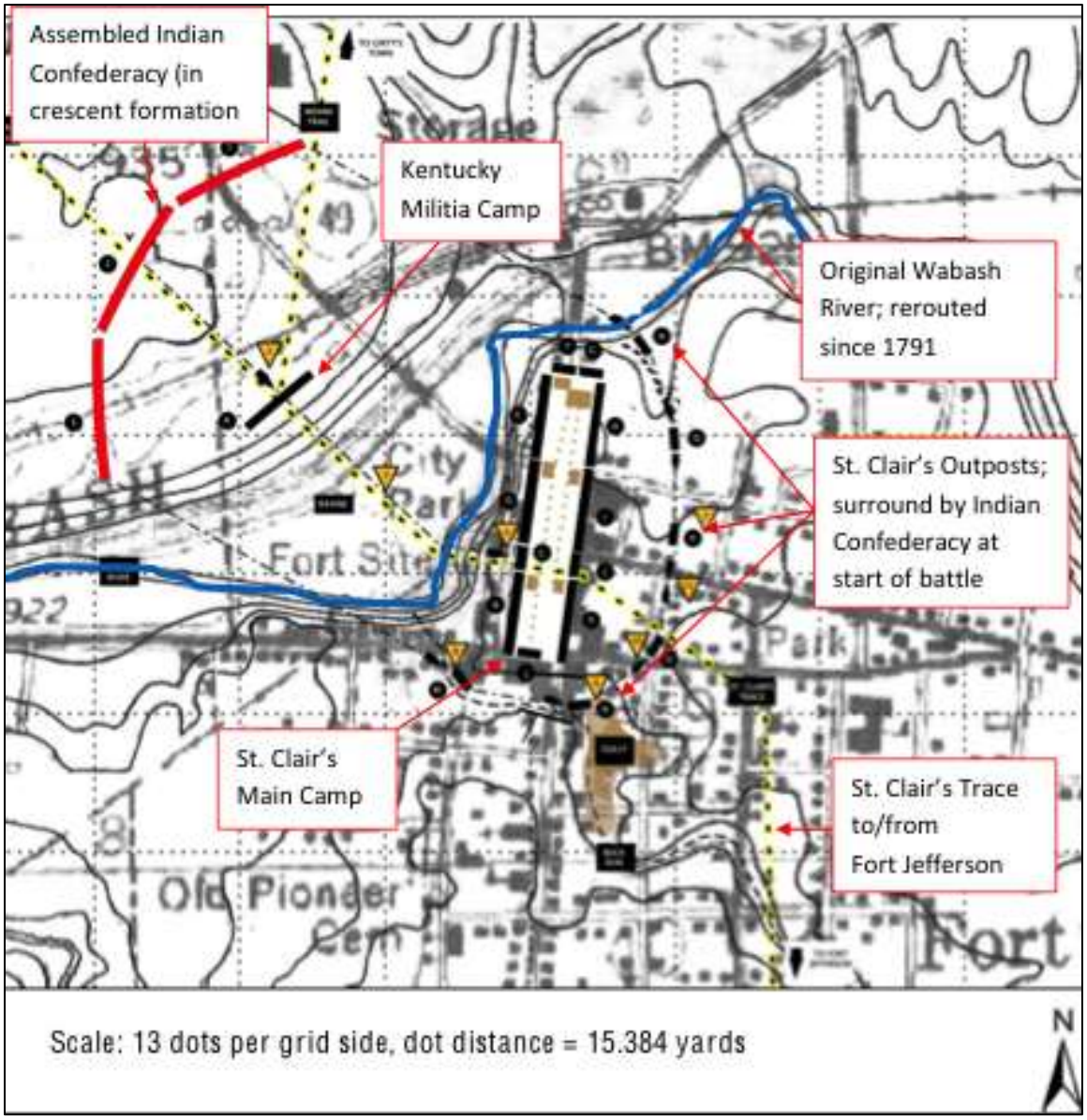

Figure 9: Battle of the Wabash (map from Winkler 2010a).

On the morning of 4 November 1791, the Indian Confederacy positioned themselves in their crescent formation and attacked the Kentucky militia at daybreak with a small party of 30 Indians. The resultant militia rifle fire was the signal for the tribes in the crescent to assume their assigned roles. The middle of the crescent (Miami, Shawnee, and Delaware) attacked the militia, pushing them back into the ravine, while the ends of the crescent raced around and across the Wabash River to attack St. Clair's outposts. St. Clair's main camp, hearing the attack, was ordered to assume their battalion formations. Despite the fact that Winthrop Sargent called their position "a very defensible one," many militiamen fled the attack of their encampment and retreated back across the Wabash River, causing chaos in the main camp (Sargent 1924:258). Fleeing militiamen made it difficult for the artillerymen to man their guns and for units on the front line facing the river to form their units. Hundreds of Natives followed the militiamen into the main

camp. The main camp quickly became an area of confusion and disorder, with Indians attacking, civilians scattering, and soldiers attempting to find battle positions behind trees or logs (Denny 1859; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Sargent 1924; Winkler 2011).

Units on the perimeters of the camp and in the outposts had some time to prepare, and the majors and captains placed their men in proper battalion and company lines. The Ottawa, Ojibwe and Potatawatomi attacked the southern outposts, while the Mingo, Wyandots and Cherokees were assigned the northern outposts. It was said that the Indians themselves were almost invisible, hiding around every available tree and behind fallen logs and brush. Artillerymen were finally able to fire shots, tin canisters filled with balls, into the woods. This had little effect since the Indians were concealed behind trees. Much of the artillery fire aimed at the Confederacy forces coming from the ravine poured over the Indians' heads and into the trees above them. Smaller guns were a bit more effective; the Indian's strategy of concentrating their initial fire on artillerymen and riflemen was successful in making most of St. Clair's munitions useless. Benjamin Van Cleve, a young assistant in the Quartermaster's service noted, "There were about thirty of our men and officers lying scalped around the pieces of artillery" (VanCleve 1922:26). At this point there were few surviving artillerymen. The Indians moved forward into the smoke and into the main camp, using the flames of the American guns as targets, and soon overtook the southern portion of the camp pushing the Americans northward (Denny 1859; DeRegnaucourt 1996; Knapke 1990; Sargent 1924; Rohr and Meiring 1991; Van Cleve 1922; Winkler 2011).

Because of the wind direction, fighting at the northern end of camp was unhindered by smoke and the soldiers kept the Indians at bay. In order to drive the Indians away from the right crescent, St. Clair ordered Darke to make a bayonet charge with the rear line. Three hundred men were assembled, with plans to charge forward from the rear line and then wheel clockwise to the south, driving the Indian's right flank forward. The Indians were driven back approximately 400 yards, some reaching a gully in Buck Run. At the time of Darke's charge, the Shawnees from the middle of the crescent had overpowered additional units. Wyandots and Mingos, who were part of the group pushed back by Darke's charge, joined the Shawnees and attacked the very center of camp. Again, chaos in camp ensued with the Indians streaming into the main part of camp overtaking the soldiers and camp followers. Hundreds of soldiers lay dead or dying. Darke's troops returned to camp among this indescribable battle, with many of his soldiers fleeing north toward safety. Wyandots had followed Darke's return to the camp and attacked his remaining troops from behind. St. Clair and Heart attempted to assemble soldiers to recover the southern end of the camp and charged south with bayonets. Although they were successful in driving the Indians out of the south end of camp, the casualties were enormous (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

By 8:30 am, St. Clair had reestablished his perimeter with wounded officers returning to take command of the front line and retrieving guns from the decimated artillery and riflemen units. However, the American army was now devoid of entire companies and units who had been completely overrun by the Confederacy. The Indians,

who had briefly retreated from the various bayonet charges, moved forward once again targeting artillery from the cover of trees and logs and fallen brush. Only 150 of St. Clair's army were left to defend the camp perimeter south of St. Clair's Trace. The Miami and Delaware advanced quickly into Thomas Butler's line and were driven in to the ravine by the 2nd Infantry Regiment unit, which then charged the Indians across the Wabash River (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

There was a 15-minute lull in the battle, where the Indian commanders briefly considered withdrawal**.** George Ash recounts this respite:

> The fight commenced and continued for an hour or more when the Indians retreated. As they were leaving the ground, a Chief, by the name of Black Fish [Mkahdaywaymayqua], ran in among them, and in a voice of thunder, asked them what they were doing, where they were going, and who had given them order to retreat? This caused a halt, and he proceeded in a strain of the most impassioned eloquence to exhort them to courage and to deeds of daring; and concluded with say what the determination of other might be, he knew not, but for himself, his determination was to conquer or die (Langdon 1829).

The Confederacy advanced again. Because of the lack of soldiers to defend the entire perimeter, St. Clair decided to abandon the southern portion of the camp and precede north after spiking the artillery and evacuating the wounded. He commanded Clark's Western Pennsylvania Battalion to turn and face south, completing a new, smaller perimeter. The Americans were now contained within three acres completely surrounded by Indians. The few surviving officers had no control over the troops who were gathering in crowds and certainly not in any type of battle formation. Major Ebenezer Denny described this dire moment for the soldiers, noting that "as [the American] lines were deserted the Indians contracted their until their shot centered from all points, and now meeting with little opposition, took more deliberate aim and did great execution (Denny 1859:166-167)." The Confederacy had the American forces surrounded. The Indians fired both muskets and arrows into the crowd of soldiers, as many Indians had no gunpowder left. By 9:30 am, approximately three hours after the battle started, half of the Americans (approximately 900) were dead or wounded. St. Clair realized that retreat was the only option at this point and had to been done quickly, without preparation of the wounded or dying (Denny 1859; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Sargent 1924; Winkler 2011).

St. Clair's plan for retreat was to have two battalions hold their positions while the soldiers defending the rest of the perimeter would charge east, fake a turn, and then retreat through the opening left by the charge. They would form a wide turn to the east around the Indians, before turning south to follow St. Clair's Trace. Darke was ordered to lead the bayonet charge through the Indian lines. The unorganized and frantic columns of retreat completed the semi-circle around the Indians and continued south on St. Clair's Trace back to Fort Jefferson. Sargent noted that the Indians "had it in their power to have cut us off, almost to a man; it is probable, however, that they might have been suspicious of the moment, and therefore thought it most eligible to embrace the opportunity to plunder" (Sargent 1924:261). Arriving at the trace, men discarded all manner of

accoutrements in order to move more quickly away from the Indians who followed. The Indians pursued the retreating battalion, killing those who were too slow to keep up. After following the army for approximately four miles down the trace, the Indians returned to the battlefield and divided the spoils of the remaining camp (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

Sargent estimated the death toll at 550 regular troops and levies, 31 officers, 42 militiamen in addition to 200 wounded. Indian casualties are unknown – there have been accounts as low as 35 Indians killed, with other estimates ranging to twice the number of casualties. Sargent's opinion was that "it is not probable that many of the Indians fell this day, though there are persons who pretend to have seen great numbers dead" (Sargent 1924:262). By 7:00 pm, the first survivors of St. Clair's army arrived at Fort Jefferson, 29 miles south of the battlefield. The officers at Fort Jefferson informed the survivors that there was no food or shelter available as they were awaiting a convoy from Fort Hamilton, 45 miles to the south. The survivors of the Battle of the Wabash continued south on St. Clair' Trace at 10:00 pm, eventually meeting the convoy from Fort Hamilton at 1:00 pm the next day (Carter 1987; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Sargent 1924; Winkler 2011).

The news of St. Clair's defeat sent shockwaves through the eastern seaboard. Many in New England, who had originally opposed the use of force in the West, now voiced their opinions in this pointless conflict. Those in the western states were equally outraged, but for opposite reasons. The frontiers now lay naked, which, to the frontiersman, seemed to be the most obvious sign of the federal government's incompetence. What was most evident to President Washington and Secretary of War Knox was the need for change of policy and leadership (Kohn 1975).

The first change was the administration of the army and the policy of the war. While many on the frontier saw St. Clair's defeat as a sign of the impracticality of regular troops, Washington saw the opposite. Once the bill passed through Congress, a new army was constructed. It was not divided by type of unit as previously had been done, but took a legionary style. Each sub legion would be equipped with different types of soldiers, such as infantry, cavalry, and artillery (Kohn 1975). While the army was being reconstructed, General Putnam was given the task of making peace with as many tribes as possible. With the aide of William Wells, who had changed sides after reconnecting with his Kentucky family, he was able to gain a peace treaty with the Eel River and Wea peoples (Gaff 2004).

The next change was a bit more problematic for Washington and Knox – the leader of the new American Legion. Both Washington and Knox wanted the new general to be a distinguished Revolutionary War veteran. There, however, was no clear-cut choice for the job. Even though they eventually decided on General Anthony Wayne, he was by no means an easy choice. Wayne had not taken well to civilian life; he had accumulated large amounts of debt from failed plantations and had lost his Georgia Congressional seat because of accusations of corruption in his election. Despite early hesitations, Anthony Wayne would prove to be one of the most brilliant appointments of the Federalist era (Kohn 1975; Gaff 2004).

Fort Recovery Construction

By Jessie Moore and Tyler Wolford

General Anthony Wayne ordered Major Henry Burbeck to march from Greene Ville to the site of the Battle of the Wabash on 22 December 1793. Burbeck was to take with him a detachment of artillerymen and infantry in the hopes of building an advanced fort. The army arrived on 24 December, and was met by a dismal sight. The soldiers were forced to clear the ground of the remains of those who fell under St. Clair's command before they could set up camp. The following morning a mass grave was dug and full military honors were given to nearly 600 individuals. Construction of the new fort began on 25 December (DeRegnaucourt 1996a, Seiler 1989; Williams 2005; Simmons 1977).

Burbeck was responsible for designing Fort Recovery. Wayne's only instructions for the fort were that it should sit on "the most favorable Ground on the South side of the Wabash or water upon which the battle was fought" and consist of "four block houses of twenty feet square in the Clear, connecting them with pickets agreeable to the enclosed plan or Draught" (Wayne 1793). The enclosed plan referenced by Wayne has not survived. Shutters, doors, and sallyports were built with double timber in order to withstand small arms fire. Three of the four cannons that were lost during St. Clair's retreat were relocated with the help of Native American intelligence and reinstalled into Fort Recovery (DeRegnaucourt 1996a, Simmons 1977; Williams 2005).

Wayne considered the names Fort Defiance and Fort Restitution when deciding upon the name of the newly built fort. He eventually settled upon the name Fort Recovery since the site was recovered from the Native Americans. Wayne was well aware of the psychological impact of constructing a fort on the site of the U.S. Army's greatest defeat to Native Americans. He believed the presence and the name of Fort Recovery would send a resounding message to the Native Americans (Simmons 1977; Williams 2005).

Wayne left Fort Recovery on 27 December, while Burbeck stayed behind for a few extras weeks completing the finishing touches. Captain Alexander Gibson was given command of the fort with a garrison of two hundred men. Gibson's management of the fort includes the second phase of its constructions. Gibson reports to Wayne that he was "about Raising the Blockhouse one story Higher, and Juting over on the extreme ends so as to admit of shooting down" (Gibson 1794). Along with the addition of a second story, Gibson added a tunnel to the Wabash to facilitate the use of the well, lean-to type structures along the picket walls, and an ice house for storing meat (Simmons 1977).

Battle of Fort Recovery

By Jessie Moore and Tyler Wolford

The Native American victory at the Battle of the Wabash ultimately only delayed Euro-American settlement in the region. From intelligence gathered by William Wells and other Indian scouts in the spring and early summer of 1794, Wayne was informed of an impending Indian attack, with full British support, on Fort Recovery. To prepare for

this imminent attack, Wayne started supplying his forts with extra supplies and ammunitions via military convoys (Carter 1987; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991).

One of these convoys, commanded by Major William McMahan, was on its way to Fort Recovery with 360 packhorses carrying 1,200 kegs of flour, accompanied by 50 dragoons and 90 riflemen. At the same time, the Indian confederacy, consisting of 2,000 warriors and again under the direction of Weyapiersenwah (Blue Jacket) and Mishikinakwa (Little Turtle), was gathering north of Fort Recovery. McMahan's convoy arrived at Fort Recovery on 29 June 1794. The soldiers and men with packhorses could not fit within the small fort, so they camped about 400 yards from the fort. On the morning of 30 June, the convoy was given orders to return south to Fort Greeneville. John Hutchinson Buell records in his diary that before Major McMahan's convoy left Fort Recovery, "A friendly Indian by the name of 'Joe' went into Fort Recovery and made signs to Major McMahan that there were a great many bad Indians nigh the Fort, the Major laughed at Joe and did not believe him" (Buell 1957:7). The convoy had traveled no more than half a mile on what is assumed to be St. Clair's Trace, when the Indians attacked the front of the convoy at 7:00 am. Major MacMahan, commander of the dragoons, "who had run out of the Fort bare-headed" so not to be identified as the ranking officer, was identified by his flaming red hair and immediately killed in the charge. Additionally, Captain Asa Hartshorne, leader of the riflemen, was wounded (Randolph 1795:35). Nearly a third of the soldiers in the convoy were killed. Captain Gibson, the commanding officer at Fort Recovery, immediately sent the soldiers inside the Fort to the convoy's aid. Additional Indians hiding in the woods attacked them. The surviving soldiers retreated to the safety of the fort (Carter 1987; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Randolph 1795; Slocum 1910).

At this point, Indians surrounded the fort. Contrary to original plans by the Indian Confederacy to only attack the convoy, warriors from the Lake and Ottawa tribes began to make a frontal attack and storm the walls of the fort. The solders within the fort fired on the Indians with both rifles and cannons, the Indians suffering numerous losses during steady fighting. After four hours, there was a break in the fighting, but the battle resumed later in the day. During the night, the Indians attempted to retrieve their dead and wounded, but rifleman in the fort prevented the removal of many of the bodies. On the morning of 1 July, the Indians led by a large number of Chippewa, attacked the fort again and the battle continued throughout the day. Artillery fire from the fort finally forced the Indians to permanently retreat. It was this artillery that Anthony Wayne believed the Indians intended to be their trump card. In his letter to the Secretary of War Henry Knox, Wayne noted that the "hostile Indians turned over a great number of logs, during the assault, in search of those cannon, and other plunder, which they had probably hid in this manner, after the action of the 4 November 1791. I therefore have reason to believe that the British and Indians depended much upon the artillery to assist in the reduction of that post; fortunately, they served in its defense" (American State Papers 1833:488). Wayne seems to be correct in his assertion. John Chew, British Officer present at the battle, lamented, "Had we two barrels of powder Fort Recovery would have been in our possession with help of Sinclair's cannon" (Cruikshank 1889:387) (Carter 1987; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Slocum 1910).

A total of 22 men in Wayne's army were killed, 30 wounded, and three missing in action. Indian casualties have been listed as 50 warriors killed, but it is thought that actual losses were probably much higher as many of the dead were removed from the battlefield during the battle. This second battle marked the defeat of the largest Native American force ever assembled. The United States victory at Fort Recovery and the Battle of Fallen Timbers on 20 August 1794 signaled the end of Indian resistance in Ohio and led to the signing of the Treaty of Greeneville in 1795 (Carter 1987; DeRegnaucourt 1996; Hall 2008; Green 1929; Rohr and Meiring 1991; Scranton 1907).

Post-Fort Period and Community Growth

By Tyler Wolford

The village of Fort Recovery was incorporated on 15 June 1858, yet the settlement of the area around Fort Recovery predates this by more than 40 years. Constructed in 1793, the history of Fort Recovery as an active military fort is short. A letter from the War Department records that the garrison was down to 14 soldiers by 1796, although it is possible that the garrison was maintained during the War of 1812. The presence of trader David Conner in the area around the fort as early as 1814 may represent the end of the use of the fort as a military outpost. Conner built his trading post near the old fort site, just after the signing of the second Treaty of Greeneville. Conner's trading post was fortified, suggesting that the conditions in the area required a garrisoned fort up to 1814 (Bicentennial Book Committee 1990; McHenry 1796; McIntosh 1880).

By the 1820s it seems the fort was no longer needed. Judge David Studebaker, an early settler near Fort Recovery, notes that in his "earliest recollection, the fort and stockade had been burned and the land was a bluegrass common that horses and cows went there to graze upon" (Bicentennial Book Committee 1990:120). Studebaker, born in 1827, left Fort Recovery with his family in 1833. The fort was destroyed sometime between 1796 and 1833, most likely after 1814. It is probable that by the time permanent settlers came into Fort Recovery the fort was not in use because the dangerous conditions that would warrant the fort would deter settlers (Bicentennial Book Committee 1990; Rohr and Meiring 1991).

John Simison was the first to settle Fort Recovery, moving from Greeneville with his family and friend Peter Studebaker in 1817. Some sources indicate that Simison moved into the old trading post built by David Conner many years earlier and farmed the land that would become the village of Fort Recovery. Other sources indicate that he built his cabin at a place with a natural spring called "Rapp Grove" south of the present village, which would later be the home of Henry Lipps. Many settlers in Fort Recovery did not stay in the first houses they lived in after arriving in the area. Even Lipps would later move closer to the center of the village. It is possible, therefore, that both stories reflect places that the Simison family called home at different times; one was a pioneer house, until a more proper home was constructed. Simison married the daughter of William Price, a soldier in St. Clair's army and is likely connected to the previous battles in the area. However, neither the names Simison nor Studebaker survive long in the history of Fort Recovery. By 1820, both Simisons had died. Captain John Rhodes, a

later settler, notes in his 1898 account that but "for the fortunate presence of Studebaker, none but the mourning orphans would have been there to perform the last sad offices for the lamented father and mother" (Bicentennial Book Committee 1990:120). The Studebakers would move away and return, but ultimately left by 1834 (Bicentennial Book Committee 1990: Scranton 1907).

Many of the important families that participate in the history of Fort Recovery arrive in the area in the 1830s and 1840s. The names of these families include Beardslee, McDaniel, Lipps, Cummings and Roop. By the time flat boat captain John Rhodes passed through the area during one of his trips delivering goods in 1844, approximately six families lived in Fort Recovery. However, this is probably a modest estimate and reflects prominent families. Many of the early settlers clustered around the old fort site, mostly to the south in Gibson Township. Rhodes would eventually stay and marry the daughter of Henry Lipps in 1855. At some time during this period Samuel McDowell, who fought at both the Battle of the Wabash and the Battle of Fort Recovery, returned to Fort Recovery to settle (Bicentennial Book Committee 1990; Rohr and Meiring 1991:18; Scranton 1907).

Around 1836 David and Obed Beardslee plotted the village north of the Greeneville Treaty line, and William McDaniel and his father-in-law plotted the land south of the line. According to the *Fort Recovery Bicentennial History*, this "rivalry was not entirely friendly, and cooperation was lacking, as the streets in relation to the Boundary line [Greeneville Treaty line] do not meet at the same points" (Bicentennial Book Committee 1990:20). After the initial settling period (1830-1850) the citizens of Fort Recovery signed a petition to incorporate the village in 1858 (Bicentennial Book Committee 1990).

In the latter half of the nineteenth century, many businesses rose up in Fort Recovery including banks, clothing stores, hardware stores, grocery stores, tin shops, harness shops and jewelry shops. One of the most significant changes in the closing years of the nineteenth century was the arrival of the railroad. It allowed many businesses to come to Fort Recovery providing a means of shipping. The construction of the railroad however, required the Wabash River to be rerouted (Bicentennial Book Committee 1990).

The construction of the railroad in Fort Recovery and the rerouting of the Wabash in three stages, have caused significant changes to the environment (Figure 10). Additionally, the urban setting of Fort Recovery makes archeological investigation difficult. In Tony DeRegnaucourt's 1994 investigation, he discovers that, "during the middle 1800's...at least two houses, a large barn, and several outbuildings were built directly over [part of the fort] site" (DeRegnaucourt 1996:114). These changes by the constant occupation of Fort Recovery make isolating a short period of time in the past difficult.

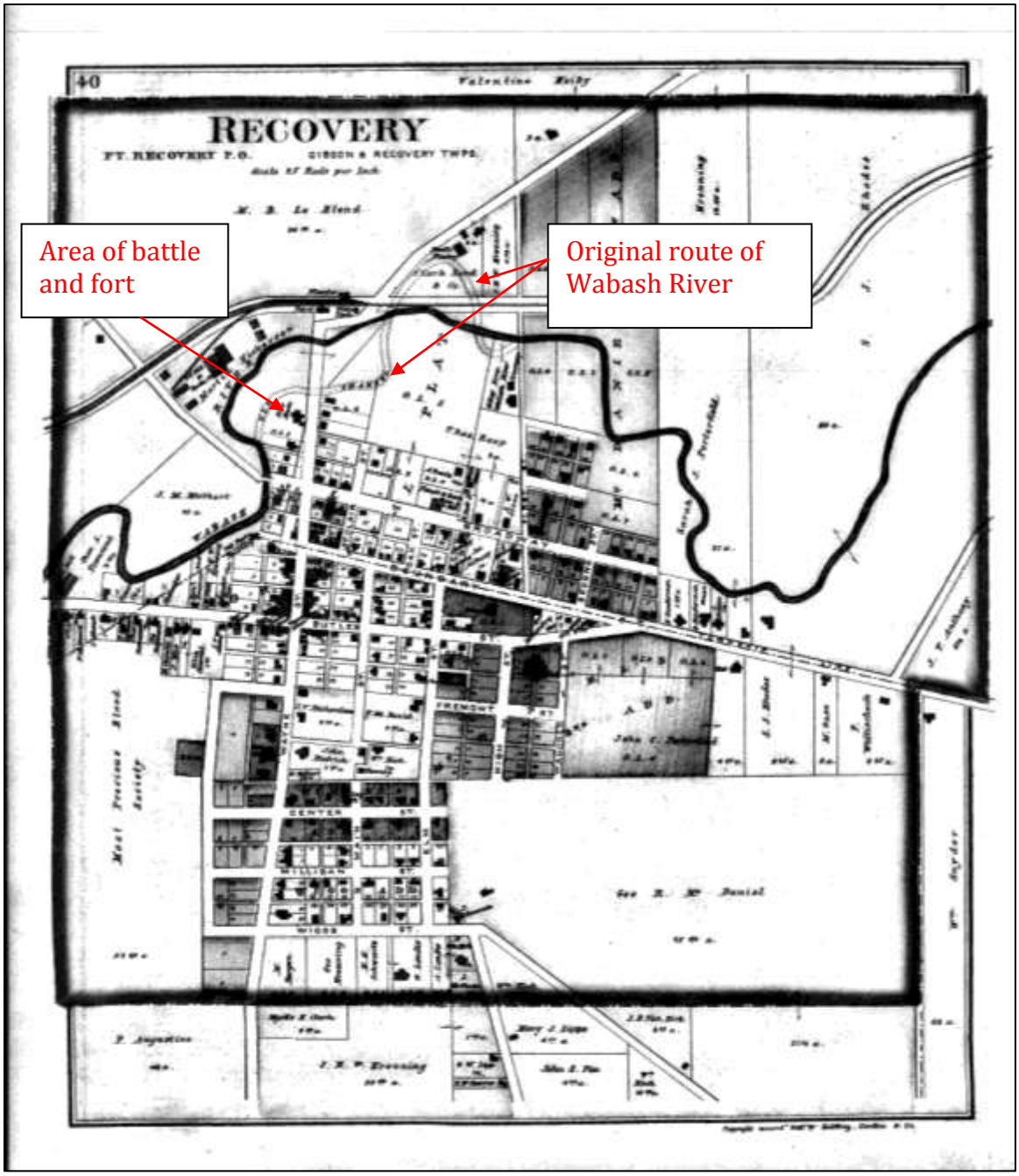

Figure 10: The village of Fort Recovery during post-Fort period, 1888.

While the continual habitation of the site complicates the archeological record, it provides important information about the site and the memory of the people who lived in the village. This is true of the generation after the initial settlers, who were still living to depart some of this information to G. W. Reuter for the construction of the first fort reconstruction in the 1930s. These aging citizens remembered a time when the Sipe family lived in the fort barracks building (Anthony Wayne Parkway Board 1952:43).

Mrs. Krenning, another of Reuter's informants, remembered playing "anti-over" along the original ditch dug from the fort to the Wabash River (Reuter 1967). This illustrates that while much of the original fort was destroyed, the growing village of Fort Recovery reused some of it.

Discovery of Battle Dead and Reburial

By Tyler Wolford

In the summer of 1851, the flat boat captain John S. Rhodes and the judge David Roop were searching for bullets and discovered a human skull uncovered by recent rains in one of the streets near the ground where the fort once stood. After the find by Rhodes and Roop, citizens of Fort Recovery organized a search and the remains of sixty more individuals were uncovered. The remains found probably represent the casualties of both battles, including both American and Native American however; the sources are unclear about this fact. At the time, most likely those discovering the bones believed them to be only American soldiers who had fallen in the Battle of the Wabash (Bicentennial Book Committee 1990; Scranton 1907; Williamson 1905).

A committee of local leaders, including William McDaniel, Henry Lipps, Benjamin Cummins, Thomas Roop, and David Beardslee chose the date of 10 September 1851 to bury the remains of those who fell in the two battles. The funeral service drew an audience of no less than 5,000 people from many counties throughout Ohio and Indiana. A procession was formed leading through the streets of Fort Recovery to a grove southeast of the battlefield. The remains of the fallen soldiers were placed in 13 large black walnut coffins, made by Robert Blake and John Rhodes. The 13 coffins symbolized the number of states in the Union at the time of the battle . Judge Bellamy Storer, traveling five days from Cincinnati, delivered the funeral oration. The remains were then buried in Pioneer Cemetery on the south side of the village (Bicentennial Book Committee 1990; Rohr and Meiring 1991; Scranton 1907).

The remains of the fallen did not lie at rest for long. In 1891, in celebration of the one hundred year anniversary of the battle, the remains were removed and placed in two large black-draped caskets in the Disciple Church on South Wayne Street. After three days the bones were reburied at Monument Park in Fort Recovery. In addition to the reburial of the battle dead the people of Fort Recovery also petitioned congress for a suitable memorial to commemorate the battles. In 1908 Congressman W. E. Touvelle of Celina secured the passage of a bill allocating $25,000 for the construction of a Fort Recovery Monument. On 1 July 1913 a ceremony has held and the 93 foot obelisk was complete. In the base of the monument a crypt was constructed to house the battle dead uncovered over 60 years earlier (Rohr and Meiring 1991).

Previous Archeological Excavations

By Tyler Wolford and Christine Keller

For many years the residents of Fort Recovery have turned up material evidence important to understanding the battles at the site, yet not all of the material remains at the Fort Recovery site were found by accident. Researchers have conducted archeological searches with specific research questions and objectives. Many of these archeological finds discovered by chance or design has given important information to supplement the scarce historical records pertaining to the fort.

The residents of Fort Recovery found many of the artifacts and features that provide the best clues relating to the characteristics of the original fort. For example, the flagstaff of the fort was found while a well was being dug in 1836 and is now housed in the Fort Recovery museum (Rohr and Meiring 1991; DeRegnaucourt 1996). While digging foundations for the buildings along the northwest corner of Wayne and Boundary streets, Sanford Warnock and his son Sylvan R. Warnock found a heavy walnut coffin thought to contain an officer from the Battle of the Wabash, possibly Butler himself (Anthony Wayne Parkway Board 1952:46). Boys playing across from the river from the town recovered the final cannon of St. Clair's army in 1832 (Wilson 1914). Beyond these items recovered,a vast array of artifacts have surfaced throughout the years. It is a constant theme in various old photographs of the village of Fort Recovery to see tents or shops where these artifacts would be displayed. Over 175 artifacts eventually found their way to the Fort Recovery State Museum, although almost all with unknown provenience (Appendix A).

The oak-lined well, which most likely would have been inside the fortification, was discovered during preparation for the 1936 reconstruction of the fort (Anthony Wayne Park Board 1952:41; Rohr and Meiring 1991). While by no means does this discovery stand up to the scrutiny of modern archeology, G. W. Reuter headed the search for the well, known as the "Old Indian Well." Reuter was one of the major proponents of the 1936 reconstruction and described in a letter to the governor of Ohio how he used elderly informants to trench for the well. The plan consisted of trenching in a thirty-foot radius and the well was discovered at a depth of 10 feet (Reuter 1967).

The Greeneville Treaty line survey marker, plotted by Israel Ludlow after the treaty of the same name, was uncovered in 1934 by Deputy Mercer County Engineer, Zoyd Flaler and Mercer County Engineer, Ralph Wright. Like Reuter's search for the well, Flaler created a research design intending to find the marker, which involved extensive archival searches and excavation. Certainly, like the search for the well, the findings lack the strict documentation of modern archeology. While the depth of the excavated Greeneville Treaty line survey marker is known to be 43 inches and is recorded on the plaque beside the marker, it is not known how much area was disturbed during the search or if any other artifacts or features were found (Bicentennial Book Committee 1990).

In 1994 Tony DeRegnaucourt conducted archeological investigations to supplement the previous data gained without the aid of professional archeology. The Fort Recovery Bicentennial Committee of the Fort Recovery Historical Society commissioned

DeRegnaucourt to locate any traces of the original fort. "A further purpose of the investigation was to attempt to find archeological remains associated with both the First Battle of Fort Recovery (St. Clair's Defeat, Nov. 4, 1791) and the Second Battle of Fort Recovery (June 30 and July 1, 1794)" (DeRegnaucourt 1996:5). DeRegnaucourt used the citizens of Fort Recovery for much of the labor.

The archeological survey concluded that the urban setting of Fort Recovery was responsible for the disturbed nature of the ground at the site. DeRegnaucourt, in his survey of results of each of his six areas of investigation (Figure 11), stated that there was no intact stratigraphy (DeRegnaucourt 1994, 1996). In some cases this resulted in artifacts from across two hundred years of American history tossed together by later construction and soil disturbance. The results of DeRegnaucourt's survey were recorded as site 33-MR-117 on an Ohio Archaeological Inventory (OAI) form with the Ohio Historic Preservation Office. Please note that this is the same exact geographical area designated on the National Register of Historic Places Inventory Form, although it is referenced as 33-MR-21 on the NRHP Inventory Form. There is no OAI form for 33-MR-21.

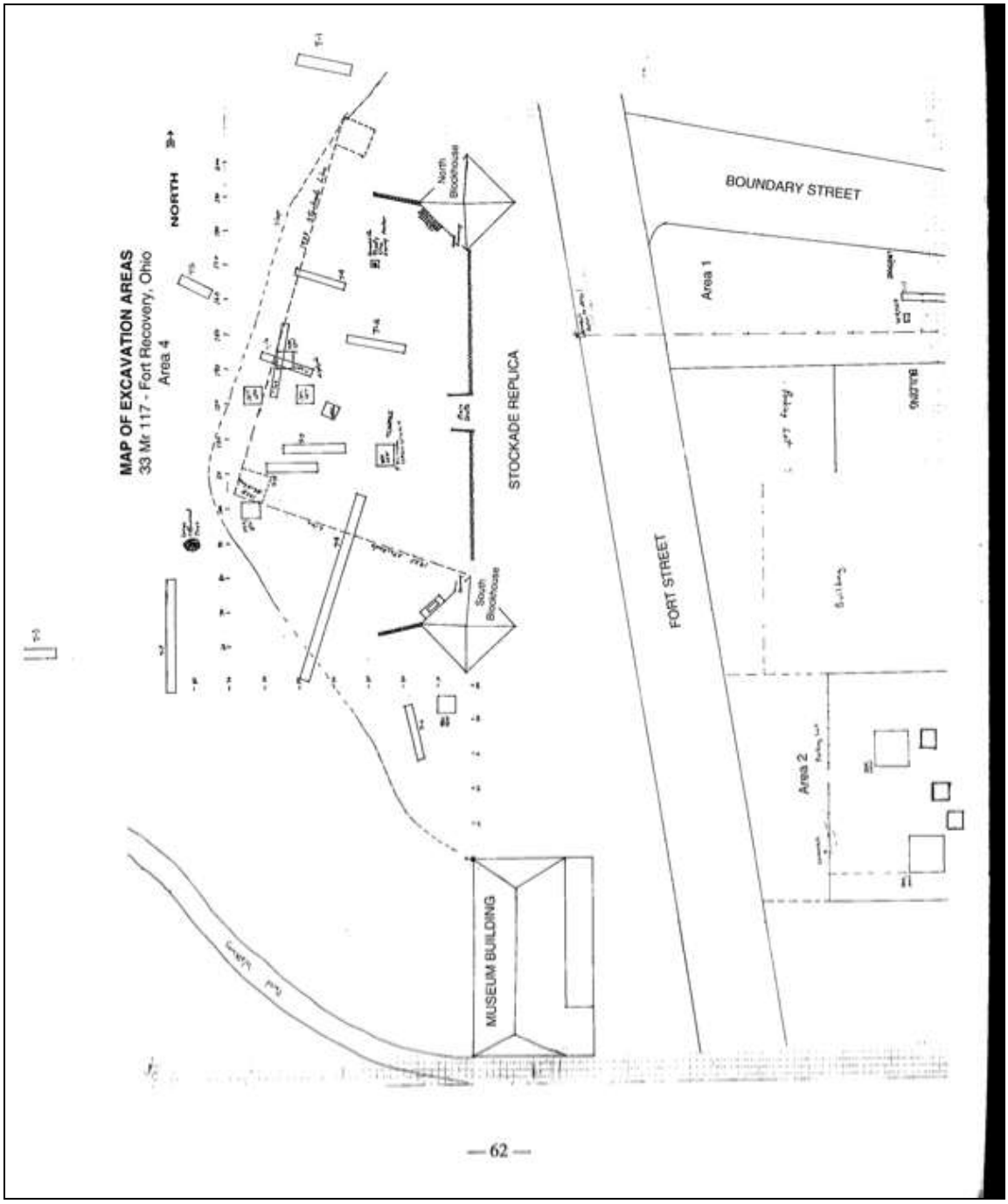

Figure 11: Map of DeRegnaucourt's 1994 Archeological Investigations, 33-MR-117 (DeRegnaucourt 1996:62).

Most of the areas in the excavation did not yield many 18th century diagnostic artifacts. Area 4, west of the current reconstruction and over the original 1936 reconstruction, yielded mostly 19th century artifacts as a result of continuous occupation by the village of Fort Recovery during the period (DeRegnaucourt 1996:115). Due to the

work of those reconstructions most of the land in this area was disturbed. Soil was added to rebuild the riverbank for the 1936 reconstruction and topsoil was then bulldozed into the hill that supports the 1956 reconstruction.

Area 2 of the DeRegnaucourt excavation uncovered many artifacts from the 1790s and is located across Fort Street from the Fort Recovery Museum building, southeast of the current reconstruction (DeRegnaucourt 1996:62). Photographs of artifacts from this excavation can be found in Appendix A. Some of these artifacts, such as the "frog-legged" eagle uniform button, are specifically attributed to the army of Anthony Wayne. Area 2 also yielded "two brass collar plates from a Wayne Legion uniform, one set of officer's sleevelinks made of brass with a clover motif, a brass arrowhead of Shawnee or Miami type, [and] 11 musketballs of various calibers, three of which are spent" (DeRegnaucourt 1996:115). Also found in Area 2 test units were many ceramic shards, cited as "various pieces of blue and green pearlware; Chinese export ware of red, blue, purple, and black; red and blue spongeware; polychrome painted Staffordshire ware; and rim and bodysherds of brown and yellow earthenware" (DeRegnaucourt 1996:115-116). DeRegnaucourt concluded that most "likely the ceramics at Fort Recovery date predominantly to the fort occupation of 1793 to about 1797" (DeRegnaucourt 1996:108).

The artifacts of Area 2 give researchers a good glimpse into the sequence of occupation and other important information. Unfortunately what can be said from these finds is limited due to the fact that "all of these artifacts were found loosely distributed in the test pits with no apparent stratigraphy or features present" (DeRegnaucourt 1996:116). The most obvious fact gleaned from the DeRegnaucourt excavation was the disturbed nature of the Fort Recovery site. However, Area 2 materials represent a the most significant of the excavation because many of the artifacts seem to be diagnostic of the 1790s and the fort occupation.

DeRegnaucourt's assertion that the ceramic artifacts represent the fort occupation period, which allows researchers a glimpse into fort life, is not however, as solid as it appears in his report. The "Chinese export ware of red, blue, purple, and black" should date to the period of the fort, if this assignment were correct. Upon examining the actual artifacts it is more likely these pieces are transfer print whiteware dating to predominately the 19th century (South 1997:212; Majewski and O'Brien 1987). The "polychrome painted Shaffordshire ware" are hand painted whiteware vessels also dating to the 19th century (Bartovics 1981:203). The "red and blue spongeware" are 19th century artifacts and DeRegnaucourt does not disguise this fact (Bartovics 1981:203). The "various pieces of blue and green pearlware" and the "rim and bodysherds of brown and yellow earthen ware" are artifacts whose upper range does include the fort occupation period (Lofstrom et al 1982:7; South 1977:212). With all the ceramics considered through independent analysis, only about 20% were possibly used during the fort period. With the reuse and long life of some ceramics, even this number is optimistic. Most likely the ceramics represent the later occupation of the site by the village, not the fort of Burbeck and Wayne.

The excavations of Tony DeRegnaucourt, G. W. Reuter, and Zoyd Flaler demonstrate the need for thorough and well-documented professional archeology.

DeRegnaucourt's report demonstrates the difficulties of excavating this urban site. The progress of human habitation has reshaped the landscape many times since the Battle of the Wabash and the Battle of Fort Recovery. Previous excavations also add to this disturbance. In some cases, Zoyd Flaler's investigation for example, the extent of the land that was disrupted is unknown. Ultimately, there is information that simply can no longer be known about Fort Recovery.

In addition to these archeological investigations directly in the assumed area of the original fort, there have been recent archeological surveys in the town of Fort Recovery in close proximity to the identified core battlefield area. No battle era artifacts were found in any of these Phase I and II surveys. In 1982, a Phase I survey of 10.5 acres for a new water treatment plant and water lines was conducted on the west side of town and immediately southwest of the core battlefield area. Five sites were found including two large lithic assemblages (33-MR-16 and 33-MR-18), two lithic scatters (33-MR-17 and 33-MR-19) and a prehistoric isolate (33-MR-20). The two lithic assemblages were recommended for further study (Tonetti 1982). An eligibility assessment of 33-MR-16 and 33-MR-18 was conducted in 1982. The assessment included a controlled surface collection of each site and a total of eight excavation units totaling 33 square meters. Although additional prehistoric artifacts were recovered, no subsurface features were found and both sites were found to not be eligible for NRHP and no further work was recommended (McIntyre and Tonetti 1982). In 1987, a Phase I survey of less than 0.25 acres was conducted for the First Street bridge replacement over the Wabash River on the north side of town and immediately northeast of the core battlefield area. This investigation found no sites and recommended no further work (DeRegnaucourt 1987). In 1993, a Phase I survey of 60 acres for an industrial park south of the village and south of the core battlefield area was conducted on the east side of State Route 49. No sites were found and no further work was recommended (DeRegnaucourt 1993). In 1999, a Phase I survey of 36 acres was conducted on the west side of State Route 49 to expand this same industrial park. Four sites were found including three prehistoric isolates (33-MR-138, 33-MR-139, and 33-MR-140) and one small historic scatter, with no battle era artifacts (33-MR-137). In 1997, a Phase I survey of two acres for the expansion of an existing industrial park was conducted at the intersection of Railroad Street and Wabash Road immediately north of the identified core battlefield area. This investigation found no sites and recommended no further work (Biehl and Wasto 1997).

Fort Reconstructions

By Tyler Wolford

The site that occupied the fort of Major Burbeck, long since fallen, is no longer an empty field. Instead, two blockhouses stand against the urban setting with a wall and gate connecting them. This reconstruction, built in 1956, represents one of the ways the people of contemporary Fort Recovery interpret their historical and archeological heritage.

The concept of archeological reconstruction is as rich as it is controversial. Often problems of historical and architectural accuracy in representations arise, and frequently

it is in question wither there is enough information to warrant reconstructions. The conservation 'purists' mostly agree that there is not enough information to justify most reconstructions, and that many times they damage or jeopardize the original archeological site in which they represent (Jameson 2004). Despite the fact that many laws and agency policies concur with conservationist approach to preservation, the reality sometimes allows reconstructions to be built without the strict rigors originally required.

Many times historical accuracy must take a backseat to other issues, such as economic concerns of the community or the marketability of the site. It must be understood that many times reconstructions are built "incorrectly" on purpose. They have other, more important concerns than strict historic accuracy. These concerns include tourism of the site, use of profitable space and granting jobs to researchers and workers. All of these concerns effect the reconstructions of Fort Recovery.

The first reconstruction of Fort Recovery was built in 1936 (Figure 12), over 100 years after the original fort was burned down, and was financed as part of the New Deal relief program through the Works Progress Administration (WPA) (Anthony Wayne Parkway Board 1952). On 6 May 1935, Franklin D. Roosevelt created the WPA by Executive Order 7034 and placed Harry Hopkins in charge of the agency. The WPA funded projects under $25,000 and required sponsors "to contribute equipment, materials and services to the maximum amount possible" (Taylor 2008:173).

One of the important aspects of the reconstruction of Fort Recovery was the process by which information was gathered to make sure the reconstruction was authentic. In G. W. Reuter's response letter to the Anthony Wayne Parkway Board's proposed new reconstruction, he cited five basic sources for information. These included local historians such as Martha Rohr and Ida May Hedrick, primary documents from Samuel McDowell and Benjamin Van Cleve, and a plat map found in Celina, Ohio. Testimony from the local people of Fort Recovery and other reconstructions such as Fort Dearborn and Fort Jefferson also served as vital information for the fort reconstruction (Anthony Wayne Park Board 1952).

Many of these sources are now unavailable to the modern researchers. The local people who remembered the original fort in their childhood died even before Reuter wrote his letter. The plat map from Celina, which supposedly showed the original fort, is also lost. Since then other plat maps have been located at the Mercer County Courthouse in Celina, that show the fort, but it is evident from these maps that the fort in the map is symbolic and not drawn to scale. These maps do not fit the description of the plat given by Reuter. The Anthony Wayne Parkway Board searched for this map while preparing their proposal for the second fort reconstruction. Historical accuracy was an important concern of those planning the 1936 reconstruction (Anthony Wayne Park Board 1952).

Reuter traveled to Columbus, Ohio, in order to cooperate "with the [Ohio Archeological and Historical] Society, [and] to sell a $10,000 idea, with a promise that we could put men to work immediately, to relieve destitute families". There was an important economic motivation in the project, and the workers hired for this project were the unemployed, not those who had historical or archeological experience. Reuter laments this fact recalling an event when a worker unearthed what might have been part

of the original fort wall stating that a laborer, "working on this trench was new and dug out some of the remaining timber, therefore destroyed a positive identification, in fact all these men were amateurs in the work and not geared to the historic value" (Anthony Wayne Park Board 1952).

Other economic and public safety concerns also affected the historical accuracy of the 1936 reconstruction. Despite the fact that those designing the fort reconstruction had a plat map that was thought to show the correct position of the original fort, it was not followed. The original fort as displayed on this map was much larger than the final 1936 reproduction and would take up promising commercial area within Fort Recovery if it were reconstructed to scale. In the economic climate of the 1930s this was unthinkable. Additionally, the trench dug to the Wabash to supplement the well, which was known from information gained from the local people of Fort Recovery, was excluded from the plan for safety reasons (Hall 2008; Anthony Wayne Park Board 1952:45).

While many reasons prevented the fort from being reconstructed with complete historical accuracy, certain construction methods were followed. Reuter describes how the reconstruction of Fort Dearborn at the 1933 World's Fair was a great inspiration and source of information for the materials used in construction (Anthony Wayne Park Board 1952:44-45). There was major difficulty in the Dearborn reconstruction because such historical accuracy was required in its construction methods (Paddock 1931:49). Yet, even with all the careful work put into the 1936 reconstruction, it is not what visitors to Fort Recovery can currently see.

In 1952 the Anthony Wayne Parkway Board proposed that the 1936 reconstruction be replaced with a new reconstruction. The board, with the help of historian Richard C. Knopf, suggested that the "present [1936] reconstruction is inaccurate in its portrayal". While historical inaccuracies were a major factor in the proposal for reconstruction, there was another more prudent concern. The 1936 reconstruction was falling apart by 1952 and was described in the AWPB document as "in a state of near collapse" (Anthony Wayne Park Board 1952).

Thus, in 1956 the Anthony Wayne Park Board in corporation with the Ohio Historical Society and the Fort Recovery Historical Society began the replacement of the original reconstruction. This new reconstruction, which still stands, consists of two blockhouses connected by stockades with a gate, measuring about 150 feet long (Figure 13). Two major differences existed between the 1936 and 1956 reconstruction. Instead of a miniature version of the complete fort, the 1956 reconstruction is one side of the fort "built in scale and character with the original" (Anthony Wayne Park Board 1958:15). The blockhouses of the 1956 reconstruction sat at an angle to the walls, while the blockhouses of the first reconstruction formed a perfect square with walls. Some of the changes for the new reconstructed fort were determined by examining the map of Fort Defiance built by Major Burbeck, the same engineer that constructed Fort Recovery (Anthony Wayne Park Board 1952; Rohr and Meiring 1991, Sanborn Map Company 1946).

The improvements in the historical accuracy of the 1956 reconstruction in relations to the 1936 fort were not universally agreed upon. Reuters, who played a major

role in the 1936 reconstruction, found the new reconstruction to be less historically accurate than its Great Depression predecessor. In a 1967 letter to the governor of Ohio he cited inaccuracies in the new fort. These criticisms were mainly related to the methods and materials used in the reconstruction (Reuters 1967). These reconstructions illustrate how different aspects of historical accuracy can be emphasized. Because the fort could not be built to scale, methods and materials were underscored in the 1936 fort. The 1956 fort, however, was built to scale even if only part of the fort was reconstructed.

Conservation purists, who do not believe reconstructions can serve the archeologist, cite the cases where the reconstruction process destroys the original site and prohibits further archeological investigations (Jameson Jr. 2004). In many ways Fort Recovery could serve as a case study for this concept. The original reconstruction required the addition of fill to build up the riverbank greatly altering the landscape. Again, when the second reconstruction was built the land was altered as "much dirt on the terrace east of the old Wabash River channel was bulldozed and graded to provide a slope for the logs comprising one wall of the reconstructed [1956] fort and two blockhouses" (DeRegnaucourt 1996:8). This means that much of the areas where the original fort stood and major portions of the 1791 battle took place are no longer in primary context. The truth about the state of the archeological remains of the original fort are reflected in the Anthony Wayne Parkway Board's report, which states, "Archaeological investigations probably would lead to little further knowledge as the river channel was moved northward, much of the site [has been] built over, and the area generally disturbed. The outlines [of the original fort] have undoubtedly been erased forever." (Anthony Wayne Park Board 1952:24).

Figure 12: Photo of 1936 fort reconstruction.

Figure 13: Photo of 1956 fort reconstruction.

Chapter III. Research Design and Literature Review

This chapter contains a literature review on battlefield archeology and military studies of the time period, fort archeology and typology, and an initial KOCOA analysis of the Battle of the Wabash in 1791 and the Battle of Fort Recovery in 1794 based on historical research.

Battlefield Archeology

By Melanie Cabak

Battlefields have long been significant features of our world-wide landscape. For many they have been noble places on the cultural landscape; they are significant memorials of past events, often of loss causes or turning points of wars. In the United States nationally-important battlefields, such as Gettysburg or the Alamo, are often protected as National Parks or Historic Sites. Places such as these are viewed as part of our national heritage. Likewise Native Americans have regarded battlefields as sacred ground; they were often places were their people were senselessly massacred but sites are also memorials of Native American active resistance to cultural hegemony. Battlefields can be viewed as places where they were trying to preserve their cultural identify.

Scholars have been drawn to battlefield sites and these sites are often extremely well-documented events; first-hand accounts, maps, oral traditions and military analysis and summaries often exist for major as well as minor battles. More recent encounters were also documented with cameras. Archeologists and historians have conducted site-focused research around the world to better understand the specifics of battles; topics such battlefield limits, equipment, events, and strategies have all been explored. Archeologists have even help relocate battlefields that time had forgotten their exact location. Beyond the site specific data, battlefield sites also have the potential to contribute to broader anthropological topics related to war such as the evolution of aggression, resistance to cultural hegemony, and the effects of war on social organizations and belief systems as well as individuals.

Despite the cultural significance of battlefields, however, Scott (2009) argues that battlefield archeology has often been done only as ancillary studies to site preservation and reconstruction with limited research orientation. The potential to make anthropological contributions to the study of war is enormous as the behavioral aspects of cultures in conflict are highly structured and military sites reflect the tenets of the parent culture of both sides. For example, U.S. military personnel were provided housing, clothing and food resulting in uniformity among troops. At battlefields artifact deposition will reflect their training as well insight into their rules of acceptable warfare behavior.

All sorts of military sites exist in North America, archeologists have excavated sites from the American Revolution, the Civil War, Mexican-American War as well numerous related in Native-American and Anglo-American conflicts. In this study, we

are specifically interested in exploring battlefields as an example of Native American agency and resistance. Native Americans and Anglo Americans had different views about undoubtedly many topics including land rights and government power. Native Americans across the continent demonstrated agency by actively resisting the government policies concerning Anglo-American settlement of their ancestral lands. Fort Recovery provides an excellent opportunity to explore Native American agency and resistance.

In the following sections we are going to review a few selected archeological studies that specifically related to conflicts between Native Americans and Anglo Americans. We are especially interested in studies that archeologically identified Native American battlefield strategies and agency. Finally, we briefly describe the battlefield archeology that has been conducted in the study area – the Ohio River Valley.

Native American Battlefield Archeology

Scott (2009:312) states that "Battlefields of the 'Indian Wars' have yielded interpretable artifact patterns. The cultural differences in the manner and practice of warfare by U.S. Army trained personnel versus various Native American groups are clearly delineated in the artifact dispersal patterns at Indian Army battle sites." Archeological research has been conducted at sites from the Early Indian Wars (Pratt 1995a, 1995b; Strezewski et al. 2006) and Late Indian Wars (Adams et al. 2000; Greene and Scott 2004; Laumbach 2001; Ludwig and Stute 1993; Scott et al. 1989). Given that both Native Americans and Anglo Americans engaged in warfare in established manners and practices of their parent cultures, differences should be archeologically detectable. Scott (2009:309) believes that battlefield archeology has the potential to reveal data relating to a wide range of battle specifics from artifacts and artifact patterning (Table 1).

Table 1: Information Topics of Battlefield Archeology.

Combat positions
Dress details
Equipage details
Troop movement
Troop deployment
Firing positions
Fields of Fire
Earthwork construction (rifle pits, trenches, rock and log breastworks)
Artifact patterns of unit or individual movement, weapon trajectory, and range of fire

Scott (2009) identifies two types of battles: sieges and transitory battles or skirmishes. Archeological signatures of sieges would include associated fortifications, artillery positions, long term camps, trash dumps, and sometimes burial grounds (Scott 2009). Transitory battlegrounds are ephemeral in nature due to the limited engagement. Artifact deposits could include uniform-related artifacts (buttons) and equipage including

spent cartridges, bullets, artillery shells and perhaps spears and arrows. Archeologists may also find temporary breastworks and associated camp and burial grounds (Scott 2009).

There have been numerous investigations at battlefield of the later Indian Wars in the western United States; these battlefields are all sites of Native American resistance to the United States government and its policies. Most notably, the excavations at the site of the Battle of the Greasy Grass (aka Battle of the Little Big Horn) (Fox 1993; Scott et al. 1989). The Battle of the Greasy Grass was part of ongoing effort of the United States government to force Native Americans on reservations. This particular battle involved the Lakota, Northern Cheyenne and Arapaho and centered around land claims related to the Black Hills. The Blacks Hills, sacred to the Lakota, were part of a vast reservation designated in treaties of 1851 and 1868. This vast reservation was reduced in size by settlers pushing westward and eventually no longer contained the sacred Black Hills, resulting in disillusioned Lakota. Many Lakota left their reservation to return to their old way of life and in the summer of 1876 the U.S. army was attempting to return the Lakota to the reservation. The Lakota and their allies engaged in battle with the U.S. Army's 7th Cavalry between 25-27 June 1876. The Battle of the Greasy Grass lasted about an hour and is known in popular history as the place General Custer made his last stand. The engagement and those over the next two days was an overwhelming loss for the U.S. Cavalry; 268 army personnel lost their lives (Fox 1993; Scott et al 1989).

The battlefield location was known and set aside as a memorial almost immediately after the battle; therefore archeology was not necessary to establish site location. In 1984 and 1985 archeologists conducted investigations at the site exploring the relationship between battlefield behavior/events and the archeological record. Through a detail study of the artifact distribution they were able to identify position and movement of combatants. The archeologists were also able to identify weapon types, find remains of missing soldiers, determine whether or not burial markers actually relate to where people fell in battle, and if actual burial locations could be established. The archeologists have proposed a 'Battlefield Pattern' for exploring battlefield behavior (prescribed versus actual), particularly for exploring battlefield events through time. Concerning Native Americans, history and archeology indicates they used 47 different weapon types; including rifles, carbines, bows and arrows, clubs and lances (Fox 1993; Scott et al. 1989; Scott et al. 1989).

Another excellent example of Native American resistance is the Nez Perce War. In 1877 when the U.S. demanded that the non-reservation Nez Perce relocate to their tribes to an Idaho reservation, which was a fraction of the size of their homeland (the Wallowa Valley), about 750-800 Nez Perce chose to flee to Canada; only about 200 of the Nez Perce were warriors. Chief Joseph and other leaders initially viewed military resistance futile and were in the process of relocating to the reservation lands but their fate was forced when a group of young Nez Perce men, feeling bitterly wronged by whites, attacked a white settlement (West 2009:124). The resistance that ensued has become known as the "1877 Nez Perce War" and contained four major battles and numerous skirmishes. Although the odds were against the Nez Perce, they won military

engagements and successfully evaded the army for five months (West 2009). Even the U.S. General W. Sherman was impressed; he stated that the Nez Perce "fought with almost scientific skill, using advance and rear guards, skirmish lines, and field fortifications" (West 2011). The war ended just south of the Canada border in Montana with the surrender of Chief Joseph; not due a decisive battlefield victory but more that the Nez Perce were exhausted. Chief Joseph's heartbreaking surrender speech has immortalized him in American popular culture ending with "From where the sun now stands I will fight no more forever" (Josephy 1965:633). According to historical information there was a moment of silence following the speech than Chief Joseph handed over his gun and covered his head with his blanket and the Nez Perce War was over. Approximately 150 Nez Perce chose not to surrender and succeeded in their flight to Canada (West 2011).

One of the battles fought during the Nez Perce War, known as the Battle of the Big Hole, has been the focus of archeological investigations. This battle, fought in 1877, was initiated in a dawn attack on unsuspecting camp of the Nez Perce. The battle resulted in the death approximately 50-90 Nez Perce women, children, and men. These deaths mostly likely occurred because the attack was in the early morning on a sleeping camp. The Nez Perce fled the camp to cover and regrouped, and mounted a defense that resulted in the death of approximately 70 army and civilian personal. General Miles claimed, in regards to this particularly battle, they could not compete with the Nez Perce warriors who were the "best skirmishers in the world" (West 2009:238). Archeologists, focusing on an area where Nez Perce laid siege to a of group army personnel, were able to associate fired bullets and cartridges from the firearms that they discharged from (Scott 2011). This study indicated only a few Nez Perce laid siege to the army, confirming Nez Perce battle accounts. Scott argues that this example demonstrates that battlefield archeology provides useful and accurate information (confirming historical accounts). More importantly for our study, it provides an example of Native American agency. In the midst of an attack on a sleeping village, Native Americans were able to regroup and successfully achieve their goal of escape.

Contemporary Native Americans agency is also illustrated by how Native Americans have been involved in identifying past battlefield/massacre sites. The oral histories of Northern and Southern Cheyenne and Arapaho descendants of the Sand Creek Massacre survivors were invaluable in locating the site of the 1864 massacre. Researchers involved in the project believe that they located the massacre site by the presence of diagnostic artifacts and artifact distribution. Archeology also helped "refine the scenario about how the events of the Sand Creek Massacre unfolded" (Greene and Scott 2004:99).

Archeology and the Struggle for the Ohio River Valley (1762-1795)

The political struggle for control of the Ohio River Valley has been known as Little Turtle's War or The Northwest Territory Indian Wars. Fierst (2001) argues that this Native American struggle to retain their homeland actually began with the Seven Years War (mid 1750s to 1762 to 1763) and continued through the Revolutionary War

and ended in the 1790s. Fierst (2001) identifies the players in this struggle as the Native American confederacy centered at Kekionga, Great Britain, and first the Atlantic seaboard colonies, later the United States. Native Americans exercised agency in this battle because they had their own objectives (preventing occupation of their homeland), kept their own command as in the case of Weyapiersenwah (Blue Jacket) and Mishikinakwa (Little Turtle), and followed their own rules; they were not merely allies of the British (Fierst 2000).

This resistance involved a confederacy of Native Americans deciding to deal with the United States jointly rather than individually. Since Native American tribes were not centralized; the effort did not involve entire tribes but rather individuals and villages. Tribes represented in the confederacy include the Wyandot or Huron, Shawnee, Delaware, Miami, Kickapoo, Kaskaskia, Chickamauga-Cherokee, Ojibwa, Ottawa, and the Potawatomi. The Wyandot were the "fathers" of the confederacy while the Shawnee and the Miami provided the bulk of the warriors.

At least three types of overt resistance occurred during this struggle in the Northwest Territory: 1) formation of a confederacy and establishment of a resistance center at Kekionga, 2) isolated raids, and 3) battles. The resistance at Fort Recovery involved two battles but all evidence for overt resistance in the study area is reviewed in this section. Kekionga was a major Native American settlement community in the Northwest Territory. Kekionga was not merely a single village, but a dense cluster of villages in one region. It was located near the confluence of the St. Joseph, St. Mary and Maumee Rivers. Undoubtedly, because of Kekionga's location at the confluence of three rivers, the area was occupied at length during prehistory. During the historic period Kekionga was an important Native American village that conducted trade with the French and British and later the United States. By the late 18th century there was a cluster of seven Miami villages, referred to as Miamitown, in the vicinity of Kekionga. Historic documents indicate numerous agricultural fields of corn, pumpkin, squash, and melons surrounded Kekionga and the banks of the nearby rivers. By the late 18th century, Kekionga was feared as a Native American resistance center by the United States government. Tradition maintains that Kekionga contained a large meetinghouse where council meeting were held (Carter 1987:66). This meetinghouse would have been a crucial organizational center for the confederacy of widely scattered tribes and villages. Mishikinakwa (Little Turtle) gave a speech during the 1795 signing of the Treaty of Greenville where he called Kekionga "that glorious gate... through which all the good words of our chiefs had to pass from the north to the south, and from the east to the west" (Poinsatte 1976:1-3). Historic information does indeed suggest that Kekionga was an important confederacy center. In fact, both Harmer's Defeat and the Battle of the Wabash were U.S. campaign efforts directed at Kekionga.

A historical marker indicates the presumed location of Kekionga; the accuracy of this marker is unknown. It is unknown if archeological investigations have been conducted in to locate or study Kekionga. No evidence of extensive archeological study of Kekionga was located. If intact portions of the village remain, archeological

investigations would be invaluable to better understanding Native American resistance and agency in the study area.

In addition to Kekionga as a major logistical node, isolated raids were a second form of overt resistance among Native Americans in the Northwest Territory. Raids and skirmishes occurred between both parties; Native Americans attacking settlers who had crossed into their territory and settlers attacking Native Americans. Fierst (2001:10-11) found historic documents that described small raiding parties and incursions. These Native American partisans were accused of lawlessness and greed; historic documents claim they plundered, killed, and took prisoners for ransom. The native perspective views these partisans as courageous individuals trying to halt the invasion of their homeland. Not surprisingly, the archeological literature review found no research attention or excavations of raid sites. The archeological identification of these sites would be difficult because raids would have been brief encounters between only a few individuals, and rarely would locational information would have been documented. Raids may have resulted in Euro-Americans abandoning their homesteads or Native Americans leaving their villages.

Sustained and substantial battles represent the third type of overt Native American resistance that occurred in the Northwest Territory. Battles fought during Territory Indian War include a series of skirmishes referred to as Harmar's Defeat, the Battle of the Wabash, the Battle of Fort Recovery, and the Battle of Fallen Timbers. Table 2 lists the battles, their locations, and archeological investigations. As the following review will show, the archeology of the Native American resistance to the United States and Great Britain occupying their homeland in the Northwest Territory has been quite limited. The archeological research has focused primarily on locating battlefields.

Table 2: Battles of Little Turtle's War and Archeological Investigations.

Battle	Present Day Location	Historic Marker	Archeological Investigations	Type
Harmar's Defeat				
Battle of Heller's Corner	Unknown	Yes	No	
Hartshorns Defeat	Unknown	No	No	
Battle of the Pumpkin Fields	Fort Wayne, IN	Yes	No	
Battle of the Wabash	Fort Recovery OH	Yes	Yes	Excavation
Battle of Fort Recovery	Fort Recovery OH	Yes	Yes	Excavation
Battle of Fallen Timbers	Toledo, OH	Yes	Yes	Survey

In October 1790 General Josiah Harmar lead an expedition whose goal was to destroy the Miami village of Kekionga. Harmar's men fought three skirmishes near Kekionga between 19 and 22 October: the Battle of Heller's Corner, Hartshorn's Defeat and the Battle of the Pumpkin Fields. Mishikinakwa's (Little Turtle) confederacy used decoys, ambushes and attacking and retreating during these skirmishes. Mishikinakwa's victories established him as a war hero among his people. To date, archeological investigations have not been conducted at these battlefields. The location of the 19

October 1790 "Battle of Heller's Corner" (aka Hardin's Defeat) is marked with a historic marker in Whitley County, Indiana. The battlefield is located in a rural area with potential for archeological investigations. The location of Hartshorn's defeat does not appear to be known as it is not identified with a historical marker. Finally, the Battle of the Pumpkin Fields appears to be marked, or at least a memorial to the battle site, with two historical markers in the city of Fort Wayne. The marker's identify the battle as "The Battle of Harmar's Ford" and the "Battle of Kekionga," taking place on 22 October 1790. Presumably this is the same battle as the Native American named "Battle of the Pumpkin Fields" that occurred on the same date. This site, if correctly identified, may have only limited archeological potential as it is located in residential neighborhood along the levee of the Maumee River in Fort Wayne (The Historical Marker Database).

The Battle of Fallen Timbers – Archeology

The Battle of Fallen Timber was pivotal in closing the Northwest Territory to Native Americans. The battle encompassed an area between 2 and 4 sq. miles, lasted less than 2 hours, and involved more than 3,000 combatants (Pratt 1995a:5). The Native Americans had planned an ambush for General Anthony Wayne's expedition into their homeland. During the battle Native Americans used fallen timbers for cover. History indicates that the Native Americans, according to their customs, had fasted the day before the battle. Due to a delay of Wayne's army the fast ended up being a two-day fast, which may have weakened the warriors and caught them off guard. The Native Americans suffered a defeat as they were not only weakened from fasting but outnumbered, roughly 3,000 to 1,300. Furthermore they received no military support, supplies, or shelter from their nearby allies – the British at Fort Miami. Following the battle, U.S. forces burned and destroyed Native American villages and crops. The Treaty of Greeneville was signed in the aftermath of the Battle of Fallen Timbers. Native Americans, perhaps realizing they were no longer receiving British support, signed this treaty. This treaty resulted in Native Americans giving up large parts of modern day Ohio as well sites used as portages along Lake Michigan and Lake Erie. Native Americans, in returned were to receive $20,000 in goods (blankets, utensils, and domesticated animals) as well as $9,500 in annual payments. Reportedly, Mishikinakwa (Little Turtle) was the last Native American leader to concede to the terms of this treaty (Fierst 2000:18).

Archeological investigations have focused on identifying the location of the Battle of Fallen Timbers. Three historic marker's identify the presumed location of the Battle of Fallen Timbers. However, Pratt (1995b) believes historic accounts and lack of archeological data at the presumed location suggested otherwise. Remote sensing coupled with archeological testing located over 300 battle-related artifacts, mostly spent bullets and uniform buttons. The artifacts were located across the entire tested area (not all areas were surveyed) of the 160-acre project area but were also concentrated. The area of artifact concentration was interpreted to be the portion of the battle between the right wing of the federal army and the Native American confederacy (Pratt 1995b).

Additional Military Studies in the Ohio River Valley

In Ohio, archeologists have conducted investigations at Fort Laurens (Gramly 1978; Pansing 2007). Fort Laurens, which was part of the battle for control of the Ohio River Valley, was located in Eastern Ohio on the Tuscarawas River near Bolivar, Ohio. The fort was built by colonists in 1778 as a staging point to attack the British at Fort Detroit and as an attempt to neutralize Native Americans who were attacking settlers who were invading their homeland. American forces had difficultly supplying this fort and after a harsh winter, which included a month-long siege of the fort by Native Americans, it was abandoned in 1779.

Concerning the battles at Fort Laurens, archival data indicates that Native Americans had ambushed a work detail from the fort in February 1779. This ambush resulted in the death of 17 soldiers, as well as 2 fort soldiers being taken prisoners (Pansing 2007). After the ambush, Native Americans conducted a *ruse de guerre* in order to successfully convince the fort's soldiers a large number of Native America forces surrounded the fort. In the 1970s archeologists found the original locations of the fort as well as evidence of a mass grave near the fort, probably the grave of those killed in the ambush. The individuals in the grave appeared to have suffered a violent death. Recently, archeologists have found a musket ball concentration and have attempted to identify its origins; given the pristine nature of the ammunition it is presumed to have been the result of an animal stampede that scatters fort supplies in 1789 (Pansing 2007). Unlike Fort Recovery, there appears to have been no battle at the fort, rather just a siege and ambushes.

Later in the early 19th century the Shawnee were actively trying to protect their homeland from further Anglo American settlement. Shawnee leaders established Prophetstown in 1808. It was here that the Shawnee Prophet (Tenskwatawa) and his brother Tecumseh were organizing resistance against further land concessions to the United States. Historic records indicate that this village became a "spiritual and military center" that attracted dissatisfied warriors from all over the Old Northwest Territory (Indiana, Ohio, Illinois, Michigan and Wisconsin) (Strezewski et al. 2006:20). In November 1811, after Prophetstown leaders met with General Harrison of the U.S. Army, the Shawnee chose to attack the U.S. army while they were sleeping outside of The site of the Battle of Tippecanoe is located at the presumably located in Battle Ground, Indiana. The battlefield's location is marked by a monument erected in 1908. The Tippecanoe County Historical Society is working with archeologist Cobly Barlett to determine the archeological remnants of this battle. Investigations will involve a proton magnetometry survey; no subsurface testing is planned (indiancountrynews.net). The results of this study have not been located.

The preceding literature review illustrates that archeology has been conducted at sites related to Native American resistance to the cultural hegemony that was occurring in the region in the late 18th and early 19th centuries (Table 3). This research has focused primarily on locating forts and battles and defining associated archeological features.

Table 3: Summary of Archeological Investigations of Native American and Anglo American Battles in Study Area.

Battle	Present Day Location	Archeological Investigations	Type
Siege of Fort Laurens (1779)	Bolivar, OH	Yes	Excavation
Battle on the Wabash (1791)	Fort Recovery, OH	Yes	Excavation
Battle of Fort Recovery (1794)	Fort Recovery, OH	Yes	Excavation
Battle of Fallen Timbers (1794)	Toledo, OH	Yes	Survey
Battle of Tippecanoe (1811)	Near Lafayette, IN	Yes	Survey

1791 Battle of the Wabash: Battlefield Boundaries, Battle Details and KOCOA Analysis

By Stefan Woehlke and Deb Hollon

On 3 November 1791, General St. Clair and the American Army numbering approximately 1,200 to 1,400 soldiers and 200 to 250 civilian camp followers arrived on the banks of the Wabash River. At the time it was thought by St. Clair that they were actually on the banks of the St. Mary's River near Kekionga, Little Turtle's village and present day Fort Wayne. Exhausted by the day's work and travel, no fortifications were constructed prior to establishing camp for the night (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

General St. Clair ordered the Kentucky militia, under Colonel Oldham, to set up camp to the west, across the river, due to the small size of the landform where the military was established. Some infantry also camped in six outposts from the banks of Buck Run in the south to the bend of the Wabash River in the north. The main camp was approximately 70 meters from east to west and 350 meters north to south along the steep 30-foot banks of the Wabash River. The main encampment included Gibson's 2nd Levy Regiment including Major Thomas Patterson's New Jersey Battalion, Major John Clark's Western Pennsylvania battalion, and Major Thomas Butler's Eastern Pennsylvania battalion along the river. The eastern line, or rear of the main camp, consisted of Major Jonathon Heart's 2nd Infantry Regiment and Darke's 1st Levy Regiment, including Heart's 2nd Infantry Regiment, Major Henry Gaither's Maryland Battalion, and the Virginia Battalion. On the north and south sides of the camp were combinations of riflemen and dragoons (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011.

At the same time the military was establishing camp, the Northwest Indian Confederacy was determining a battle strategy based on the opportunity afforded them by General St. Clair's encampment strategy and terrain of the land. Under the leadership of Mishikinakwa (Little Turtle) and Weyapiersenwah (Blue Jacket), warriors from the Delaware, Miami, Shawnee, Mingo, Wyandots, Cherokees, Ottawa, Ojibwe, and Potatawatomi tribes were organizing for a morning surprise attack in which they would

surround the entire U.S. Military. Their attack would be initiated on the Kentucky militia, which was relatively small and isolated on the western side of the Wabash River. Meanwhile, the rest of the warriors would run out from the stations they established in the night to surround the rest of the military camp from the north and south. Most of the night was spent establishing the warriors' positions for the start of the battle (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

The key terrain elements taken into account while the military established camp and the Confederacy planned their attack include the Wabash River, Buck Run, and the high ground (Figure 14). The Wabash River had many elements which made it ideal for the edge of a camp. First, its banks were steep and approximately 30 feet high from the water's edge to the high ground. Second, the river bed was used for cover and concealment, as well as a buffer to the surge of an attack. Buck Run acted as the southern boundary of St Clair's camp. High ground was important for the soldiers and equipment so they could remain dry, as well as being preferred from a defensive standpoint.

The next morning, after the warriors established their positions, the Kentucky militia was attacked by a small group of Confederacy warriors (Figure 15). The sound of the musket fire was the signal for the two sides of the Confederacy crescent to start to surround the military outposts, while the center of the crescent forced the Kentucky militia to flee back towards the main camp, across the river and up its banks (Figure 16) (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

As the sounds of the attack reached St Clair, the military was ordered into position. The artillery, however, was ineffective since the retreating Kentucky militia blocked their field of fire (Figure 17). Confusion quickly set in, when moments later the fleeing militiamen broke through the lines followed directly by attacking warriors which sent the civilians scattering and soldiers scrambling for cover behind fallen trees (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

While mayhem was setting in on the front line, the outposts on the far side of the camp had a few more moments to prepare. The Confederacy warriors at the ends of the crescent moved quickly, concealed by trees and brush. Artillerymen that were able to get off shots were ineffective due to the large amount of cover easily found on the battlefield. Artillerymen were also the Native American's first targets along with the riflemen whose combined firepower was most feared by the warriors. The Confederacy's warriors, obscured by a thick cloud of smoke, aimed for the flames of their enemy's fire. Working north and west they broke the lines of the outposts and forced the military to fall back toward the center of camp (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

By this time the Confederacy warriors at the northern end of the camp were being held back by the military, which was aided by the wind which cleared the battlefield of smoke. Taking advantage of the stabilized situation, General St Clair ordered Darke to make a bayonet charge to take pressure off the soldiers in the south (Figure 18). He took the rear line which contained about 300 men and moved counterclockwise, flanking the Confederacy warriors and driving them south to Buck Run. Many of these warriors then looped around west and up into the center of camp as Darke returned. At the same time

other warriors followed Darke's path and attacked his rear. St. Clair and Heart gathered troops for another bayonet charge and were able to push the Native warriors south and out of the camp at a great cost (Figure 19) (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

The terrain was critical to the way the first stage of the battle played out. The ground the Kentucky militia was camped on was not defensible. As the militia fled back to the main camp they could not be covered by artillery fire since the guns could not fire downward from their high position into the Wabash River's floodplain. The Wabash River and its banks slowed the Kentucky militia's retreat as well as the warrior's attack. The high ground of the American military encampment would likely have been effective in defense of the initial warrior charge if the lines were not broken by the Kentucky militia's retreat. After control was established in the northern part of the camp the high ground enabled the front line to hold the Confederacy forces back so the rear line could be redeployed.

In the southern battle zone the terrain enabled the warriors to gain the upper hand. The large number of trees and fallen logs provided the Native Americans with abundant cover. Smoke clouds and underbrush also concealed their movements. There were no steep banks along Buck Run that would aid the military in defending their line either. This meant very easy access for the warriors to kill the soldiers and move quickly past them into the center of camp. They were only pushed back in the south by bayonet charges from the north enabled by the line maintained along the steep banks of the Wabash River. This was followed by a fifteen-minute break in the fighting while the Confederacy's leaders weighed the benefits of a second attack.

At this time St. Clair condensed the troops, pulling wounded soldiers north and clearing the southern portion of the battlefield (Figure 20). After ordering the Western Pennsylvania Battalion to form a southern line, a three acre area was occupied by the military and it was completely surrounded by the warriors of the Northwest Indian Confederacy. Many soldiers at this point had abandoned their positions and formed random groups while the remaining lines held their positions against a combination of musket fire and arrows used due to a lack of gunpowder held by confederacy warriors at this late stage in the battle (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

Acknowledging that retreat was the only option, St. Clair ordered a charge east through the warriors. Darke and his soldiers made a final bayonet charge south in order clear an avenue of retreat down the road that the soldiers had cleared the day before (Figure 21). As the unorganized lines of retreat cleared the area, the bayonet charge turned and fled down the road pursued by Confederacy warriors who continued to take down soldiers as they fled. The soldiers hastily discarded the equipment and weapons that slowed them down. Back at the camp the wounded American soldiers and civilians were killed. At the end of the battle approximately 650 American soldiers and 100 civilians were dead, with at least 300 more soldiers and civilians wounded, estimates for Confederacy warrior dead range from 35 to 70 (DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Winkler 2011).

During the final moments of the battle the terrain played a key role in the United States Military's ability to hold off the Northwest Indian Confederacy warriors, as well as their ability to accomplish a successful retreat. Again, the Wabash River played a crucial role, forming a natural boundary along the western and northern boundaries of the Military's position. St. Clair's Trace, which was built as the military marched north, was crucial for the rapid retreat. The northern line of the military could hold their ground during the retreat, freeing enough soldiers to make a bayonet charge in order to clear an avenue for soldiers to move through to the road and eventually south to Fort Jefferson.

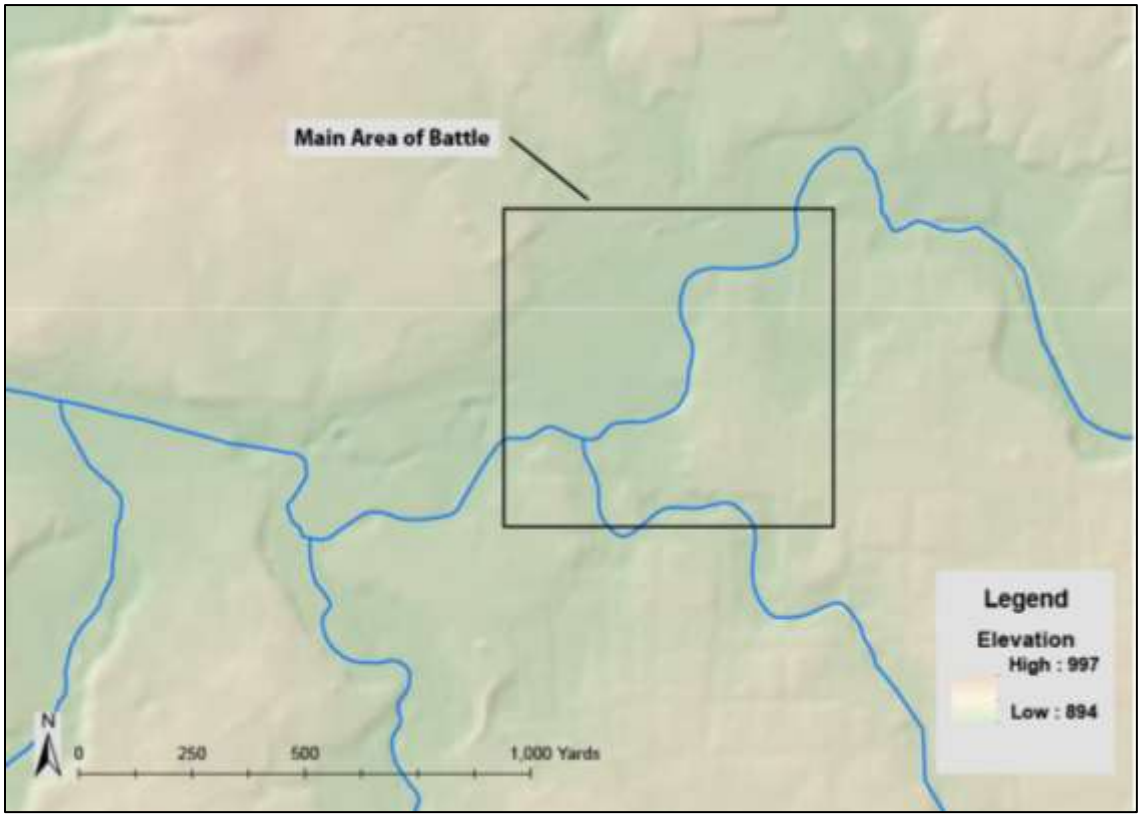

Figure 14: Battle of the Wabash - Key terrain.

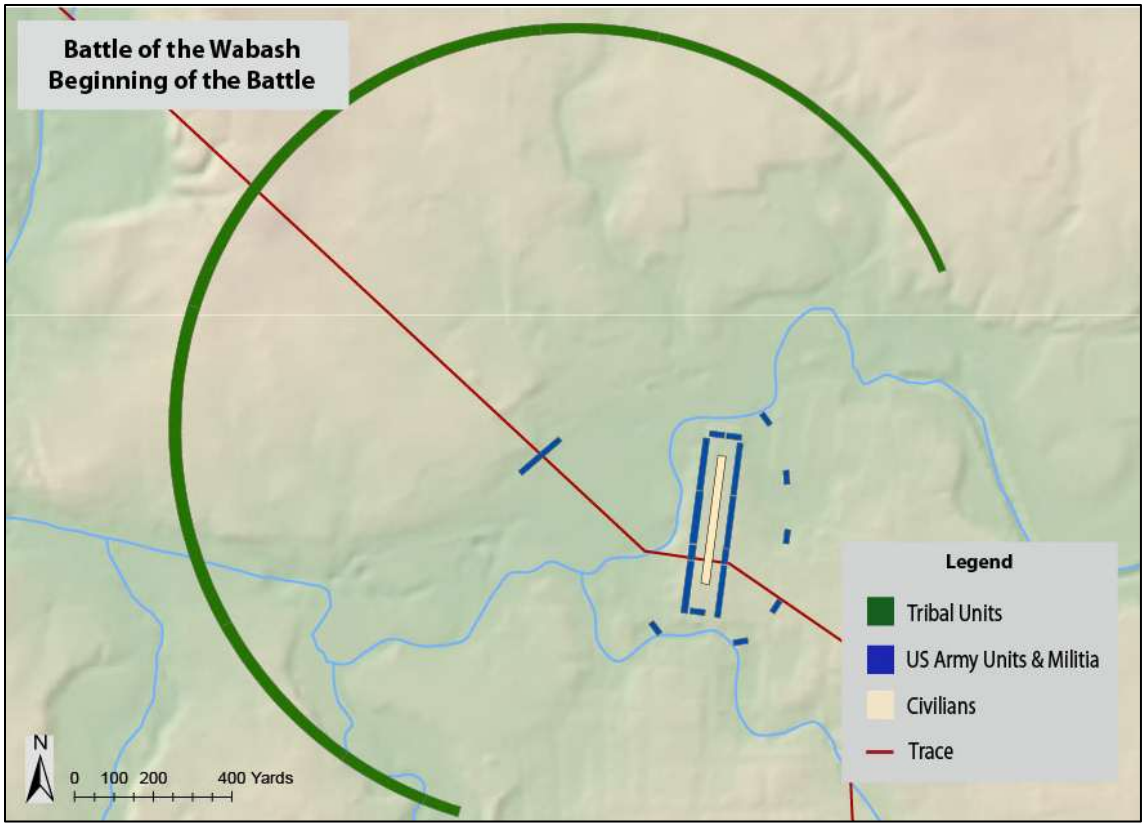

Figure 15: Battle of the Wabash - Beginning of the battle.

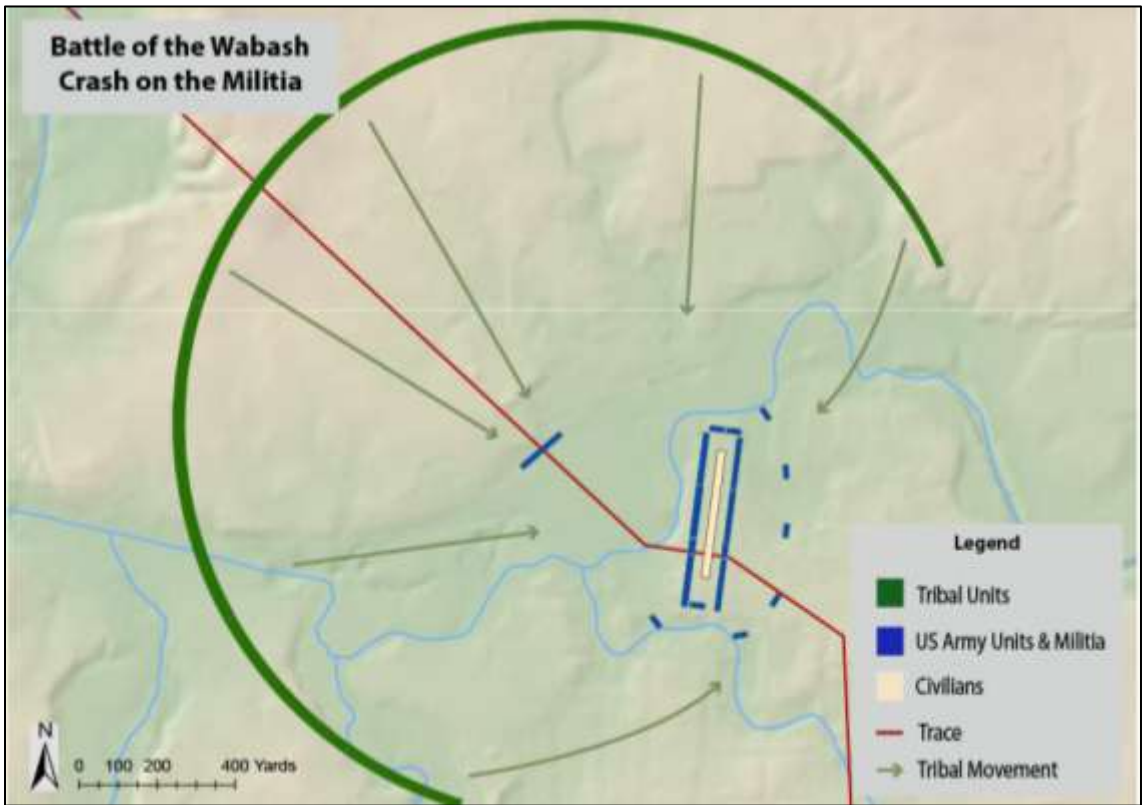

Figure 16: Battle of the Wabash - Native American attack on the militia.

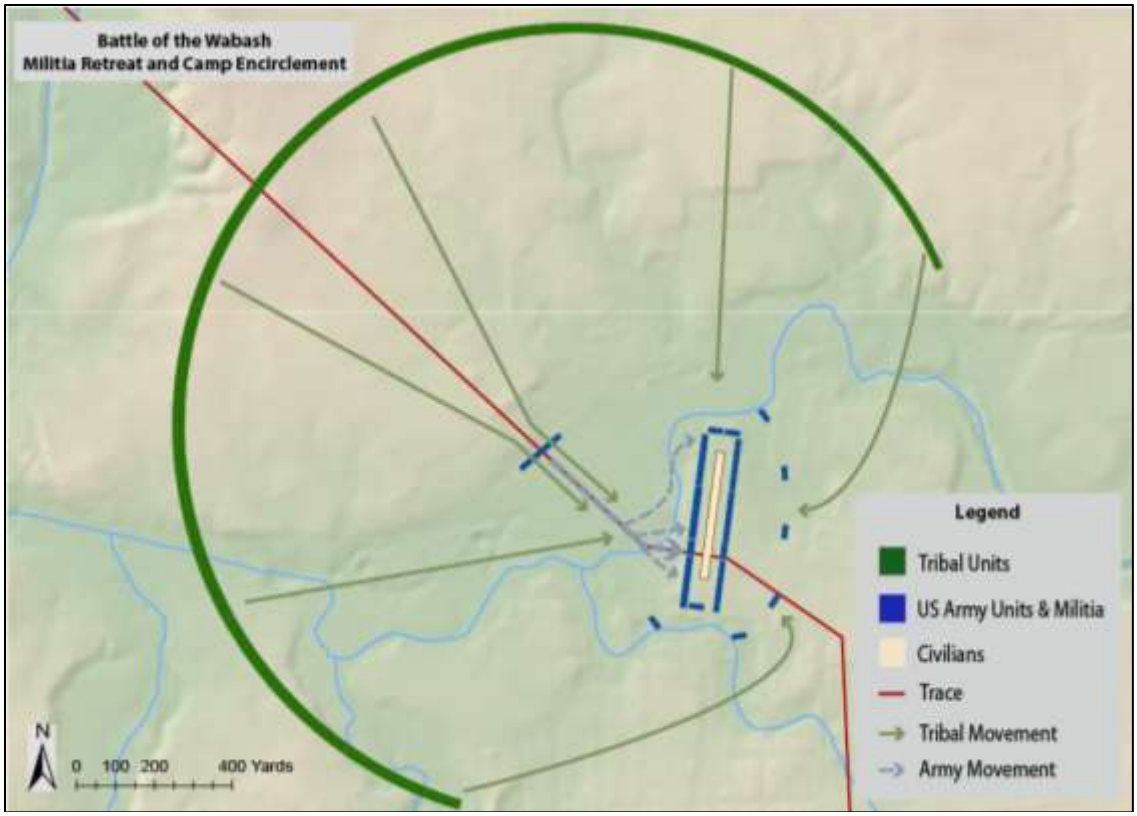

Figure 17: Battle of the Wabash - Militia retreat and camp encirclement.

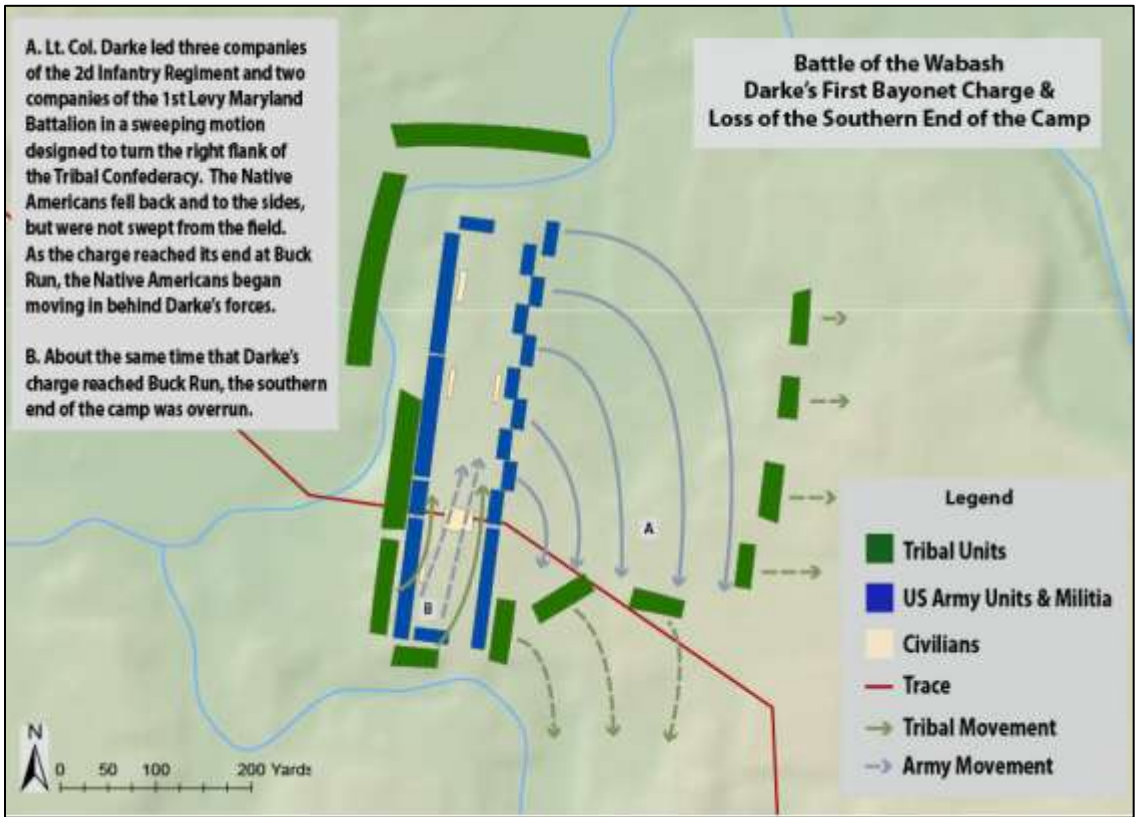

Figure 18: Battle of the Wabash - Darke's first bayonet charge.

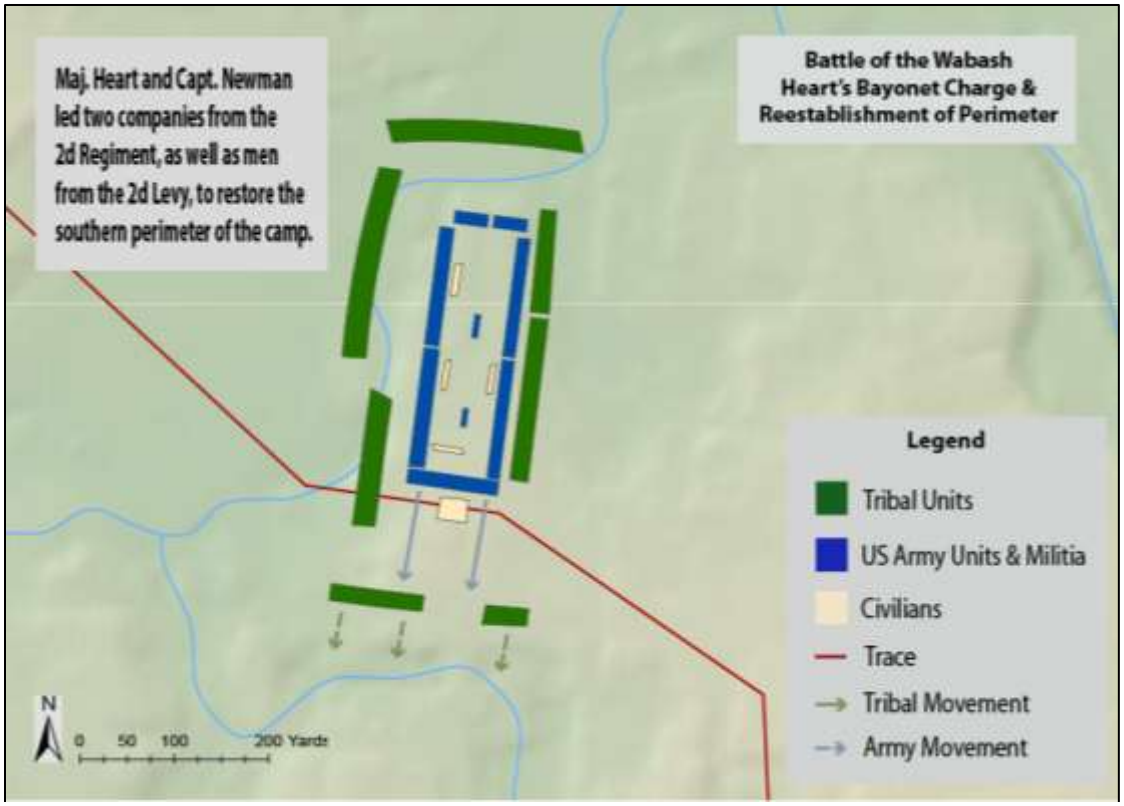

Figure 19: Battle of the Wabash - Heart's bayonet charge re-establishing perimeter.

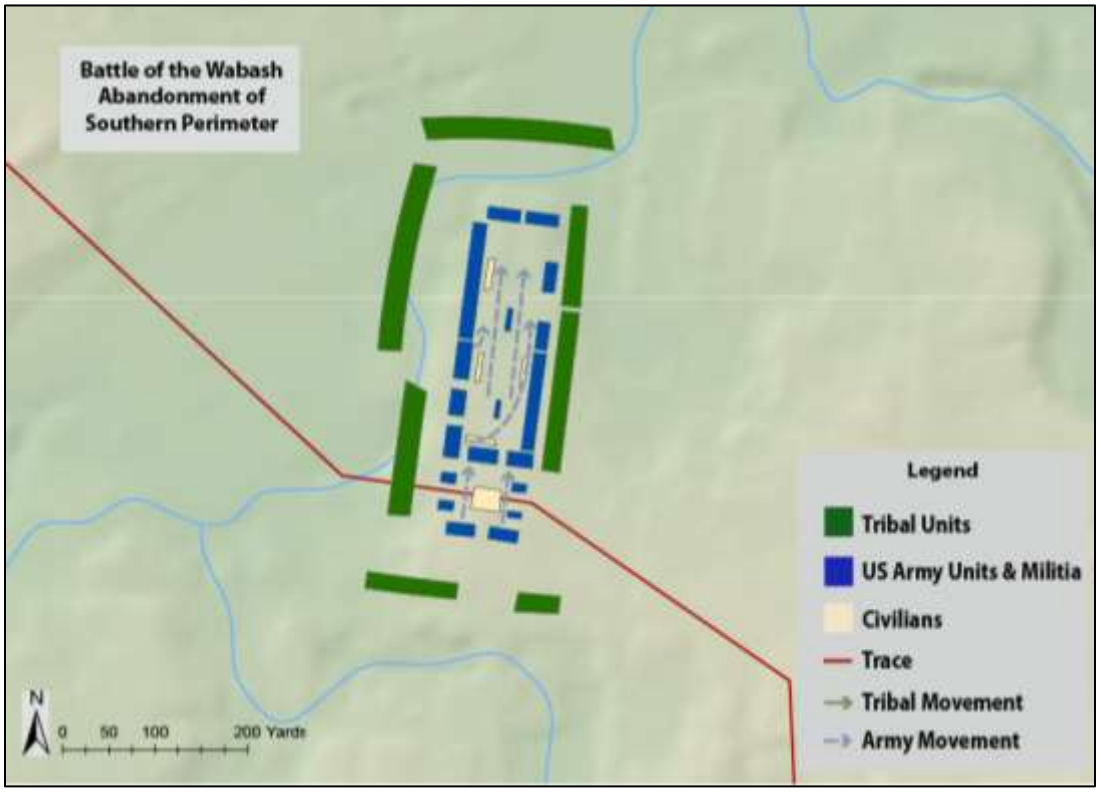

Figure 20: Battle of the Wabash - Abandonment of southern perimeter.

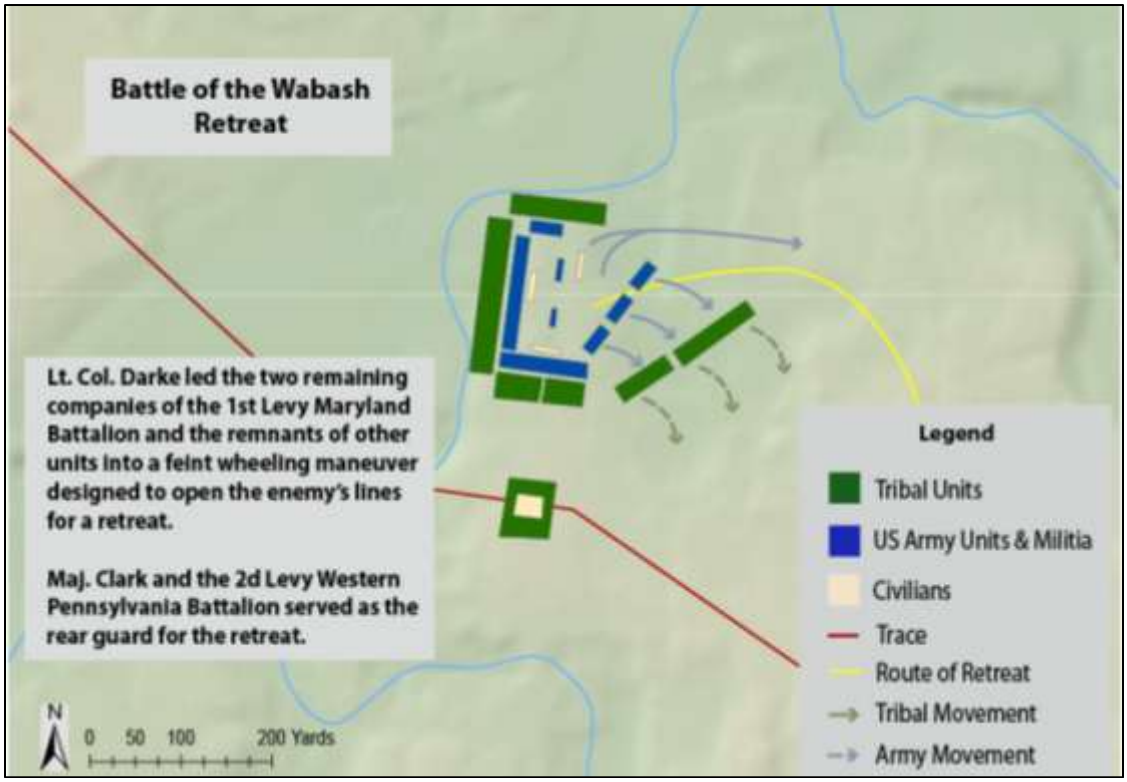

Figure 21: Battle of the Wabash – Retreat.

As mentioned in the previous battle details, numerous defining features affected battle decisions and the ultimate outcome of the battle. As stated in the Project Goals, a defining feature is any natural or manmade terrain feature or structure that influenced battlefield strategy. The formal and systematic identification of these features will help address questions of the movements, locations, and formations of combatants – information critical for establishing the overall geographic extent of the battles as well as important landmarks and features that preserve the setting and character of historic events. Categories used in this process include:

K = Key Terrain
O = Observation and Field of Fire
C = Cover and Concealment
O = Obstacle
A = Avenues of Approach and Retreat

Initial KOCOA analysis and key defining features of the Battle of the Wabash have been identified and are shown in Table 4.

Table 4: Initial KOCOA Analysis - Battle of the Wabash, 1791
Key Defining Features

Terrain and Topographic Features					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Wabash River	Runs through NW corner of core battlefield	St. Clair thought this was the St. Mary's River and as such, incorrectly calculated that he was much closer to Kekionga; this greatly influenced his camp strategy and future plans	Rerouted several times since 1791; original Wabash river remains as ditch immediately NW of reconstructed fort	Key Terrain; Observation and Field of Fire; Obstacle	Location, Setting, Association
Level wooded high dry ground on bank of Wabash River	NW of core battlefield on SW side of original Wabash River	St. Clair's main camp was pitched here on night of Nov. 3	OHS property and downtown modern day Fort Recovery	Key Terrain; Observation and Field of Fire	Location, Setting, Association
Higher ground about 300 – 400 yards across the Wabash River	NW edge of core battlefield	Militia encampment on night of 3 Nov.	Part of privately owned Ambassador Park	Key Terrain; Observation and Field of Fire; Obstacle (Indian Confederacy)	Location, Setting, Association
Bed of the Wabash River	Runs through NW corner of core battlefield	Mentioned numerous times in first person accounts as being waded through or used for cover	Remains as ditch immediately NW of reconstructed fort (river rerouted since 1791)	Key Terrain; Cover and Concealment	Location, Setting, Association
High banks of the Wabash River	Runs through NW corner of core	Mentioned numerous times in first person	Somewhat remains	Key Terrain; Cover and	Location, Setting, Association

	battlefield	accounts as being used for cover	immediately NW of reconstructed fort (river rerouted since 1791)	Concealment	
Ravine, hollow, rich bottom between the militia and main camp	Runs through NW corner of core battlefield; SE of militia camp; Wabash River ran through this river	Became an obstacle for the militia as they retreated from the initial Indian attack back to the main camp; became cover for the Indians as artillery shot at the ravine soared over their heads and into the trees	Most likely site of park w/ baseball field (OHS property leased to village)	Key Terrain; Obstacle (Militia); Avenue of Retreat (Militia); Cover and Concealment (Indian Confederacy)	Location, Association
Buck Run	SW Corner of battlefield	Location of Darke's charge on the Indians; southern border of St. Clair's main camp	Remains as drainage ditch through town	Key Terrain	Location, Setting, Association
Small trees, pile of trees blown out of root, larger tree, large tree blown down, brush, etc.	Throughout battlefield	Mentioned in numerous first person accounts as playing an integral part in Native American battlefield strategy	No longer a wooded area	Cover and Concealment	Setting, Association
Fortifications					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Fort Jefferson	29 miles SE of battlefield	The remnants of St. Clair's army and camp followers retreated here immediately after the battle	Ohio Historical Society (OHS) Site	Avenue of Retreat (St. Clair's Army)	Location, Setting, Association

Road and Transportation Networks					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
St. Clair's Trace	S of battlefield	Avenue of approach from Fort Jefferson for St. Clair's Army; Avenue of retreat to Fort Jefferson for survivors of the battle	Most likely current route of SR 49 south of Fort Recovery	Avenue of Approach (St. Clair's Army on Nov. 3) and Avenue of Retreat (St. Clair's Army on Nov. 4)	Setting
Indian Trail to Indian Camp	NW of core battlefield	Trail used by various Indian tribes when gathering on Nov. 3	Unsure of exact location	Avenue of Approach (Indian Confederacy)	Setting
Indian Trail to Girty's Town	NW of core battlefield	Trail used by various Indian tribes when gathering on Nov. 3	Unsure of exact location	Avenue of Approach (Indian Confederacy)	Setting

Key Defining Features compiled from Anonymous (1864), Carter (1987), Darke (1791), Denny (1859), DeRegnaucourt (1996), Howe (1847), Rohr and Meiring (1991), Sargent (1924), St. Clair (1812), Van Cleve (1922), Wilson (1935), and Winkler (2010a, 2011).

1794 Battle of Fort Recovery: Battlefield Boundaries, Battle Details and KOCOA Analysis

By Stefan Woehlke and Deb Hollon

In 1794 there was a second U.S. Military campaign to take control of the Northwest Territory. This time it was led by General Anthony Wayne who studied the errors of 1791 and made dramatic changes to the military as a whole and the strategy of the campaign itself. He relied on the frequent construction of forts and the steady flow of supplies through convoys. He also spent more time training the soldiers and redesigning equipment, such as the manufacture of smaller pieces of artillery that could be transported on horseback and fire downwards from a high position (Carter 1987; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991).

As part of this new strategy Fort Recovery was constructed at the site of the Battle of the Wabash. Construction began in 1793 and was complete in March of 1794. Like the other forts constructed as part of this campaign the soldiers stationed there were supplied by large convoys containing foodstuffs and ammunition. On 29 June 1794, a convoy led by Major William McMahan arrived at Fort Recovery containing 360 packhorses loaded with supplies and defended by 50 dragoons and 90 riflemen. Again, the Northwest Indian Confederacy's warriors, under the guidance of Mishikinakwa (Little Turtle) and Weyapiersenwah (Blue Jacket), prepared for an attack. The convoy couldn't fit inside the fort and was forced to camp a short distance down St. Clair's Trace with the packhorses and no defenses. The Confederacy warriors devised a plan to attack the soldiers with the convoy in order to steal the horses and any other supplies they could (Carter 1987; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991).

The initial attack was successful and the warriors were able to attack the soldiers with the convoy (Figure 22). As reinforcements left the fort to support the convoy they were attacked by warriors concealed in the woods, flanking the road (Figure 23). All the soldiers were quickly forced to retreat back to Fort Recovery, using St. Clair's Trace as the avenue of retreat (Figure 24). The American Indian leaders, Mishikinakwa (Little Turtle) and Weyapiersenwah (Blue Jacket) wanted to fall back and end the battle with the successful attack on the convoy. However, encouraged by the ease of this success some tribes decided to attempt a siege on the fort (Carter 1987; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Slocum 1910).

The battle raged for many hours. With increased accuracy of the military's rifles and the increased flexibility in aiming the artillery the Confederacy warriors were held back. After four hours the warriors retreated but staged a second attack later in the day (Figure 25). Again, the warriors were pushed back from the fort walls. The next day a large group of Confederacy warriors, predominantly Chippewa, attacked again. The battle raged another day but the warriors were no match for the improved artillery or accuracy of the rifle fire (Carter 1987; DeRegnaucourt 1996; Knapke 1990; Rohr and Meiring 1991; Slocum 1910).

In total, 22 U.S. soldiers were killed with 30 injured and three missing in action. Confederacy losses were noted as 50 dead, but the number was likely higher given the practice of removing dead and injured warriors from the battlefield. This battle was

followed soon after by the Northwest Indian Confederacy's defeat at Fallen Timbers, leading to the signing of the Treaty of Greeneville in 1795 (Carter 1987; DeRegnaucourt 1996; Hall 2008; Green 1929; Rohr and Meiring 1991; Slocum 1910).

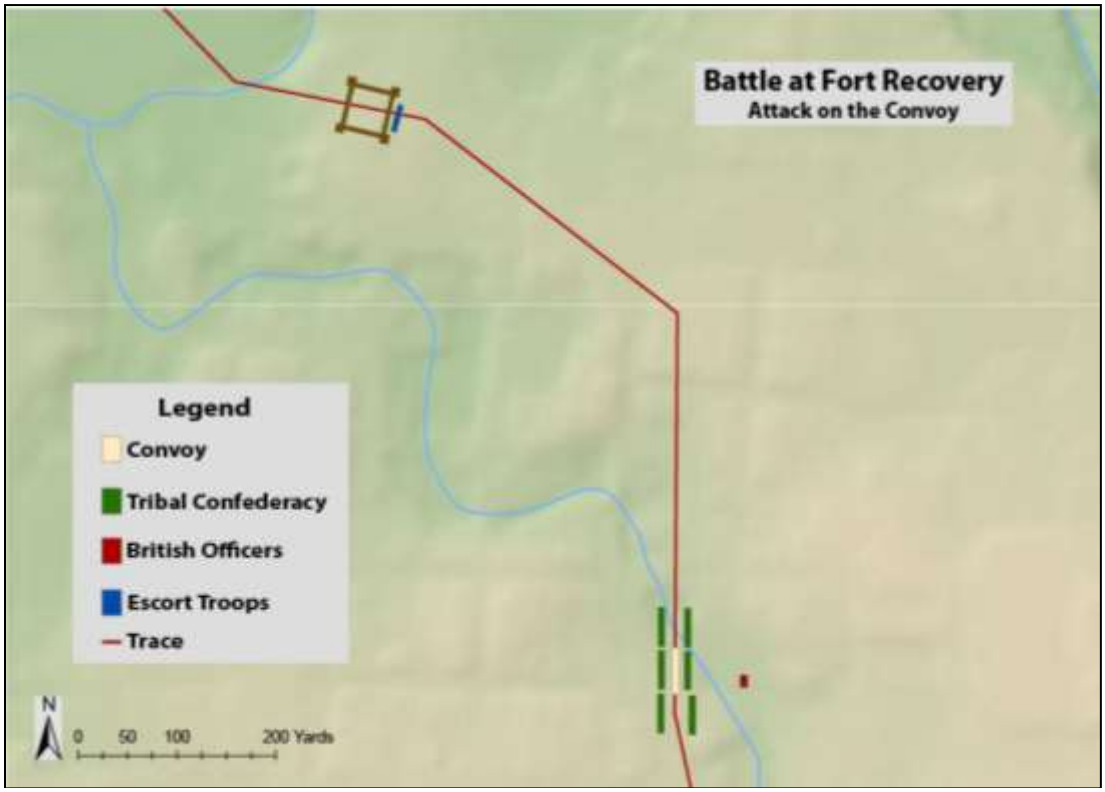

Figure 22: Battle of Fort Recovery - Attack on the convoy.

Figure 23: Battle of Fort Recovery - Escort to the rescue.

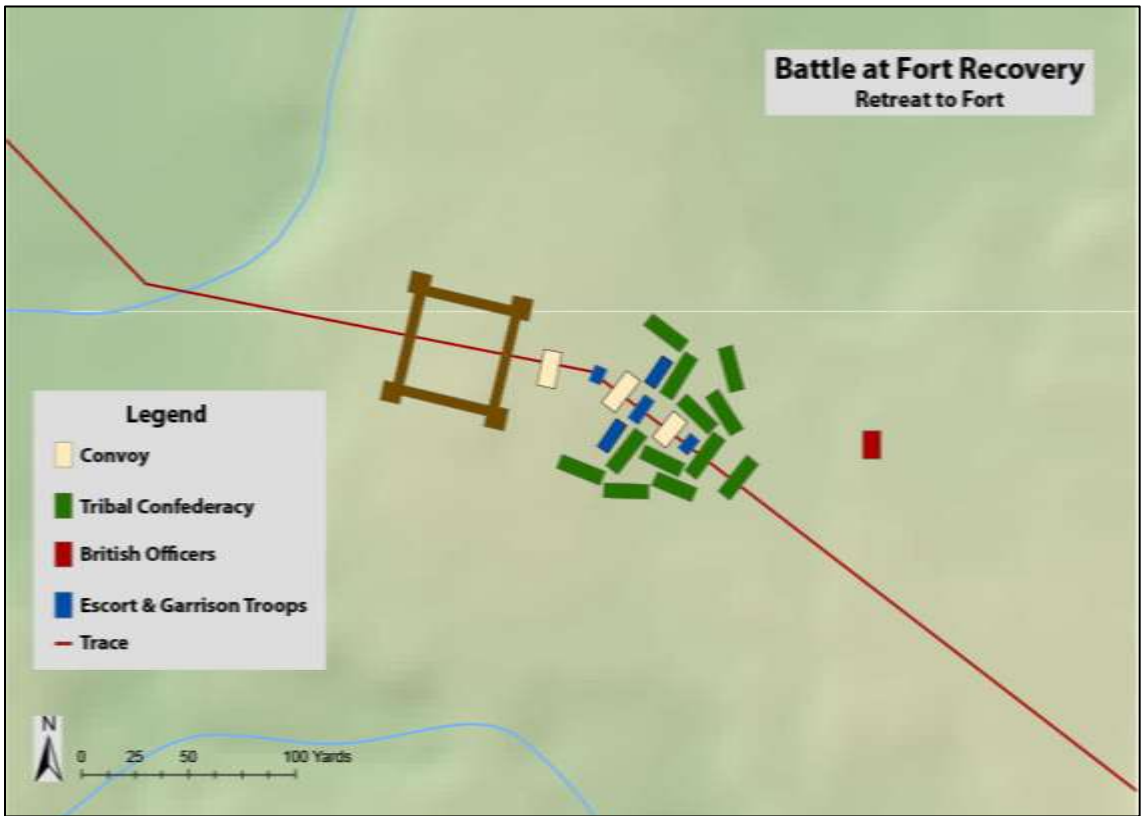

Figure 24: Battle of Fort Recovery - Retreat to the fort.

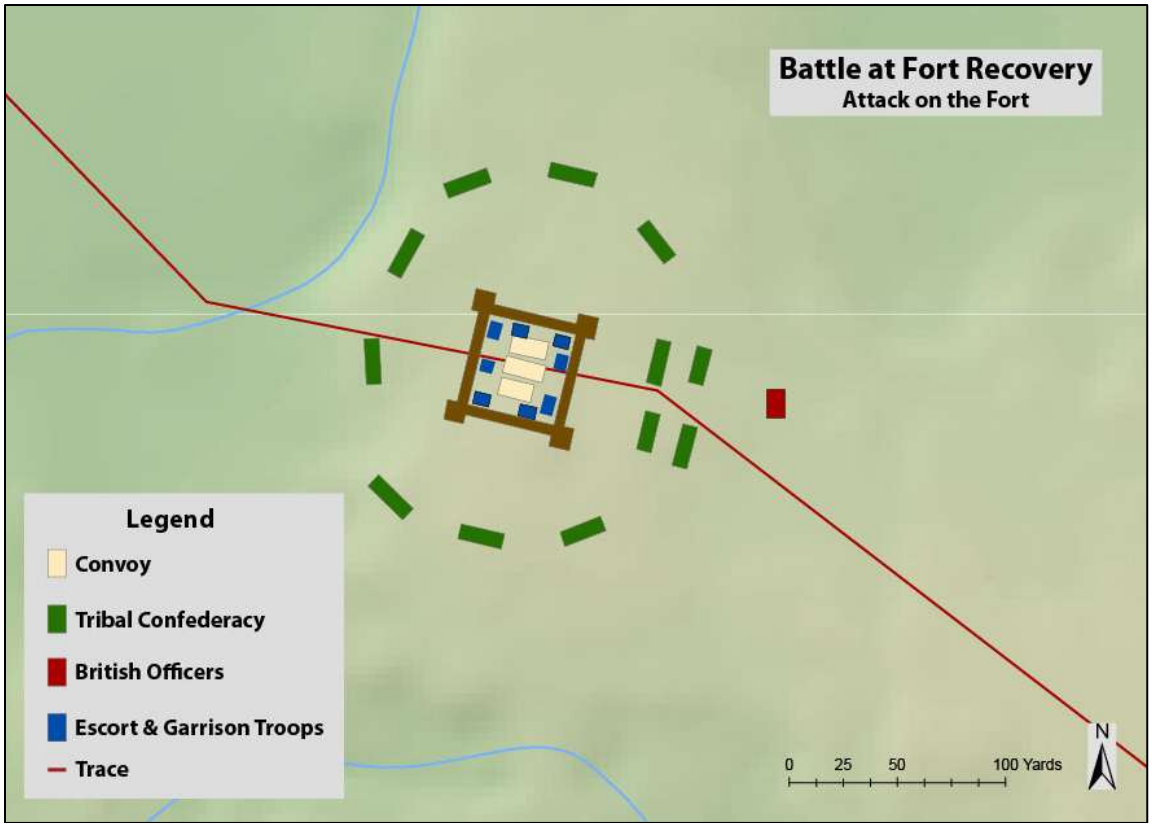

Figure 25: Battle of Fort Recovery - Attack on the fort.

The terrain played an important part in the Battle of Fort Recovery, but compared to the Battle of the Wabash in 1791 there was significant alteration of the landscape, which gave the U.S. Military an advantage. The most obvious alteration of the landscape is perhaps the fort itself. Despite being greatly outnumbered the soldiers were able to remain protected during each attack that was brought by the Confederacy. The road, likely St Clair's trace, is also an important aspect of the attack on the convoy which initiated the siege since it provided an avenue of retreat for the soldiers who were attacked in the convoy. Finally, the area around the fort would have been cleared in order to acquire building materials and firewood. This cleared area added to the U.S. Military's advantage provided by the artillery and riflemen since it eliminated the abundant cover and concealment which protected the warriors during the first battle, leaving them exposed during any charge toward the fort in the second battle.

Initial KOCOA analysis and key defining features of the Battle of Fort Recovery have been identified and are shown in Table 5.

Table 5: Initial KOCOA Analysis - Battle of Fort Recovery, 1794.
Key Defining Features

Terrain and Topographic Features					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Unknown piece of ground	400 yards from Fort Recovery	Where convoy camped the night before the battle	Unknown current location	Key Terrain	Setting
Unknown piece of ground	½ mile south of Fort Recovery	Where convoy was attacked	Unknown current location	Key Terrain	Setting
Road and Transportation Networks					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Road to the south (most likely St. Clair's Trace)	South of Fort Recovery	Convoy was traveling this road when they were attacked	If St. Clair's Trace, this is most likely the current location of SR 49	Avenue of Retreat (for solders)	Setting
Fortifications					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Fort Recovery	On Wabash River, at site of the Battle of the Wabash 1791	Indians attacked convoy that was delivering supplies to Fort Recovery and was camped just outside Fort Recovery; attacked soldiers fled to the fort	Approximate location of current fort reconstruction	Obstacle (for Indians); Avenue of Retreat (for soldiers); Cover and Concealment (for solders)	Location, Setting, Association

Key Defining Features compiled from Carter (1987), DeRegnaucourt (1996), Knapke (1990), Rohr and Meiring (1991), and Slocum (1910).

Fort Archeology

By Julie Koogler

The forts of Generals Josiah Harmar, Arthur St. Clair, and Anthony Wayne were pivotal in the decisive domination of the Northwest Territory by American forces. As such, so are the material remains of the battlefields and fortified structures that once existed within the boundaries of the Northwest Territory. The careful archeology of these sites reveals more than simply the boundaries of the battlefields or the traces of the military posts. Archeology allows us to unveil the patterns involved in strategic or tactical military choices as well as social and behavioral patterns recognized through the material culture once possessed by soldiers who passed through these places (South 1978; Scott 2009; Scott and McFeaters 2010).

The development of the American military was directly related to the acquisition of land after the American Revolution. Americans from the east were given the opportunity to purchase this land to populate the newly gained Northwest Territory. Upon settlement, however, it became clear that expansion of Americans into the frontier was often not as peaceful as promised and that protection of these families from hostile natives would be necessary (Guthman 1975). To regulate the Northwest Territory lands, a Federal army was born "and practically left to its own resources during 1784-1791" (Guthman 1975:2). After a series of modifications in the structure of the American army, Major General Anthony Wayne modeled his organization of American military strategy and fortification directly from that of Roman Legion (Wilson 1937:73). Many facets of Major General Wayne's Legion army were influenced by his utilization of Roman Legion military techniques, possibly including that of his encampment and the interior design of his most impressive fort, Greene Ville.

Historical archeology of American military fort sites has been pursued extensively throughout the United States. However, minimal archeology has been performed to study the forts or battlefields of Generals Harmar, St. Clair, and Wayne. Although the information available may be somewhat limited in regard to the plats, or blueprints, of these forts, an adequate amount of plat drawings (along with conjectural contemporary sketches) exist whereby a generalized understanding of their functional roles can be assessed into multi-tier typologies. It is the purpose of this section to discuss the historical nature of fortifications and synthesize their typological roles in American frontier defense.

Fort Standardization

The concept of fort standardization began in Europe and Western Asia with the necessary advent of fortification. Over the centuries, fortification evolved along with the modernization of warfare. Fortified structures reflected this modernization by developing such features as heavy walls, high towers, and palisades (Robinson 1977). Similarly, American fortifications were also modified to meet the needs of modern warfare. American fort designers adapted military fort trace design to fit the lay of the land. Defense of the fort was dependent upon not only the engineering involved in fort design, but the natural surroundings of the fort and the mode of attack from the enemy.

Forts were designed with multiple uses in mind at different periods in history. For the purposes of this report, the design of Northwest Territory land forts will be analyzed. The need for fortification in the Northwest Territory arose primarily as French, British, Spanish, and American forces battled to secure land holdings in the North American continent through warfare. Defense from frequent Native American attacks was yet another reason to fortify areas that were chosen for settlement as securing the new territory enabled America to pursue capitalist ventures as well as pay former Revolutionary War soldiers for their service (Guthman 1975:1). Simply designed forts that could be erected in a short period of time were most often the form selected since a means of protection from attack was mandatory. Most of the American army men who "directed the construction of the early defenses …had comparatively limited backgrounds and talents" (Robinson 1977:50). The failure of these early military forts was compensated for by the American employment of engineers both foreign and domestic (Robinson 1977). These engineers influenced design changes that utilized Old World methods (most of the foreign engineers were French), modifying fort traces to the terrain and military defense needs of the American army.

The most common fort trace used in early America was the four-bastioned fort. It allowed the designers and builders to adapt the size of the fort according to the availability of building materials, laborer skill, economic conditions, terrain, and suspected methods of enemy attack (Robinson 1977). Many of the late 18th century land forts erected by Generals Arthur St. Clair and Anthony Wayne took this form. Forts Hamilton, Jefferson, St. Clair, Greene Ville, and Defiance all took this form with varying trace size for the number of troops stationed at each fortification (Robinson 1977:134; Simmons 1977; Seiler 1989).

Plats of standardized fort designs, which are contemporary with early American fortifications, do not seem to appear frequently in the historic record. The majority of late 18th and early 19th century fort sketches are either trace blueprints, contemporary soldier's sketches, or later artistic conceptions of what a specific fort was supposed to look like based on the written descriptions of those designing the forts. One standardized sketch attributed to Henry Burbeck's hand was submitted to the War Department in March 1803 (Davidson 2010). Its trace design is similar to the four-bastioned fort; however, only two diagonal blockhouses appear to be utilized in this sketch rather than bastions. A similar sketch is provided in McBride and McBride's (2010:126) discussion on the general structure of frontier forts in West Virginia and western Virginia. It is important to mention that both of these standardized sketches date later than 1800 (McBride and McBride's dates to 1842). Military documentation of all forms was stored at the War Department and much of it dating prior to 1800 was lost there as a result of a fire in November of that year (Center for History and New Media 2007). It is possible that many frontier fort plats were destroyed in that fire.

Fort Jefferson Layout and Architecture

The trace of Fort Jefferson is described as being a four-bastioned square design of irregular shape (Wilson 1950; Simmons 1977, 1992; Seiler 1989; Williams 2005). It is stated to be similar to Fort Hamilton in its design, which is not unexpected since Major

William Ferguson engineered both fortifications. The construction materials utilized consisted of logs laid horizontally with the storeroom, barracks (which had chimneys), and kitchen buildings being incorporated in the curtain design for efficient use of construction time (Simmons 1992). This construction approach could be seen as an engineering measure that helped to reinforce the curtain strength from artillery; however, this fort was built with the weaponry of Native Americans in mind, not European land competitors who would have been equipped with cannons. An interesting defensive design feature that appears at Fort Jefferson and not at the other military campaign forts in the Ohio Valley is the attachment of pointed stakes along the top of the barracks. Simmons (1977:11) calls these chevaux-de-frise, "a forerunner of barbed wire, [they] were wooden bars with sharpened stakes running through them in a criss-cross fashion," which would allow the walls to be just as defensive in nature as if they were constructed in the style of a vertical palisade. Depending upon the source, Fort Jefferson's trace measured "curtains [of] 35 yards" (Denny 1859:156), "114 feet square" (Simmons 1977:11; Williams 2005:51), or "measuring a little more than 100 feet on a side" (Simmons 1992:116). Each corner of the fort had a bastion built with horizontal logs (Simmons 1992). The northeast and southwest bastions served as mounting structures of each of the two cannons within the fort (Williams 2005). It is possible that the foundations of the fort were constructed from logs (Darke County Historical Society 2007).

The main gate was located in the center of the north curtain (Simmons 1992). Fort Jefferson was designed to hold a garrison of 100 (Williams 2005), which was one of the smaller forts built during the 1790-1795 war campaigns. The position of the flagpole could be in two positions at Fort Jefferson. One position could be outside of the fort at the corner of the northwest blockhouse and the other position could be at the addition of General James Wilkinson's house in the center of the fort (Simmons 1992). The powder magazine and well are suggested to have been in the same location (possibly the area of the southeast bastion) according to hired artist Major J. F. Mollenkopf's map which was drawn in 1930 as a result of archeological investigations at the site (Mollenkopf 1930; Simmons 1992:121-122). The well depth measured twenty-five feet and eight feet square and was connected to the fort by one of the two tunnels that were uncovered in Harry R. McPherson's 1930 excavation for the Ohio State Archeological and Historical Society, which measured eighty feet in length (Simmons 1977:11; 1992:120-122; Mitchell 2005). The second tunnel was discovered to lead to a spring located to the southwest of the fort (Simmons 1992). It is possible that a blacksmith's shop was located within the fort, as Mollenkopf's (1930) site map notes an area with "small boulders and ashes" from the 1930 excavations at the site.

General James Wilkinson made amendments to Fort Jefferson in 1792 in response to the many raids made upon the garrison's soldiers by Native Americans (Simmons 1992). An area of 15 to 20 acres was cleared surrounding the fort for better defense of the area (Wilson 1950; Mitchell 2005). An addition was built onto the north end of the original fort, which had buildings probably consisting of stables and granaries (Simmons 1992). According to Simmons (1992), the upper floors of the granaries were designed like blockhouses, having loopholes cut in the walls from which to defend the fort from attackers. Two blockhouses constructed with second stories "that projected out over the

lower floor were erected outside the fort walls" (Wilson 1950; Simmons 1977:11; Mitchell 2005; Williams 2005). These new blockhouses were built to guard the new corral to the west of the fort (Simmons 1992). Finally, General Wilkinson had a house built near the center of the fort for his family (Simmons 1977, 1992; Mitchell 2005). The house was his second, the first built at Fort Hamilton, and it was constructed with glazed windows in wooden sashes, dormers, a sloping roof, and a cupola (Simmons 1992; Mitchell 2005). The interior of the house was presumably very similar to the one at Fort Hamilton, which had a cellar, wooden floors, room partitions, and plastered walls (Simmons 1992). These houses were unusual for the time period, boasting luxuriant creature comforts in an area that was not at the time comfortable for Americans to live in, nor did the homes of the average American settler exhibit such excess of material wealth.

Fort Recovery Layout and Architecture

Fort Recovery was the second fort built during General Anthony Wayne's war campaign. Its designer was Henry Burbeck, General Wayne's chief of artillery. Information regarding the fort's layout is limited since the location of the original plans is no longer known. However, its description has been recorded in contemporaneous letters and later historical writings of the fort site. Built to function as another supply and line-of-communication fort, Fort Recovery was erected "to afford additional security to the Western Frontiers" (Knopf 1960:297). It was the simultaneous intention of the American army to secure the lands acquired at the signing of the Treaty of Paris while establishing a military stronghold at the location of the greatest recorded victory of Native American forces.

Built on the banks of the Wabash River, the site of the Battle of the Wabash, Fort Recovery was a log construction with fifteen-foot high palisades of a vertical construction (Lee 2001). The walls had shutters on the portholes that enabled the fort's defenders to shut off the openings while they reloaded their muskets (Williams 2005; Hall 2008). A discrepancy exists regarding the exterior trace design of Fort Recovery. Some descriptions of the fort represent it as having two blockhouses rather than four, as reported in the majority of the literature consulted. Van Trees (2007:240-241) notes this inconsistency and states that "the banks of the Wabash may have provided a measure of protection which dictated use of only two corner bastions." Until extensive archeological examinations can determine the validity of the "two blockhouse" statement, the bulk of authoritative literature states that Fort Recovery was constructed with the four blockhouses initially built as a means of defense against hostile attacks before the remainder of the fort was assembled (Simmons 1977; Gaff 2004; Williams 2005; Mitchell 2006; Hall 2008). Considering this perspective, Fort Recovery followed the standard frontier fort plan with a square design and four single-story blockhouses measuring 20 square feet instead of bastions (Simmons 1977; Lee 2001; Williams 2005; Mitchell 2006; Hall 2008). The blockhouses were designed with shuttered embrasures (portholes with outward flaring sides) that would allow a small howitzer to be fired in defense of the fort (Simmons 1977). The initial construction consisted of the blockhouses which were angled so that three of the four sides faced outward from the curtain (Mitchell 2006; Hall 2008). The positioning of the blockhouses would have given the garrison a wider view of approaching enemies and provided better angles from which

to defend the structure. The palisade was quickly constructed after the completion of the blockhouses and the surrounding land was cleared between 100 and 1,000 feet (Rohr and Meiring 1991; Williams 2005; Mitchell 2006; Hall 2008). Upon consideration of potential names for the fort, Wayne had thought to call it Fort Defiance or Fort Restitution, but settled on Fort Recovery since the purpose of erecting a fortress in the wilderness was to recover the ground and artillery left at the site after the defeat of American forces under the command of General St. Clair (Simmons 1977; Williams 2005; Mitchell 2006; Van Trees 2007).

Limited information exists regarding the interior layout of Fort Recovery. It is known that a 36-foot deep well was dug within the walls of the fort, but the men of the garrison complained so severely about the sulfurous taste of the water that a tunnel was dug connecting the fort to the Wabash River and a fresh water supply (Simmons 1977; Williams 2005; Mitchell 2006; Hall 2008). The size of the fort was large enough to accommodate a garrison of 200 men (Sword 1985:273; Williams 2005:66), which indicates that there may have been buildings within the interior such as officer's and enlisted men's quarters. Van Trees (2007) and Rohr and Meiring (1991) both note the existence of barracks or small buildings within the interior of Fort Recovery in their historical accounts.

In addition to the well and tunnel, further amendments were made by Captain Gibson from January through 1 May 1794 to further provide security to the fort's garrison (Simmons 1977; Rohr and Meiring 1991; Gaff 2004; Williams 2005; Mitchell 2006; Hall 2008). A second story was added to each of the blockhouses with cupolas on them that were to "function as lookout post[s]" (Hall 2008:26). The men of the garrison spent their time searching for St. Clair's lost artillery and "cutting down underbrush and removing some fallen trees for a distance of about 250 yards around the fort and…building a detached blockhouse on the banks of the stream" (Gaff 2004:198). An icehouse measuring twelve by fourteen feet was constructed as a means of preserving perishable stores throughout the warmer months of the year (Simmons 1977; Williams 2005; Mitchell 2006; Hall 2008). The location of this structure is not mentioned in the literature in reference to Fort Recovery's layout. All of these reinforcements, including the recovery of six of the eight cannons known to be scattered about the site, served the garrison well when it came under attack on 30 June 1794 (Williams 2005:67; Hall 2008:27).

Northwest Territory Fort Typology

Following the close of the Revolutionary War, early America was unable to pay its veterans due to years of warfare and a decentralized government (Guthman 1975:1). When America acquired the Northwest Territory lands in 1783, the financial burden of war had the potential to be relieved with the sale of land tracts to willing frontier settlers. As an economic boon for fledgling America, for the fee of the land tracts private citizens could purchase land and settle their families further west (Guthman 1975:1). Military veterans were to be paid for their service with reserved land tracts in the western frontier

(Guthman 1975:1). The development of revenue through securing these lands would strengthen America in its capitalist ventures.

However, westward expansion proved to be dangerous for American citizens. Initially, settlers had difficulty with Native American tribes who were unhappy with American citizens establishing settlements north of the Ohio River. As a response to acts of aggression from the natives, Congress established the first version of the Federal army (Guthman 1975:1-2). Until the first government supply and defense forts were established in 1789, this version of the army was understaffed and ineffective for defense of the settlers in the frontier (Guthman 1975:21-24). In tandem with the construction of government forts, settlers began safeguarding their new homesteads by building their own fortifications in the forms of civilian forts, blockhouses, and fortified log houses (Scamyhorn and Steinle 1986; Lee 2001). By 1785, General Josiah Harmar had begun establishing forts in the Ohio Valley (Sword 1985:56).

The fortifications built in the Northwest Territory were designed with specific functions in mind. While many of the forts were military posts or strongholds others were built by civilian settlers to protect their families in the frontier. All of these fortifications fall into typological categories that can be separated into three distinct levels, each classified by function and layout. Level I forts consist of government-built forts and strongholds that were the main supply storehouses and defensive structures constructed to secure the American foothold in the Northwest Territory. Level I forts were constructed as imposing bastions of military strength, reinforced for the purpose of withstanding heavy artillery (Forts Defiance and Wayne) or as siege-resistant structures in the wilderness. Level II forts were also government-built but served a slightly less vital function as military garrisons. Their design was somewhat less reinforced and they tended to be built more quickly than Level I forts. Level III forts were primarily built near settlements by civilians as a line of defense against Native American raids. These constructions did not always follow a standard fort layout design, but could be composed as log cabins and blockhouses that maintained elements of fortification such as a picketed palisade. Whether the military or settlers built them, these forts were crucial in establishing American settlements in the western frontier and opening the door for further western settlement as Native Americans faced removal from their ancestral lands.

World-Systems Theory and Frontier Fortification

Modern theories allow archeologists, historians, and economists to scrutinize the capitalist goals of early American legislation tactics. The theory that will be utilized in this section is Immanuel Wallerstein's World-Systems Theory. World-Systems Theory attempts to identify the factors that contribute to and are affected by the capitalist world economy. Specifically, World-Systems Theory divides the capitalist economic processes into three geographically-based categories: core, semi-periphery, and periphery (Hopkins and Wallerstein 1987; Groover 2003). The core can be identified as an area, or port of entry, containing the highest levels of cultural complexity and formal government and economic centers. The semi-periphery is balanced in-between the core and periphery, having some government and economic powers, but operating also as regional distribution centers for goods and services. The periphery is most often referred to as the

frontier and functions as the interface between the expanding entity and the indigenous peoples by means of interaction between non-native settlers and through commodities trading.

The mode of incorporation as associated with World-Systems Theory provides the impetus for new areas of capitalist expansion, which is identifiable in colonial America (Hopkins and Wallerstein 1987). The success of the American land grab can be attributed to the attractive nature of the North American frontier and the limitations of Native American resistance strategies. For example, areas with comparable resistance qualities as the expanding entity (i.e. similar military strengths) would be unattractive. However, the North American frontier and its native populations appeared to be a favorable geographic area for the westward incorporation of American capitalist ventures through the building of government fortifications in the frontier periphery (Hopkins and Wallerstein 1987). The conditions for settlement were then set and families moved from a core or semi-periphery area to build homes in the periphery. It is only after this process occurs that the expanding entity, America, can exploit its conquest of capitalist motivations in the periphery lands.

Level I Northwest Territory Forts: Main Supply and Defense Fortifications

Level I forts include the meticulously designed, government-built strongholds credited with securing the American grasp on the Northwest Territory. Forts Washington, Greene Ville, Defiance, and Wayne were designed to be imposing, impenetrable structures whose presence would be threatening to Native Americans. The role of these defense strongholds is important for the fact that they served as main supply posts from which satellite forts were provisioned as well as significant fortresses of government protection for soldiers and civilians alike. Fort Defiance and Fort Wayne were models for defensive fortifications, reinforced to withstand a battering from European weaponry.

The security of Native American lands was threatened through the establishment of fortifications not only north of the Ohio River, but near their villages (Gaff 2004). The utilization of psychological warfare was employed at many of the locations chosen to erect these forts and effectively enforced as a regular tactical maneuver after General Wayne became the army's commanding officer. Most of his forts were placed at known meeting areas of native tribes within the Ohio Valley. The construction of Fort Wayne in the immediate vicinity of Kekionga, home of Mishikinakwa (Little Turtle) and the Miami's large village, may have been the final intrusion that further instilled the strength of the Americans in the native psyche.

What is most important about these forts is that they were subsidized for the protection of settlers through the taxation of citizens and to further make the point to natives that the Americans were not going to abandon lands that they could capitalize upon. That is, the Federal army was paid through direct taxation of its citizens as a result of an act of Congress (Guthman 1975:3) and as such, any fortifications that were built by soldiers would have been subsidized through Article I Section VIII of the United States Constitution (Guthman 1975:3; Mount 2010).

If Level I fortifications are examined under the lens of World-Systems Theory, this type of fort could be identified as a part of the core or semi-periphery. Fortifications identifiable as core or semi-periphery would have included Fort Washington, Fort Greene Ville, Fort Defiance, and Fort Wayne. These government facilities were important ports of entry as America ventured into the frontier.

Level II Northwest Territory Forts: Frontier Garrisons

The remainders of the government built fortifications that have been discussed fall into the Level II category. These fortifications primarily functioned as links in the chain, aiding the supply convoys to their final destinations and to provide communication between the garrisons. These forts would be the interface between settlers and deployed military or militias and the Type I core/semi-periphery fortifications.

Forts Hamilton, Jefferson, St. Clair, Recovery, and Adams functioned as part of the supply line for the military to secure its hold on the Northwest Territory lands it had acquired. These forts would have functioned within the semi-periphery as regional distribution centers when World-Systems Theory is applied. They were not foremost in the hierarchy of forts, but did serve as centers for gathered information and goods as they were being redistributed.

It was an important function of these forts to be no further apart than about 24 miles each as a supply convoy could travel no further than that approximate distance in one day. As General Arthur St. Clair was conducting his campaign, a distance of 44 miles stretched between Fort Hamilton and Fort Jefferson. General James Wilkinson remedied this discrepancy by constructing Fort St. Clair between the two forts. General Anthony Wayne continued the supply chain by constructing Fort Recovery and Fort Adams.

Although these forts may have posed a threat to Native Americans living in the vicinity, none of them are noted as being constructed with that in mind. Fort Recovery is the only exception to this with its site location chosen solely as a defiant stand by General Wayne and his Legion. Constructed at the site of General St. Clair's defeat on the banks of the Wabash River, Fort Recovery was the first of the American government's forts to withstand an unusual frontal attack and subsequent siege attempt from Native American warriors (Williams 2005; Mitchell 2006).

The life span of a supply and communication fort was generally short-lived. Fort Hamilton would have been one of the longest occupied at six years and Fort Adams had a short occupation at one year or less (Williams 2005:148-149). Several small government forts throughout the Northwest Territory were only used for a few months to one year before they were abandoned or destroyed. Many government forts were simply abandoned and later burned by settlers for the hardware that they contained.

Level III Northwest Territory Forts: Community Forts, Posts, and Blockhouses

The Type III forts include those built by American citizens as a means of self-preservation and survival in the frontier. These forts were built by people who did not

necessarily have the expertise of the engineers who built the government fortifications, but did own land in the local area. The people who built and lived within these fortified areas or blockhouses would have been the ones who provided the tax monies that supported their government protectors, and therefore were the ones who subsidized the funding of American government and military functions.

The community-built posts of Fort Miami, Dunlaps Station, and Covalt Station can be placed in the category of peripheral local distribution centers, as they recovered basic resources for resale within the core society elsewhere (Scamyhorn and Steinle 1986:15). In acquiring these resources, they served a purpose that government fortifications were not allowed to—they could function as fur trading posts, linking the worlds of Americans and Native Americans. Scamyhorn and Steinle (1986:15) note the friendly contact between settlers and Native Americans in what would become Southwestern Ohio. They state that relations were cordial until some of the posts began cheating Native fur traders on prices and compensation. It was not until May 1789 when the "first serious attack in the area occurred at North Bend" (Scamyhorn and Steinle 1986:15). The attacks did not cease until the signing of the Treaty of Greene Ville in 1795 (Scamyhorn and Steinle 1986:15).

The years between 1789 and 1795 were dangerous for settlers in the Northwest Territory. The best means of survival meant that one's land or the community settlement needed to have some form of fortification. Federal army soldiers were often stationed at these posts to aid the citizens when a raid occurred. At least one blockhouse was built to provide safety for the members of each community (Scamyhorn and Steinle 1986:20). However, the consistency of these community fortifications varied significantly (Scamyhorn and Steinle 1986:20).

The function of these forts in World Systems Theory is that of local distribution centers, or as part of the periphery or frontier. These civilian-built fortifications were often the furthest from military help unless a few soldiers were assigned to guard the small communities. While they interacted with another periphery or frontier group, Native Americans, that relationship turned sour for reasons of greed on the behalf of those who ran the fur trading posts and also for the invasion of native lands by the American government. The people living in these communities would have been the furthest from society and culture and probably had little interaction with people occupying semi-periphery and core groups. These civilian posts also do not appear to have established towns or cities existing today, which further supports their categorization as Level III forts.

The survival of America as a fledgling country can positively be attributed to the building of government and civilian fortifications in the frontier. The standardization of forts in America was dependent upon the studious observation of French engineers and their willingness to educate American artillerists in the design concepts of successful fort building. Although most of the government-built forts exhibited a standardized trace design, civilian fortifications were less likely to follow standardized forms since the builders of these structures were often not trained in military engineering strategy. It is possible that without these basic military science strategies, America may not have had the advantage that allowed it to become the country we know today.

While the standardization of these early frontier posts is rather limited, there are a few designs that may have been influenced by either practical application or as a result of the engineer's training as an artillerist. The common four-bastioned (sometimes blockhouse) fortification is a rather important design since it allowed for the best defense of the American frontier fortification during an attack. The concept of standardized forts is briefly mentioned throughout literature on fortifications, but does not appear to have been systematically analyzed. Further analyses performed in this area may provide a better understanding of why individual early American frontier fortifications, both government and civilian, were designed, located, and utilized as described in the writings of soldiers and settlers.

The application of World-Systems Theory as a means to categorize early American forts into a tri-level fort typology also has not been approached to date. It is possible that further analysis of these government and civilian forts that both uses and expands upon the basic concepts of the World-Systems Theory may allow for the development of a new theoretical model or perspective. Additional fortification studies by archeologists and historians may provide new information regarding the underlying processes involved in and/or resulting from the construction of government forts and frontier garrisons, community forts, and blockhouses built during the Federal Period in the Northwest Territory.

Chapter IV. 1791 Battle of the Wabash: Field Methods, Results, and Analysis

This chapter details archeological field methods and results for the Battle of the Wabash in 1791. Based on the results of historical research and archeological results, a comprehensive GIS data model and updated KOCOA analysis concludes this chapter.

Battlefield Reconstruction Methods

By Christine Keller and Jessie Moore

Battlefield reconstruction methods for the Battle of the Wabash consisted of informant and collector interviews and geophysical surveys of the 97 acre core battlefield area. Geophysical surveys consisted of metal detector survey of various parcels that fell within or just outside the core battlefield area. Parcels were chosen for metal detector survey based on their lack of relative disturbance, the parcel's location and role within the battle, and landowner permission. Gradiometer survey was conducted on parcels that produced battle era artifacts or showed some type of data anomaly during the metal detector survey. Resistivity survey was performed in the central battlefield area and the area of St. Clair's encampment.

For generations, collectors have been recovering materials related to the two battles in and around the modern town of Fort Recovery. Their knowledge of the distribution of battle related materials was sought through interview as one of methods used in this project to reconstruct the battlefield and document the integrity of battlefield features.

The Battle of the Wabash in 1791 covered a large area based on contemporary maps and historical records. The combination of geophysical surveys and informant and collector interviews will produce archeological information that will help further define and delineate the battlefield boundaries of the Battle of the Wabash and to help answer our project goals. The presence of the later Battle of Fort Recovery in 1794 always has the potential to complicate the archeological record. However, our GIS data modeling analysis can help distinguish the temporal period of recovered battle era artifacts, helping us to clarify even further our battlefield boundaries for the Battle of the Wabash in 1791. The GIS data model, using the KOCOA methodology, synthesizes all archeological results with the historical and background research to produce additional insights about the battlefield movements and strategies of both the Native Americans and St. Clair's Army.

Informant and Collector Interviews

Interview participants generally fell within two categories, informants or collectors. Informants were community members that did not collect artifacts but instead offered other relevant information such as history of the project area, potential locations for surveying, or possible collector contact information, etc. Informants generally approached project members informally as opposed to being approached themselves.

Collectors were most notably distinguished by the fact that they did collect artifacts. Collectors have not always been viewed as a good resource for archeologists, since their hobby has the potential to adversely affect archeological sites. Recently however archeologists are beginning to realize the advantage of using collector information. Collectors can contribute greatly to archeological projects because of their expertise in particular areas.

Collectors' interviews were arranged both formally and informally. It was common for collectors to approach team members in the field and offer help or suggestions. On other occasions at the recommendation of informants, collectors were contacted and invited to participate. Collectors represented a significant element to the project because of their contribution to both artifact and methodological knowledge. Experience levels ranged from novice to expert; with many collectors familiar with operating metal detectors.

In order to reach a larger audience from within the local community, a mass mailing was made with the annual Fort Recovery State Museum patron solicitation in March 2011. The mailing included an explanation of the grant project, a map of the core battlefield area, and a questionnaire for community members to fill out if they had previously found battlefield artifacts. Approximately 100 questionnaires were mailed to current and previous museum patrons and community members.

The mailing also included information on two public informational meetings to be held to discuss the grant and to give collectors an opportunity to bring in their artifacts for review. The meetings were held on 4 April and 10 April 2011. Approximately 15 community members and collectors attended these meetings which were hosted by the Fort Recovery State Museum director and Ball State University archeologists and students. The meetings were intended to gather information on collectors' artifacts, potential areas for future surveying, and further collector/hobbyists contacts.

Battlefield Survey and Testing Methods

A principal research goal of the project was to identify defining features of the 1791 and 1794 battles. A defining feature is any natural or manmade terrain attribute or structure that influenced battlefield strategy. Defining features were identified by examining both primary and secondary historical documents. Primary sources were comprised of personal journals of enlisted men and officers, battle maps, correspondences, and reports. Secondary sources included synthesized battle maps, county maps, USGS topographic maps, GLO notes, and modern maps and aerial photographs.

This information was then transferred to digital map files for analysis using ESRI's ArcGIS 10 software. A project area consisting of 97 core acres was established from this analysis. The core project area was divided into 20 parcels ranging in size from 0.02 to 52.81 acres (Figure 26 and Table 6). The parcel size was generally determined by land owner property lines. Detailed parcel images are contained in Appendix E.

Figure 26: Overall Parcel Map.

Table 6: Overall Parcel Listing.				
Parcel	**Landowner**	**Acres**	**KOCOA Analysis**	**Current Use**
1	**Redacted**	2.04	Avenue of Approach/Retreat-St. Clair 1791; Field of Fire	**Redacted**
2	**Redacted**	0.73	Avenue of Retreat-St. Clair 1791; Obstacle; Cover and Concealment	**Redacted**
3	**Redacted**	0.59	Avenue of Retreat-St. Clair 1791; Obstacle; Cover and Concealment	**Redacted**
4	**Redacted**	0.70	Obstacle	**Redacted**
5	**Redacted**	1.50	Avenue of Approach/ Retreat-St. Clair 1791; Field of Fire	**Redacted**
6	**Redacted**	10.35	Key Terrain; Obstacle; Field of Fire; Observation; Cover and Concealment	**Redacted**
7	**Redacted**	52.81	Key Terrain; Avenue of Approach-Native American Confederacy; Avenue of Retreat-St. Clair 1791; Observation; Field of Fire;	**Redacted**

Table 6: Overall Parcel Listing.				
Parcel	**Landowner**	**Acres**	**KOCOA Analysis**	**Current Use**
			Cover and Concealment; Obstacle	
8	**Redacted**	0.09	Key Terrain; Field of Fire	**Redacted**
9	**Redacted**	0.04	Key Terrain; Field of Fire	**Redacted**
10	**Redacted**	0.02	Avenue of Approach/Retreat-St. Clair 1791; Field of Fire	**Redacted**
11	**Redacted**	0.92	Avenue of Retreat-St. Clair 1791; Obstacle	**Redacted**
12	**Redacted**	1.02	Avenue of Approach/Retreat-St. Clair 1791; Field of Fire	**Redacted**
13	**Redacted**	0.31	Avenue of Approach/Retreat-St. Clair 1791; Field of Fire	**Redacted**
14	**Redacted**	2.52	Avenue of Approach-Native American Confederacy; Field of Fire	**Redacted**
15	**Redacted**	1.87	Avenue of Approach-Native American Confederacy; Field of Fire; Obstacle; Observation; Cover and Concealment	**Redacted**
16	**Redacted**	1.73	Avenue of Approach-Native American Confederacy; Field of Fire	**Redacted**
17	**Redacted**	2.07	Possible Avenue of Retreat – St. Clair 1791; Field of Fire	**Redacted**
18	**Redacted**	0.07	Field of Fire	**Redacted**
19	**Redacted**	1.06	Field of Fire	**Redacted**
20	**Redacted**	0.31	Field of Fire	**Redacted**

The analysis for battlefield reconstruction was then used in the field where investigations focused on the 97 acre core area. Field methods to specifically address the Battle of the Wabash consisted of geophysical surveys using metal detector, gradiometer and resistivity.

All geophysical surveys (metal detector, resistivity, and gradiometer) were conducted in 20 x 20 meter grids that were created across the 97 acre core area using the Create Fishnet tool in ESRI's ArcGIS 10 software (example shown in Figure 27). Grids were identified by northing and easting GPS readings as well as unique grid numbers across the core battlefield area landscape. The grids were laid out using 20 meter long ropes that were incremented every half meter. The incremented ropes were placed horizontally along the north and south baselines with a third incremented rope acting as a guide line running vertically from the north to south baselines. The grids were divided into four quadrants (northwest, northeast, southeast, and southwest) by two unmarked ropes.

Figure 27: Parcel 17 showing grid created with ArcGIS Create Fishnet tool.

Metal Detector Testing

The project began with a systematic metal detector survey of a 25% sample of the 97 core area, excluding parking lots. Metal detector surveys were used to identify the extent and concentration of battle related materials that correlated with the limits of the battlefield and helped to detect the location of combatants and key events. Metal detectors are believed to be an appropriate method for determining the location of battlefield events and boundaries where few artifacts other than lead projectiles are thought to exist. Fisher F2 metal detectors were primarily used throughout the survey except for occasions when volunteers used their own instruments. The sensitivity level was set at 2 when using the Fisher F2 metal detector. Setting 2 was decided upon after noting that higher settings rendered higher levels of trash or modern artifacts.

The metal detector operator began the survey by placing the incremented guide line at the first meter mark on both the north and south baselines. They then followed this guide line as they performed two meter wide sweeps with the metal detector. The metal detector had to remain completely horizontal to the ground surface and stay within one inch of the ground surface in order to produce accurate results. Once the opposite side of the grid (either north or south baseline) was reached, the operator would then advance two meters to their side, moving the incremented guide line with them, and begin the process again in the opposite direction. The result produced a zigzag movement east-west across the grid (Figure 28).

Figure 28: Metal detector surveys methodology.

While the operator surveyed the selected 20 meter x 20 meter grid, an assistant recorded the type of metal, the associated metal detector numeric reading, and the quadrant (NW, NE, SE, SW) of the location of the metal target on a pre-printed Metal Detector Grid Worksheet (Appendix G). The next step required flagging the targets in the quadrants that were to be sampled. Depending on the parcel, sample size ranged from 5 to 25 percent. Sample size differences were dependent on the amount of disturbance present in the parcel due to urban development, previous collector reports for that parcel, and the role of the parcel during the battles in 1791 and 1794. A range of metals were identified during the metal detecting survey – the F2 Fisher metal detector identified these as iron, nickel, quarter, zinc, dime, plus, tab, foil categories. Each metal category was flagged with a specific color of flag. The distribution of metals within a sample quadrant was mapped on a pre-printed Metal Detector Sample Worksheet & Sketch Map (Appendix G) using the color of the flags to designate the various metal types. The foil and tab categories were originally sampled and mapped, however it was found that these categories almost always recovered modern trash; therefore the two categories were later only recorded but not recovered or mapped. The Metal Detector Sample Worksheet & Sketch Map also was also used to track negative shovel tests.

The artifact collection sampling strategy was based upon specific parcel properties. The range of sample sizes ranged from 5 to 25 percent of quadrants per parcel depending on the location and role of the parcel within the core battlefield area, the amount of soil disturbance detected when conducting sample shovel tests in the parcel, and previous collector reports for that specific parcel. After the sample quadrants had been flagged and mapped, the artifacts were then recovered. The vast majority of shovel

test units ranged in depth from just below ground surface to approximately 15 cm below ground surface. There were some shovel tests that were excavated slightly below the 15 cm depth to recover the identified metal objects. A Garrett Pro-Pointer pinpointer was used to quickly locate metal objects once the shovel test was dug. After artifacts were recovered they were bagged and given a temporary artifact number specific to the particular grid and quadrant from which they were recovered. Temporary artifact bags were tied to a specific shovel test on the sketch map.

Volunteers were invited to participate in the metal detecting portion of the project. Three participants took part including Alan Mark, Dennis Morgan, and Jeff Morgan. Dennis Morgan and Jeff Morgan used their personal White Spectrum XLT and White DFX metal detectors on relic mode. Alan Mark used his personal Garrett GII 2500 metal detector. The volunteers were specifically employed in metal detecting in anticipation that new operators and more advanced metal detectors might result in more precise findings. The volunteers were accompanied by a team member in order to insure that they accurately followed previously defined survey methods. The volunteers identified targets while other team members recorded data and recovered artifacts.

Data from the Metal Detector Grid Worksheet was entered into an Excel spreadsheet by parcel, grid, and quadrant with metal detector hits tracked by specific metal type. The data was then imported into ESRI's ArcGIS 10 software to produce the metal detector data analysis in GIS (Figure 29). The analysis was color coded to represent a graduated scale of metal detector hits by quadrant for a specific metal type; with dark green being the lowest number of hits and red being the highest number of hits for metal type being analyzed. Original Metal Detector Grid Worksheetss were kept in a binder by parcel and grid. Data from the Metal Detector Sample Worksheet & Sketch Map was kept for informational and record keeping purposes only and the original worksheets were kept in a binder by parcel and grid.

Figure 29: Example of metal density analysis in Arc GIS.

Gradiometer Testing

Following the metal detector surveys, magnetometer surveys with a FM36 gradiometer were conducted in areas reported as combatant encampments, areas believed to be the location of heavy fighting, and areas that showed metal detector data anomalies. These areas were more likely to contain archeological features beyond isolated artifacts, such as fort walls and foundations, rifle pits, hearths, and others. The gradiometer testing was limited in some areas due to recent fill of up to one meter, but significant portions of the core area were available for survey. When possible, the gradiometer survey was conducted on the same 20 meter x 20 meter grid system created by the ArcGIS 10 Create Fishnet tool that was previously used for the metal detector surveys. The gradiometer survey also used the same marked rope system as the metal detector surveys. Data was initially collected at a rate of 8 readings per meter with transect spacing of 0.5 meters. In grids that showed specific areas of interest, the density of gradiometer data collected was increased with data collected at a rate of 16 readings per meter with transect spacing of 0.25 meters. The resultant data in all grids was processed using GEOPLOT v3.0 software.

Resistivity Testing

Resistivity is a good compliment to magnetometry as it uses a different approach to identifying buried features and is less affected by metal objects that can obscure detection in magnetometer surveys. An RM-15 electrical resistivity unit was used to survey a small portion of Parcel 6. The resistivity survey was conducted on the same 20 meter x 20 meter grid system created by the ArcGIS 10 Create Fishnet tool that was previously used for the metal detector and gradiometer surveys. The resistivity survey also used the same marked rope system as the metal detector and gradiometer surveys. Data was collected at a rate of 2 readings per meter 0.5 meters with transect spacing of 0.5 meter. The resultant data was processed using GEOPLOT v3.0 software.

Laboratory Activities

All materials recovered from the metal detector survey were analyzed at the Applied Archaeology Laboratories at Ball State University. Laboratory methods followed the procedures and practices listed in the Ohio Historical Society Archaeology Collections Acquisition Procedures and the appropriate National Park Service standards. Artifacts were cleaned as appropriate, identified and cataloged per these procedures.

Upon completion of the project, all artifacts and records associated with the investigation, including copies of field notes, field drawings, maps, photographs, and reports, will be curated at either the Ohio Historical Society. Modern non-artifacts collected during the survey were curated at the Applied Archaeology Laboratories, Ball State University. This arrangement has been agreed upon by the project team members, the Fort Recovery State Museum, the Fort Recovery Historical Society, the Ohio Historical Society, and Fort Recovery landowners participating in this project.

Digital photographs were also utilized to document all aspects of the project.

Battlefield Reconstruction Results

By Christine Keller and Jessie Moore

The results of informant and collector interviews, metal detecting surveys, gradiometer testing and resistivity testing all contributed to GIS data modeling processing that helped further define and delineate the battlefields of the Battle of the Wabash and the Battle of Fort Recovery. These results are presented by parcel and analyzed spatially based on KOCOA analysis and the role(s) the parcel played in the two battles.

Informant and Collector Results

Approximately 15 informant or collectors volunteered time or information for the project. Of these, four contributed artifacts or allowed for their personal collection to be examined. Figure 30 displays the distribution of artifacts from collectors.

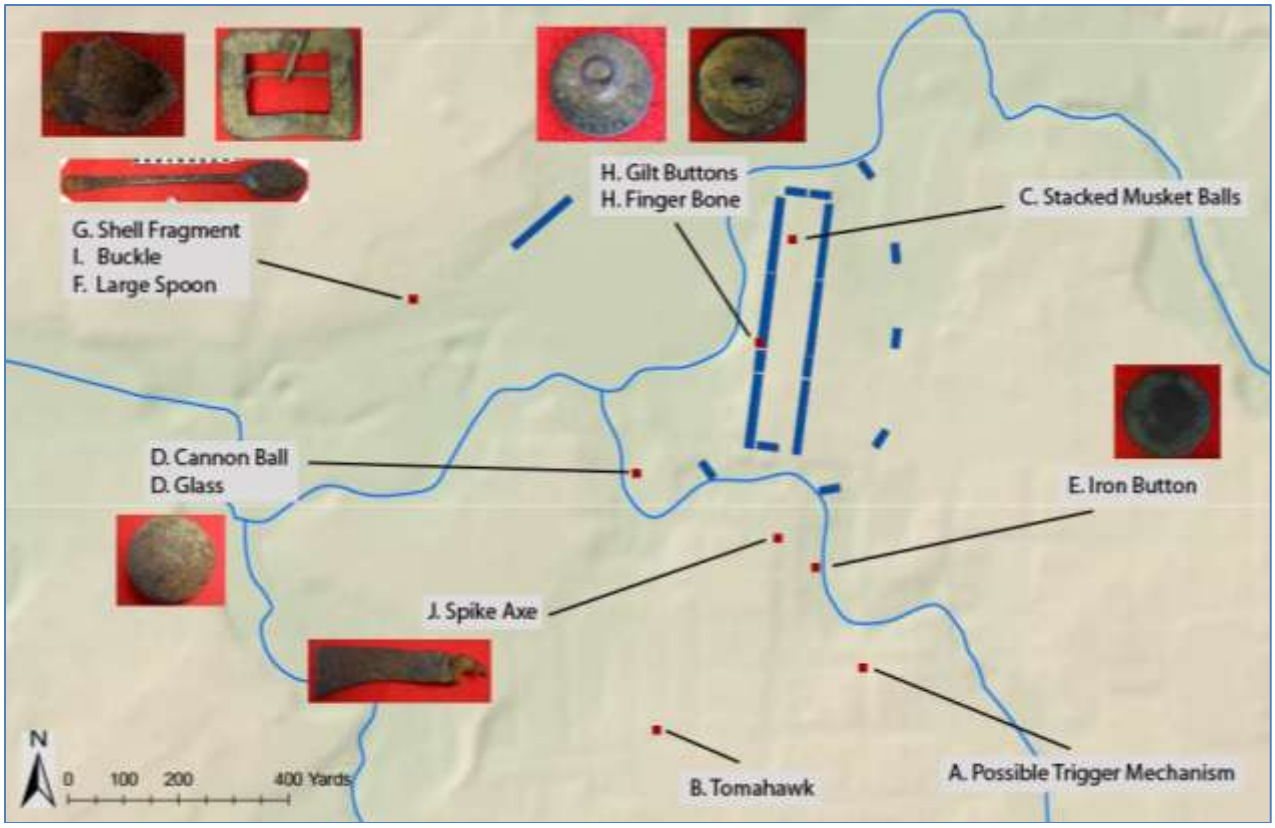

Figure 30: Distribution of battle era artifacts from collectors.

Mr. Dan Wilker, local metal detector hobbyist, provided information and advice regarding metal detector methods. In addition, he provided information concerning a possible trigger mechanism from a late 18th century pistol that had been found near the southwest corner of the intersection of Main and Center streets (Figure 30.A).

Mr. Jim Stump provided information concerning an axe that resembles a period tomahawk that had been found in front of his residence on Milligan Street in the 1970s (Figure 30.B).

Mr. Jeremy Bubp provided information concerning stacked musket balls found in backfill on North Wayne Street in 1994 (Figure 30.C). He also provided information on a cannon ball (Figure 31) discovered at his residence at the southeast corner of Butler and George Streets in 2009 (Figure 30.D). Colored glass and a possible buckle wer found by Mr. Bubp at this same location. He also provided information on an iron button he recently discovered between South Wayne and South Main Streets (Figure 30.E). This location is adjacent to Parcel 1.

Mr. Alan Mark, local metal detector hobbyist and collector, provided information concerning a 3" Howitzer shell fragment (Figure 33) and a spoon (Figure 32) he discovered in Ambassador Park, Parcel 7, in 1983 (Figure 30.F and G). After further investigation, the Howitzer shell was discovered to more likely represent a cannon shell

due to its small circumference (Berkebile 1961, 1965; Muller 1768). The maker's mark on the spoon is either an "8" or an "S." Mr. Mark also provided information on his discovery of two gilt buttons (one engraved with "Treble Gilt" and the other engraved with "Coville Double Gilt") (Figure 34 and Figure 35) and a finger bone in a backdirt pile at the northeast corner of the intersection of Boundary and Fort Site Streets (Figure 30.H). This location is adjacent to both Parcel 8 and Parcel 6. Mr. Mark also provided information on grapeshot he had purchased that supposedly was find within a tree in Fort Recovery years before. Mr. Mark also provided information on a buckle (Figure 36) found in Ambassador Park in 2009 (Figure 30.I). Finally, Mr. Mark provided information on a spike ax (Figure 37) found by a city worker in 2010 within the backfill from the South Wayne Street renovation project (Figure 30.J). Besides the grapeshot, Mr. Mark knew the exact locations of all of his discoveries and led Ball State University archeologists to those spots where UTM coordinates were taken.

Over 200 battle era artifacts have been previously found by numerous community members since the settling of the village of Fort Recovery since the 1850s. These artifacts (the vast majority without provenience) are shown in Appendix A.

Figure 31: Cannon ball discovered by homeowner Jeremy Bubp at the southwest corner of Butler and George Streets in 2009.

Figure 32: Spoon discovered by collector Alan Mark in Ambassador Park, Parcel 7.

Figure 33: 3 inch Howitzer or cannon shell fragment discovered by collector Alan Mark in Ambassador Park, Parcel 7.

Figure 34: Gilt button engraved with "Treble Gilt" discovered by collector Alan Mark in backfill dirt at the northeast corner of Boundary and Fort Site Streets.

Figure 35: Gilt button engraved with "Coville Double Gilt" discovered by collector Alan Mark in backfill dirt at the northeast corner of Boundary and Fort Site Streets.

Figure 36: Buckle discovered by collector Alan Mark in Ambassador Park, Parcel 7.

Figure 37: Spike ax discovered in backfill dirt from the 2010 South Wayne Street renovation project.

Metal Detecting Results

Metal detecting surveys took place from 4 April to 13 September 2011. A total of 182 grids measuring 20 meters x 20 meters were surveyed across 81 acres of land in Parcels 4, 6, 7, 11, 15, and 17. Modern intrusions resulted in some grids only being partially investigated. A total of 603 quadrants were surveyed with 123 quadrants sampled. A total of 1,758 shovel test units were excavated, with 1,427 of those being positive and 2,655 total artifacts recovered. Figure 38 shows the areas metal detected with parcels outlined in red. The coloring of each square indicates the relative number of metal detector hits in each grid and quadrant.

Figure 38: Areas of metal detector surveys with red showing highest levels of metal concentration.

The 2,655 total artifacts included 50 cut nails, 222 pieces of glass, and 9 pieces of faunal material with 13 battle related artifacts (Table 7). The remaining artifacts recovered were either more modern artifacts unrelated to the battle or modern refuse. The complete metal detecting artifact catalog sheet is contained in Appendix C. Photos of battle era artifacts founding during this project are contained in Appendix B.

Table 7: Metal Detector Results by Parcel.									
Parcel	**Total Acres**	**Grids Surveyed**	**Sample Size**	**Units Excavated**	**Artifact Count**	**Cut Nails**	**Glass**	**Faunal**	**Battle Related**
4	0.7	1	25%	23	24	1	2	0	0
6	10.35	18	20%	269	704	22	99	8	4
7	52.81	112	25%	1,261	1,728	16	100	1	9
11	0.92	6	5%	30	25	4	0	0	0
15	1.87	20	16%	79	81	0	1	0	0
17	2.07	22	5%	96	934	7	20	0	0
		179		**1,758**	**2,655**	**50**	**222**	**9**	**13**

The 13 battle related artifacts were located within Parcel 6 and within a concentration in Parcel 7 (Figure 39). The artifact in Parcel 6 was located near the location of General Arthur St. Clair's 1791 encampment and just outside the location of General Anthony Wayne's 1794 fort structure. The concentration of artifacts within Parcel 7 was located on the southern periphery of the Northwest Indian Confederacy staging area before the battle commenced.

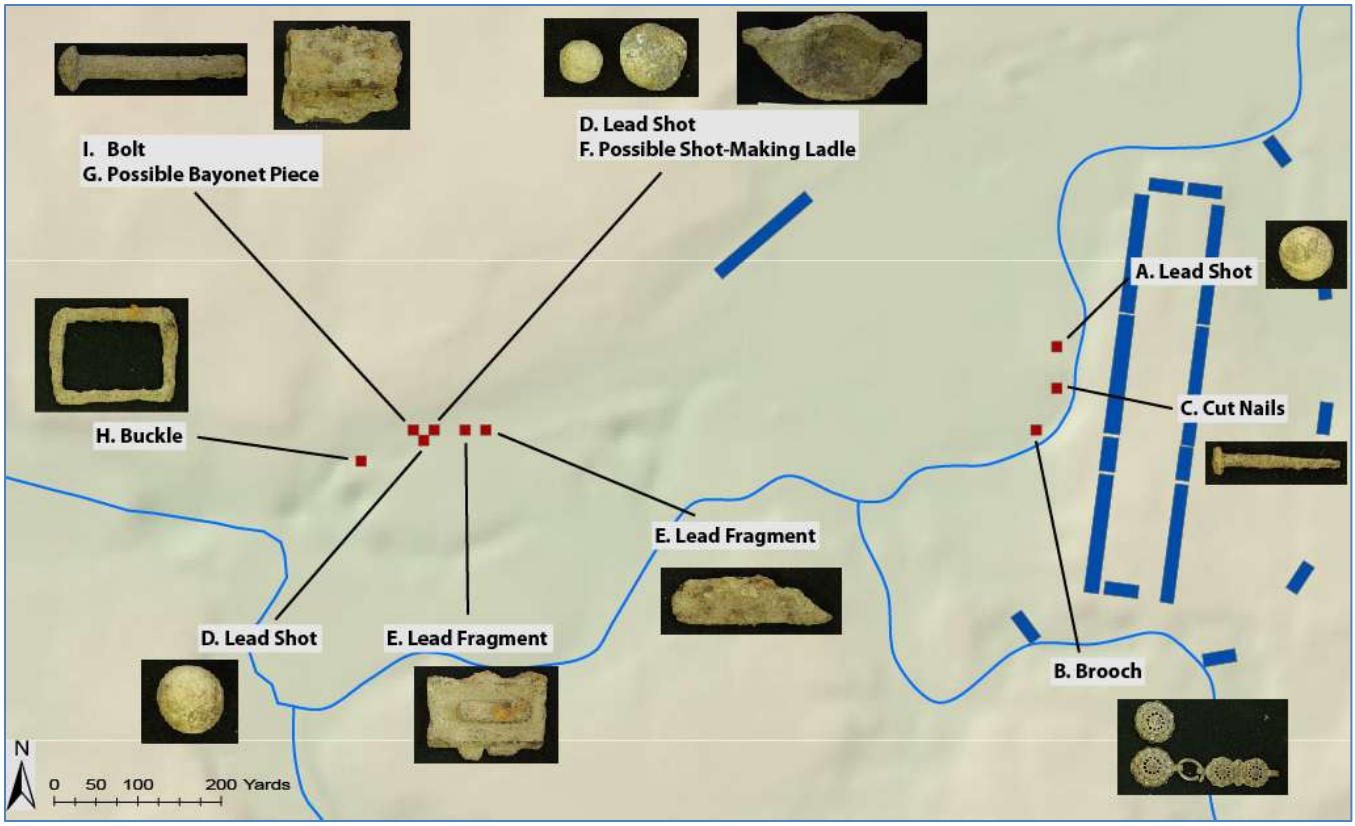

Figure 39: Distribution of battle era artifacts from metal detector survey.

Parcels 1, 5, 10, 12 & 13

Parcels 1, 5, 10, 12 and 13 comprise the possible area of St. Clair's avenue of retreat. The parcels are located in the southeast corner of the core project area and are approximately five acres total in size. The area would also be considered a field of fire since the Native American Confederacy pursued the fleeing American Army along this path. This route potentially represents the path of least resistance for both the fleeing and pursuing forces if it was the original avenue of approach (St. Clair's Trace) used by St. Clair's army when arriving on the Banks of the Wabash (Barmann 1991; DeRegnaucourt 1996; St. Clair 1791; Winkler 2011; Young 1917).

The northern edge of Parcel 1 represents the most southern boundary of the 1836 village of Fort Recovery. Small structures including stockyards, homes, and apartments have dotted this parcel over the years. Flooding has always been an issue, therefore the structures were eventually razed and fill dirt was brought in to raise the ground surface level. A fire station was built on the parcel in the 1980s. Flooding continued to be problematic thus the fire station was later moved to Parcel 13. When the fire station was moved the fill dirt was also removed, perhaps leaving the ground surface levels near that of the surface levels from the 1790's. Two sample shovel tests were conducted to

determine the authenticity of this claim and it was determined that the parcel was constituted of highly disturbed mottled and gravel-filled soil down to 8 inches below ground surface. Parcel 1 is now currently an open lot used as an overflow retention pond (Bicentennial Book Committee 1990; Griffin 1888; Sanborn Map Company 1898, 1927, 1946).

Parcels 5, 10, 12 and 13 were primarily used as residential properties indicated by the presence of domestic structures. In addition, Parcels 5 and 12 included the Fort Recovery Stirrup Company factory that was built in 1899. The stirrup factory was removed in the early 1900s and later replaced by residential property in Parcel 5 and the Fort Recovery Town Hall in Parcels 12. The southern edge of Parcels 5 and 12 are bordered by Buck Ditch (formerly known as Buck Run) that periodically washes up historic artifacts after heavy rains. A pedestrian survey was conducted in this area to identify any readily available artifacts (Sanborn Map Company 1898, 1907, 1914, 1927, 1946; Scranton 1907).

Four sample shovel tests were conducted in Parcels 5, 10, 12 and 13 to determine the extent of disturbance. These parcels were determined to be highly disturbed and thus less favorable candidates for metal detecting. The sample shovel test from Parcel 10 consisted of A-horizon to 40 cmbgs composed of fill dirt with an orange clay B-horizon. Parcel 13 was sampled twice. The first shovel test demonstrated a shallow A-horizon to 8 cmbgs of organic soil. The B-horizon was constituted of highly disturbed mottled and gravel-filled clay to over 40 cmbgs. The second shovel test within Parcel 13 demonstrated a shallow A-horizon of organic soil to 8 cmbgs with a gravel-filled clay B-horizon to over 40 cmbgs; however less gravel-filled than the first shovel test. The shovel test from Parcel 12 featured a sandy-loam A-horizon to 38 cmbgs with a highly mottled gravel-filled B-horizon.

Parcels 2 & 3

Parcels 2 and 3 are located southwest of the probable fort location. The parcels are currently located in the center of the core project area and over one acre in size. Parcel 2 would have been trisected by the Wabash River and Buck Run (now known as Buck Ditch). The southern half of Parcel 3 would have also contained a portion of the Wabash River. The presence of the Wabash River could potentially be seen as an obstacle for both the fleeing American Militiamen and the pursuing Native American Confederacy. The river might have also offered an avenue of retreat or an opportunity for cover and concealment (DeRegnaucourt 1996; Winkler 2011).

Parcels 2 and 3 have been used as residential properties over the years. The old route of the Wabash River used to run through both parcels however after repeated attempts at redirecting the course of the river, the Wabash River is no longer present within either parcel. The parcels continue to be used as residential properties with single-family homes located on the grounds (Griffin 1888; Sanborn Map Company 1898, 1907, 1914, 1927, 1946).

The above parcels were not metal detected because of the high probability that they were constituted mainly of disturbed fill. The land owner permission was obtained nonetheless in case additional acreage was needed for surveying.

Parcel 4

Parcel 4 is located in the center of the core project area and is approximately one acre in size. The parcel is bordered on the south by Buck Ditch and would have seen heavy fighting during the Battle of the Wabash. The presence of the ditch and the stream may have created a potential obstacle for the American militiamen as they fled from the Native American Confederacy (DeRegnaucourt 1996; Winkler 2011).

The area was later occupied by both residential and commercial properties. Domestic structures were present by 1888 and later replaced by a blacksmith and wagon shop in 1898. Three original structures occupied the parcel. Additions to these structures were added by 1914. A printing shop and a woodworking shop replaced the previous businesses. The parcel is now a mowed lot just south of a residential property (Griffin 1888; Sanborn Map Company 1898, 1914, 1927, 1946).

Parcel 4 was surveyed on 17 August 2011 by Christine Keller, Victoria Lucas, and Anna Kalk. One 20 meter x 20 meter grid was surveyed with an approximate 25 percent sample size (one quadrant) flagged for shovel tests. A total of 23 shovel tests were excavated with 23 positive shovel tests.

A total of 24 artifacts were found, none of which appear to be related to the two battles. Two pieces of glass were found. One cut nail was recovered that dates from 1815 to the present (IMACS 1992). No faunal artifacts were recovered. The remaining artifacts were either unrelated to the two battles or were modern refuse. No subsurface features were discovered. The non-sampled survey area showed no metal detector anomalies that warranted further research.

Parcel 6

Parcel 6 is located in the center of the core project are and is approximately ten acres in size. The parcel represents an area of concentrated activity during the Battle of the Wabash. St. Clair's camp was positioned within the parcel, representing numerous elements of KOCOA analysis such as key terrain, observation and field of fire, obstacle, and cover and concealment. The main assault took place within and surrounding the camp which was heavily forested. The high banks of the Wabash River posed an obstacle to the American militiamen as they retreated back from their outpost into the main camp (Barmann 1991; St. Clair 1791; Winkler 2011; Young 1917).

The actual Fort Recovery was built in 1793 on a portion of Parcel 6. In the mid-19th century, other structures were also built within the parcel including two residential properties, a large barn, and several small outbuildings. The parcel lies just outside the modern village center. The Wabash River was redirected to the north during the late 1800s and early 1900s and no longer flows within Parcel 6 at all. A drainage ditch is

now present at the historic location of the Wabash River. Two fort reconstructions were built on the property. The first reconstruction was built in 1936 and replaced in 1956 by the current fort reconstruction. Parcel 6 also houses the Fort Recovery Museum. In addition, the parcel contains a park with a baseball diamond, basketball court, playground, and shelter houses (Anthony Wayne Park Board 1952; Griffin 1888; Sanborn Map Company 1898).

Parcel 6 was surveyed from 9 May 2011 to 1 June 2011. The field crew consisted of Christine Keller, Melanie Cabak, Debra Hollon, Miranda Taubert, Kristin Kjeldsen, Alejandra Fernandez, and Jessie Moore. Sixteen sample shovel tests were first conducted to determine the level of soil disturbance. The shovel tests varied somewhat however they generally featured a deep A-horizon of flood plain soil with a lighter clay B-horizon. Eighteen 20 meter x 20 meter grids were surveyed with an approximate 20 percent sample size flagged for shovel tests. A total of 269 shovel tests were excavated with 222 positive shovel tests.

A total of 704 artifacts were recovered, four of which could be related to the battles. The vast majority of artifacts were modern refuse (pop tabs, cans, bottle caps). Ninety-nine pieces of glass were recovered including 39 pieces of clear body glass, two pieces of clear flat glass, 57 pieces of amber body glass and one piece of aqua body glass. The clear glass dates from 1875 to the present. The amber glass dates from the 1860s to the present. The aqua glass dates from circa 1800 to 1910. Twenty-two cut nails were recovered that date from 1815 to the present (IMACS 1992). Seven faunal artifacts were discovered within Parcel 6. They included a partial unidentified mammal long bone, two unidentified animal bones, a cow navicular, two pieces of pig rib, and a large mammal epiphysis.

The four artifacts which could be related to the battles include two cut nails, one lead shot, and one metal decorative brooch. The lead (Figure 40) was found in the northeast quadrant of Grid 340 (Figure 39.A) and was flattened and most likely fired. The metal decorative brooch (Figure 41) was found in the southeast quadrant of Grid 386 (Figure 39.B). The two cut nails were found in southeastern quadrant of Grid 366 (Figure 39.C). The remaining artifacts were either unrelated to the two battles or modern refuse.

Two subsurface features were discovered in Parcel 6. What appeared to be a limestone foundation (Figure 42) was located within the northwest quadrant of Grid 394 along the south bank of the old Wabash River channel. This feature seemed to be related spatially to a second feature located within the northwest quadrant of Grid 402 along the north bank of the old Wabash River channel. The second feature consisted of a large piece of buried wood with three nails (Figure 43). Metal detector survey between the two features showed a higher concentration of iron than the immediate surrounding area. These grids and quadrants are recommended for further study as these two features and the connecting iron hits could be indicative of some type of bridge or river crossing.

By accident, it was discovered that several of the older, larger trees in Parcel 6 had a high level of metal detector hits, particular iron and zinc concentration. Based on the diameter of the trunks, it is possible that these trees may contain preserved shot or musket balls from the two battles. Tree 1 was an ash tree in in Grid 394 with a diameter

of 37" measured at chest height. Tree 2 was a 55" diameter cottonwood located in Grid 388. Tree 3 was a black walnut with a 43" diameter located in Grid 354. As a control sample, several of the younger, smaller trees in Parcel 6 were metal detected and none of them exhibited metal detector hits.

Portions of Parcel 6 exhibited abnormally high iron concentrations in specific areas (Figure 44). High iron concentration in the area directly behind the museum and fort reconstruction is explainable due to former structures in that location. However, several grids along the banks of the old Wabash River exhibited unexplainable high iron concentrations. Several of the quadrants were sampled with some of the iron concentrations being very deep and not excavated. Based on the anomalies detected as part of the metal detector survey, portions of this parcel were targeted for gradiometer and resistivity surveys.

Figure 40: Lead shot found in Parcel 6, Grid 340, NE Quadrant.

Figure 41: Brooch found in Parcel 6, Grid 386, SE Quadrant.

Figure 42: Limestone feature in Parcel 6, Grid 394, NW Quadrant.

Figure 43: Wood with imbedded nail feature in Parcel 6, Grid 402, NW Quadrant.

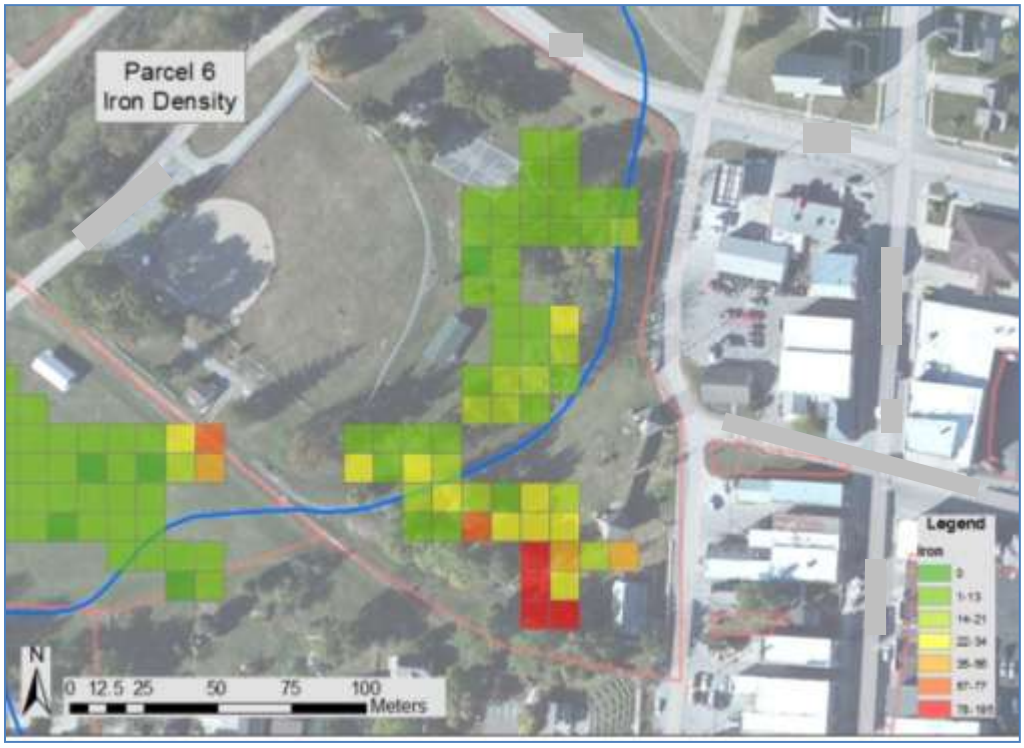

Figure 44: Parcel 6 metal detecting survey results – iron density.

Parcel 7

Parcel 7 is located in the northwest corner of the core project area and is approximately 52 acres in size. Parcel 7 is the likely location of the Kentucky militia camp, as well as potentially the southern outskirts of the Native American Confederacy staging area and crescent formation before the battle. The parcel contains many geographical features that represent categories under the KOCOA analysis. The Kentucky militia camp and the Native American Confederacy staging area represent key terrain, observation and fields of fire, and cover and concealment. The land between the two combatants would represent an obvious avenue of approach or retreat as well as an obstacle. The obstacle was created by the fording of the Wabash River and the high banks of the river behind the militia camp (DeRegnaucourt 1996; Sargent 1924; Winkler 2011).

Parcel 7 included a gristmill located along the Wabash as well as a railroad which was built in the 1930's along the upper northern half of the parcel. The area is currently used as park where tractor pulls and festivals are held throughout the summer. Campsites have also been created in the northern half of the parcel with electrical wires running between sites. Prior to being rerouted in the late 19th century, the Wabash River was located south of this parcel; today, the rerouted river flows directly through the center of the parcel beginning on the western edge and exiting on the eastern edge.

Parcel 7 was surveyed from 6 June to 17 August 2011. The field crew consisted of Christine Keller, Melanie Cabak, Debra Hollon, Preston Russett, Tyler Wolford, Anna Kalk, Kirstin Kjeldsen, Alejandra Fernandez, Trey Hill, Jessie Moore, Victoria Lucas, and volunteers Dennis Morgan, Jeff Morgan, and Alan Mark. The Fisher F2 metal detector was used primarily throughout the parcel except in the case when volunteers supplied the White Spectrum XLT, the White DFX, and the Garrett GII 2500 metal detectors. One hundred and twelve 20 meter x 20 meter grids were surveyed with an approximate 25 percent sample size flagged for shovel tests. The increased sample size was due mainly to the number of collector reported battle artifacts previously found in this parcel. A total of 1,261 shovel tests units were excavated with 1,077 positive shovel tests.

A total of 1,728 artifacts were found, nine of which may directly relate to the battles. In addition, one hundred pieces of glass were recovered including pieces of clear body glass, amber body glass, green body glass and milkglass. The clear glass dates from 1875 to present and the amber and green glass dates from the 1860s to present. The milkglass dates from 1890 to 1960. Sixteen cut nails were recovered that date from 1815 to the present (IMACS 1992). One faunal artifact consisting of a shell was discovered within Parcel 7.

The nine artifacts which may directly relate to the battles include three pieces of lead shot, two lead fragments, one buckle, one bolt, one iron ladle, and a possible bayonet piece all found within close proximity to each other (Figure 39.D-I). Two pieces of the lead shot (Figure 45 and Figure 46) are approximately .45 caliber in size and were most likely rifle shot. They do not display rifle marks and thus were more likely dropped rather than shot. The third piece appears to be lead sprue (Figure 45), the left over lead

from making shot. The single piece of lead shot was found in the northwestern quadrant of Grid 758 (Figure 39.D). The other lead shot and the sprue were found in the same shovel test unit in the southeastern quadrant of Grid 714 (Figure 39.D/F). This same shovel test unit also contained a possible iron ladle for pouring lead (Figure 47). The two lead fragments (Figure 48 and Figure 49) were found in the southwestern quadrant of Grid 717 and the southwestern quadrant of Grid 716 (Figure 39.E). The buckle (Figure 50) was found in the northwestern quadrant of Grid 800 (Figure 39.H). One hand wrought bolt (Figure 51) was found in the southeastern quadrant of Grid 713 (Figure 39.I). An artifact was also recovered that potentially resembles a piece of a bayonet (Figure 52) in the southeastern quadrant of Grid 713 (Figure 39.G).

The area of these nine battle related artifacts is highly recommended for further study. It was targeted for gradiometer surveys as part of this project based on this artifact distribution. The remaining 1,602 artifacts found in Parcel 7 were either unrelated to the two battlers or modern refuse. No subsurface features were discovered.

Figure 45: Lead shot and sprue found in Parcel 7, Grid 714, SE Quadrant.

Figure 46: Lead shot found in Parcel 7, Grid 758, NW Quadrant.

Figure 47: Possible ladle found in Parcel 7, Grid 714, SE Quadrant.

Figure 48: Lead bar found in Parcel 7, Grid 717, SW Quadrant.

Figure 49: Lead bar found in Parcel 7, Grid 716, SW Quadrant.

Figure 50: Buckle found in Parcel 7, Grid 800, NW Quadrant.

Figure 51: Hand-wrought bolt found in Parcel 7, Grid 713, Quadrant SE.

Figure 52: Possible bayonet part found in Parcel 7, Grid 713, SE Quadrant.

Parcels 8 & 9

Parcels 8 and 9 are located in the center of the core project area and constitute an area less than one acre in size. The parcels are situated at the epicenter of activity during the 1791 battle. The two parcels undoubtedly made up a portion of St. Clair's camp and may also include the actual structure of Fort Recovery, built in 1793. The parcels represent fields of fire and key features using KOCOA analysis (Anthony Wayne Park Board 1952; Barmann 1991; St. Clair 1791; Winkler 2011; Young 1917).

The area was later used by early settlers as the village center. Modern commercial sites still occupy the area including a bank, storefront, and a grassy area abutted by a parking lot. A reconstructed historic cabin is also located in Parcel 9.

Parcels 8 and 9 were not metal detected. Two sample shovel tests were placed throughout the two parcels to determine the levels of disturbance. The shovel test located in Parcel 8 featured an A-horizon composed of fill dirt up to 30 cmbgs. The B-horizon was composed of reddish clay. The shovel test located in Parcel 9 demonstrated highly disturbed soils. The A-horizon was composed of fill dirt and gravel up to 25 cmbgs. The B-horizon was also composed of rubble however at a higher concentration. A ground-penetrating radar survey was conducted later on 4 April 2011 which indicated the presence of potential subsurface features. Mark Groover chose to locate excavation units in Parcels 8 and 9 for Ball State University's archeological field school in 2011.

Parcel 11

Parcel 11 is located in the southeast corner of the core project area and is approximately one acre in size. The parcel lies within the possible location of an avenue of retreat for St. Clair's army as they were fleeing the Native American Confederacy. Buck Run (now known as Buck Ditch) runs through the southern portion of this parcel which may have also caused an obstacle for St. Clair's fleeing army (DeRegnaucourt 1996; Winkler 2011).

Parcel 11 is the mowed back lot of a residential property. The parcel has been used as a residential site as early as 1888. In addition to the large home structure south of the parcel, a smoke house was also located in the center of the parcel. The smoke house was removed at an uncertain date and the area is now part of a large maintained yard. The parcel is disturbed on its eastern edge due to road build up and the recent construction of a new sidewalk. Two shovel test units were excavated within this parcel. The soil composition from the first shovel test unit consisted of an A-horizon of fill dirt down to 40 cmbgs with a clay B-horizon. The second shovel test unit consisted of an unidentified A-horizon down to 11 cmbgs and a clay B-horizon (Griffin 1888; Sanborn Map Company 1898, 1907, 1914, 1927, 1946).

Parcel 11 was surveyed on 14 April 2011 by Christine Keller, Melanie Cabak, and Jessie Moore. Six 20 meter x 20 meter grids were surveyed with an approximate five percent sample size flagged for shovel tests. A total of 30 shovel tests were excavated with 22 positive shovel tests. A pedestrian survey was also conducted in Buck Ditch at the southern edge of this parcel as this area frequently floods and is known by the landowner to wash up artifacts and modern debris. The landowner had us review artifacts washed up by floods several weeks earlier; all objects were post-battle era period.

A total of 25 artifacts were recovered, none of which appear to be related to the two battles. Four cut nails were recovered that date from 1815 to the present. This parcel registered a very high concentration of iron which the shovel test units showed to be predominately post-19th century nails (IMACS 1992). No glass or faunal artifacts were recovered. The remaining artifacts were either unrelated to the two battles or were modern refuse. No subsurface features were discovered. The non-sampled survey area showed the same metal detecting survey signature with a high concentration of iron (shown in orange squares) most likely indicating a distribution of post-19th century nails (Figure 53).

Figure 53: Parcel 11 iron density.

Parcels 14 & 16

Parcels 14 and 16 were locations of probable fields of fire and an avenue of attack. The parcels are currently located in the northeast corner of the core project area and are approximately four acres in size. It is possible the Native American Confederacy attacked from this direction because of the benefit of having the sun to their back's as they attacked in the early morning (Barmann 1991; St. Clair 1791; Winkler 2011; Young 1917).

The two parcels were previously used as farmland. Parcel 16 also had two structures present on the northwestern corner of the land. Currently the parcels are domestic residences. There are a few structures located on each parcel that consist mostly of large open maintained yards (Griffin 1888; Sanborn Map Company 1898, 1907, 1914, 1927, 1946).

Metal detecting was not conducted in these parcels, although they were reserved for future surveying if necessary.

Parcel 15

Parcel 15 is located in northeastern corner of the core project area and is approximately two acres in size. The parcel potentially represents the northeastern periphery of St. Clair's encampment. It is possible that this is the location in which the Native Americans first attacked the American Army thus representing a field of fire. The American forces would have been facing the morning sun and potentially blinded by the light, therefore the area can also be considered an area of both obstacle and observation and concealment (Barmann 1991; St. Clair 1791; Winkler 2011; Young 1917).

The area was formerly used for agriculture. It is now a mowed empty lot abutting the northwestern corner of a mobile home park. A turn-around for vehicles is located on the northwest corner of the parcel and large drainage sewers run throughout the middle of the parcel. The northern edge is bordered by the modern and re-routed Wabash River.

Parcel 15 was surveyed from 2 May to 9 May 2011 by Christine Keller, Melanie Cabak, and Jessie Moore. Four sample shovel tests were first conducted to determine the level of soil disturbance. The first shovel test unit featured an A-horizon down to 20 cmbgs with a highly mottled gravel-filled B-horizon. The second shovel test demonstrated a less noticeable difference between the A and B-horizons. A slight color change was noticed around 30 cmbgs. The third and fourth shovel tests were very similar with their A-horizons ending around 12 cmbgs. Their B-horizons were also constituted of highly mottled gravel-filled clay. Twenty 20 meter x 20 meter grids were surveyed with an approximate 16 percent sample size flagged for shovel tests. A total of 79 shovel tests were excavated with 58 positive shovel tests.

A total of 81 artifacts were found, none of which relate to the two battles. One piece of aqua glass was recovered and dates from circa 1800 to 1910 (IMACS 1992). No cut nails or faunal artifacts were recovered. The remaining artifacts were either unrelated to the two battles or were modern refuse. No subsurface features were discovered. Portions of the non-sampled survey area showed high iron concentration due to large drainage pipes and sewers running the center of the parcel. Parcel 15 was initially considered as a possible location for future gradiometer survey however the results of the metal detecting survey did not show this as a productive parcel to gradiometer survey.

Parcel 17

Parcel 17 is located in the east central corner of the core project area and is approximately two acres in size. The parcel most likely encompasses a portion of St. Clair's avenue of retreat. This area can also be categorized as a field of fire due to the pursuing attack from the Native American Confederacy (Carter 1987; DeRegnaucourt 1996:59-61; Winkler 2011).

The parcel was the site of the Fort Recovery Union School from 1868 to 1891. A water tower was located in this parcel and was later removed in the early 1900s. Construction for the 100 foot tall monument which currently sits at the center of the parcel began in 1912. Fallen soldiers from the Battle of the Wabash were relocated to this site and buried beneath the memorial. Parcel 17 is now a public park owned by the

Ohio Historical Society and known as Monument Park (Bicentennial Book Committee 1990; Griffin 1888; Rohr and Meiring 1991; Sanborn Map Company 1898, 1907, 1914, 1927, 1946).

Parcel 17 was surveyed from 4 April to 14 April 2011. The field crew consisted of Mark Hill, Christine Keller, Melanie Cabak, Jessie Moore, and Allison Galbari. Two sample shovel tests were first conducted to determine the level of soil disturbance. The first shovel test featured an A-horizon to 25 cmbgs with a gravel-filled B-horizon. The second shovel test featured an A-horizon to 30 cmbgs with an orange clay B-horizon. Twenty-two 20 meter x 20 meter grids were then surveyed with an approximate five percent sample size flagged for shovel tests. A total of 96 shovel tests were excavated with 52 positive shovel tests.

A total of 94 artifacts were found, none of which appear to be related to the two battles. Twenty pieces of glass were recovered including five pieces of clear flat glass, four pieces of aqua flat glass, eight pieces of clear body glass, two pieces of amber body glass, and one piece of aqua body glass. The clear glass dates from 1875 to present. The aqua glass dates from circa 1800 to 1910. The amber glass dates from the 1860s to the present. Seven cut nails were recovered that date from 1815 to the present (IMACS 1992). No faunal artifacts were discovered within Parcel 17. The remaining sixty-six artifacts were either unrelated to the two battles or were modern refuse. No subsurface features were discovered. Portions of non-sampled survey area demonstrated a high concentration of zinc within the northwestern portion of the parcel (Figure 54). This anomaly could correspond to the location of the water tower that was previously located at the site.

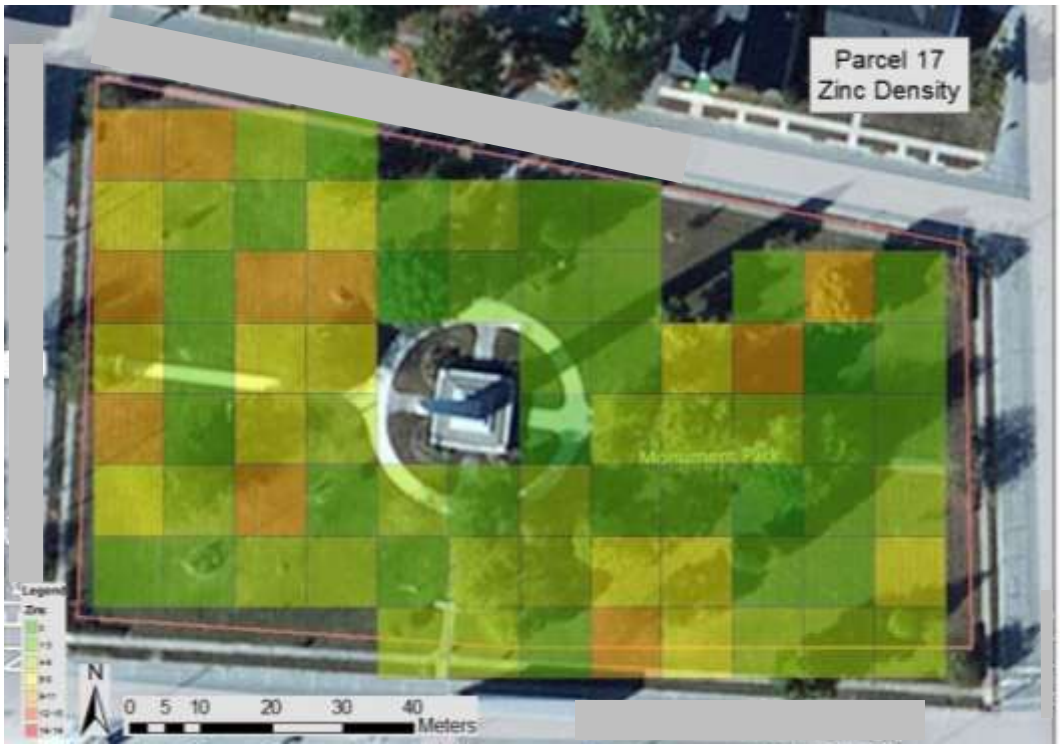

Figure 54: Parcel 17 metal detecting survey results – zinc density.

Parcels 18, 19 & 20

Parcels 18, 19 and 20 encompass a portion of St. Clair's original camp. The location represents an area of initial of conflict with fields of fire. The three parcels are currently located in the center of the core project area and consist of over one acre in size (Anthony Wayne Park Board 1952; Barmann 1991:31; St. Clair 1791; Winkler 2011; Young 1917:47-68).

This area represents a portion of the first village plot. It was likely occupied by settler dwellings and later situated as the center for commerce, such as the livery that was located in Parcel 19. Commercial structures continue to surround this property. The parcels currently consist of parking lots for surrounding businesses along Wayne, Butler and Boundary Streets (Bicentennial Book Committee 1990; Griffin 1888; Sanborn Map Company 1898, 1907, 1914, 1927, 1946).

These parcels were initially identified as potential sites for ground-penetrating radar surveys, however they were not surveyed as better parcels for GPR surveys were later identified.

Results of Gradiometer and Soil Resistivity Surveys
By Mark A. Hill

Gradiometer and soil resistivity surveys were conducted in July, August, and September of 2011. These surveys focused on Parcels 6 and 7 (Figure 26) and were used to identify potential late 18th century features related to the 1791 and 1794 battles. In Parcel 6, surveys were guided by both the results of earlier metal detector surveys which had found battle related artifacts, and by the potential location of the original fort. No resistivity surveys were conducted in Parcel 7, but gradiometer surveys were guided by the earlier identification of battle related artifacts in both collector interviews and the earlier metal detector surveys. Methods followed the outline provided earlier in this chapter.

These geophysical surveys were conducted in an attempt to document any potential battle related features that may remain on the landscape, ranging from camps to entrenchments or other hasty fortifications, and potentially remnants of the 1793 fort and outbuildings. While most of the anomalies appear to represent modern and more recent historic activities, a few features in Parcel 6 may represent portions of the 1793 fort or associated structures.

Parcel 6

As shown in Figure 26 and discussed earlier in this chapter, Parcel 6 is located in the center of the core project area and was partially occupied by the 1791 US Army camp that was the focus of the Battle of the Wabash, and may have been the location of the 1793 fort that was the focus of the 1794 battle. Collectors had recovered battle related materials from the area in the past, and metal detector surveys of this parcel had

identified one possible musket ball, cut nails, and a brooch that may all date to the battle era.

Gradiometer surveys were conducted on approximately 2.4 acres (0.97 hectares) of parcel 6 (Figure 55). This acreage included twenty-five 20 meter x 20 meter grids, specifically Grids 340, 353, 354, 355, 365, 366, 367, 376, 377, 378, 386, 387, 388, 393, 394, 395, 396, 397, 402, 403, 404, 405, 409, 410, and 411. Several features were observed in the data, the majority of which represent modern or recent activities such as utility lines, drainage features in the former riverbed, park benches, and other park features. However, in the southern and southeastern portion of the surveyed area, several features remained unidentified. Some likely represent disturbance from 19th and 20th century construction on this location, but the removal of all structures has left little evidence of foundations from this period. One structure immediately west of the well within the fort reconstruction appeared to represent a corner of a structure, while other features in and around the modern fort reconstruction were suggestive but unresolved at this level of investigation.

To examine this area more closely, an additional gradiometer survey was conducted in the area around the reconstructed fort. In this survey, transect intervals were narrowed to 0.25 meters, while sixteen readings were taken per meter along these transects. This increased the data density by a factor of four over the previous surveys and promised to provide a more detailed look at this area.

The results were suggestive but not conclusive (Figure 56). The 1930s fort reconstruction was more clearly revealed, as were the flagpole and the area around the well. A few features appear to represent subsurface metallic items, based on their strength. An intriguing cluster of features is found around and to the west of the well, while what is today understood to be the flagpole appears to be associated with two other features – one to the northeast and another equidistant to the southwest. These clusters of features may represent 19th century construction on the site but since the flagpole and well are both thought to represent original 1793 fort structures, their association with anomalous features in the gradiometer data are suggestive of the presence of early structural remains associated with battle era features. It is unlikely that this issue will be resolved without additional subsurface archeological investigation.

Soil resistivity surveys were also conducted around the modern fort reconstruction. However, resolution of any features other than the existing well and treaty marker was very poor due to the larger sampling interval associated with this technique.

Parcel 7

In Parcel 7, metal detector surveys identified potential battle related artifacts in the western portion of Ambassador Park. Collectors had likewise found battle related materials near this same area, and it was thought that perhaps features associated with one or both of the battles may be present. These features could consist of short camp related activities associated with native forces advancing on the American positions, or

possibly represent a more westerly position for the 1791 Kentucky Militia camp than had been thought.

To investigate the possibility that battle related features could be present, a gradiometer survey of 0.8 acres (0.3 hectares) was conducted around the location where the metal detector surveys had identified lead shot and other potentially battle related artifacts (Figure 57). This acreage included eight 20 meter x 20 meter grids centered around Grids 714 and 758. This survey was conducted used the standard methods outlined earlier in this chapter. The results failed to definitively identify features that are definitively associated with the battles. The most prominent features were related to the existing road that bisected the survey area from west to east. This road is built into the side of a low hill by cutting into the hill slope, leveling the roadbed, and redepositing the remaining fill in the low area to the downslope side of the road. Informants suggested that this was likely the location of a former railroad grade that had been converted into a road through Ambassador Park many decades ago. In addition to the road related features and disturbance, a cluster of unidentified pit-like features was observed in the southwest portion of the survey area. The morphology, magnetic strength, and layout of these features do little to suggest their origin or affiliation, and additional interpretation will require subsurface archeological investigation.

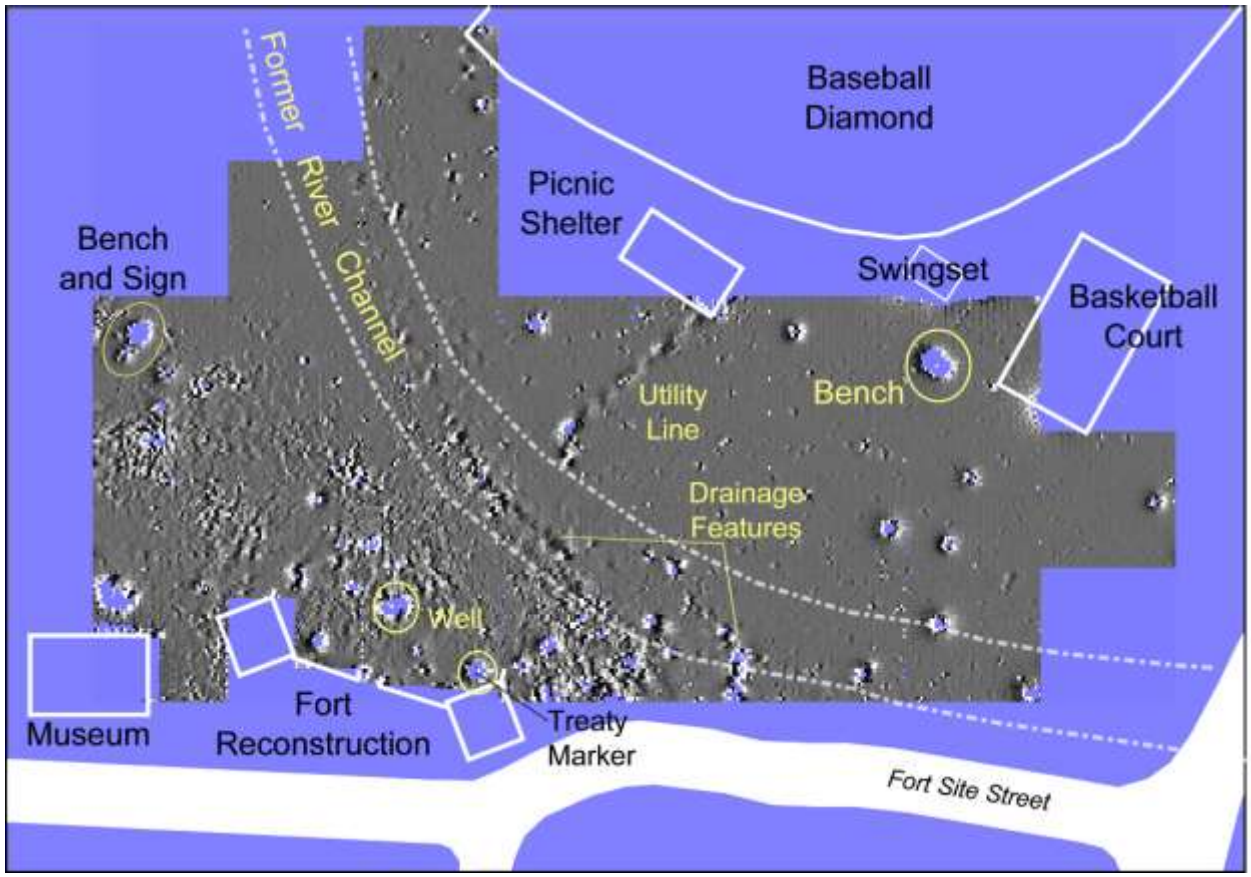

Figure 55: Gradiometer survey results in Parcel 6.

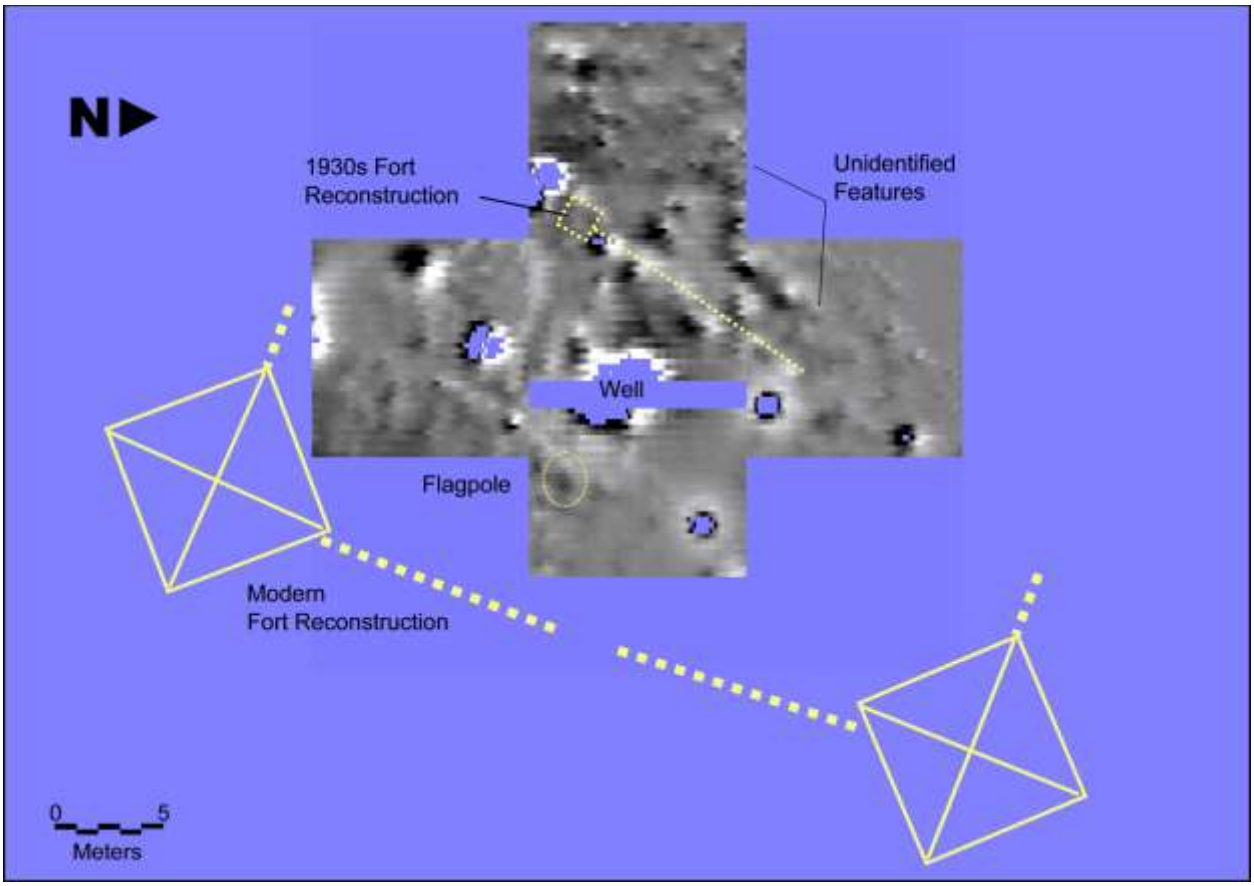

Figure 56: High resolution gradiometer survey of the area around the current fort reconstruction in Parcel 6.

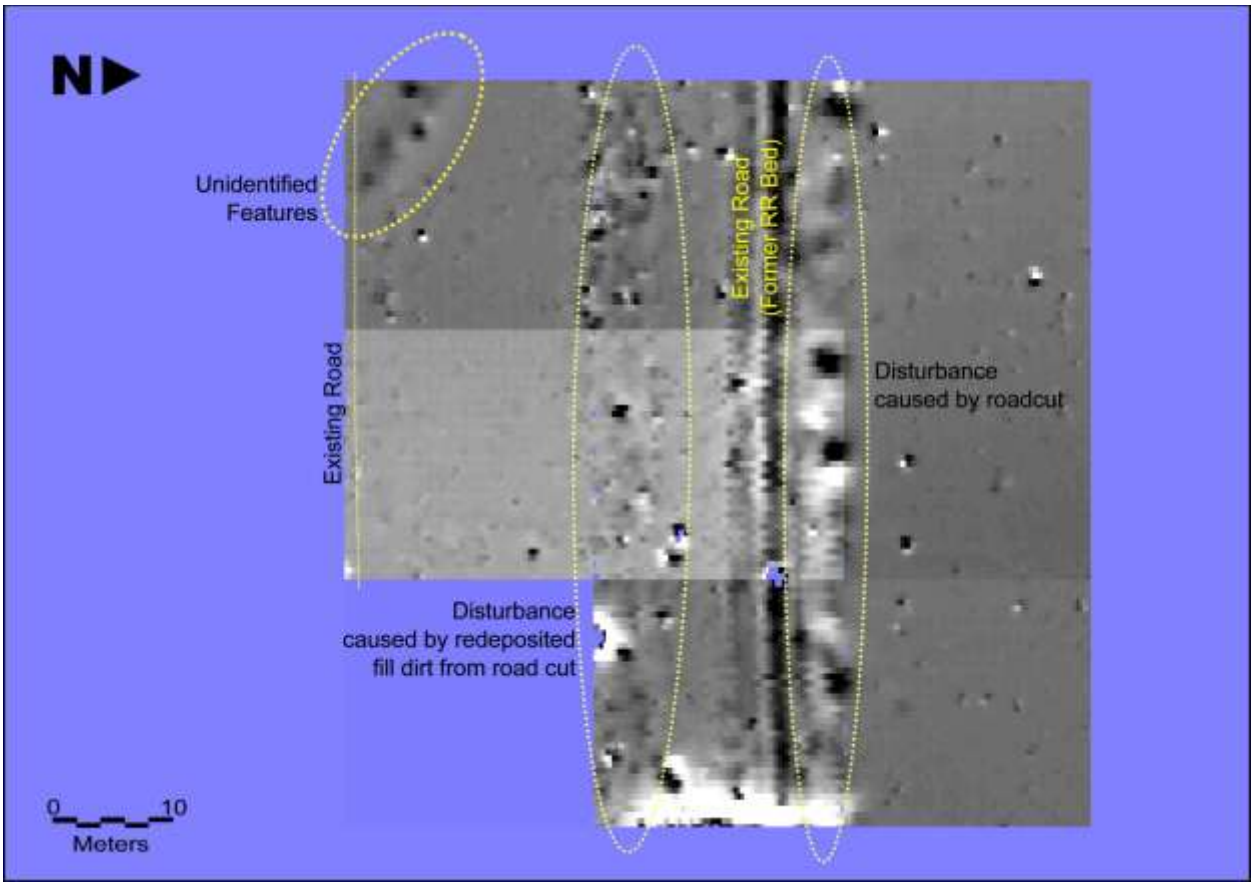

Figure 57: Results of the gradiometer survey of approximately 0.8 acres in Parcel 7.

Battle Reconstruction and GIS Data Modeling

By Deb Hollon

As has been noted in previous sections, St. Clair's army camped on an area of relatively high, clear ground which was bounded by the Wabash River to the north and west and Buck Run to the south and which was surrounded by forests on all sides. The main camp ran slightly east of a north-south line while the Kentucky Militia encamped across the river approximately 400 yards farther along the trace (Denny 1859; Sargent 1924; Winkler 2011). The camp of the Northwest Indian Confederacy was located approximately one-and-a-half miles northwest of the Army's camp (Knapke, personal communication). The night before the battle, the warriors of the Confederacy gathered in a crescent-shaped formation out of sight of St. Clair's camp (Young 1917; Winkler 2011).

The use of a geographic information system (GIS) allows for a comparison of data and for modeling the various elements of the battle and its combatants. All GIS work in this analysis was conducted with ESRI's ArcGIS 10. Details of the parameters for each function used are listed in Appendix F. This appendix includes calculations for

field of fire for each weapon, viewshed, the least visible path for the Native American battle formation and the least cost path for the retreat of St. Clair's Army.

Spatial Analysis of Artifact Data

Artifacts found by individual collectors, the Ball State University field school, and the ABPP project crew were scattered over an area encompassing over 110 acres (Figure 58). Given the passage of time since the battle and the development in the area, it can be assumed that not all of these artifacts are in their original locations. However, some of the finds correspond very closely with elements of the battle as derived from the accounts as well as with elements modeled through the use of a GIS.

The stacked muskets balls, gilt buttons, and human remains found by collectors were discovered along and within the estimate for St. Clair's camp (Figure 59). The stacked musket balls were found in the north end of the camp behind the line formed by the New Jersey Battalion of the 2nd Levy. The battle at this end of the camp was much quieter than at the southern end of the camp.

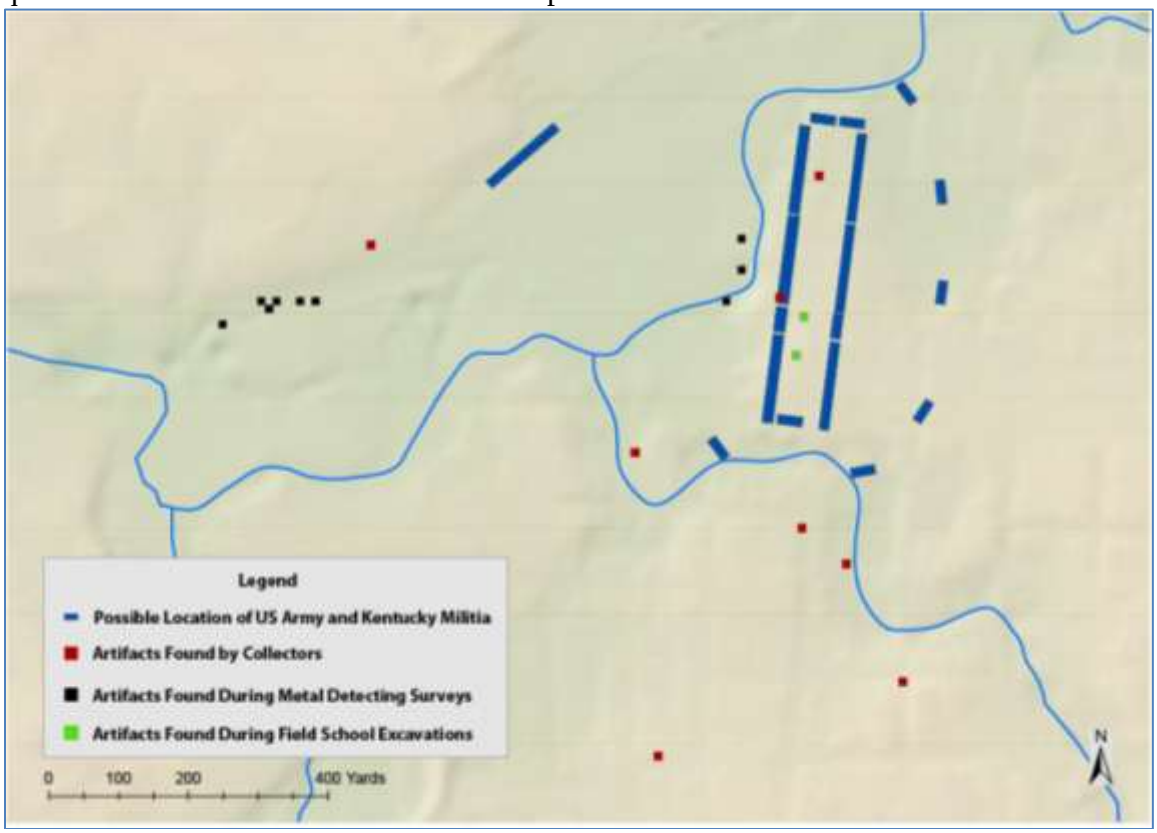

Figure 58: Battle era artifacts found in study area.

The finger bone and gilt buttons were found at the southern end of the Western Pennsylvania Battalion of the 2nd Levy, just north of the artillery location on the front line. This was an area where some of the heaviest fighting of the battle occurred. The ferocity of the battle at this location was due, in part, because this was the spot where the

Kentucky militia poured into the camp and also because the Confederacy was believed to have targeted artillerymen. (Howe 1847; Sargent 1924; Carter 1987; Winkler 2011)

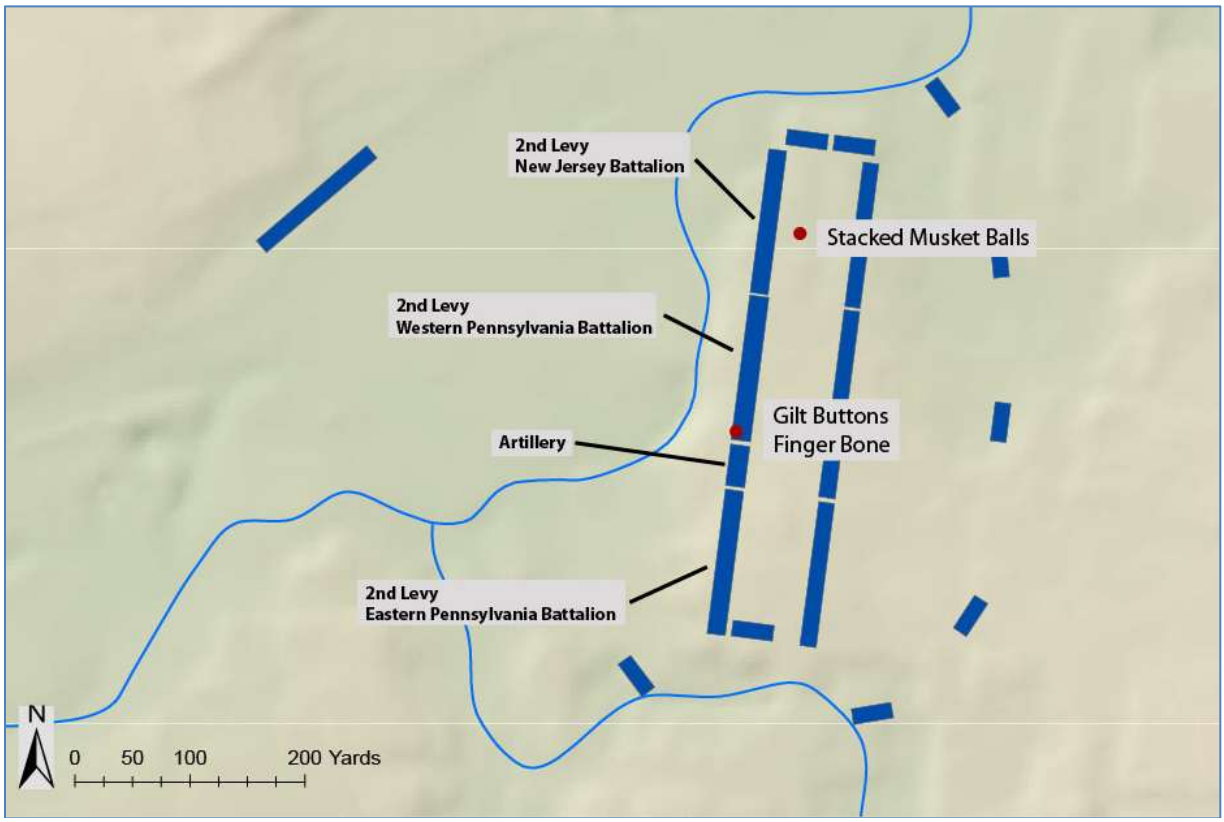

Figure 59: Location of collector found and reported gilt button, stacked musket ball, and finger bone.

A lead ball was found by the BSU field school during excavation in Parcel 8. This location would have been behind the Eastern Pennsylvania Battalion of the 2nd Levy and south of the artillery line. Again, this was an area of some of the heaviest fighting.

Other selected artifacts were found by collectors in locations away from the camp (Figure 60). A shell fragment was found approximately 580 yards to the west-northwest of the front line of the formation. Round shot was found in the gully formed by Buck Run approximately 180 yards to the west-southwest of the southwest corner of the camp. Finally, a tomahawk was found approximately 500 yards south-southwest from the southwestern corner of St. Clair's camp. The spatial significance of these artifacts will be discussed in more detail below.

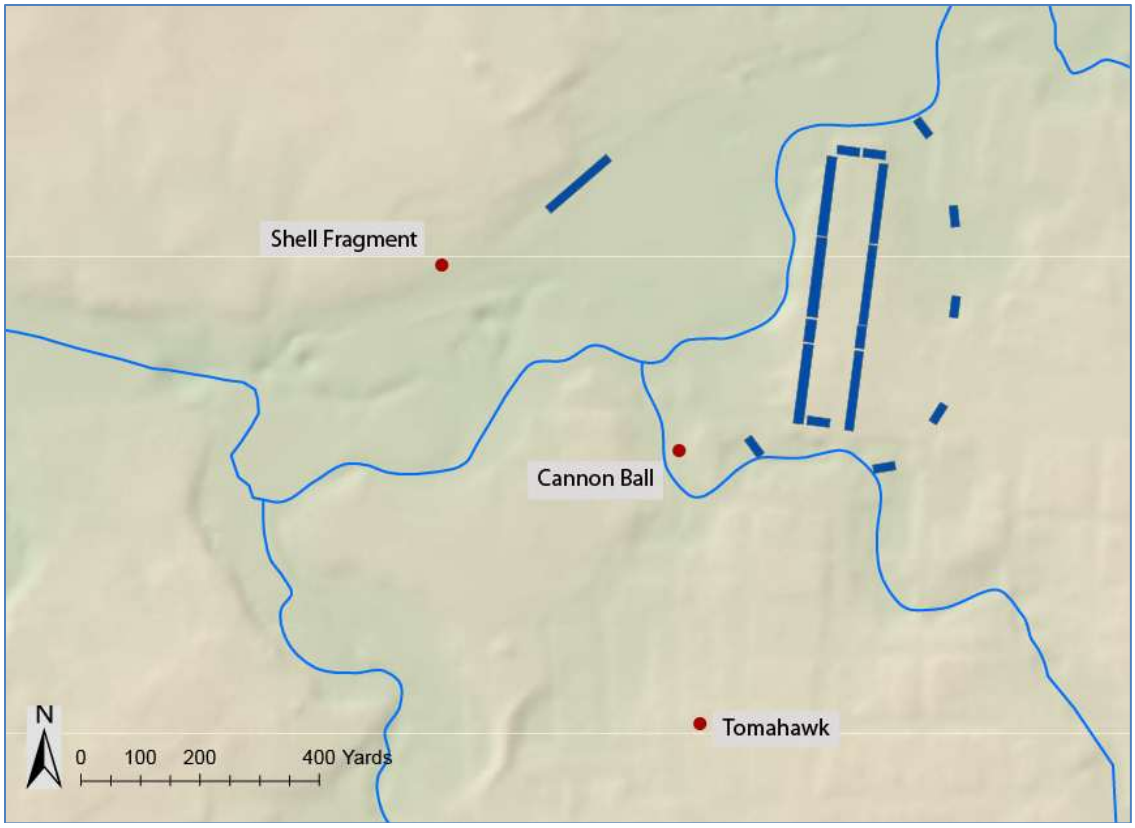

Figure 60: Location of collector found and reported shell fragment, round shot and tomahawk.

Metal detector surveys discovered several artifacts possibly from the time period of the two battles (Figure 61). Fired and flattened lead shot was found approximately 50 yards in front of the Western Pennsylvania Battalion of the 2nd Levy in the front line of the formation. Several pieces of unspent lead shot, lead fragments, a buckle, a long bolt, a possible ladle for making shot, and a possible bayonet part were discovered to the west of the camp. These items range from approximately 650 yards to 825 yards west of the center of the front line and approximately 300 yards southwest of the proposed Kentucky Militia location based on historical sources. Most are in a relative line at 20-40 yard intervals with the farthest west artifact being approximately 100 yards beyond the main cluster. As with the collector artifacts, these items will be discussed further in later sections.

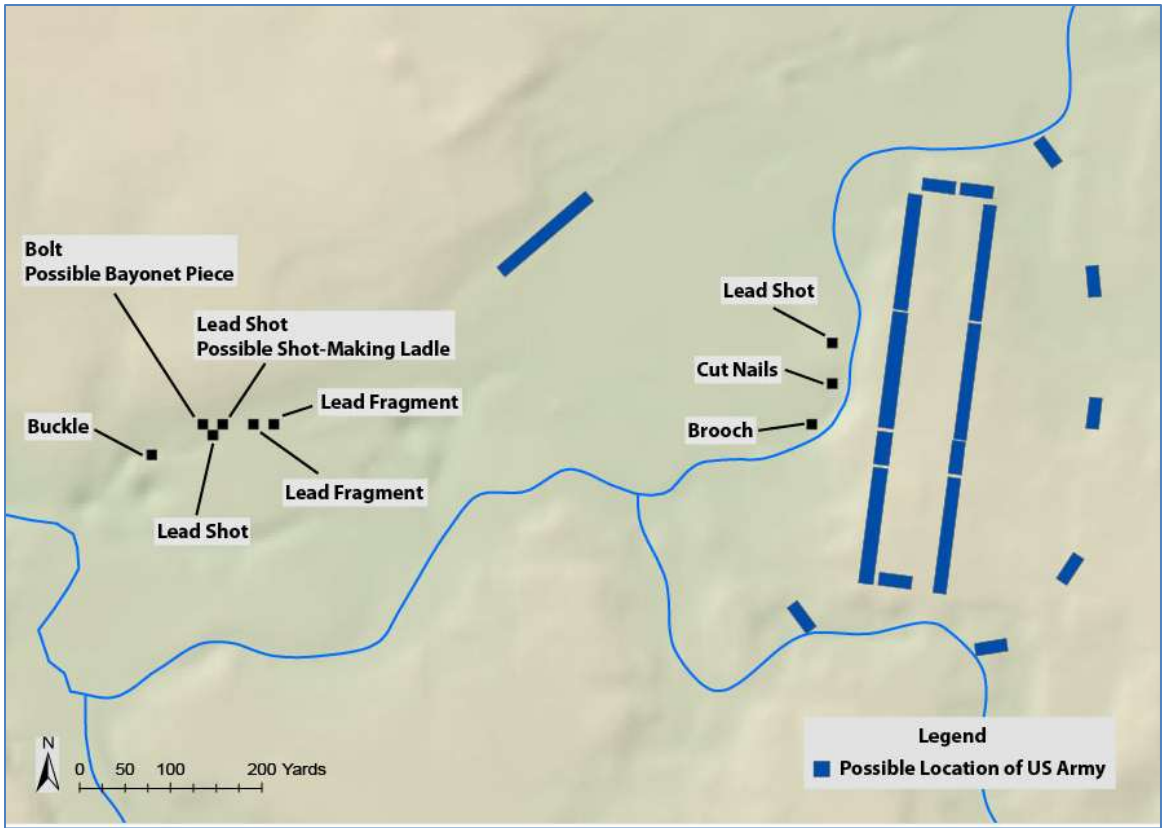

Figure 61: Battle era artifacts found during metal detector surveys.

Additional Analysis of Terrain using KOCOA Methodology

Key Terrain

The key terrain of the Battle of the Wabash was the land along the Wabash River (Figure 62). A ridge with some of the highest elevation in the area was located just over half a mile to the west of the river and it was from this direction that the men of the Northwest Indian Confederacy attacked. St. Clair's camp was established on the east side of the river on one of the few locations with relatively high, clear ground in the area and one side was semi-protected by the steep banks of the Wabash River. However, those steep banks also worked against the Army in that the cannon could not be lowered to fire into the ravine. The canister shot flew over the head of the attackers and as evidenced by historical accounts proved ineffective.

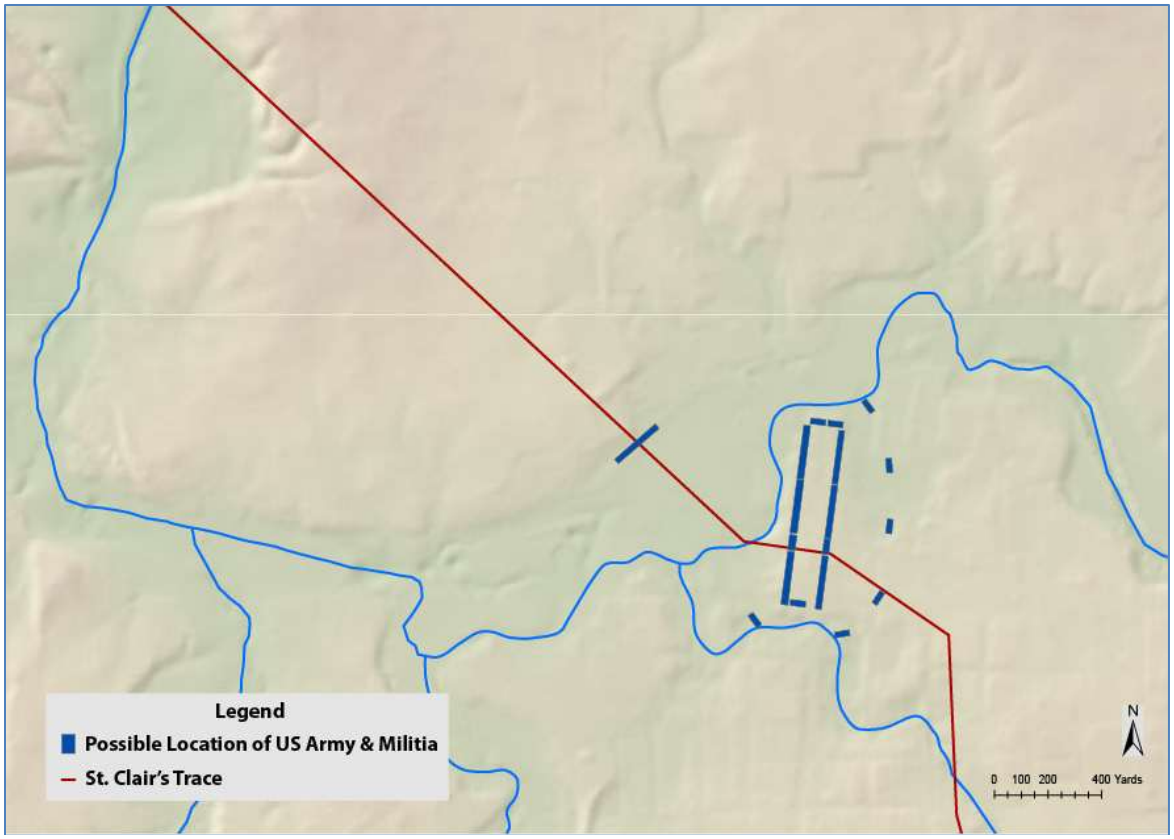

Figure 62: Battle of the Wabash - Key Terrain.

Observation and Field of Fire

The ability of St. Clair's army to see warriors of the Confederacy as they gathered for the battle or began the attack was severely limited due to the terrain. Figure 63 shows the visibility held by the army at any point along the camp, pickets, or the militia outpost. The areas in color reflect those locations which are visible from the army's position. The areas in gray indicate the locations which were not visible from any point along the formation. It should be noted that this analysis is based solely on elevation and does not include information concerning ground cover or daylight conditions. This was a highly wooded area and, even though the battle took place in winter when there were no leaves on the trees, the sheer number of tree trunks would have further inhibited the ability of St. Clair's army to see the enemy. In addition, the attack took place at dawn when visibility would have been poor although snowfall the night before would have brightened the landscape.

A similar procedure reveals that the Confederacy was able to see most of the Army's camp (Figure 64). The magenta line along the ridgetop represents the Confederacy's leaders prior to the battle. This location was chosen as it is between the Confederacy camp and the battlefield. Again, the areas in color indicate locations visible from that line while gray areas indicate locations which are not visible. While the militia's position is not visible from the ridgetop, scouts sent out by the Confederacy

during the night would have detected its presence. As in the visibility analysis of the Army's position, vegetation was not factored into the model.

The ability to see the enemy and the ability to shoot the enemy are not necessarily the same thing. The field of fire of the individual weapons must also be considered. A viewshed analysis was conducted to approximate that field of fire for each of the weapons known to be used in the battle. The parameters specific to each (e.g., height above ground of the muzzle, effective range, etc) were factored into the analysis (Lee and Stucky 1998). The GIS model methodology and parameters for both field of fire and viewshed calculations are detailed in Appendix F.

Based on accounts of the battle and sketches of the camp, the general location of the different types of weapons is known. Most of the Army had Charleville muskets while the men of the Confederacy typically carried Brown Bess muskets. The Kentucky Militia camping in front of the main army and the Pennsylvania militia at the north end of the camp accounted for the majority of the rifles (Denny 1859; Sargent 1924; Winkler 2011). A comparison of the relative fields of fire for these three weapons (Figure 65) reveals the obvious advantage of a rifle in effective range. Rifles were also a great deal more accurate than the muskets. The effectiveness of the rifles and the men using them can be seen by the low casualty rate among the units on the north end of the camp.

One piece of fired and flattened lead shot found during metal detector surveys was approximately 50 yards from the front line of the formation. This location would have been at the edge of musket range and well within rifle range from the line (Figure 66). This was also an area where, according to accounts, many individuals from the Kentucky militia came into the camp after blockage of the trail by Confederacy warriors (Howe 1847; Branshaw 1864). This piece of shot may have been dropped by one of those individuals, although highly unlikely given that the lead shot had been fired.

The trees which registered positive during the metal detector surveys are located between 55 and 100 yards from the estimated front line of the Army camp. Figure 67 compares the locations of the trees (red dots) to the effective ranges of the Charleville musket (light gray), rifle (medium gray), and six-pounder gun (black). Based on their relative locations, Tree B could contain musket shot and Tree C could contain canister shot, but those trees are at the edge of the effective range for both of those weapons. If the metal in the trees is from the time of the battle, it seems most likely that it would be rifle shot. It should also be noted, however, that those trees would have been well within the 200-250 yards which historical accounts state was cleared by Captain Gibson shortly after Fort Recovery was constructed in 1793.

There were three types of cannons used by St. Clair's army: three six-pounders; three three-pounders; and two carronades which were being shipped for the new fort the army was to build. The three-pounders were located along the rear of the camp pointing back down the trace. The six-pounders were located along the front line of the camp facing along the trace as it went forward (Denny 1859; Sargent 1924; Winkler 2011). Figure 68 reflects the field of fire for the combination of all three six-pounders shooting

canister shot. As can be seen, there is an area of dead ground directly in front of the cannon. This is due to the fact that the guns could not be lowered to shoot into the ravine of the Wabash River.

As noted above, the collector artifacts include a shell fragment and solid round shot. The shell fragment was found approximately 580 yards in front of the Army's front line. When the cannon field of fire is adjusted to account for the range of a six-pounder firing explosive shell, the location of the shell fragment falls well within the calculated field of fire (Figure 69). The shell fragment's location in relation to the guns as stated in the historical accounts and sketches of the camp would seem to indicate that the fragment was placed at its location during the battle.

The location of the round shot in the gully of Buck Run approximately 180 yards from the southeastern corner of the camp, however, does not seem to fit within a battle scenario. It does not line up with the field of fire of the gun locations from the historical accounts. Given the general ineffectiveness of the cannon that morning and the general chaos of the battle, it doesn't seem likely that one would have been levered around to the south to fire in that direction, particularly when the artillerymen were targeted in the initial attack and so few were available to fire the guns as the battle wore on. If such a move would have occurred, the location of the round shot would have been at the near edge of the range of a six-pounder firing solid shot (Figure 70). The results of the GIS modeling, when combined with the condition of the shot, would indicate that the gully is not the original location of the round shot.

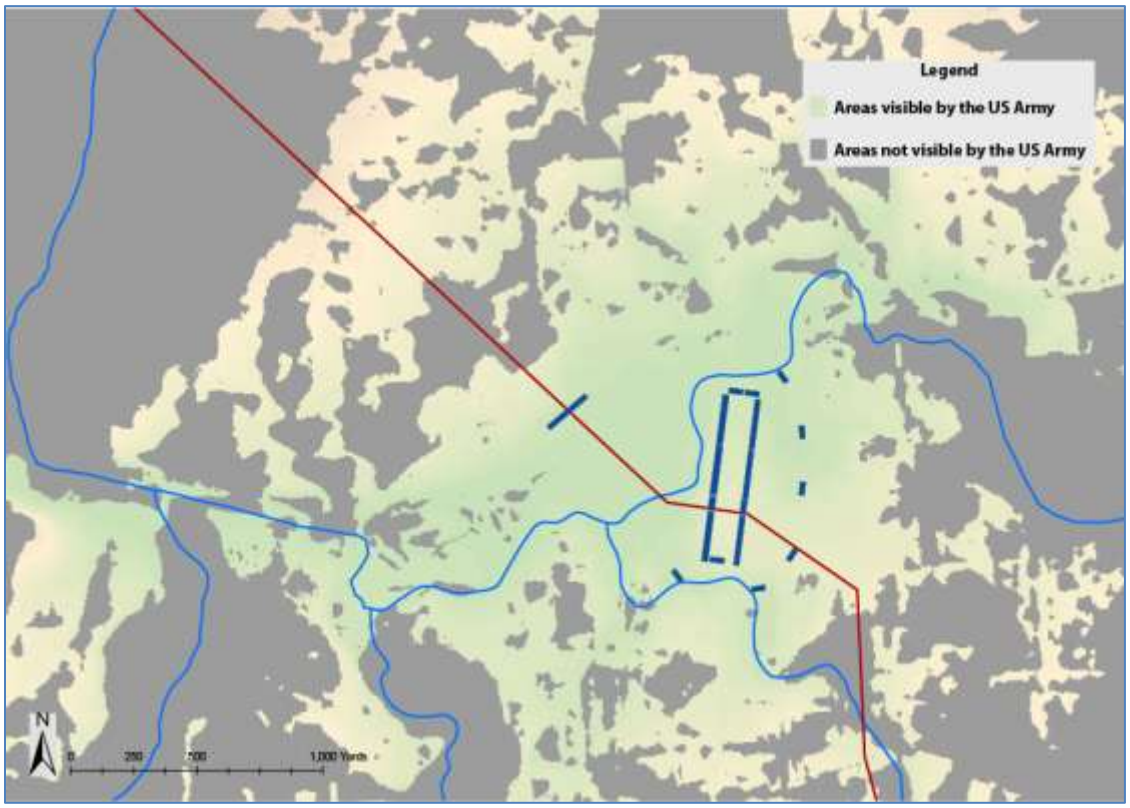

Figure 63: Areas visible by the U.S. Army.

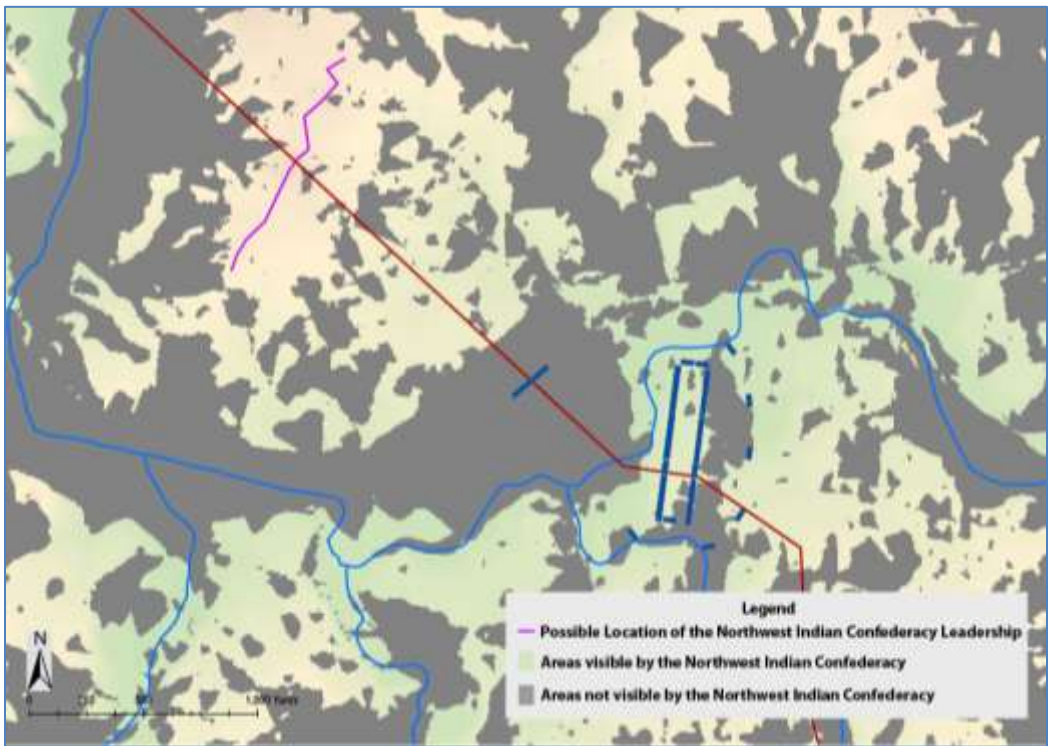

Figure 64: Areas visible by the Northwest Indian Confederacy.

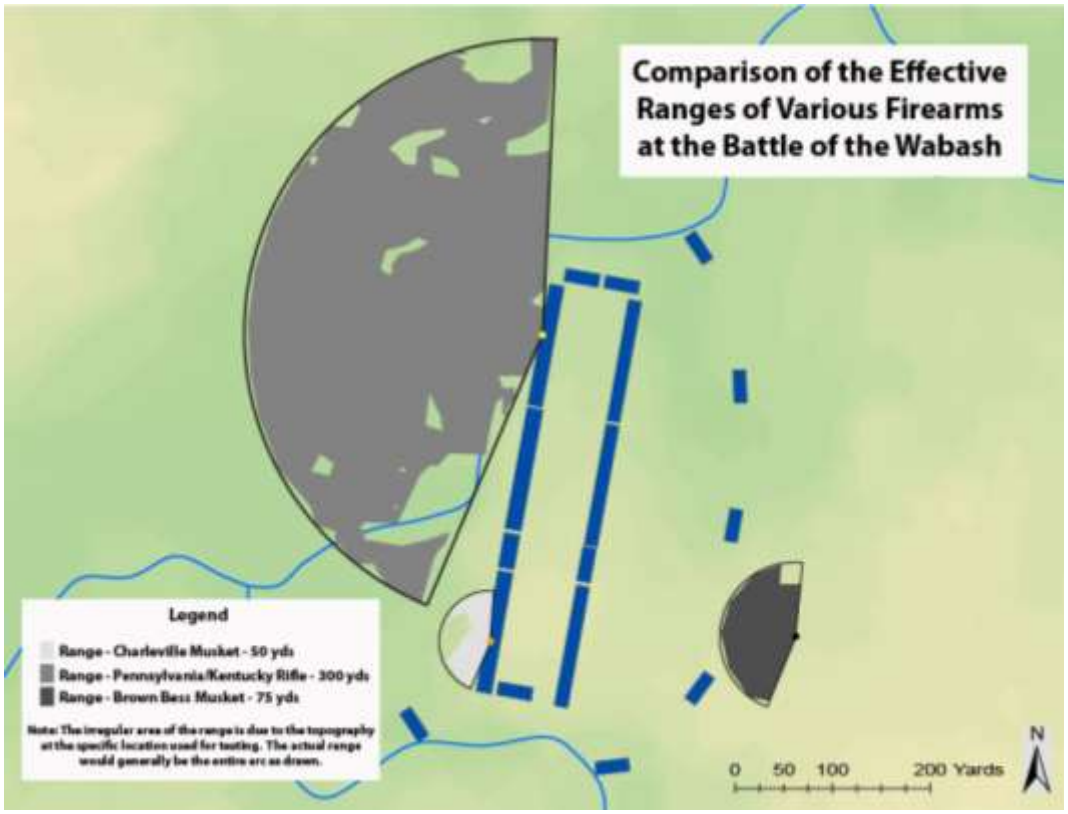

Figure 65: Firearms' fields of fire.

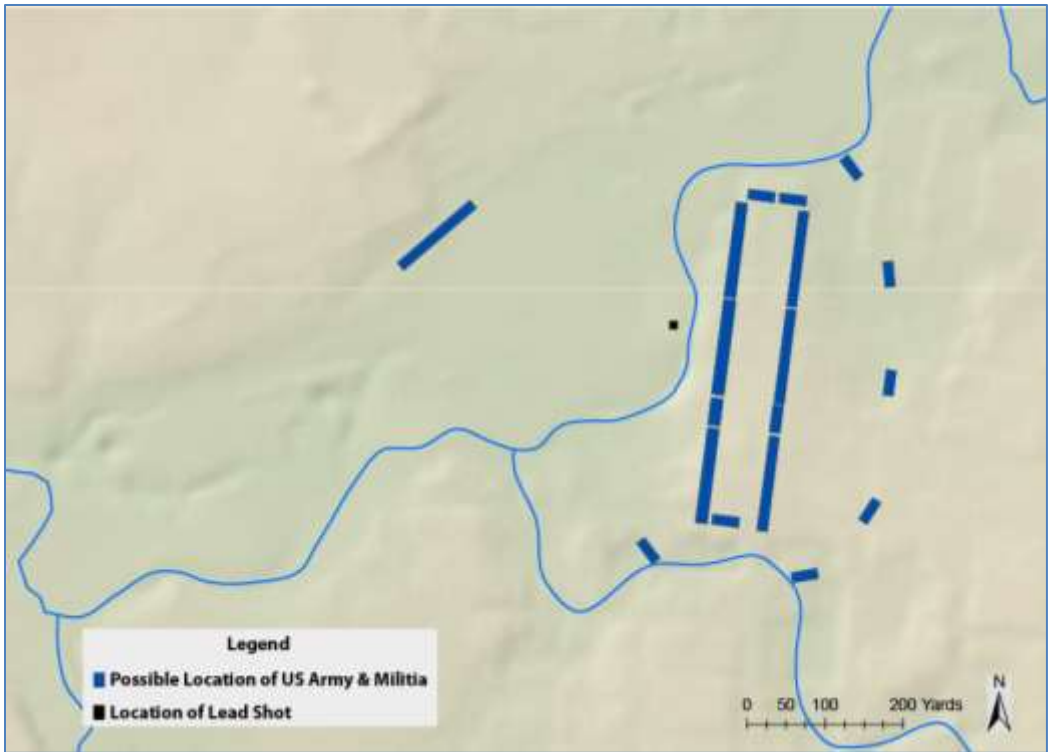

Figure 66: Lead shot found in front of the formation.

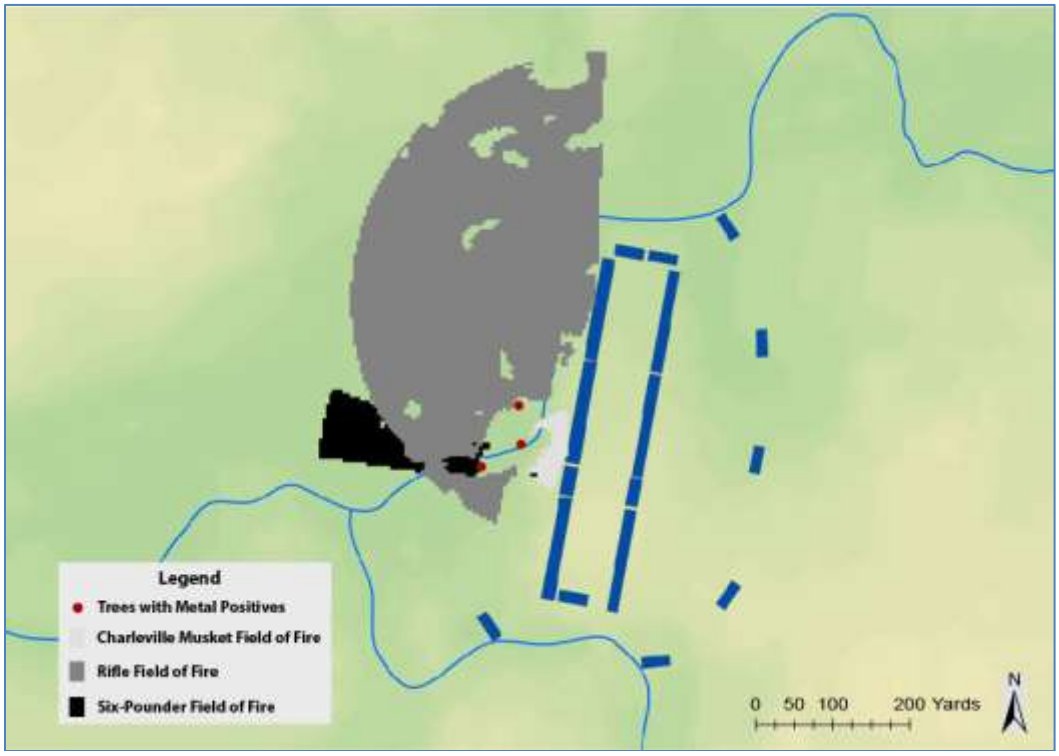

Figure 67: Locations of trees with metal positives.

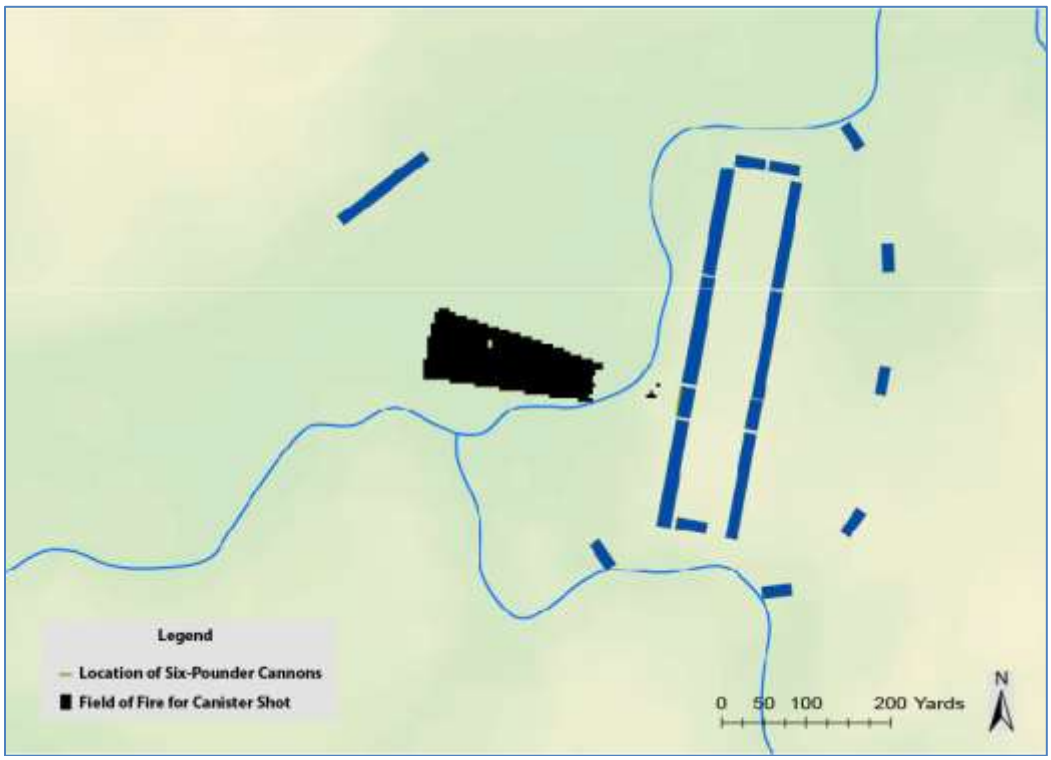

Figure 68: Field of fire for three six-pounders firing canister shot.

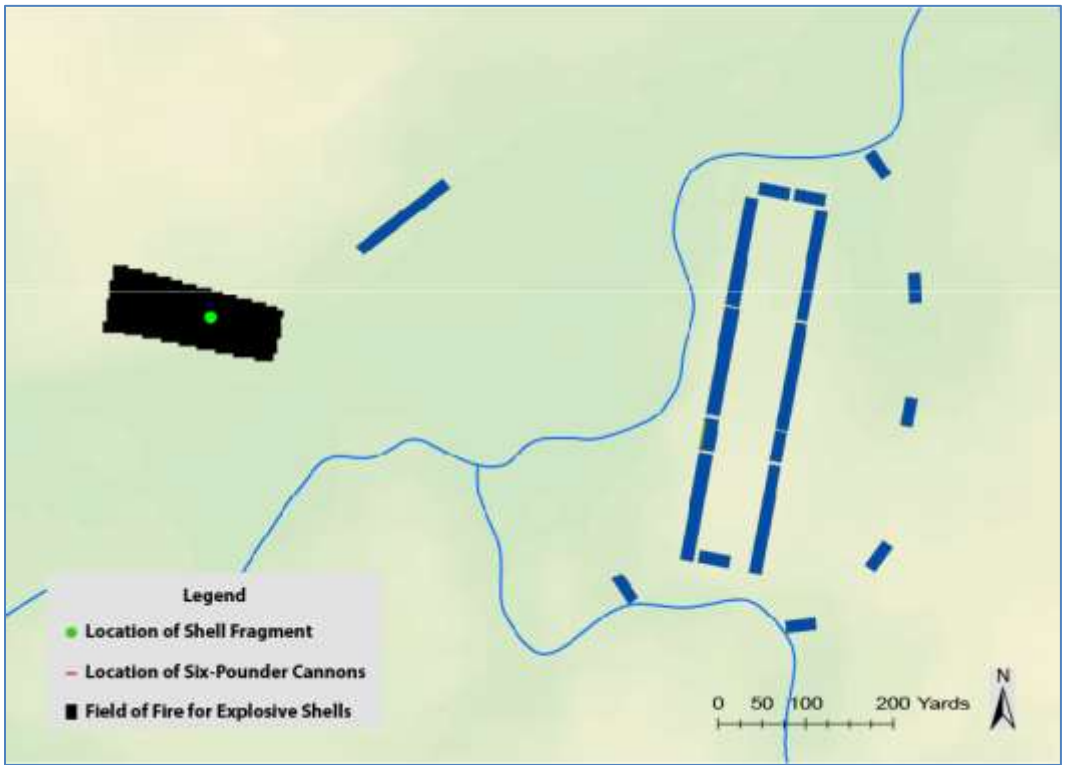

Figure 69: Field of fire for three six-pounders firing explosive shell.

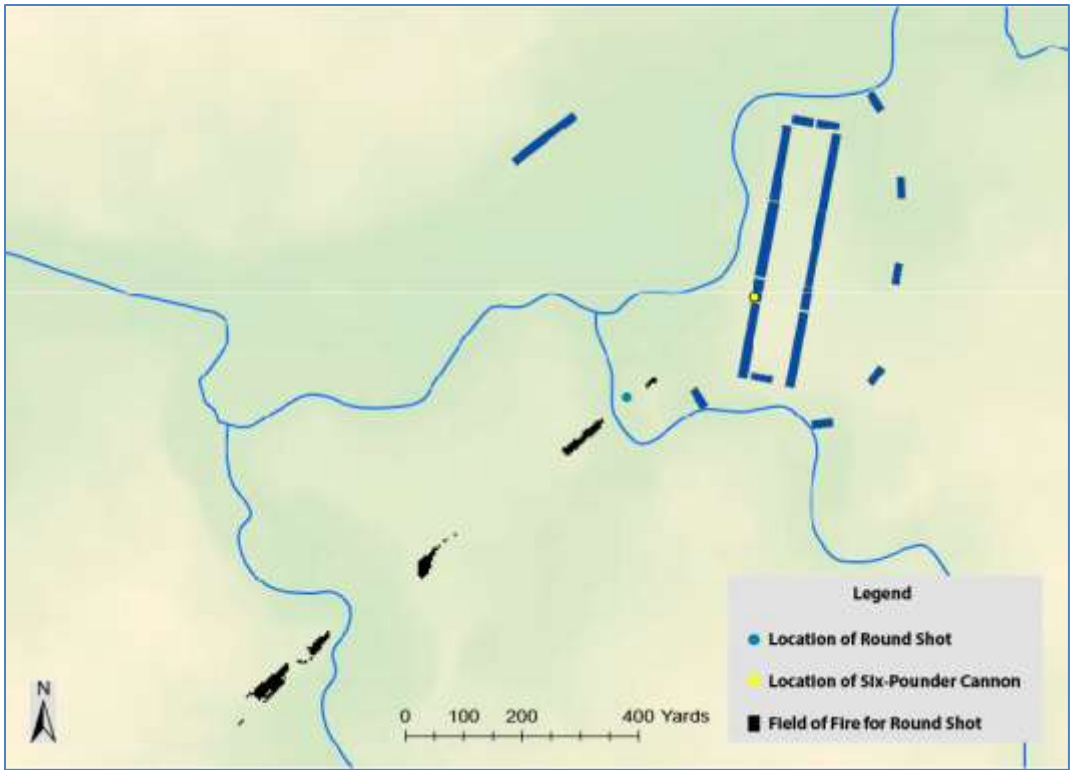

Figure 70: Field of fire for six-pounder firing round shot.

Cover and Concealment

As noted above in the section on Observation, the position of the Northwest Indian Confederacy's units could not easily be observed by any position in St. Clair's camp. The visibility analysis indicates that the army was very limited in what it could see (Figure 71). The concealment of the Confederacy provided a distinct advantage over the army as they prepared for and began the attack.

The collector artifacts include a tomahawk found approximately one-quarter of a mile south of the southern line of the camp. The location where this tomahawk was found is in an area not visible from any portion of the camp (Figure 72). This could perhaps indicate that the tomahawk was lost as part of the Confederacy moved into position around the camp.

The items found to the west of the camp during the metal detector surveys - lead shot, lead fragments, a buckle, a long bolt, a possible ladle for making shot, and a possible bayonet part – were found in an area which would have been visible from the U.S. Army and Kentucky militia positions based on the visibility model (Figure 73). This model, however, does not account for the woods in the area or for the pre-dawn conditions. It is possible that these items indicate the presence of members of the Native American Confederacy advancing toward the U.S. Army camp.

Another possible reason for the presence of these items is that an outpost of the Kentucky militia camped at that location. Denny's map (Figure 74) shows a militia

location in the same general direction, but much closer to the main camp. This scenario would also better explain the presence of the possible bayonet part as that piece of equipment is more likely to be in an Army or militia encampment than a Native American one. It should be noted, however, that Denny's map is the only contemporary map showing the separation of the militia into multiple camps. Other maps show one militia camp directly west of the main camp (Sargent 1924).

Various aspects of the terrain and environment provided cover for the attacking warriors. The steep bank leading out of the Wabash River to the east side of the camp provided a great deal of cover to the attacking members of the Confederacy. A side profile of the elevation directly in front of the cannons' position illustrates this difficulty (Figure 75). This profile lends credence to accounts of canister shot going over the heads of Confederacy warriors as they ran to the battle. Trees also provided cover to individuals on both sides of the battle. Several historic accounts note the practice of hiding behind trees while reloading or searching for targets (Branshaw 1864; Van Cleve 1922).

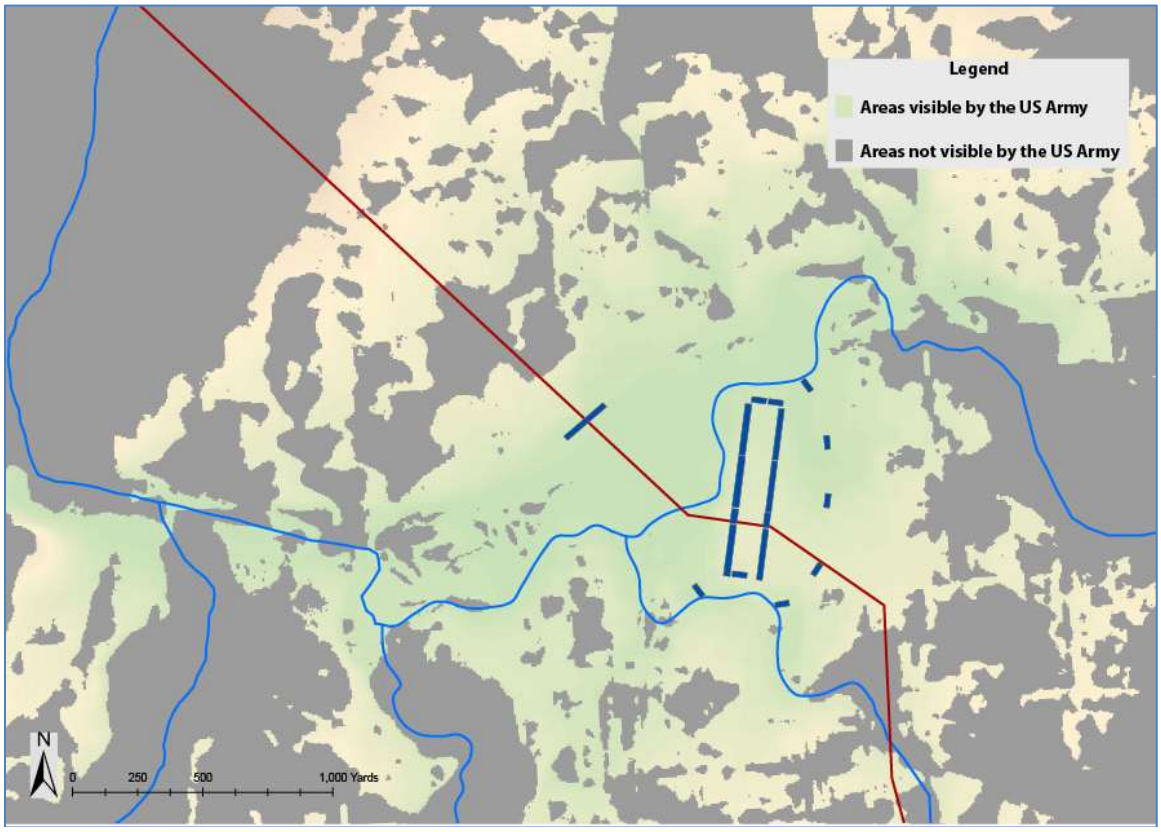

Figure 71: Areas visible by U.S. Army.

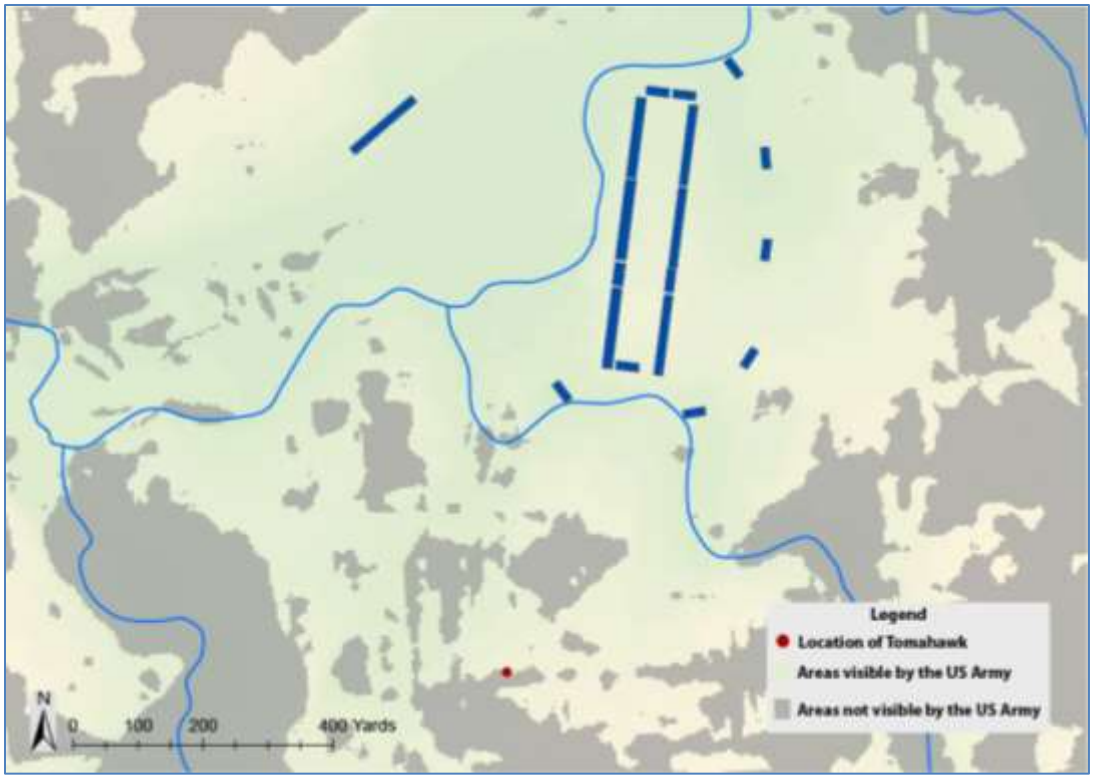

Figure 72: Location of tomahawk in relationship to visible areas.

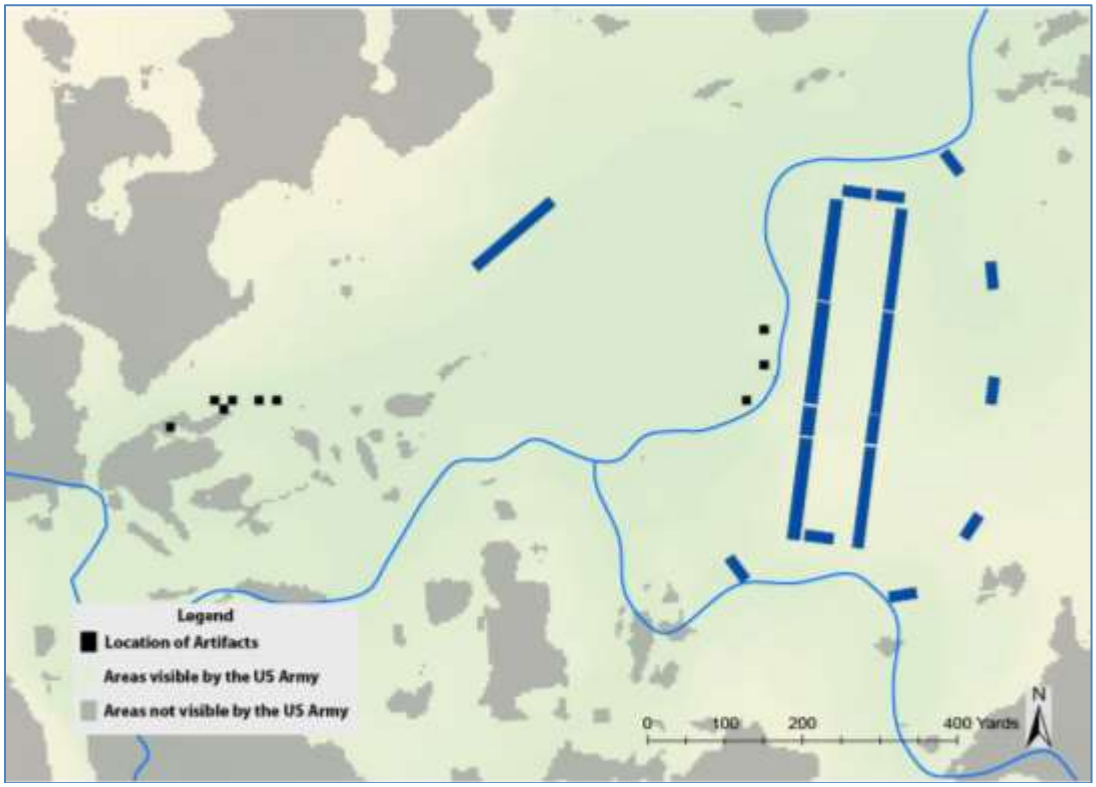

Figure 73: Location of artifacts found by metal detector survey in relationship to visible areas.

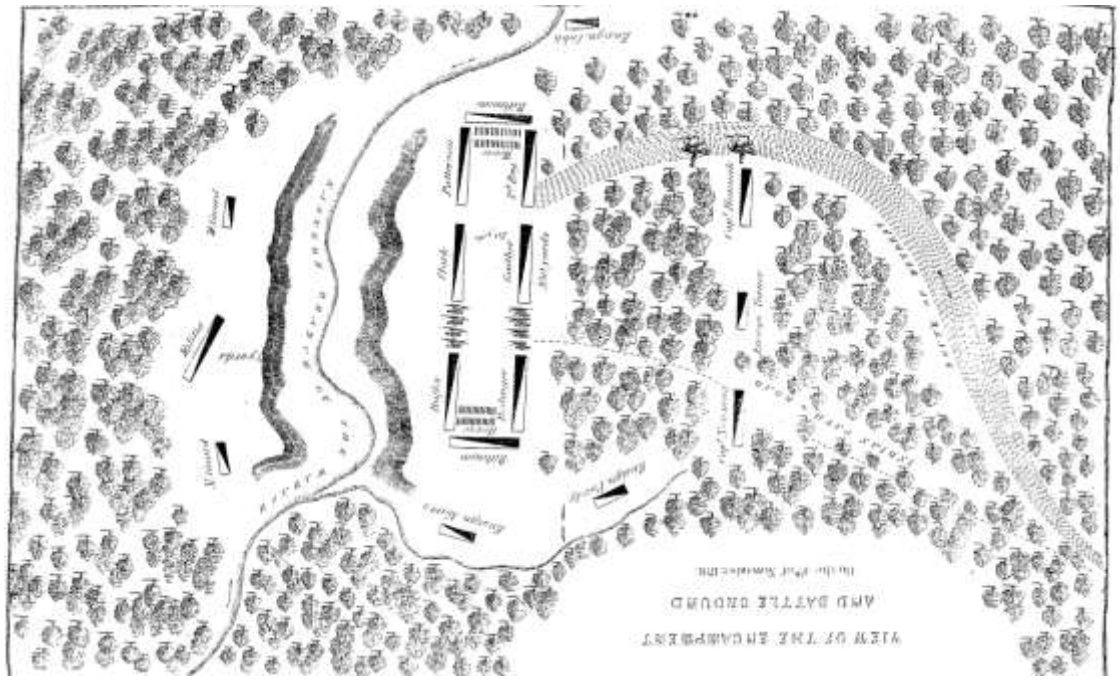

Figure 74: Map drawn by Lt. Ebenezer Denny, rotated so north is facing up.

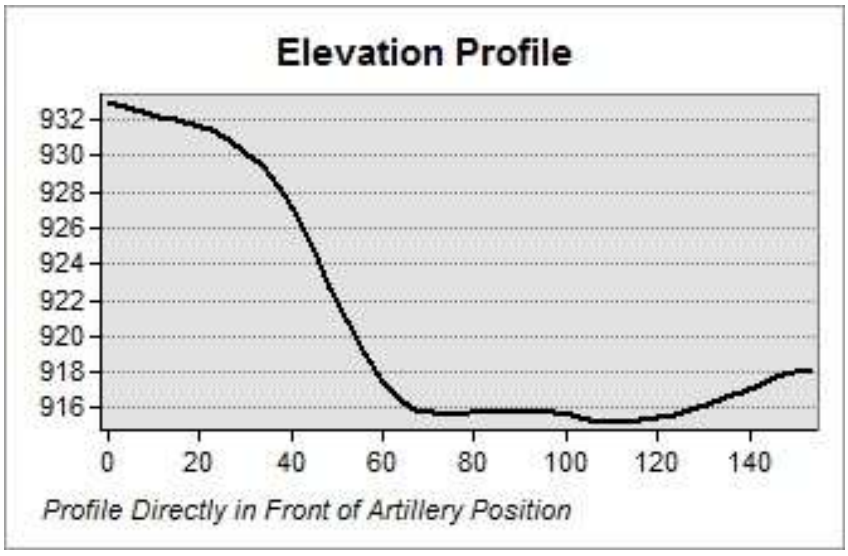

Figure 75: Elevation profile directly in front of artillery position.

Obstacles

The terrain of the battlefield and the surrounding area impeded the movement of the two armies at different levels. For the Northwest Indian Confederacy which was travelling light and unencumbered by wagons or carriages, the terrain was generally unrestricted and presented no barriers to movement. During the battle, however, the side of the Wabash River ravine, as well as the river itself, became a slight obstacle to the

attacking warriors trying to cross the river and attack the line (even though the ravine provided cover from cannon fire).

For the U.S. Army, the overall terrain of the region was severely restricted and presented a significant obstacle to movement. The region was heavily forested in the 18th Century. The trees had to be cut to the width of a road in order to move the wagons, pack horses, and gun carriages required by the army. According to historical accounts, the axes were of poor quality which made creating the road even more difficult.

Avenues of Approach and Retreat

Concealment and the Northwest Indian Confederacy's ability to surround St. Clair's camp without detection to attack all lines almost simultaneously was one of the keys to the success of the battle. To model the approach route, a least visible (least cost) path was created with the costs being based upon the number of observation points along the army formation which could see a given spot on the landscape. Figure 76 shows the calculated least visible path from a starting point at the top of the ridge across from the camp to points surrounding the camp. While not suggesting that these were the exact routes taken by the attacking warriors, the paths do show the possibility of moving through the landscape with a minimum risk of detection.

As has been noted, St. Clair's army came to the battlefield over the course of several months of cutting their way through the woods to widen an existing trail. The road they created became known as St. Clair's Trace (Figure 77). According to historical accounts, the army's retreat from the battle was hastily organized and options were limited due to the presence of Confederacy warriors on all sides. A feint sweeping move created an opening in the lines on the northeast corner of the formation to begin the retreat. St. Clair's trace was regained in approximately one-and-a-half miles. A least cost path was created using these parameters to estimate the avenue of retreat for the army (Figure 78). This calculated path (in green) is very similar to the path created based on sketches of the camp and historical accounts (in yellow).

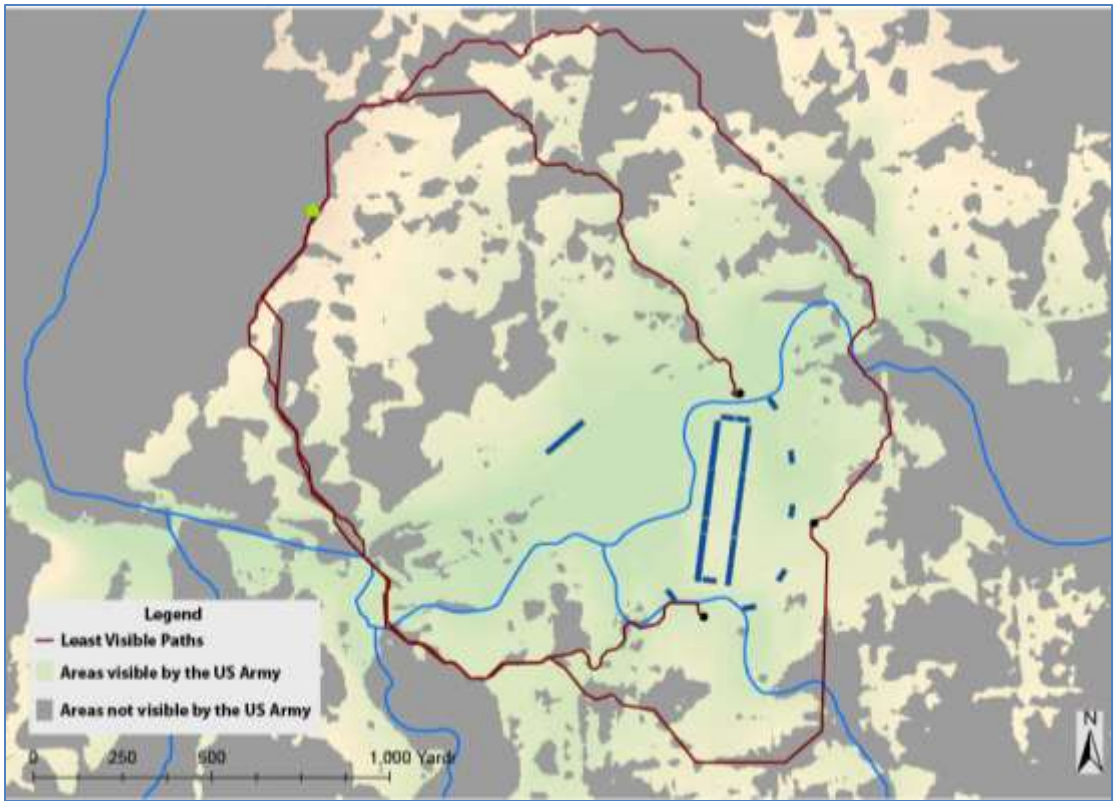

Figure 76: Least visible paths for Confederacy attack.

Figure 77: Route of St. Clair's Trace.

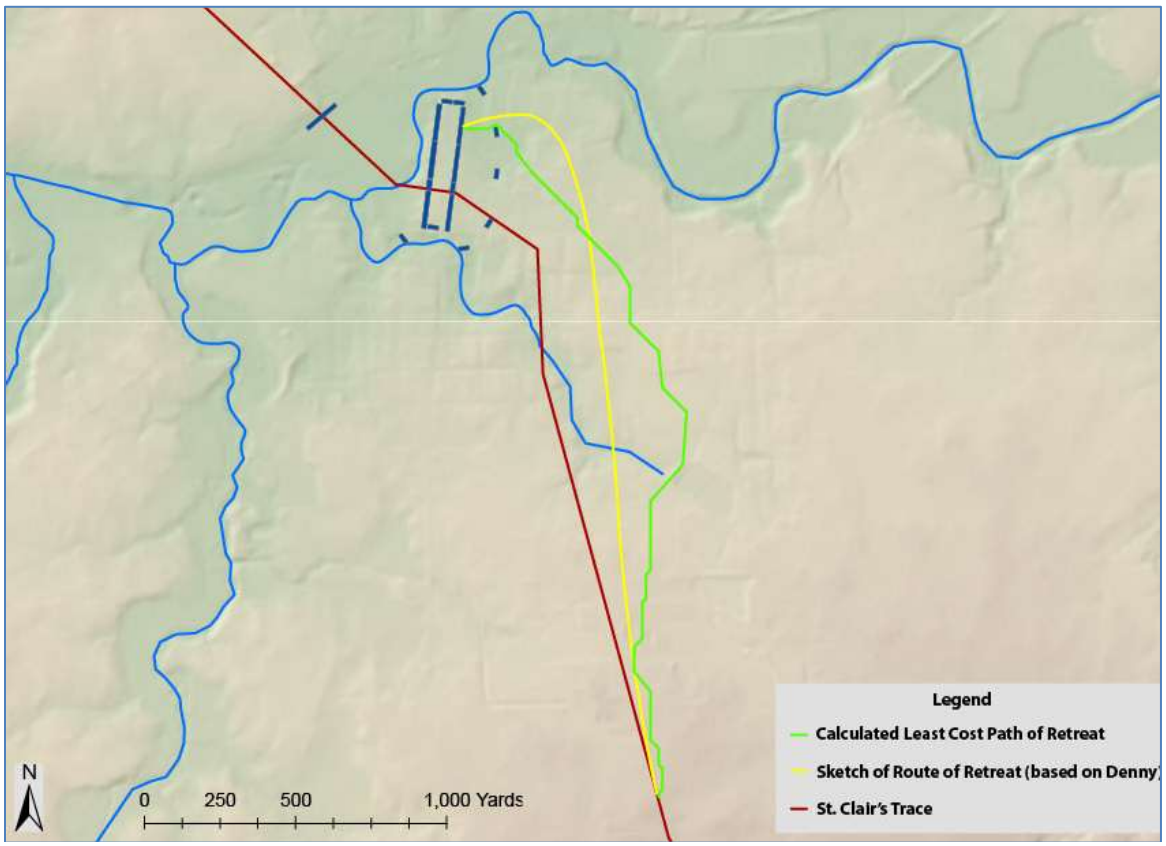

Figure 78: St. Clair's Army route of retreat to Fort Jefferson.

Identification of Battlefield Boundaries – Battle of the Wabash

Based on individual accounts of the two battles and contemporary sketches of the camp, the original research design for this investigation identified a 97 acre core area for the two battles. Archeological investigations and GIS modeling indicate that the battlefield boundary should be extended to encompass an area totaling approximately 630 acres. Figure 79 shows the 97 acre core area outlined in yellow and the expanded battlefield boundaries outlined in green. The extended 630 acre battlefield area is within Sections 8, 9 and 16, Township 15N, Range 1E in Gibson Township, and Sections 17, 18, 19, and 20, Township 7S, Range 1E in Recovery Township, Mercer County, as shown on the USGS 7.5' Fort Recovery, Ohio Quadrangle. The potential National Register (PotNR) area of integrity is included within the extended battlefield boundaries. Enlarging the boundary of the battlefield area allows for the inclusion of: the artifacts found during metal detector surveys, areas of interest based on gradiometer data, the possible staging area of the Northwest Indian Confederacy and the corridors along the least visible paths calculated utilizing GIS.

Future research should investigate all of these factors in an effort to gain a more complete view of the Battle of the Wabash. Research on the expanded battlefield area

could include investigation of unsubstantiated reports of battle era artifacts found by collectors northwest of the 97 acre core area but within the expanded battlefield area. Several informants told about artifacts found in these expanded areas, but these findings were not confirmed during this study. Limited excavation of the area west of the original battlefield boundaries where multiple battle era artifacts were found could also provide clues to the function of that location and the surrounding landscape during the battle and the time preceding the battle. The expanded battlefield area encompasses a much larger and more realistic view of the staging area of the 1,500 member Northwest Indian Confederacy – archeological investigations in this expanded area could provide much missing information on the movements of the Confederacy the evening of 3 November and the morning of the battle on 4 November. The results of these future investigations of the expanded battlefield area could provide a more historically accurate picture of the Battle of the Wabash, especially from the Native American perspective.

Based on the results of the GIS data modeling the KOCOA analysis for the Battle of the Wabash has been updated as shown in Table 8.

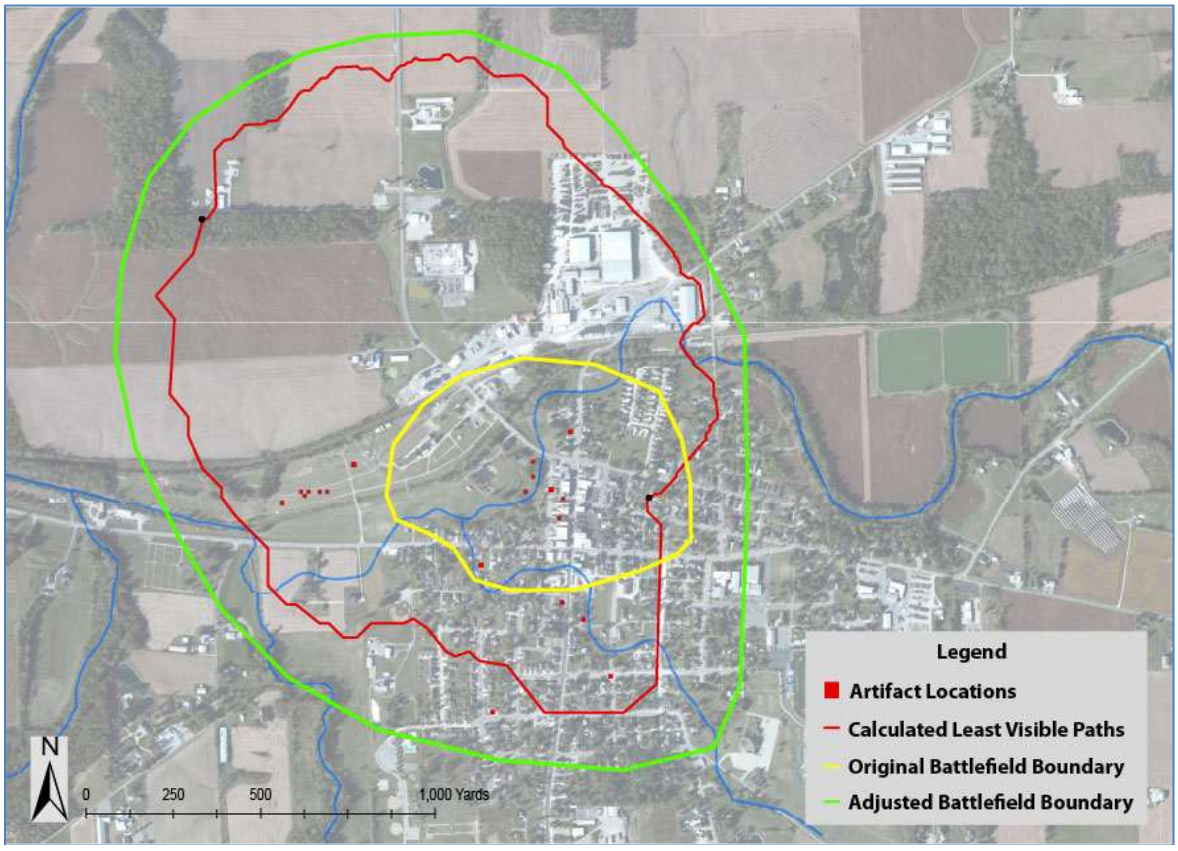

Figure 79: Adjusted battlefield boundaries – Battle of the Wabash.

Table 8: Updated KOCOA Analysis - Battle of the Wabash, 1791
Key Defining Features updated with GIS Modeling Data
(updates in *bold italics*)

Terrain and Topographic Features					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Wabash River	Runs through NW corner of core battlefield	St. Clair thought this was the St. Mary's River and as such, incorrectly calculated that he was much closer to Kekionga; this greatly influenced his camp strategy and future plans	Rerouted several times since 1791; original Wabash river remains as ditch immediately NW of reconstructed fort	Key Terrain; Observation and Field of Fire; Obstacle	Location, Setting, Association
Level wooded high dry ground on bank of Wabash River	NW of core battlefield on SW side of original Wabash River	St. Clair's main camp was pitched here on night of Nov. 3 ***GIS visibility analysis indicates limited observation beyond the immediate vicinity of the camp which allowed for a surprise attack. Least visible paths were calculated and compared to artifact locations to determine adjusted battlefield boundaries.***	OHS property and downtown modern day Fort Recovery	Key Terrain; Observation and Field of Fire; ***Cover and Concealment***	Location, Setting, Association
Higher ground about 300 – 400 yards across the Wabash River	NW edge of core battlefield	Militia encampment on night of Nov. 3	Part of privately owned Ambassador Park	Key Terrain; Observation and Field of Fire; Obstacle (Indian Confederacy)	Location, Setting, Association
Bed of the Wabash	Runs through NW	Mentioned numerous	Remains as ditch	Key Terrain; Cover	Location, Setting,

River	corner of core battlefield	times in first person accounts as being waded through or used for cover	immediately NW of reconstructed fort (river rerouted since 1791)	and Concealment	Association
High banks of the Wabash River	Runs through NW corner of core battlefield	Mentioned numerous times in first person accounts as being used for cover ***GIS analysis reveals a 17' elevation change on the bank from the river bed to the higher ground.***	Somewhat remains immediately NW of reconstructed fort (river rerouted since 1791)	Key Terrain; Cover and Concealment	Location, Setting, Association
Ravine, hollow, rich bottom between the militia and main camp	Runs through NW corner of core battlefield; SE of militia camp; Wabash River ran through this river	Became an obstacle for the militia as they retreated from the initial Indian attack back to the main camp; became cover for the Indians as artillery shot at the ravine soared over their heads and into the trees ***GIS analysis confirms that cannon fire would not have reached individuals in this area.***	Most likely site of park w/ baseball field (OHS property leased to village)	Key Terrain; Obstacle (Militia); Avenue of Retreat (Militia); Cover and Concealment (Indian Confederacy)	Location, Association
Buck Run	SW Corner of battlefield	Location of Darke's charge on the Indians; southern border of St. Clair's main camp	Remains as drainage ditch through town	Key Terrain	Location, Setting, Association
Small trees, pile of trees blown out of root, larger tree, large tree blown	Throughout battlefield	Mentioned in numerous first person accounts as playing an integral part in Native American	No longer a wooded area	Cover and Concealment	Setting, Association

down, brush, etc.		battlefield strategy			
Slight ridge	***Approximately ½ mile west of the army's main camp; between the camps of the Confederacy and the U.S. Army***	***Based on a GIS analysis, the ridge was at the edge of visibility from the camp; afforded high ground for observation by the leaders of the Northwest Indian Confederacy; and was a possible staging area prior to the attack.***	***Remains as farmland northwest of town***	***Key Terrain; Cover and Concealment***	***Location, Setting, Association***
Terrain generally and effective range of weapons	***Throughout battlefield***	***Through GIS, determined terrain's impact on and artifact locations in relation to field of fire.***	***NA***	***Key Terrain; Observation and Field of Fire; Cover and Concealment***	***Location, Setting***
Fortifications					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Fort Jefferson	29 miles SE of battlefield	The remnants of St. Clair's army and camp followers retreated here immediately after the battle	Ohio Historical Society (OHS) Site	Avenue of Retreat (St. Clair's Army)	Location, Setting, Association
Road and Transportation Networks					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
St. Clair's Trace	S of battlefield	Avenue of approach from Fort Jefferson for St. Clair's Army; Avenue of retreat to Fort Jefferson for survivors of the battle ***The calculated least cost path for the retreat is very similar to the route of***	Most likely current route of SR 49 south of Fort Recovery	Avenue of Approach (St. Clair's Army on Nov. 3) and Avenue of Retreat (St. Clair's Army on Nov. 4)	Setting

		retreat depicted in Denny's map.			
Indian Trail to Indian Camp	NW of core battlefield	Trail used by various Indian tribes when gathering on Nov. 3	Unsure of exact location	Avenue of Approach (Indian Confederacy)	Setting
Indian Trail to Girty's Town	NW of core battlefield	Trail used by various Indian tribes when gathering on Nov. 3	Unsure of exact location	Avenue of Approach (Indian Confederacy)	Setting

Key Defining Features compiled from Anonymous (1864), Carter (1987), Darke (1791), Denny (1859), DeRegnaucourt (1996), Howe (1847), Rohr and Meiring (1991), Sargent (1924), St. Clair (1812), Van Cleve (1922), Wilson (1937), and Winkler (2010; 2011).

Chapter V. 1794 Battle of Fort Recovery: Field Methods, Results and Analysis

Chapter V covers the archeological field methods, results, and GIS modeling and updated KOCOA analysis for the construction of Fort Recovery in 1793 and the Battle of Fort Recovery in 1794. Because the majority of the Battle of Fort Recovery took place around the fort itself, it was important to attempt to find any remnants of the fort to help ascertain a more exact position. Ground-penetrating radar was performed on parcels that may have been within or closely surrounding the fort walls, based on documentation from historical resources. Information from the radar survey was then used to pinpoint excavation units that were excavated as part of Ball State University's field school.

Ground-Penetrating Radar (GPR) Methods and Results

By Jarrod Burks, Ohio Valley Archaeology, Inc.

In April, 2011 Ohio Valley Archaeology, Inc. conducted ground-penetrating radar surveys on three parcels in the Fort Recovery area: Parcels 6, 8, and 9 (Figure 80). The goal of this work was to locate possible intact portions of the fort or any other historic-era features that might be present. Numerous utility lines, disturbances from post-fort-era buildings, and a suite of other features were found. While it is was not clear if any of the radar anomalies actually dated to the fort era, the results of the radar surveys are useful in that they show where the most disturbance to the site has occurred and, if nothing else, indicate areas to avoid when looking for intact remains of Fort Recovery. This section presents the results of the radar survey and examines the potential for the presence of other, post-fort buildings using the Sanborn Fire Insurance maps.

Figure 80: Map showing the locations of the ground-penetrating radar surveys (in yellow).

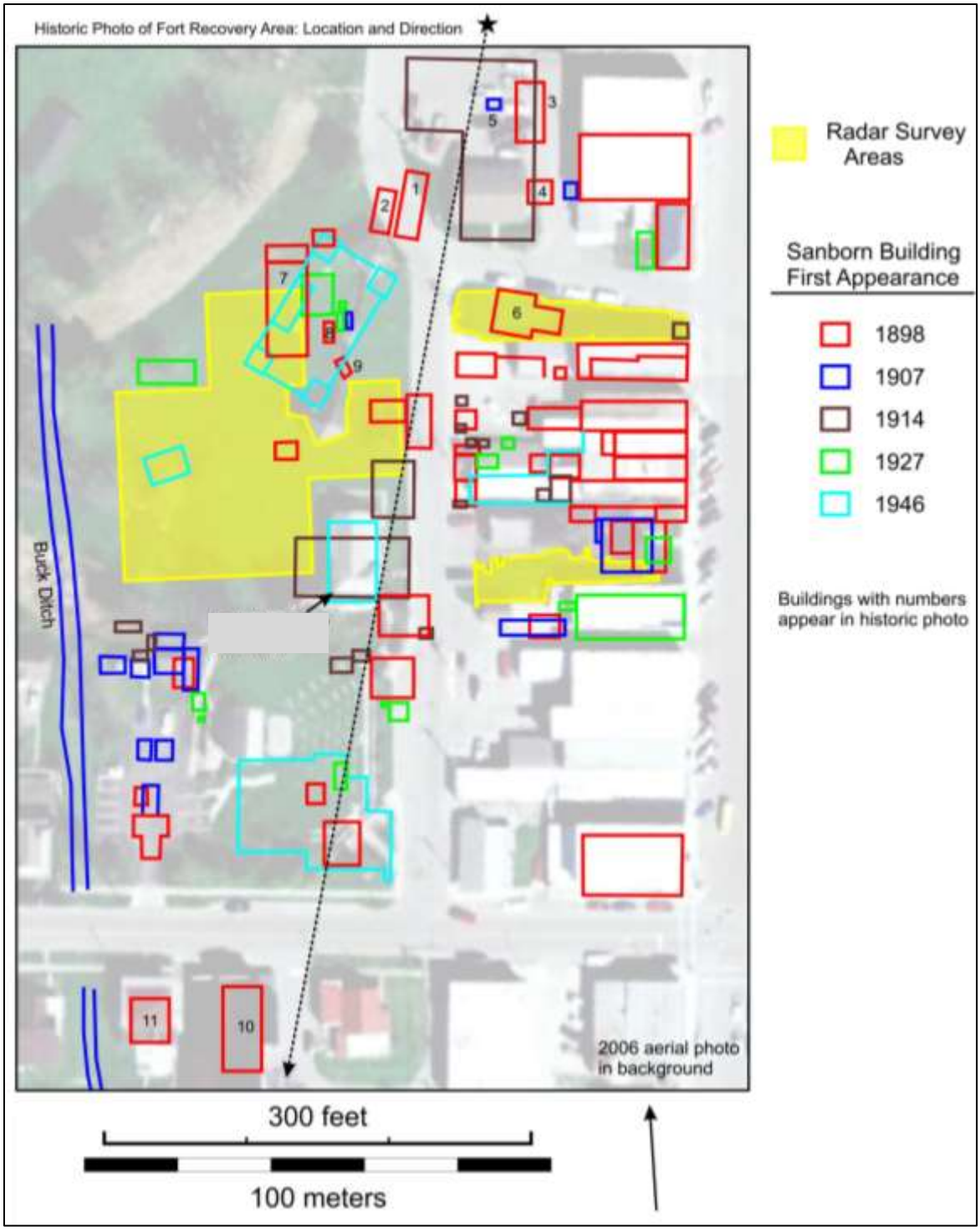

Figure 81: Map of select Sanborn Fire Insurance map buildings over time overlaid on a 2006 aerial photograph .
(historic photograph of this same area shown in Figure 82)

One of the big challenges of doing geophysical survey in urban settings is the massive amount of ground disturbance caused by the construction and demolition of buildings and the routing of utility lines, storm sewers, and the like. In the 200-plus years since the fort was built, the town of Fort Recovery has come to cover most of the site. While the excavation of cellars and deep trenches for building foundations and utility lines has erased much of the fort's archeological signature, there may yet be fragments of the fort left to find. Remains of the fort might be found in back yards or along the sides of structures, or even under areas currently paved. There may also be areas where fill has been brought in to level off ground, thus burying fort-era artifacts and structural remains related to the fort.

Because the area of the fort has changed so much in the last 200 years, the first step in making sense of the radar results is to consider the locations of post-fort buildings that have since been demolished. Our best tool for this are the Sanborn Fire Insurance maps of Fort Recovery (the town), which date to 1898, 1907, 1914, 1927, and 1946. In Figure 81, the locations of Sanborn map buildings near the fort and the radar survey parcels are shown overlaid on a 2006 aerial photograph. The map on which a building first appears is indicated by the color of the building outline on the Figure 81 schematic. Prior to the founding of the Fort Recovery park site and the reconstruction of the fort in 1936, the area that today houses the museum and the partial fort reconstruction was home to numerous buildings.

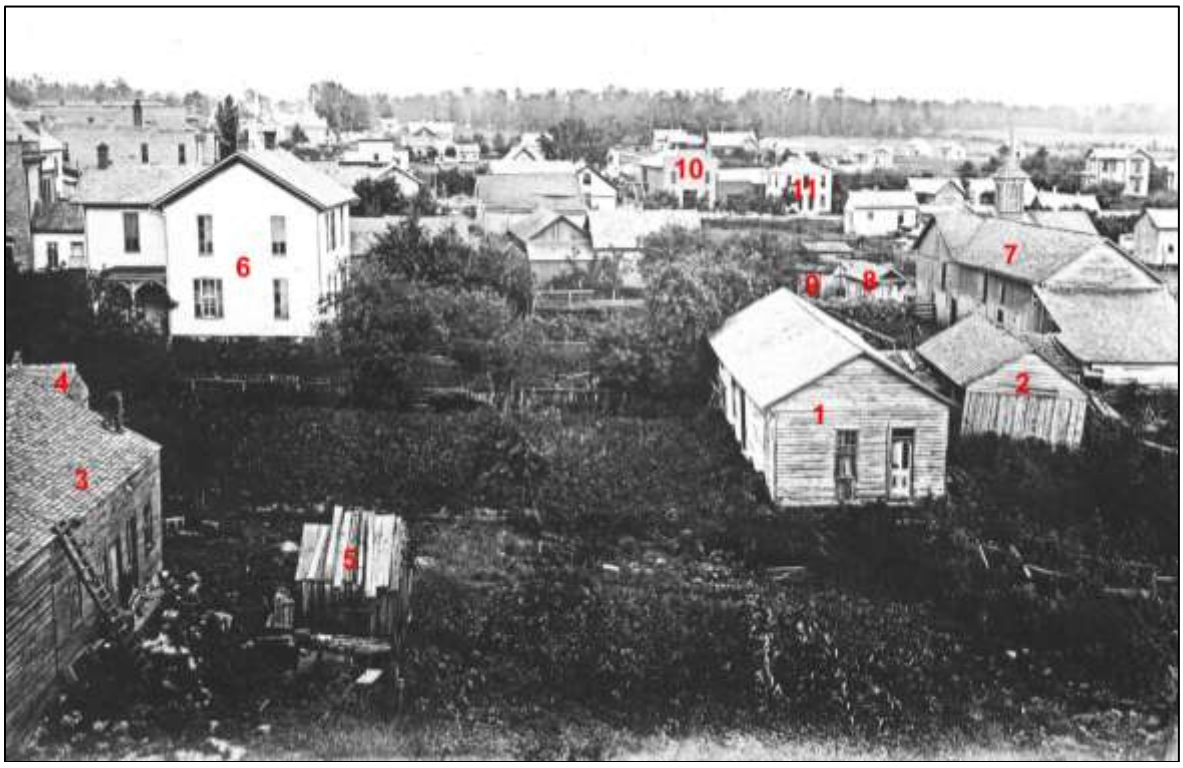

Figure 82: Photograph of Fort Recovery area looking from north to south along what is today Fort Site Street.
(numbers refer to buildings from Sanborn Fire Insurance maps referenced in Figure 81)

The photograph in Figure 82 shows a view of the Fort Site Street area, looking from north to south. The general trajectory and location from which this photograph was taken is indicated in Figure 81. Distinctive buildings present in the photograph and the Sanborn maps are numbered in both the photo and on the Sanborn composite map in Figure 81. Building 7 was located right in the area of the fort's northwest corner, including the area of the fort well and flagpole. Building 6 covers a significant part of Parcel 8, but not all of it. Parcel 9 seems to mostly be clear of buildings, at least from 1898 to 1946. We will revisit these Sanborn building locations below when the radar results from each parcel are presented.

Ground-Penetrating Radar: Some Notes about the Method

Of the variety of geophysical survey instruments available for imaging the subsurface, ground-penetrating radar (GPR) is the most appropriate for the urban parcels of the Fort Recovery project. Ground-penetrating radar works by moving a radar antenna along the ground as it transmits thousands of pulses of radar energy per second. As these waves of energy travel into the ground and bump into things, especially those things with distinctly different electrical properties and in particular things that cause the radar energy to change velocity, some of the energy is reflected back to the surface and received by the antenna (Conyers 2004; Witten 2006). The instrument records how strong the reflections are and how long it took the energy to travel away from and back to the antenna. This radar travel time can be used to calculate the depth of a detected object or feature, assuming one can determine the velocity of the radar energy in the ground.

Many things below ground can cause strong and weak radar reflections, including tree roots, pipes, larger rocks/bedrock, distinct layers (gravel or brick paths, garden features), foundations, shaft-type features (e.g., graves, wells, cisterns, and privies), and disturbances to the natural soil layers, like a gap in a gravel layer caused by a grave shaft. Various chemicals in the ground, for instance motor oil, can also produce distinctive reflections. Radar energy will bounce off of but also easily penetrate asphalt, concrete, and gravel. In fact, concrete and asphalt are excellent materials on which to survey because they are very good at allowing the radar energy to pass into the ground (as long the antenna is nearly touching their surfaces). Other materials, especially clayey, moist soils, tend to absorb radar energy and do not allow it to pass (cf. Weaver 2006). At the extreme, radar energy cannot penetrate metals, so metal pipes and other large metal objects are easily detected, but they obscure things below them.

For the Fort Recovery project, a Sensors and Software Noggin 500 (MHz) system was used to collect the radar data. Figure 83 shows a picture of this radar system. The Noggin 500 is a single channel radar system with a built-in display panel, which shows the survey results real-time while collecting data, and data storage port for easy download of the data to a computer.

The depth of a radar system's signal penetration, and the depth to which objects can be detected, depends on the frequency of the antenna being used and the conductivity

of the ground. Higher frequency antennas (e.g., 1000 MHz) can detect very small things but only at shallow depths, while lower frequency antennas (e.g., 50 MHz) can penetrate into the ground much deeper but can only detect larger things. The frequency of the antenna, however, can be a moot point if the ground is so conductive that all of the radar energy is absorbed before it can make its way back to the surface. The Noggin 500 system has a mid-range antenna frequency (500 MHz) that is good in a variety of settings for typical kinds and sizes of archeological targets, such as pipes, foundations walls, and pier stones, for example.

Figure 83: Ground-penetrating radar system used during the survey.

Radar systems are often used to collect 40 traces per meter (essentially, a "reading" [a.k.a. trace] taken every 2.5 cm) along transects spaced 50 cm apart. This is a *standard-density* survey. To increase the resolution of the resulting radar images, one only need increase the data collection density—in particular, increasing the number of transects per meter greatly enhances the image quality and detectability of small features. A *high-density* survey consists of a one-directional survey with transects spaced 25 cm apart[1]. In addition to shrinking the transect spacing, a higher-density image also can be created by surveying an area twice, once in the grid north-south direction (a.k.a., Y-lines) and once in the grid east-west direction (a.k.a., X-lines). A *bi-directional high-density* survey includes X- and Y-line data with 25 cm transect spacing and traces collected at 2.5 cm intervals along each transect. Collecting X- and Y-lines is important when searching for linear features like foundation walls, though such a survey requires twice as much time to complete (Neubauer et al. 2002; Pomfret 2006). For the Fort Recovery project I elected to use a one-direction high-density spacing (25 cm transect spacing) to collect the radar data. In part this data density was chosen for its speed, over a bi-directional survey, but also because of the irregular shape of Parcels 8 and 9.

Once collected, each radar trace is like a tiny profile of the ground. When all of these tiny profiles, or traces, are put together side by side along their collection transect they form a radargram. Figure 84 has three example radargrams from historic-era sites in Ohio. These radargrams are the nuts and bolts of a radar survey; they show the locations, shapes, intensities, and sometimes frequencies of the radar reflections. However, it can be very hard to interpret what has been found based on the radargrams alone. One very useful aspect of radar data is that the radargrams can be stacked up side-by-side, creating a three-dimensional block of data the whole of which can be "sliced" horizontally and looked at from the top rather than the side—giving the effect of being able to excavate down through the data, and the site, one layer at a time (Figure 85). These horizontal data slices are called "time slices" or "amplitude slices" and they show a horizontal map of the radar reflection amplitude (or reflection strength) at a desired depth (Goodman et al. 1995). The thickness of the slice can be adjusted to any desired thickness, though slices 2-15 cm thick usually work the best on sites in the Midwest.

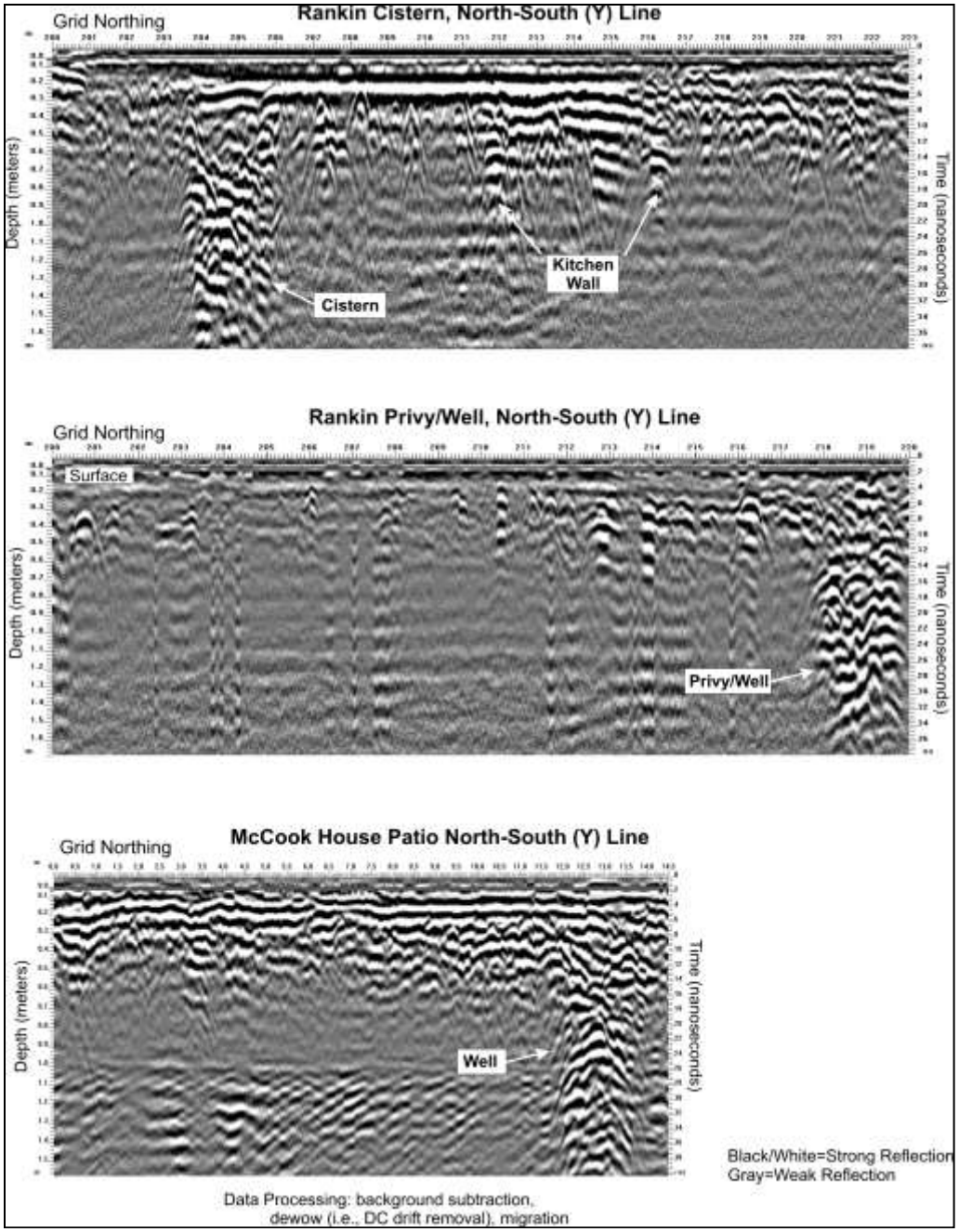

Figure 84: Radar profile examples with wells and cisterns.

Because there are an infinite number of ways to slice and display radar data, it can be quite difficult to show all of the important radar features from a survey area in one map. Often, radar data are shown as a series of side-by-side amplitude slices at varying depths. Each slice generally is chosen so as to display the variability in the radar data with depth. If one knows the velocity of the radar energy as it travels through the ground, then the depth of each slice can be estimated. When examining the Fort Recovery Project radar data, I used a variety of slice thicknesses in an effort to find the best thickness for imaging features in each of the different parcels. Once the slices were produced (all data

were processed in Ekko_Mapper 4 using a variety of processes, like dewow, migration, enveloping, and background subtraction), they were exported to Surfer and then they were pulled into CorelDraw where they were layered into the site map.

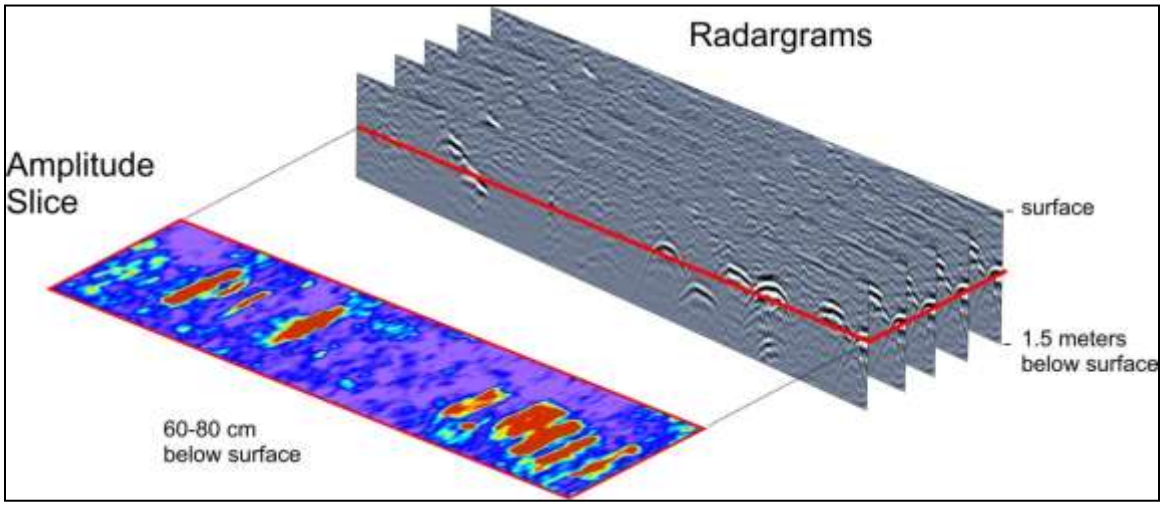

Figure 85: Creating amplitude slices from radargrams.

Interpreting Ground-Penetrating Radar Results

Picking anomalies of interest in radar data is usually straightforward if one is attempting to identify foundations, cellars, and other large features. Such features usually produce rectilinear anomalies that look like the shape of the foundation or cellar. Linear features like utility lines or trenches and paths and walkways are also fairly easy to spot. More difficult to identify are shaft-type features, like wells, cisterns, and privies. With shaft-type features it is especially important to examine the radargrams for evidence of cultural features because shaft-type features are sometimes not evident in amplitude slices. This is especially the case with privies, which often lack architectural stone and thus are hard to detect in radar surveys. Smaller features, like foundation piers, are also sometimes only recognized in the radargrams. Therefore, every radargram must be examined for small and distinctive reflections, as well. In the end, an interpretation map of radar results (or any geophysical survey results) should be considered a series of suggestions, most of which need further testing to evaluate. As shown below, while some of the radar findings at Fort Recovery represent distinctive features visible in the Sanborn maps or historic photographs, many anomalies remain unexplained and will require excavation to better define.

End Notes

1. What passes for *low-density*, *standard*, and/or *high-density* radar surveys is surveyor dependent. In the last 10 to 15 years 50 cm transect spacing has been considered fairly high density. Now that computer processor speed and data storage capacities have increased by leaps and bounds, 25 cm transect spacing with one-direction data collection

is becoming more standard. Bi-directional surveys greatly increase data density and improve the resolution and detectability of linear features, but they are very time intensive for single channel systems like the Noggin 500, which has just one transmitter/receiver. The wave of the future in archeology (this already is a reality in engineering settings) is multichannel systems with numerous transmitters and receivers all connected to the same cart, decreasing transect spacing to less than 10 cm.

Parcel 6

The Parcel 6 survey area includes the grassy yard area directly behind the Fort Recovery Museum and the area around the southern half of the reconstructed portion of the fort (Figure 80, Figure 86). Several outbuildings are known to have been in this area prior to the fort reconstruction, based on the Sanborn maps (Figure 81), and the remains of the 1936 fort reconstruction should be present as well.

Figure 86: Parcel 6 survey area photo taken from just west of the fort reconstruction, looking from north to south towards museum.

The Parcel 6 survey area covered just over half of an acre. Figure 87 shows the interpretive results of the survey. Figure 88 contains eight amplitude slice maps of the area at select depths. Twenty anomalies of potential interest, Anomalies 24-42, were identified in this area. Most of these anomalies are related to past interpretation facilities related to the park:

Anomaly 24: a gravel path that once serviced a log cabin (brought in from elsewhere in ca. 1936) on the grounds.

Anomaly 25: small anomaly first evident in the 26-31 cmbs slice. This could be a small feature related to the log cabin that was once located nearby.

Anomaly 26: a deep utility line first evident in the 66-71 cmbs slice.

Anomaly 27: the now-archeological remains of the log cabin that once stood on the property as an interpretive display. It would appear that numerous support piers were used to hold up the cabin and the bases of these piers remain. The base of the chimney (Anomaly 27b) is also present in the radar data. Figure 89 is a picture showing the eastern end of the cabin, with its large chimney on the back, before the cabin was removed.

Anomalies 28-31: Anomalies 28-31 are small, distinctive reflections that occur in the 66-71 cmbs slice. These anomalies seem evenly spaced but are not lined up in an obvious way with the nearby cabin. Given their depth, these anomalies could date to an earlier time than the cabin and perhaps became buried when the park was improved at the time the cabin was installed ca. 1936.

Anomaly 32: this is a recent utility line trench.

Anomaly 33: this is an arching, fuzzy anomaly behind the museum that is most evident at about 35-40 cmbs. This anomaly is likely related to the construction of the museum. The area just behind the museum was likely altered by previous buildings located in this area and while the museum building was being erected in the 1930s. Thus, I suspect that Anomaly 33 post-dates Fort Recovery.

Anomaly 34: a small area of diffuse reflections, about 4 meters across, just behind the museum. This anomaly seems to be spatially connected to Anomaly 33 and perhaps is related to it in time, as well. Anomaly 34 is most distinct in the 26-31 cmbs slice. It could be an area of increased soil moisture or higher clay/sand/gravel content.

Anomaly 35: this is a large area of strong reflections in front of the fort reconstruction. While the survey only covered part of this anomaly, it looks to be a gravel path or road, or perhaps distinctive fill brought in as part of the fort reconstruction project.

Anomaly 36: approximate location of large tree removed in the near past. This tree is visible behind the blockhouse in the Figure 89 photo. The Anomaly 36 anomalies may be remains of the tree's root system.

Anomaly 37: this is part of the southwest blockhouse from the 1936 fort reconstruction. It is most evident in the 36-41 cmbs slice.

Anomaly 38: this appears to be the southern curtain wall of the 1936 fort reconstruction. One of DeRegnaucourt's excavation trenches cuts through this anomaly (Figure 87).

Anomaly 39: a large, rectilinear anomaly first evident in the 16-21 cmbs slice, this anomaly is likely part of the 1936 fort reconstruction. Two of DeRegnaucourt's trenches cut through this anomaly.

Anomaly 40: this appears to be a path that once led up to the back side of the 1936 fort reconstruction.

Anomaly 41: small anomaly, less than a meter across, that seems to be located in between DeRegnaucourt's trenches and is very close to the edge of an outbuilding from the Sanborn maps, as well as the west edge of the 1936 fort reconstruction. This strong anomaly may be a piece of metal in the ground.

Anomaly 42: this strong reflector is located along the edge of the 1936 fort reconstruction. A DeRegnaucourt excavation unit is located in the same general area. Anomaly 42 could be the bottom of the excavation unit or part of the fort reconstruction.

The Parcel 6 area contains the western part of the original fort and museum, including the well and the base of the original flag pole. To the west it is edged by a now-dry and partially re-filled channel of the Wabash River; to the east is the Fort Site Street corridor and all of its utility lines. Prior to the 1936 reconstruction of the fort, the Parcel 6 area contained a variety of small and large wooden buildings, some of which are visible in the Figure 82 photograph. While construction of the town and the reconstruction of the fort have heavily damaged this area, finding the intact base of the flagpole, albeit in the early 1800s, suggests that perhaps portions of the original fort may still be intact beneath the remains of the reconstructed fort—though it seems unlikely. The radar survey in the Parcel 6 area located numerous features dating to the 1936 fort reconstruction and later. No obvious remains of the earlier buildings from the Sanborn maps were detected. Several anomalies were not obviously part of the 1936 reconstructions (Anomalies 28-31), but given their proximity to these reconstructions it is likely that these anomalies are also not fort-era in origin.

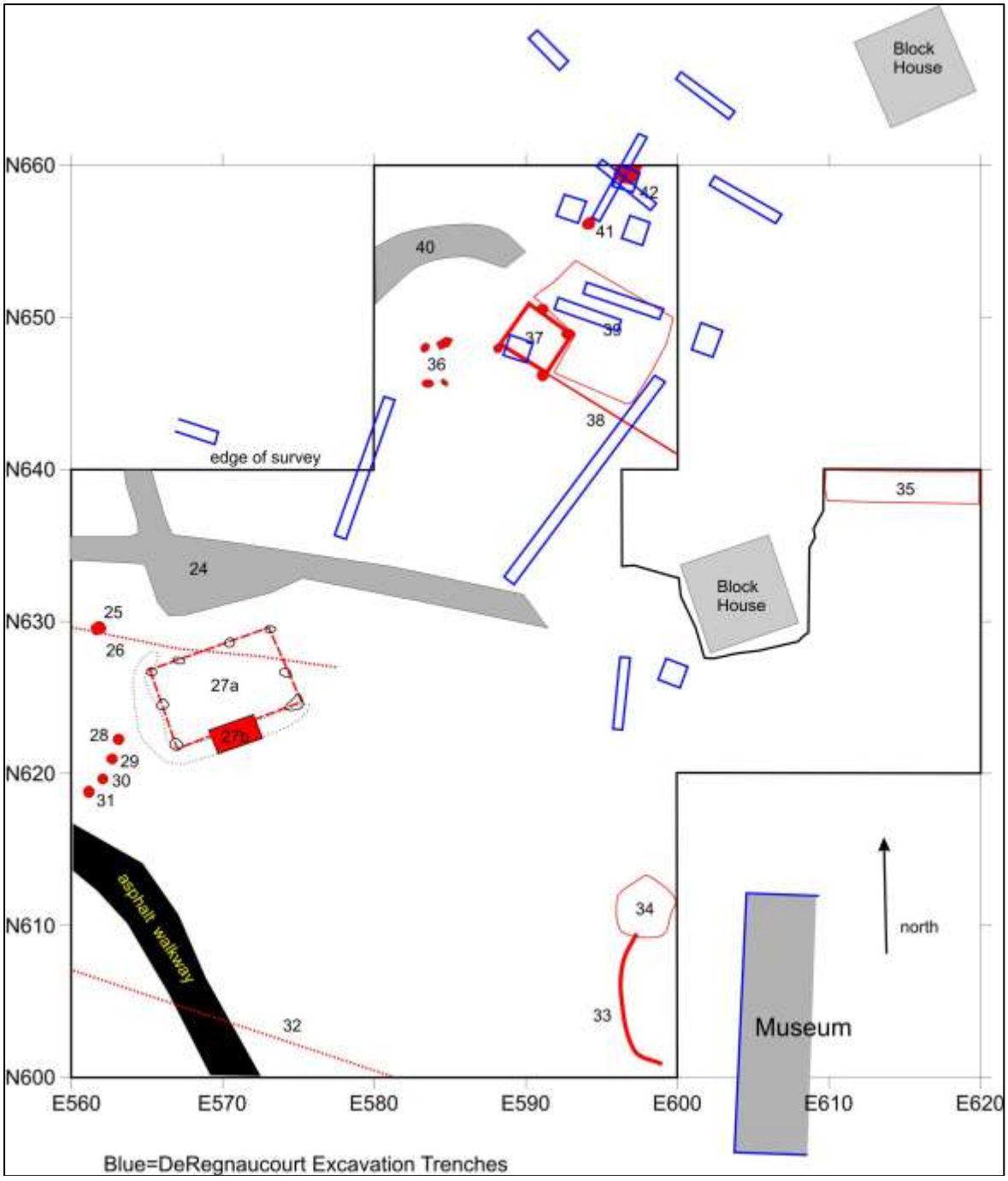

Figure 87: Parcel 6 radar anomalies of potential interest.

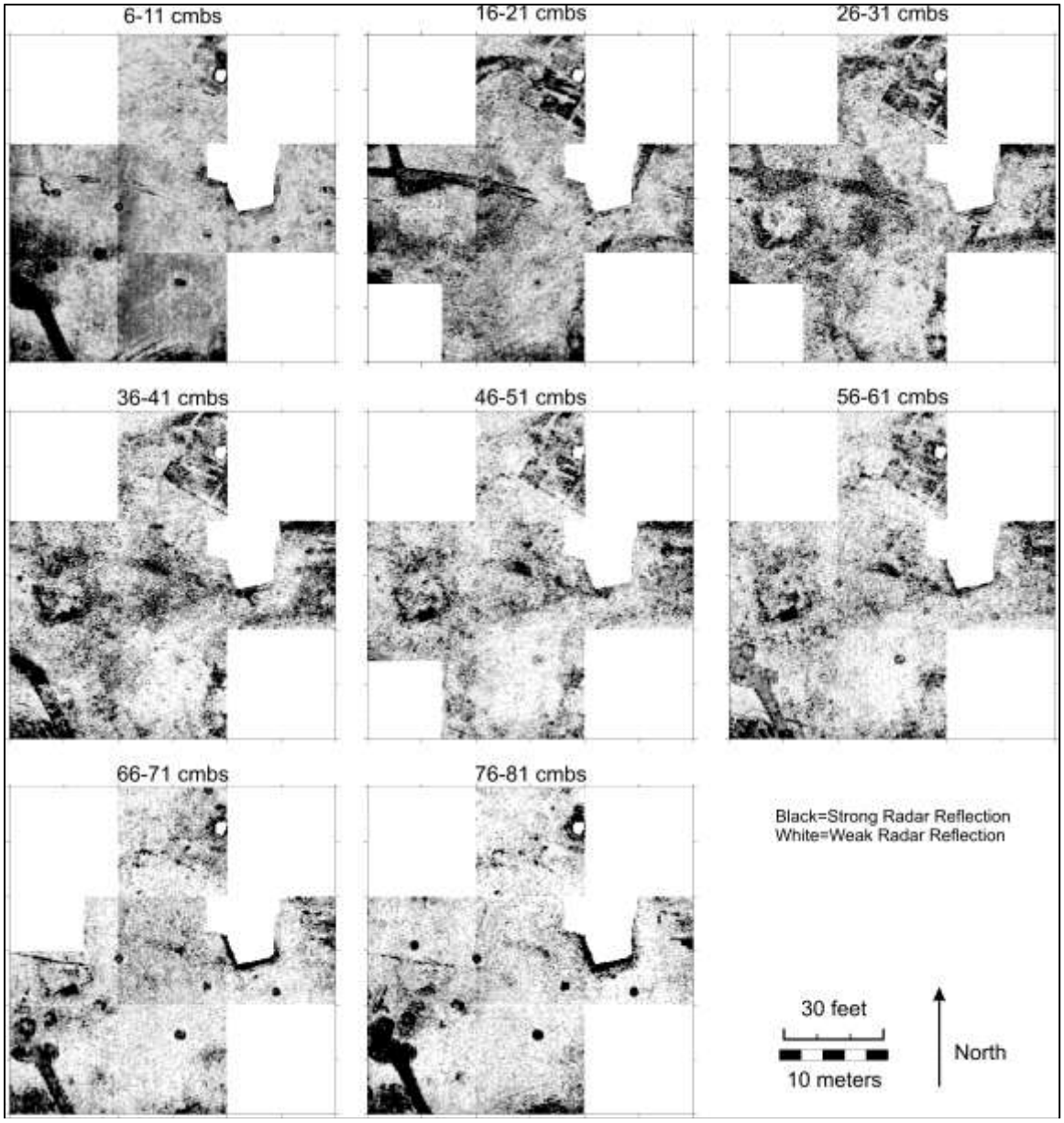

Figure 88: Parcel 6 radar amplitude slices.

Figure 89: A picture of the old cabin and the southern blockhouse (*from Fort Recovery Bicentennial 1776-1976*).
Both were interpretive features at the Fort Recovery park—the log cabin, installed ca. 1936 is now gone but its foundation is still detectable

Parcel 8

Parcel 8 is located at the southeast corner of the Fort Site Street and Boundary Street intersection (Figure 80, Figure 90). This long, narrow lot likely would have been located within the original fort. According to the Sanborn maps, this lot has been home to two buildings since the late 1800s. There was a house located in the western half of the lot. This house was present in the late 1890s when the first Sanborn map was made and it was gone by the 1946 map. It is marked as "6" in the Figure 82 historic photograph. A second small structure was present near the east end of the lot in the 1914 Sanborn map, and it appears to be labeled "lunch stand." In addition to these known structures, the Parcel 8 lot no doubt has many utility lines running through it.

Figure 90: Parcel 8, looking from east to west.

Figure 91 shows an interpretive map of the Parcel 8 radar survey results; Figure 92 has the radar amplitude slices. As expected, there are numerous distinctive anomalies in Parcel 8, including many narrow linear features that appear to be utility lines. Twelve anomalies of potential interest were identified in the data. While many of these are utility lines, knowing the locations of these helps highlight areas that may be less impacted by post-fort excavations.

Anomaly 1 (N808.5, E800): a possible pipe or walkway running out of the back of the house (building 6 from Figure 82) shown in the Sanborn maps. Starts at about 35-40 cm below surface on the east end and gets deeper (about 65 cmbs) to the west.

Anomaly 2: layer of gravel, perhaps, about 20 cm below surface; about 2.2-2.5 meters wide. Could be a path, driveway, or road. It likely post-dates the demolition of the 19th century house that once stood on this lot.

Anomaly 3: probable metal pipe. Starts at about 25 cmbs on the south side of the lot and gets to as deep as 65 cmbs by the north side.

Anomaly 4 (E813.90): a probable pipe running north-south toward the manhole cover. About 80-85 cm below surface.

Anomaly 5: probable utility line running from utility pole to buildings south of Parcel 8. At about 40-45 cmbs.

Anomaly 6: probable utility line running from utility pole to buildings south of Parcel 8. At about 15 cmbs.

Anomaly 7: possible drainage pipe running from downspout northwest toward road, at about 20-25 cmbs.

Anomaly 8 (N806.25, E820): Small area feature, about 1.3x1.5 meters in size and starts at about 25 cmbs. Could be a piece metal, or area of gravel or pavement.

Anomaly 9a (N800.50, E818): Small area feature about 1.5 m long east-west. Most prominent from 20-40 cmbs. Unknown anomaly source. Could be part of Anomaly 11.

Anomaly 9b (N801.5, E820.5): Small area feature about a meter across, and starts at about 25-30 cmbs surface. Could be part of Anomaly 11.

Anomaly 9c (N802.5, E823): Small area feature about 2.5 meters long east-west and a meter long north-south. Occurs at about 30-40 cmbs. Could be part of Anomaly 11.

Anomaly 9d (N804.5, E823): Small area feature about 3 meters long east-west and 75 cm north-south. Occurs at about 30-45 cmbs. Could be part of Anomaly 11.

Anomaly 10 (N801, E823.5): linear anomaly, very shallow at 5-10 cmbs. Could be wet area related to nearby downspout.

Anomaly 11: linear area about 1.8 meters wide. Strong reflection at 45-50 cmbs. Given location, this could be a sidewalk (brick?) related to structure visible on the Sanborn maps. This anomaly may be related to Anomalies 8 and 9. These anomalies, 8 and 9 and especially 11, are worth excavating as they do not seem to be utility lines or foundations and they, Anomaly 11 in particular, seem to parallel a possible wall of the fort.

Anomaly 12: At the approximate location of the house as shown on the Sanborn maps. This anomaly starts at about 40-45 cmbs and could be fill related to the house and its foundation.

The most interesting anomalies in Parcel 8 are Anomalies 8-11. These do not appear to be utilities, though this cannot be ruled out. Anomalies 8 and 9 seem to form a V-shaped pattern, not unlike the shape of the bastions common to forts of the late eighteenth century. Anomaly 11 extends off the point of this V-shape and parallels the nearby Greenville Treaty line. These anomalies (8-11) may be unrelated to one another or could be part of a complex of related anomalies. They do not appear to line up with DeRegnaucourt's excavation units in this area; his excavations located a gravel walkway (I suspect this is Anomaly 2) and lots of other disturbance.

DeRegnaucourt notes finding evidence of numerous utility lines in Parcel 8, as well as a few possible fort-era objects. Combined with the nineteenth century buildings that were once present, it would seem that Parcel 8 has been highly disturbed. However, this does

not preclude the presence of possible fort-era objects and features. These will just be much harder to find.

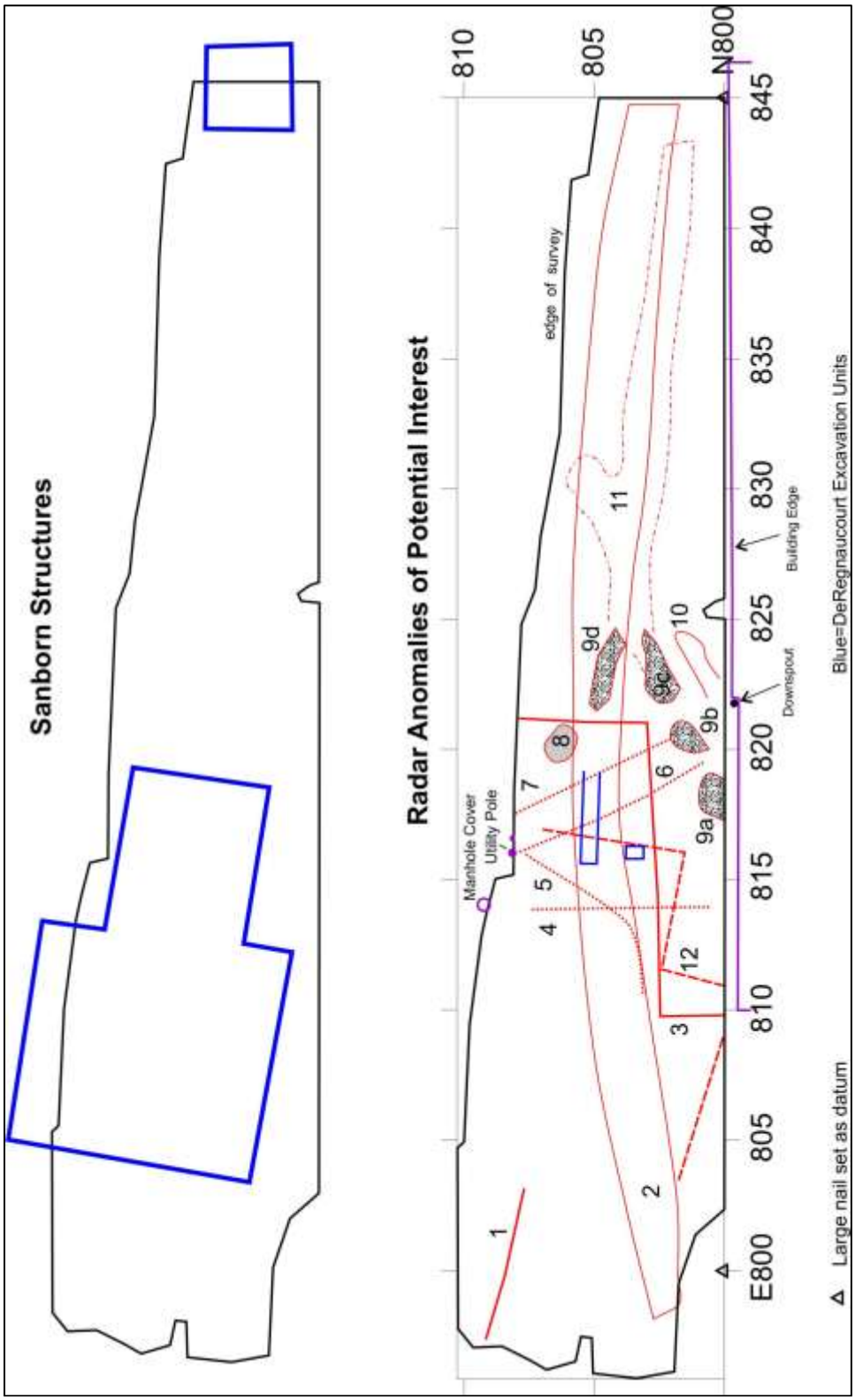

Figure 91: Parcel 8 radar anomalies of potential interest.

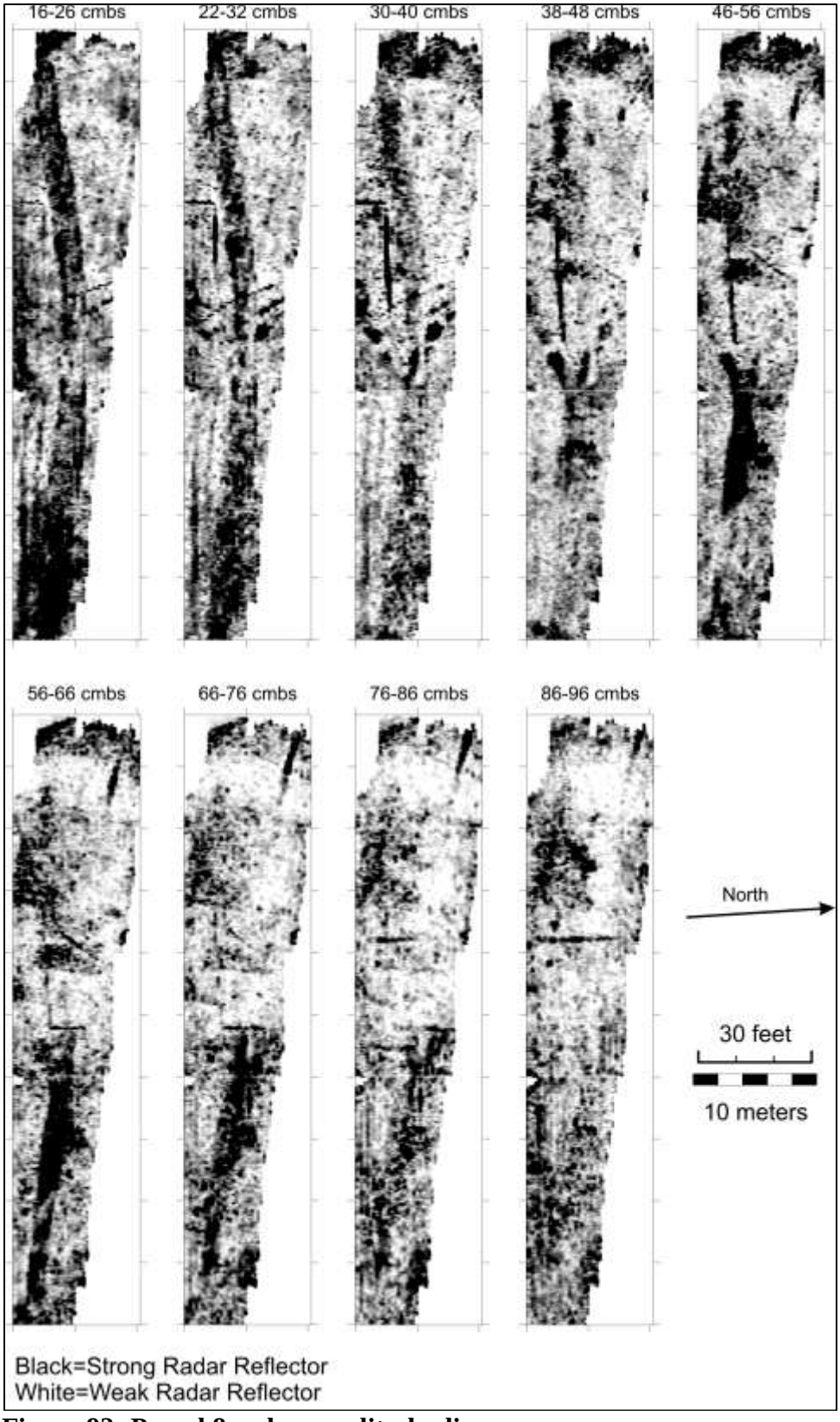

Figure 92: Parcel 8 radar amplitude slices.

Parcel 9

Parcel 9 is located in the lot just north of a bank building and drive-thru lanes across Fort Site Street from the Fort Recovery Museum (Figure 80, Figure 93). The north side of the lot is covered by landscaping, patio-block paths, and a log cabin moved to the lot recently. Another small building occupies the east end of the lot. Several early twentieth century buildings were located on the east side of the lot (Figure 81) but the radar survey was not able to cover much of this ground because of landscaping and the extant buildings. The survey area included the mowed grass between the buildings (bank and museum building at east end of the lot) and to the north of the drive-thru lanes. A baseline was run from N900, E900 to N900, E940 (where datum nails were also set) and the radar was pushed in north and south trending transects so us to run it up into all of the irregularly shaped edges.

The area just north of the Parcel 9 radar survey was tested by DeRegnaucourt with two 10x10 ft squares and three 5x5 ft squares, located in the area now covered by the cabin. These excavations produced numerous fort-era objects, as well as later nineteenth and twentieth century objects. While the deposit is somewhat mixed, the fort-era objects suggest that this parcel has a good chance for containing intact fort-era features, as well as additional fort-era objects.

Figure 93: Parcel 9 area at the time of the radar survey.

Figure 94 shows the interpretive results of the radar survey; Figure 95 has the radar amplitude slices. Eleven radar anomalies of potential interest were found in Parcel

9. The anomaly numbers pick up where the numbers end in Parcel 8. Several of these Parcel 9 anomalies are utility lines and others could be paths or drives. However, Anomalies 13, 14, 19, 20, and 21 are of an unknown origin. These have the highest potential of being fort-related features. Anomaly 15 is a rectangular, subsurface feature like a cellar; however, a conversation with the bank manager found that the Anomaly 15 area is the location of a buried fuel oil tank that no longer is in use. Parcel 9 would be a worthwhile area to spend some time excavating if only to recover more fort-era objects and record some better information about stratigraphy.

Anomaly 13 (N896.5, E901): Small area feature a little over a meter wide, about 20-25 cmbs. Could be an area of gravel or a utility trench. Does not appear to extend any deeper than about 40 cmbs.

Anomaly 14 (N896.75, E906.30): small area feature about 1.75 m east-west and 1.25 m north-south. Most distinctive between 25 cm and 40 cm below surface. This could be an area of gravel or some other gravel-like material.

Anomaly 15 (N897, E913): probable cellar or some other kind of subsurface vault. It is about 4 m wide east-west and may be partially covered by the drive-thru lanes to the south. The top of this feature starts at 40-45 cmbs and extends to at least a meter below surface. There are no structures present in this area on any of the Sanborn maps, the earliest of which dates to 1898. So, either this feature is related to a structure that predates 1898 and was gone before 1898, or it was never depicted on the Sanborn maps and could be of any age. Christine Keller mentioned this feature to the bank manager/president and he claimed that it is where a subsurface oil tank is/was located.

Anomaly 16 (N901 from E900 to E915): A linear feature about 1.3 m wide north-south. This feature is most distinctive at 30-40 cmbs. It is likely a gravel walkway or drive related to the house that used to be located near the front of this lot. Anomaly 22 is probably more of this same feature. If a drive or walkway, Fort Recovery-era objects and features could be below this anomaly— DeRegnaucourt found numerous fort-era objects several meters to the north.

Anomaly 17 (N902): probable utility line running east-west along the north edge of Anomaly 16. The utility is shallow and appears at about 30-35 cmbs.

Anomaly 18: probable utility line running west to east, towards existing structure on the east end of the lot. Utility is buried about 30-40 cmbs.

Anomaly 19 (N903.5, E910.5): small area feature about 1.25 m by 1 m in size. It is most distinctive between 27 and 45 cmbs. Anomaly 19 overlaps with Anomaly 20 and could be related. This could be one of DeRegnaucourt's 5x5 ft excavation squares, though his map suggests that his units were located north of the Parcel 9 survey area, in the location currently occupied by the cabin.

Anomaly 20: Large area feature, about 9 m long by 2.5-3 meters wide. Anomaly is most distinctive between 35 and 60 cmbs. This could be a layer of gravel or some kind of fill. There is a fairly consistent reflection across entire anomaly and it has

discrete edges. This is certainly some kind of different fill. Given its depth, it may be related to the fort-era based on all of the fort-era objects that DeRegnaucourt found just north of here in the top 14 inches of soil.

Anomaly 21 (N902.50, E917.5): Linear anomaly running north-south. Does not seem to be a pipe or utility line. Anomaly most distinctive from 50-65 cmbs. This is a good anomaly to test.

Anomaly 22: A probable continuation of Anomaly 16. This flat, linear anomaly is most distinctive from about 25-50 cmbs.

Anomaly 23 (N902, E930.75): This flat, strong reflector is about 1.4 m square. It occurs near the end of Anomaly 22 and thus may be a shallower part of that anomaly. This anomaly starts at about 20 cmbs surface and could be a piece of sheet metal in the ground (there are numerous multiples—a multiple is a repeating reflection that occurs nearly all the way down the radar profile and is usually caused by metal objects).

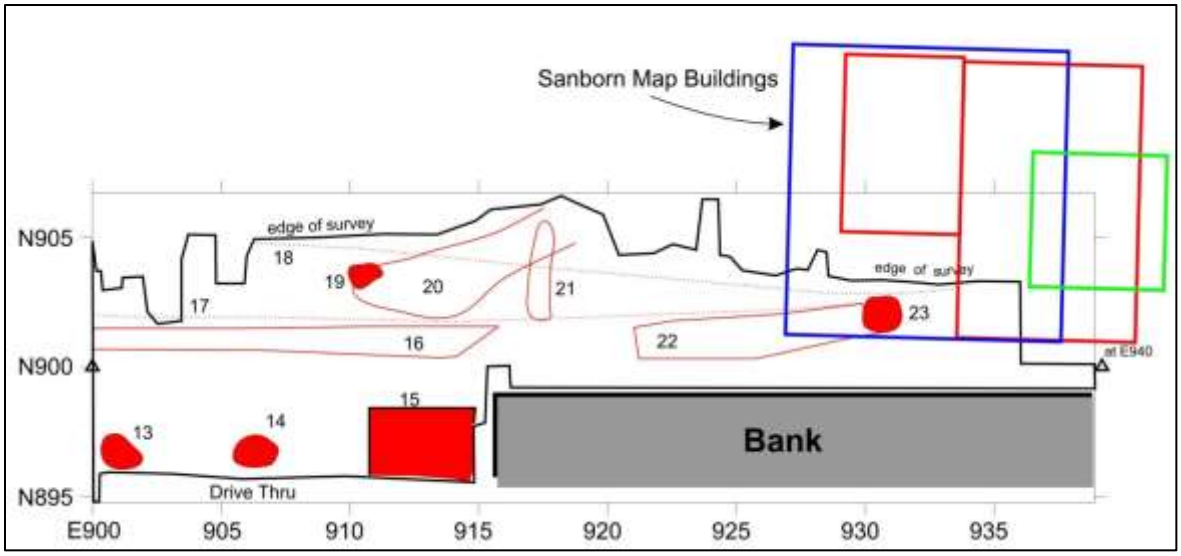

Figure 94: Parcel 9 radar survey anomalies of potential interest.

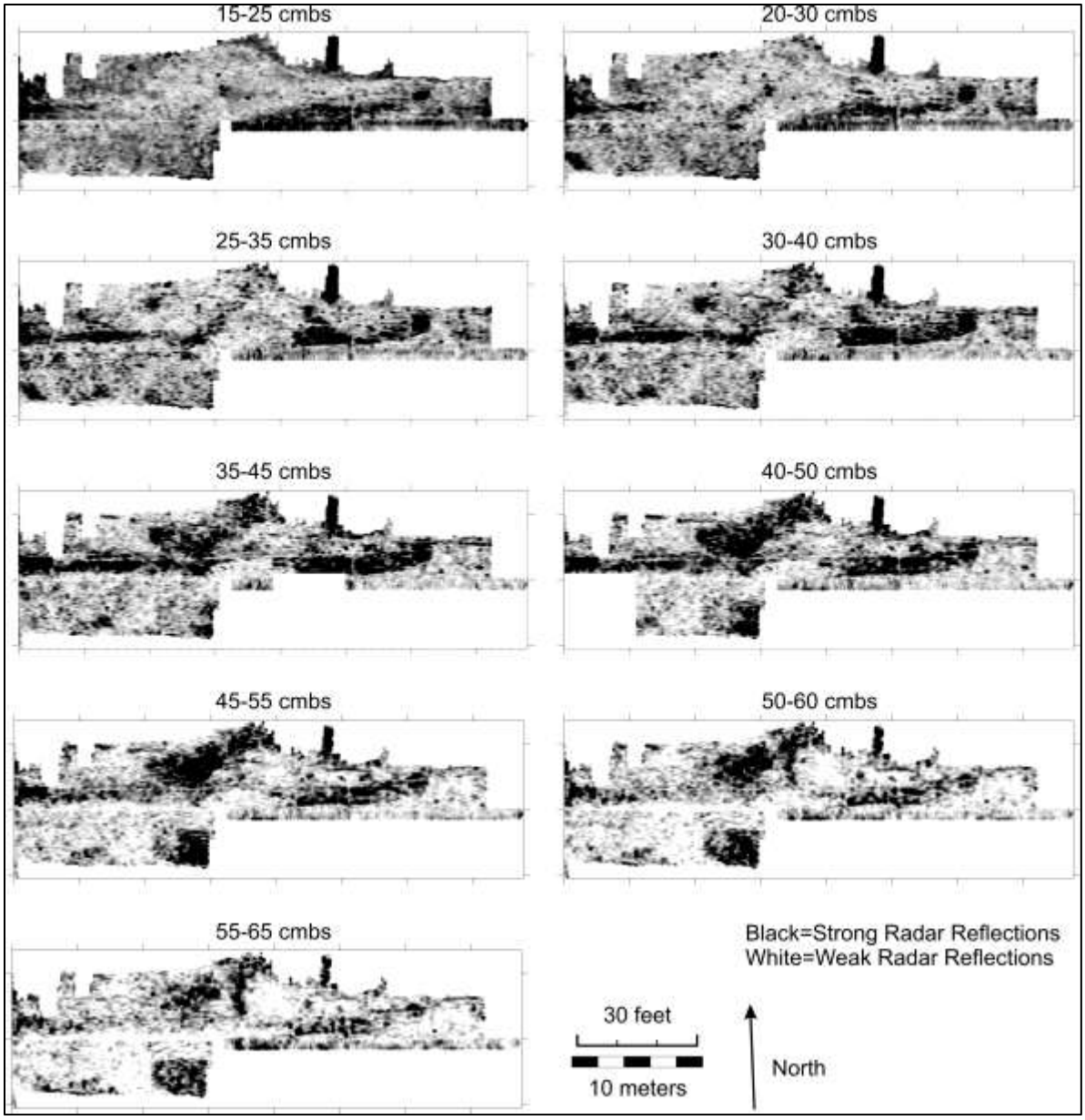

Figure 95: Parcel 9 amplitude slices.

Site Excavation Results: 2011 BSU Field School

by Mark Groover and Tyler Wolford

The following section presents a brief summary of the excavation results from the 2011 Ball State University Department of Anthropology archeology field school. The field school was conducted as one part of the American Battlefield Protection Program Grant awarded to the BSU Department of Anthropology by the National Park Service, U.S. Department of the Interior in 2010. The field school was conducted during summer semester 1, between 16 May to 17 June 2011. The field school was directed by Mark D. Groover, a historical archeologist in the Department of Anthropology. The archeology field school consisted of undergraduate anthropology majors, anthropology graduate students, and a graduate student from the Department of History.

2011 Excavation Summary

The objective of the 2011 BSU archeological field school was to locate remains of Fort Recovery, and if possible provide information about the size and layout of the fort. The town of Fort Recovery is a small Midwest community in west central Ohio along the Ohio-Indiana state line. Although the town of Fort Recovery is a small community, the area investigated during the field school archeologically is a dynamic urban environment. At some military fort sites, the fort is the only archeological occupation at a site. This was not the case in the town of Fort Recovery in the area investigated during the field school. The excavations were essentially an example of urban historical archeology, in which the archeological record spanned a 220-year interval. Consequently the archeology presented a challenging interpretive environment in which to locate remains from the 1793 fort.

During the 2011 archeology field school, excavation was conducted in 3 areas designated Parcels 6, 8, and 9 (Figure 80). These three areas had previously been the subject of a ground-penetrating radar (GPR) survey conducted in April 2011. The ground-penetrating radar survey was conducted by Jarrod Burks, an archeologist specializing in geophysical survey methods employed with Ohio Valley Archaeology, Inc., a cultural resources management consulting firm located in Columbus, Ohio. Christine Keller, staff archeologist in the Applied Archaeology Laboratories, BSU Department of Anthropology, also conducted the geophysical survey with Jarrod Burks. See the preceding section for a more detailed discussion of the geophysical survey results. The anomalies identified during the GPR survey guided the placement of excavation units during the 2011 BSU archeological field school.

The geophysical survey identified a trench-like anomaly oriented north-south in Parcel 9 that was located ca. 50 centimeters below ground surface (cmbgs) in the GPR results. It was hoped that the anomaly might be the fort's north-sourh oriented palisade trench. During the BSU archeological field school, a 1-x-2 meter unit, designated Unit 1, was excavated in this area to uncover the north-south oriented anomaly. Unit 1 was excavated to 55 cmbgs. The upper half of the unit contained secondary deposits composed of mixed hardpan clay and brown loam topsoil. These secondary deposits contained 20th-century artifacts and building debris, such as large brick fragments and

brick size fragments of road asphalt. The upper half of the unit contained deposits that probably originated from construction events in the town lot dating to the 20th century, such as building and road improvements, after the 1800s dwelling in the lot was removed. The lower half of the unit was less mixed than the upper half and contained domestic artifacts dating to the middle of the 19th century. The earlier deposits in the lower half of the unit were probably created by the residents that lived in the dwelling on the town lot during the second half of the 19th century. The north-south oriented GPR anomaly was not encountered during excavation of the unit. Due to time constraints and fort period deposits encountered in Parcel 8, excavation was terminated at 50 cmbgs in Unit 1, corresponding to deposits dating to the middle1800s.

The geophysical survey also identified a cluster of anomalies in Parcel 8. The anomalies were in the center of the town lot in Parcel 8 and were located ca. 45 cmbgs in the GPR results. The anomaly cluster appeared to be either trench segments or large pits, possibly postholes. The cluster of anomalies in Parcel 8 formed a large triangular pattern that was interpreted to possibly be a corner bastion of the fort or a portion of an east-west oriented palisade trench.

During the field school eight 1-x-2 meter units (Units 2, 4, 5, 6, 7, 8 and 9) and a 2-x-2 meter unit (Unit 10) were excavated in Parcel 8 over the area containing the triangular shaped GPR anomaly. Excavations in Parcel 8 revealed an east-west oriented palisade trench that was ca. 2 feet wide and extended 3 ft. below ground surface (Figure 96 and Figure 97). A 17 ft. segment of the palisade trench was exposed during the field school. The trench was designated Feature 3. A 2-meter long sample of the trench was excavated during the field school to confirm its function and age. The 2-meter long trench sample contained small postholes. Three large, deep postholes in the trench segment were also excavated west of the 2-meter long trench sample. The encountered trench and postholes suggest the fort's wooden stockade was constructed of large posts spaced at approximately 5 ft. intervals and the spaces between the substantial primary stockade posts were filled with smaller split, pale-like posts. Artifacts obtained from the postholes excavated in the trench, consisting of freshwater shell buttons, shell fragments, cut nails, very thin window glass, and fort period ceramics such as blue shell edge pearlware, date to the fort period and strongly support the conclusion that the encountered trench feature was an east-west oriented segment of the fort's palisade trench.

As discussed later in this chapter, the Feature 3 trench also closely aligns with the Greenville Treaty Boundary line surveyed by government surveyor Israel Ludlow in 1799. Close spatial correspondence of the Feature 3 trench with the Greenville Treaty Boundary line suggests that while surveying the Fort Recovery segment of the boundary line, Ludlow used either the extant north wall or south east-west oriented palisade wall of the extant fort as a physical landmark to establish this section of the treaty boundary line. Because of its historical significance and non-threatened location, the majority of the Feature 3 trench was not excavated during the field school and was left undisturbed and preserved.

The third area investigated during the BSU archeological field school was Parcel 6. This area was located adjacent to the standing reconstructed blockhouses and stockade wall immediately west of Fort Street and north of the Fort Recovery museum. Previously

in November 2010, Christine Keller archeologically monitored excavation of a utility line trench west of the reconstructed stockade wall. The trench was excavated by city personnel for installation of an underground electrical line adjacent to the fort's extant well and flagpole. Monitoring of the utility line excavation resulted in identification of foundation remains suspected of dating to the original WPA-era fort reconstruction. A 1-x-2 meter unit, designated Unit 3, was excavated in the area over the utility line trench still visible on the ground surface. A foundation corner of the southwest WPA-era blockhouse was encountered 5 cmbgs in Unit 3.

Figure 96: Parcel 8, Unit 9 showing brown trench fill (left) and tan clay backfill (right) from palisade trench.

Figure 97: Parcel 8, Units 6 and 2, showing base of excavated trench segment and postmolds at 50 cmbgs.

Site Occupation Periods

To better contextualize and interpret the archeological record encountered during excavation of units in Parcels 6, 8, and 9, a history of the excavated areas in the study site is briefly presented. History of the study site history is divided into culture history time periods. This information is presented to periodize the occupation history of the site and more effectively link the archeological record to specific periods of site occupation.

The archeology encountered in Parcel 8 is significant for several reasons. First, this area contains undisturbed deposits from the original Fort Recovery period. Second, Parcel 8 was occupied during a 100-year interval and contains archeological deposits from the post-fort frontier period through the passing of the frontier to the development of Fort Recovery as a small Midwest town. Consequently, Parcel 8 reveals information about the fort itself but also the trajectory of material conditions in the town during the second half of the 1800s into the first third of the 1900s until the property was acquired by the Ohio Historical Society.

1791 Battle of the Wabash

In 1791, an alliance of Native American warriors led by Little Turtle defeated a

group of Americans consisting of U.S. Army and militia led by General St. Clair. The 1791 battle occurred adjacent to the Wabash River and was one of the largest U.S. Army defeats on American soil. The battle was also the largest Native American victory in U.S. history. The U.S. military detachment was travelling to the Miami village of Kekionga to destroy the town. The Native American alliance surrounded and attacked the U.S. detachment during the early morning of 4 November 1791. It is estimated the Americans suffered approximately 900 casualties. After the Americans realized they were overwhelmed by superior Native American numbers, they retreated south to Fort Jefferson, located in modern day Darke County, Ohio (Rohr and Meiring 1991; Winkler 2011).

1793 Fort Recovery Construction and 1794 Battle of Fort Recovery

After the stinging defeat experienced by the U.S. Army during the 1791 Battle of the Wabash, General Anthony Wayne ordered, under the direction of President George Washington, the construction of a fort at the site of the 1791 Battle of the Wabash. The fort was named Fort Recovery to illustrate the U.S. Army's resolve to counter their defeat in 1791 and prevail militarily over Native Americans residing in the Northwest Territory. Construction of the fort began in December 1791. On 30 June 1794, a second alliance of Native Americans converged upon the newly constructed fort. Their unsuccessful attack lasted two days and the Native Americans retreated after not being able to take the fort (Rohr and Meiring 1991).

It is known historically that the main purpose of Fort Recovery was to serve as a defensive post in securing this region of the Northwest Territory. A large number of details are not known regarding the fort. Architecturally, the size, layout, and construction methods of the fort were not recorded in detail. Likewise, the fate of the fort after the 1794 battle is not known. For example, it is not known how long the fort served as a U.S. Army post and what happened to it after it was abandoned. Primary sources suggest the fort was occupied by settlers after the U.S. Army abandoned the fort (Anthony Wayne Parkway Board 1952). Sources also suggest the fort was dilapidated and burned by settlers in the 1830s (Bicentennial Book Committee 1990).

1795-1830s Post Fort/Pre-Town Period

After the 1794 Battle of Fort Recovery, the Greenville Treaty was established in 1795. The treaty demarcated land to the south of the treaty line that was open for settlement. Land to the north of the treaty remained Native American territory. Four years later in 1799, government surveyor Israel Ludlow surveyed the treaty line across the Northwest Territory. The treaty line was mapped across the territory from east to west. Ludlow surveyed the line along an east to west axis to Fort Recovery. At Fort Recovery the treaty line continued on a southwest bearing toward the Ohio River (Mitchell 2009). As stated previously, the results of the archeological field school and the location of the palisade wall trench adjacent to modern day Boundary Street in the town of Fort Recovery suggests Ludlow used the extant fort as a surveying landmark, and Ludlow either sighted an east-west oriented wall of the fort as part of the boundary line or sighted the boundary line immediately adjacent to the fort wall.

A limited amount of historical information exists for Fort Recovery and the

immediate community between the first decade of the 1800s to the 1830s. Extant population information indicates a small community existed in the area surrounding the original location of the fort. As discussed later in the artifact chapter, recovered artifacts indicate that the area encompassing the fort was inhabited during the 1810s through the 1830s and into the second half of the 1800s. The identity of the residents in the fort area between the 1810s and 1830s is currently not known. However, the recovered material culture provides significant information regarding material life and living conditions during the post-fort frontier period in the study community. Consequently, it is recommended that Parcel 8 should be preserved in perpetuity because of the extant fort features located in the area and the post-fort, domestic-oriented archeological resources also contained in the parcel.

1830s-1930s Town Residence Period

During the 100 year interval between the 1830s and 1930s a small Midwest town developed around the original location of Fort Recovery. By the early 1830s land patents were being recorded for settlers purchasing property in the Fort Recovery area. In 1858 the town of Fort Recovery was established, with the town being surveyed and lots established. During this period several residences are noted on the town map. The town population continued to increase during the second half of the 1800s (Bicentennial Book Committee 1990).

1930s-Present WPA/OHS Period

During the early 1930s, the property encompassing Parcel 8 was acquired by the Ohio Historical Society. Shortly after acquisition by the state a replica of the fort was constructed by the Civilian Conservation Corps (CCC), a branch of the Works Progress Administration (WPA). The reconstructed fort was square in configuration and contained corner blockhouses (Figure 12**)**. The fort replica was razed in 1956. A two story structure was also constructed adjacent to the fort by the CCC. This structure currently serves as the Fort Recovery Museum.

After the WPA-era fort replica was razed, a second partial replica was constructed on the traditional site of the fort. The second replica contains two corner blockhouses and a segment of palisade wall oriented along a north-south axis oriented perpendicular to Boundary Street. The traditional location of the fort flagpole and well are located immediately west of the second replica stockade wall.

During the 1930s when the WPA-era replica fort was constructed, the frame dwelling in Parcel 8 was removed. Domestic occupation of the Parcel 8 town lot ended at this time and household artifacts were no longer deposited in the lot. During this period fill dirt was deposited in Parcel 8. The fill deposits were probably related to landscaping of the Parcel 8 town lot after the frame dwelling was removed. Evidence of Boundary Street road improvements was also encountered during excavations conducted for the field school.

Field Methods

During the 2011 BSU archeological field school standardized field methods were used during the excavations conducted in Parcels 6, 8, and 9. The standard excavation unit size was 1-x-2 meters. All units were excavated in this dimension with the exception of one 2-x-2 meter unit (Unit 10) in Parcel 8. The units were excavated in 5 cm arbitrary levels using shovels, mattocks, and mason's trowels. Shovels were used to horizontally skim the floors of units during the excavation of individual levels. Trowels were used for more detailed excavation, such as the excavation of features and cleaning unit floors. Mattocks were used in levels containing substantial secondary clay and gravel deposits. In some situations in Parcel 8, unit levels were excavated stratigraphically by cultural levels, especially in units that contained deep deposits of redeposited or mixed clay and gravel. Soil from each level was screened separately through ¼-inch mesh hardware cloth. Artifacts were bagged in provenience labeled bags. Artifacts were bagged separately by unit and level. Artifacts from features were also bagged separately. All the soil removed during excavation was screened with the exception of substantial redeposited clay encountered in two of the Parcel 8 units.

Level forms were completed for each level. Encountered features were recorded on feature forms and plan view and profile maps were drawn of features during excavation and when excavation was completed. Photographs of features and units were also taken as excavation proceeded. In Parcel 8, the east profile of the excavation block was drawn on a profile map. All of the resulting forms were filed in a field notebook. Following the completion of excavations, the excavation units were lined with landscaper's cloth and backfilled. In Parcel 8 the location of the units was recorded on a site base map. Unit locations were also recorded using a hand held global position system (GPS).

Excavation Units

Parcel 9, Unit 1

Unit 1 was located in Parcel 9, immediately east of Fort Site Street in a small open lot. Fort Recovery Museum buildings are located north of the open lot and a bank building (Second National Bank) is located south of the open lot. The location of Unit 1 was selected based on the results of a GPR survey conducted in the Parcel 9 lot. The GPR survey identified an anomaly ca. 45 cmbgs oriented north-south that appeared to be a trench-like feature (Figure 94). The anomaly appeared to be a possible trench for a palisade wall. Excavations determined the deposits in Parcel 9 are disturbed. The upper 40 centimeters of the unit contained modern 20th-centruy artifacts and construction materials mixed with earlier middle 19th century artifacts.

The anomaly recorded in the GPR survey was not identified during excavation of Unit 1. The unit was excavated to 50 cmbgs and due to time constraints excavation stopped at this depth. Five features were recorded in Unit 1. In addition to the five archeological features a modern electrical utility line was encountered in the unit running east-west across the center of the unit. The utility line was connected to a street lamp located on the Fort Street sidewalk.

Eight arbitrary levels were excavated in Unit 1 to a total depth of 55 cmbgs. The upper half of Unit 1 contained 20th-century deposits and artifacts. The lower half of Unit 1 contained materials from the middle 1800s, presumably artifacts from the house formerly located on the Parcel 9 houselot. Five cultural strata were present in Unit 1. Stratum 1 consisted of dark brown loamy humus and extended from 0 to 10 cmbgs. Stratum 2 consisted of dark brown silty loam mixed with redeposited brown clay subsoil. The stratum extended from ca. 10 to 20 cmbgs and contained modern artifacts (plastic, cloth fragments, cement fragments) mixed with 19th-century artifacts. Stratum 3 extended from 20 to 30 cmbgs and contained brown loam soil mixed with redeposited yellow and brown hardpan clay subsoil. The stratum contained 19th and 20th-century artifacts. It also contained large pieces of road asphalt, indicating the deposit contained secondary fill from an unknown source. Town residents that visited the excavation area during the field school informed the crew that in the middle 20th century large amounts of fill had been deposited in the parcel 9 lot. These fill episodes were undoubtedly the source of the clay fill mixed with 20th century construction debris.

Stratum 4 extended from 30 to 40 cmbgs and consisted of brownish gray mixed loam. The stratum contained a mixture of brown loam, gravel, 19th-century artifacts, and recent 20th-century construction artifacts such as tar paper used in modern roofing. The contents of the stratum indicate the deposits were mixed during the 20th century. Stratum 5 consisted of a thin lens of mixed clay that extended from 40 to ca. 50 cmbgs. The deposit contained greater amounts of 19th century artifacts than upper strata and fewer amounts of recent items, suggesting the modern, mixed deposits do not extend below ca. 50 cmbgs. Stratum 6 consisted of brown loam soil with greater amounts of middle 19th century artifacts, presumably deposited by the residents of the 19th-century house formerly located on the lot.

The GPR anomaly identified at ca. 50 cmbgs was not encountered or defined at this depth in Unit 1. The anomaly may be located at a depth below 50 cmbgs. Due to time constraints, excavation was terminated in Unit 1 at this depth.

Parcel 8 Excavation Block

Parcel 8 is a triangular shaped lot bounded by Boundary Street to the north and a 1907 two-story brick building to the south. During the GPR survey several anomalies were recorded in Parcel 8 (Figure 98). The GPR anomalies formed a large V-shaped pattern and appeared to be either contiguous postholes or a trench-like feature. The V-shaped pattern was interpreted to be a possible palisade corner or corner bastion. An excavation block consisting of 8 units (Units 2, 4, 5, 6, 7, 8, 9, and 10) was excavated in the area immediately above the V-shaped GPR anomalies (Figure 99 and Figure 100). The excavation goal was to locate the anomalies and identify their chronology, function, and ultimately determine if they were Fort Recovery-related features.

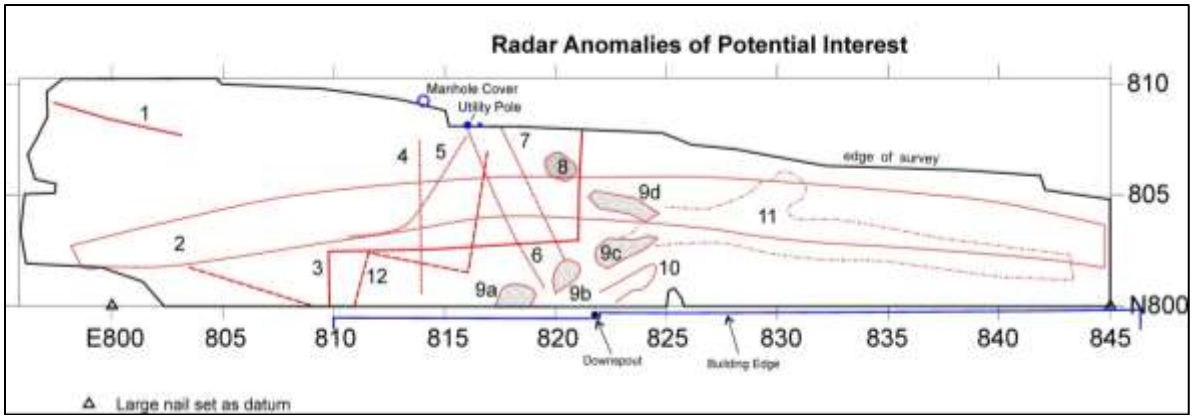

Figure 98: Parcel 8 ground-penetrating radar anomalies.

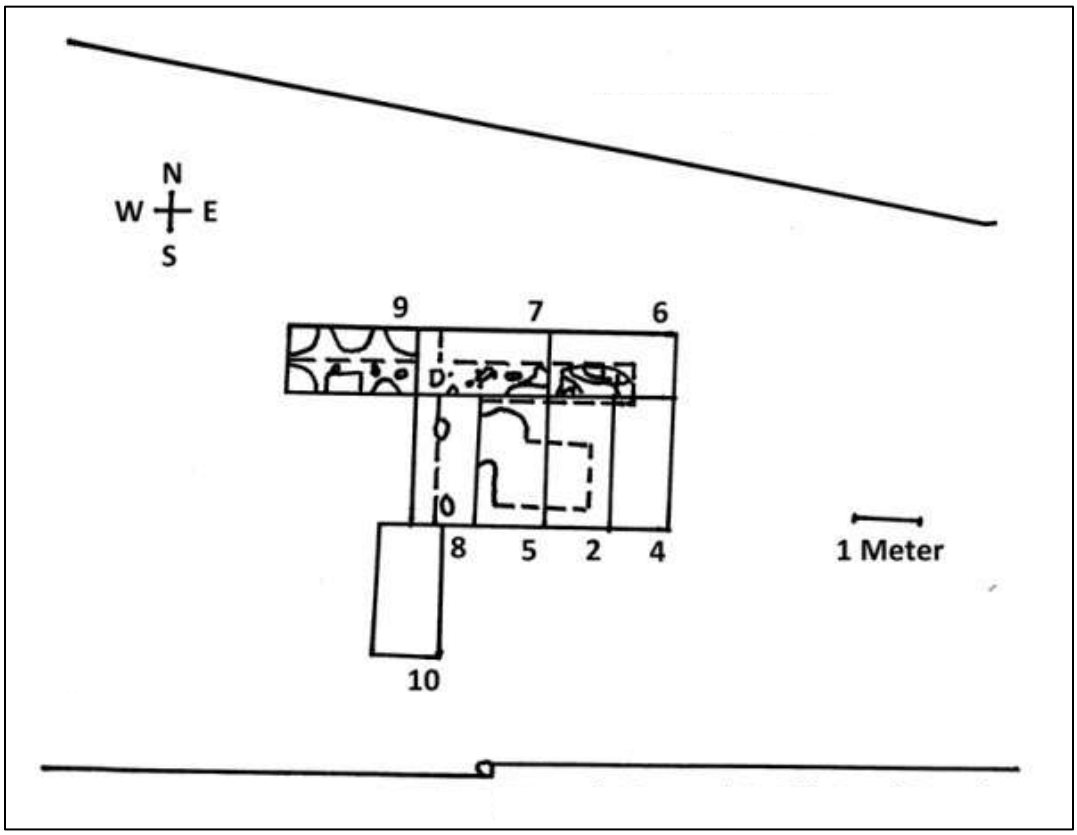

Figure 99: Aerial view of Parcel 8 excavation block.

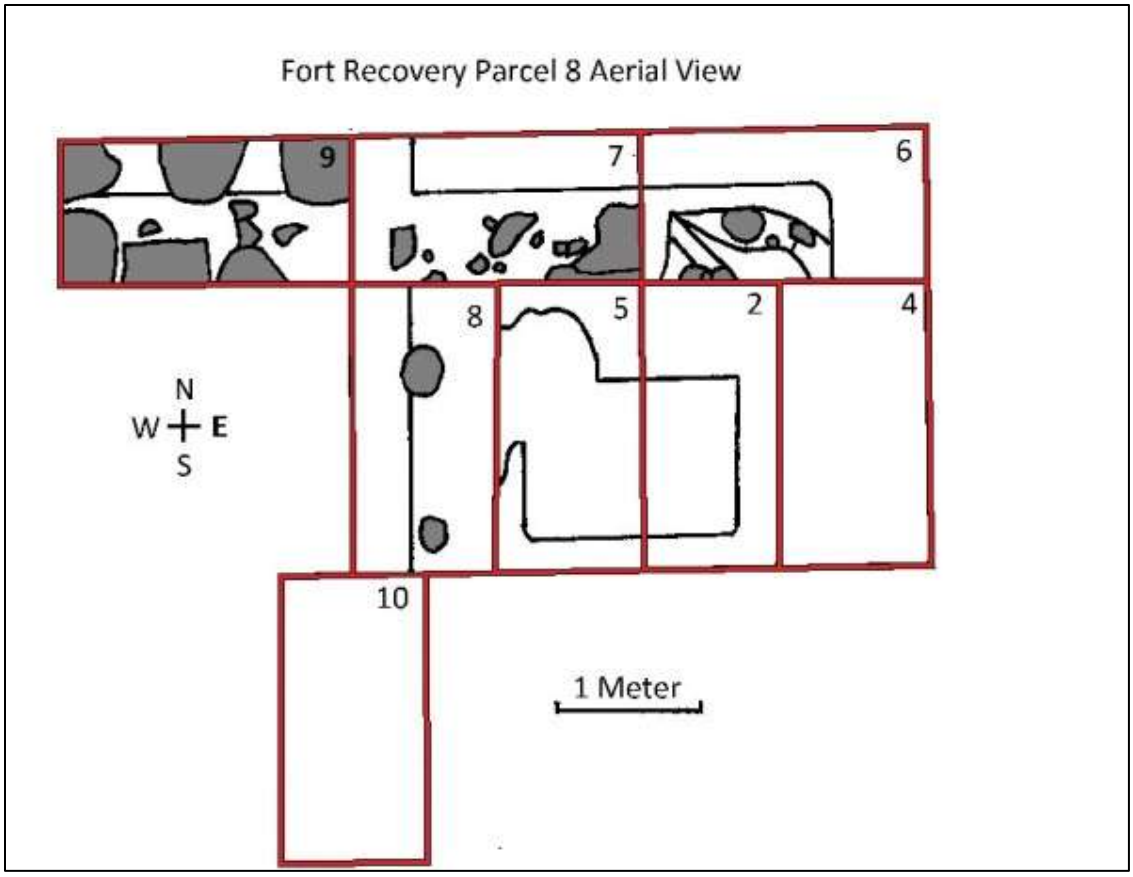

Figure 100: Detailed aerial view of Parcel 8 excavation block.

The stratigraphy in the Parcel 8 block was relatively complex and represented an example of urban historical archeology. Parcel 8, referred to as Out Lot 5 in the 1800s plat maps and deed descriptions for Fort Recovery (Mercer County Archives 1838, 1857, 1864a, 1864b, 1865, 1866, 1867, 1870, 1872a, 1872b, 1876), contained deposits, artifacts, and features from the late 1700s to the 1930s. Parcel 8 contained fort-related features and artifacts in the lower strata and domestic deposits dating from the 1810s to the 1930s in the upper strata of the excavation block. Unlike the Parcel 9 deposits that were substantially mixed and disturbed to 50 cmbgs, the deposits and strata in Parcel 9 were intact and undisturbed from the ground surface to undisturbed sterile clay subsoil encountered at 70 cmbgs. In addition to fort-period deposits, Parcel 8 contained a dwelling during the second half of the 1800s to the 1930s. It also contained domestic refuse dating from the early 1800s to the middle 1800s. It is unknown if a household was living on the lot at this time or if the artifacts comprise secondary deposits from households living in the immediate area. Intact stratigraphy and deposits were encountered in the immediate area encompassing the Parcel 8 block excavations. It was not determined if the areas in Parcel 8 located east of the excavation block toward Main Street or west toward Fort Street in Parcel 8 contain undisturbed deposits. The west half of Out Lot 5 contained a wooden frame dwelling from the middle 1800s to the 1930s. As discussed previously in the history of the lots, the residential history for Parcel 8 during

the 1800s is complex and could not be reconstructed in a clear manner. The lot appears to have been owned and occupied by a large number of households, and it may have been occupied by tenants. Consequently, the residential history of the lot is probably best characterized as representing substantial discontinuity, in which the identity of specific households could not be established and linked to specific archeological deposits. Further, the post-fort period was not a specific topic of investigation in the original archeology fieldwork research design. However, the archeologists conducting excavation viewed it as a research obligation to attempt to determine the occupational history of the lot and deposits during the 1800s in Parcel 8. Unfortunately, due to the urban context of the lot, this objective was not achieved within the constraints of the research project.

Stratigraphy in the Parcel 8 excavation block contained eight strata extending from the ground surface to ca. 70 cmbgs (Figure 101). Stratum 1 extended from the ground surface to ca. 20 cmbgs and contained a humus layer composed of brown loam topsoil. Recent 20th and 21st century artifacts were recovered from Stratum 1. Stratum 2 extended from 20 to 30 cmbgs and contained brown loam mixed with a substantial amount of gravel. The gravel was probably associated with road construction and the paving of Boundary Street located immediately adjacent to the north of Parcel 8. The gravel also may have been part of a driveway for the nineteenth century house located in the west half of Out Lot 5. The gravel covered most of the block and was relatively deep in some units. Stratum 3 extended from 30 cmbgs to ca. 40 cmbgs and was composed of deep red sandy loam mixed with subsoil flecks and paving gravel. Strata 1 through 3 mainly contained modern artifacts with 1800s items also present. Stratum 4 extended from 40 to 45 cmbgs and contained gray silty sandy loam. The sandy soil deposits encountered below ca. 30 cmbgs may have been created from flooding events. Small to medium sized cobbles were also present in these strata. Strata 5 extended from 45 to 50 cmbgs and contained brownish gray silty loam mixed with gravel. The deposits below 45 cmbgs in general contained few modern artifacts and predominantly artifacts dating from the first half of the 1800s. Several fort-period items were also recovered in the basal strata of the block, such as shell buttons and shell blanks or unmodified freshwater shell, pearlware edge decorated ceramics, and very thin window glass. Stratum 6 extended from 50 to ca. 55 cmbgs and contained brown sandy loam soil. Stratum 7 extended from ca. 55 to 60 cmbgs and consisted of brown silty sandy loam soil. Stratum 8 extended from ca. 60 to 70 cmbgs and contained dark brown clay subsoil. The upper levels of Stratum 8 contained 19th century artifacts, while the lower levels were culturally sterile and did not contain any artifacts. Excavation in the block was terminated at 80 cmbgs.

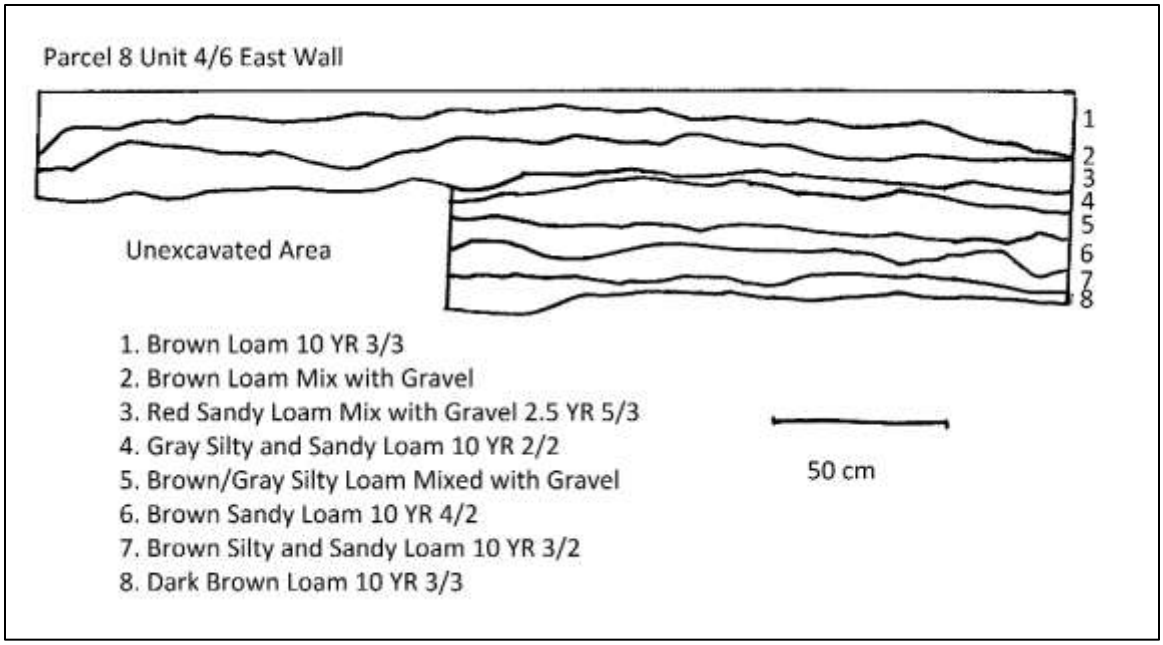

Figure 101: Stratigraphy of Parcel 8 Unit 4/6 East Wall.

Regarding Fort Recovery period archeological resources, the most significant feature encountered in Parcel 8 was Feature 3.1, a palisade trench segment associated with the 1793 fort. Oriented along an east-west axis along the north edge of the excavation block, Feature 3.1 was ca. 2 ft. wide, 2.9 ft. deep, and a 15 ft. segment of the feature was exposed in the Parcel 8 block. The palisade trench contained large posts on ca. 5 ft. centers. Smaller split posts or rails were visible between the large postmolds. Based on information observed in Feature 3.1, the segment of palisade was constructed of large unhewn posts on 5 ft. centers with smaller split posts filling in the space between the primary posts. The construction method was similar to a very large picket fence, except the split pales between the primary palisade posts had been driven into the ground. Late 1700s artifacts were recovered in the post molds, such as shell buttons, thin window glass, and blue shell edge pearlware ceramic fragments. A hand wrought iron strike-a-light was also recovered from the base of one of the excavated primary palisade posts.

Due to time constraints, the top of Feature 3 was exposed but not excavated, with the exception of a ca. 1 meter wide section at the east end of the Parcel 8 block in Unit 6. The meter long section of palisade was excavated in Unit 6 to confirm the function of the feature. The postmold fill was removed by individual mold or pale to confirm the shape or form of the posts. Excavation revealed the pales were square to rectangular in shape, consistent with logs that had been split into eighth sections. No postholes were observed for the smaller pales, indicating they had been driven into the soft trench soil after it had been excavated and backfilled. Fort period artifacts were consistently recovered from the postmold fill in the Unit 6 trench sample. Interestingly, north-south oriented, triangular shaped postmolds were encountered in the base of the Unit 6 trench sample, indicating some split posts had been carefully placed in the base of the palisade trench prior to backfilling during fort construction. The trench fill was excavated after the postmold fill

had been removed. The trench fill contained noticeably fewer artifacts than the postmold fill from the Unit 6, Feature 3.1 trench sample.

The area immediately south of the Feature 3.1 palisade segment in the Parcel 8 block had experienced heavy depositional activity from the construction of the 1800s house in the west half of Parcel 8, and the early 1900s brick store immediately south of the excavation block. However, the archeological deposits in the south half of the block were stratified, and artifact dates for the levels confirm that largely intact deposits are preserved in Parcel 8. The deposits south of the palisade trench in the Parcel 8 block predominantly date to the post fort period, during the early settler period of the community and the post-frontier era when a wooden frame residence was located on the lot.

Fort Interpretation and Preservation Recommendations

The probable palisade segment identified in Parcel 8 suggests Fort Recovery was relatively small. Based on archeological information from Parcel 8 and the current topography of the hill above the former floodplain of the Wabash River, the fort possibly measured ca. 100-x-100 ft. to 150-x-150 ft. square. The Feature 3.1 east-west oriented trench segment may have been either a south wall or north wall.
If Feature 3.1 was part of the north wall, then Feature 3.1 would intersect with the reconstructed west wall of the fort forming the northwest corner of the fort. If this is the case, then the southern portion of the fort may have been destroyed by 20th century development in the area south of Boundary Street. Conversely, if the Feature 3.1 trench segment is a south wall, then the fort walls would extend north into the residence and businesses located at the corner of Boundary Street and Fort Avenue. If this is the case, then northern portions of the fort may be preserved under the area immediately north of Boundary Street. Clearly, additional fieldwork is required to identify the configuration of the fort.

Regarding preservation recommendations, based on archeological information recovered from Parcel 8, it is recommended that Parcel 8 should be preserved and no future ground disturbing activities be conducted on the lot. It is recommended that additional ground penetrating radar surveys should be conducted in the area immediately north of Boundary Street adjacent to Parcel 8 to attempt to identify a north-south oriented palisade segment that would probably represent the east wall of the fort. If future archeological excavations are conducted in Parcel 8, it is recommended that a ground penetrating radar survey should be conducted in Parcel 8, including Boundary Street and Fort Avenue adjacent to Parcel 8. To determine the site structure of Parcel 8, the entire Parcel 8 area should be excavated as a complete block to fully expose any fort related features in this area. Likewise, Boundary Street and Fort Avenue adjacent to Parcel 8 should be removed and the area archeologically opened to determine if east-west and north-south oriented palisade segments are present in this area. Given the economic cost of fully exposing the Parcel 8 area, long-term preservation of the area is recommended as the most practical preservation strategy. A gravel path or wooden posts could be place along the palisade segment to note the location of the palisade for site visitors. Relevant signage could also be placed in the fort and battle location for site visitor interpretation.

Artifact Analysis Results: 2011 BSU Field School

By Tyler Wolford and Mark Groover

The majority of artifacts recovered from excavations conducted during the 2011 BSU field school at Fort Recovery reflect the domestic occupation of the site by residents of the village beginning in the early 1800s. While features in Block 8 are probably associated with the fort palisade line, most of the artifacts recovered from excavation date to the post fort period and provide insight into frontier condition in the community of Fort Recovery from the beginning to the end of the 1800s.

The artifacts recovered at the Fort Recovery site were classified according to Stanley South's (1977) artifact typology. Artifact classification also relied upon the format used by Smith (1993) for the excavation of Fort Southwest Point.

The most prevalent artifact group in the assemblage is the architecture group (27%), excluding brick and mortar. The kitchen group, including animal bone, comprised approximately a fifth of the total artifact distribution. The activities group made up nearly a tenth of the artifact sample. The personal, clothing, arms, furniture, and prehistory groups together comprised less than a tenth of the total. The complete field school excavation artifact catalog sheet is contained in Appendix D. Photos of battle era artifacts founding during this project are contained in Appendix B.

Kitchen Group

Two major materials dominated the kitchen group items recovered from the Fort Recovery excavation. Ceramics represented 57% of the kitchen group followed by glass, which represented 39% of the sample. Some metal items (4%) were included in this group; however, most of the objects were modern artifacts recovered from the upper levels of excavation units.

Ceramics

Ceramics represented the most prevalent artifact recovered at Fort Recovery in the Kitchen Group. Five hundred and twenty ceramic sherds were recovered, comprising 57% of the Kitchen Group.

The most common tableware recovered was whiteware (66%), indicating a 19th century domestic occupation of the site. A noticeable amount of pearlware was recovered (29%) from the excavations, along with the presence of creamware (3%), ironstone (1%), and British or American porcelain (1%). The creamware and pearlware date to the Battle of Fort Recovery period (1793-1794). Several of the pearlware fragments were found in the Feature 3 palisade trench postholes.

The majority of the creamware was undecorated. One piece was decorated with a shell-edged rim and another with molding. Twenty-five pieces of the 89 pieces of recovered pearlware was decorated. Four sherds were decorated with annular bands, two with molding, 10 were hand painted, and eight sherds were sponge decorated. One piece also had the letters "ME" and "J" printed on them with transfer print technology. Most of

the whiteware sherds were undecorated. Fifty-seven sherds of the 199, however, exhibited decoration. Thirteen of these items were decorated with a transfer printed design. Twenty-seven whiteware sherds were hand painted. Two annular sherds were recovered. Seven sherds had shell-edge decoration, and eight were sponge decorated. Only two pieces of ironstone were recovered. One was undecorated and the other exhibited molding. The majority of the yellowware sherds was undecorated; however, one sherd is decorated with a Rockingham design.

Utilitarian ceramics were dominated by redware, representing almost three-quarters of the ceramic assemblage. Yellowware comprised 19 percent of the utilitarian category, while stoneware comprised less than 10 percent of the utilitarian ceramics.

When the table ceramics assemblage is sorted by the economic system devised by George Miller and revised by Amy Earl et al. (1993), Tier 1 ceramics comprise the highest proportion of ceramics (74%). Tier 1 wares consist of undecorated pottery. Tier 2 consists of ceramics that have edge decoration such as molding or shell-edge decoration. Tier 2 ceramics represent only 4% of the sample. Tier 3, consisting of hand painted and sponge printed vessels, comprise 16% of the sample. Tier 4, the most expensive group, represented only 6% of the ceramic sample. This group was mainly represented by transfer printed decoration. The distribution of ceramics by decoration type and cost suggests that the tableware in Parcels 8 and 9 was deposited by middle class households during the first half of the 1800s that chose to use inexpensive undecorated and painted tablewares. Molded and decal tablewares, dating from the 1860s to the early 20th century, respectively, are noticeably absent from the ceramic sample, suggesting that household refuse was no longer being deposited in the sampled Parcel 8 midden after the third quarter of the 1800s.

Bottle Glass

Three hundred and sixty three bottle glass fragments were recovered from excavations conducted in Parcels 8 and 9 at Fort Recovery, accounting for 39% of the Kitchen Group artifacts. By color, aqua and clear glass fragments were most prevalent comprising 45% and 38% respectively of the glass sample. Amber colored glass only represented 7% of the assemblage. Green glass accounted for 5%, a modern glass color. Amethyst glass, an early 20th-century marker, comprised 2% of the glass sample, while olive colored, cobalt and milk glass each only amounted to 1% each. The large amount of aqua glass, which was used in the 19th century, demonstrates the primary occupation of the site during the early period of the village of Fort Recovery.

Tableware

The only notable metal tableware items recovered from excavations were two spoons recovered in the lower levels of Parcel 8, Unit 4. These spoons were both similar in size, measuring about 7-¼ inches long with the ladle measuring about 1-½ in diameter. Judging by their size, the items were most likely serving spoons.

Architecture Group

Five hundred and ten fragments of window glass were recovered from the Fort Recovery site. The fragments are useful clues to establishing a chronology with the aid of Moir's window glass dating formula (Moir 1987). It is assumed that since Fort Recovery was a temporary post with a short occupation span there would not have been large amounts of window glass placed in structures at the fort.

The chronology established by the window glass (Figure 102) appears to parallel the historic record for the Parcel 9 excavation area. Plotted in a line graph by excavation level and window glass date, a major frequency peaks occur in the 1830's and 1840's when it is known that settlers were arriving in the village of Fort Recovery. The Moir dating method was not designed for dating window glass before the 1820's, so the early window glass in the Parcel 9 assemblage may or may not be related to United States military activity. The window glass chronology, however, does demonstrate that the lowest artifact bearing deposits encountered in the Parcel 8 excavation units (ca. 80 cmbgs) date to the fort period or immediately after, during the early Fort Recovery settler community period.

Figure 102: Fort Recovery site window glass chronology.

Two major peaks in the window glass distribution graphed by excavation level shows two different periods when architectural events occurred at the site. The first architectural event occurred in the early 19th century, around the 1830's and 1840's. The second architectural event in Parcel 8 occurs around the 1860's. It is possible that the first event between the 1830s to 1840s occurs when a dwelling was first constructed on Parcel 8. The second window glass peak or architectural event may represent either a dwelling expansion, renovation, or razing episode. It is known historically that the residence on Parcel 8 during the early 1900s was razed during the 1930s when the WPA reconstructed the first fort replica.

While Parcel 9, containing only one excavation unit, did not produce a large enough sample of window glass to make important statements about construction or destruction phases, it is interesting to note the almost even distribution of window glass across time (Figure 103).

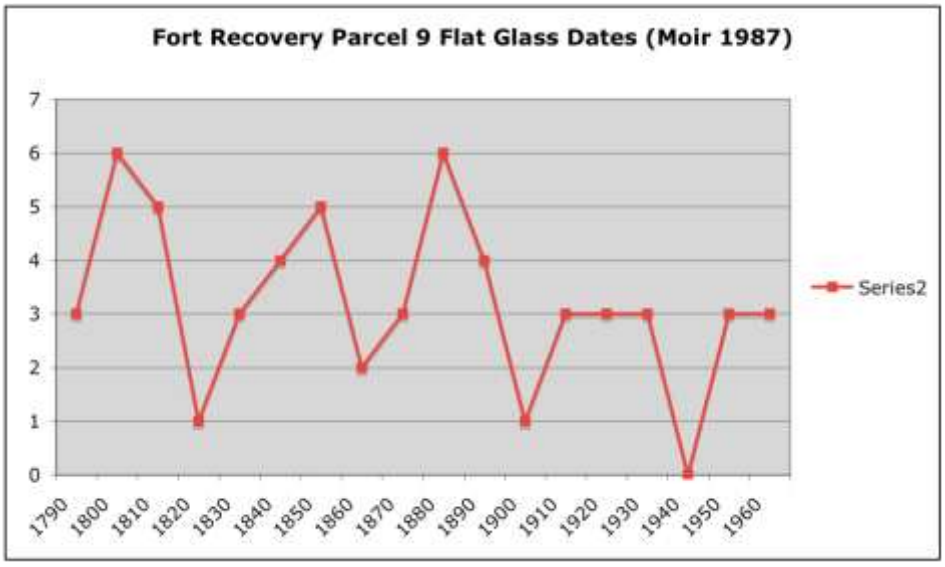

Figure 103: Parcel 9 flat glass dates.

Six hundred and thirty-three nails were recovered from the Fort Recovery excavations. Sixty-eight (11%) were modern wire nails. The vast majority of nails (89%) consisted of cut nails manufactured from 1790 to 1890 (Nelson 1968; Smith 1993:244). An attempt was made to determine if any of the nails were "type A" cut nails manufactured before 1830, but even in galvanized nails where rust is not a factor, the difference was hard to distinguish.

The nails were divided into functional categories based on pennyweight. Pennyweight 2D to 5D are considered finishing nails, used in the final stages of construction. Nails ranging from 6D to 16D were all-purpose construction nails used for many different functions. Any nail larger than 16D was usually used for framing houses and fence construction. At the Fort Recovery site, 75% of the assemblage consisted of finishing nails. The medium sized all-purpose nails made up 23% of total nails and large nails constituted only the remaining 2% of the nail sample. The prevalence of nails and absence of daub or chinking suggests that the 1800s structures located in Parcel 8 were probably of wooden frame construction rather than log construction. Likewise, the palisade trench encountered in Feature 3 appeared to be of post and pale construction, which would have benefited from the use of finishing nails to attach smaller pales to horizontal framing elements, similar to a large picket fence.

Furniture Group

The Furniture Group consists of chimney glass and furniture parts. The majority of items in the Furniture Group consisted of 138 fragments of chimney glass. A large

portion of the chimney glass is associated with Unit 10 in Parcel 8. A furniture handle was also recovered at the site.

Arms Group

The Arms Group consists of musket balls, shot, sprue, and flint-lock parts. Nine Arms Group artifacts were recovered from the site excavations in Parcel 8. On first thought, this artifact number appears small for a palisade trench at the fort. However, palisade trenches at other fort sites, such as Fort South West Point (Smith 1993), also contained low amounts of artifacts. This artifact trend related to palisade trenches is probably due to the fact that the trenches at forts would have been some of the first defensive works created during construction of a fort, and would have contained few discarded items since they would have been dug and backfilled quickly during fort construction. Of the nine Arms Group artifacts recovered from Parcel 9, three have a high probability of being contemporaneous with Fort Recovery.

A musket ball (Figure 105) was recovered from the site, which measured .6320 inches in diameter. This is within the size range for a shot ball used in a 1763 French infantry musket, or "Charleville Musket," which fired a .69 caliber ball (Cole 2007). This shot caliber, however, was used by the U.S. military up to 1842 for musket balls used in the opening battles of the Civil War (Cole 2007).

Two 22 caliber shells were also recovered from the site, which post-date the fort and are possibly modern. The 22 caliber shells unfortunately were discovered underneath the musket ball, demonstrating the disturbed nature of the site. The 22 caliber shell was invented in 1857 by Daniel Wesson, and become widely available by the end of the decade (Boorman 2004). A piece of lead sprue was recovered from a deep feature, possibly associated with an original depositional context. Sprue fragments are the drippings and lead residue from making shot using a shot or bullet mold.

A center band from a Charleville musket (Figure 106) was found in Parcel 8. This band includes the mechanism that attaches the strap to the musket barrel. These band pieces were characteristic of the French muskets of the period; however, when the United States began to manufacture their own muskets, they copied the French design. This band piece is also seen in firearms that utilized rifling, such as the 1861 Springfield Rifle-Musket (Cole 2007). While it is very possible that this piece belonged to a Charleville musket related to one of the two battles, with the continuation of the piece in military technology and the possible lag in civilian access to these weapons, it may have been a weapon owned by one of the first settlers of the village of Fort Recovery. A piece of flint was also recovered that may be a flint used in a Charleville musket. A flattened piece of what is thought to be the end of a ramrod (Figure 107) was recovered. It has been compared to ramrods photographed with the knurled cleaning side of the ramrod (Neumann and Kravic 1975:231).

Figure 104: Strike-a-light discovered in Parcel 8.

Figure 105: Musket ball discovered in Parcel 8.

Figure 106: Center band from Charleville musket discovered in Parcel 8.

Figure 107: Flattened cleaning jag discovered in Parcel 8.

Clothing Group

The clothing group consists of buckles, buttons, scissors, pins, needles, and awls, beads and eye fasteners. There was a wide variety of items in the 53 artifacts recovered in the Clothing Group. Two buckle tongues were recovered from the site. Considering the large number of unidentified pieces of metal, this number is probably underrepresented. As the tongues were smaller; they were most likely from a person's belt, as opposed to being part of a horse harness.

Twenty-five buttons were recovered. The range of materials is relatively wide for this small sample. Both shell buttons and glass buttons each make up 28% of the total buttons recovered. Metal buttons comprise 16% of the assemblage. Two bone buttons were recovered (8%). Three plastic (12%), one stone (4%), and one ceramic button (4%) were also recovered from the site. The shell and bone buttons, similar to those found by Tony DeRegnaucourt at Greene Ville, are probably undergarment buttons (DeRegnaucourt 2007:58; Luscomb 1997:177). No military buttons were recovered from the Fort Recovery site. This is not surprising given the extent of metal detecting at the site and the short occupation span of the fort.

A portion of a pair of iron scissors was recovered. Seven sewing pins were also recovered from the site. These pins, however, were usually found highly corroded, so determining the difference between these pins and small nails sometimes became difficult. Several of the pins recovered from post holes in the palisade trench (Feature 3) had wire wound heads that date before 1824 (Smith 1993). Eight sewing needles were also recovered from the site.

Two beads were found. They differed in size and possible clothing function. The first is a larger bead, called a "necklace bead" (Stone 1974). The bead is closest to a "Type 12" or "Round to oblong; multi-faced, cut or ground surfaces" (Stone 1974:97). The function of the bead, however, may have been something other than a necklace, so it may be prudent to label it a "standard bead"(White 2005:82) or a "big" bead (Karklin 1982:89). This bead is a deep royal blue in color. The second bead is a small seed bead that was sewn into clothing. This bead is blue in color. It would fit into Karklin's category of "small" bead, measuring fewer than 6 mm (White 2005:82). These beads could certainly have been trade beads contemporaneous with Fort Recovery. They were, however, found in levels with post-fort materials.

Two eye fasteners were uncovered. Eye fasteners were usually used to fasten undergarments (White 2005). One of the eye fasteners has a dot of glass attached to the end, making it unlikely to be an undergarment hook. A similar fastener was recovered in Parcel 9.

Personal Group

The Personal Group consists of coins, jewelry and keys. The majority of items found in this category were modern. A few items, however, seem to represent some activities undertaken by the inhabitants of the village of Fort Recovery. All coins

recovered were modern coins. One piece of jewelry was recovered from the site. It was gold costume jewelry, which represents habitation during the village of Fort Recovery. A personal mirror was recovered. This mirror's glass once removed from the soil matrix appeared to be window glass, but it was identified during the excavation and removed accordingly. The back of the mirror was made of thin pieces of metal. One key was recovered from Parcel 9, away from the main block of the excavation. It is probably related to a household in the village of Fort Recovery.

Activities Group

The Activities Group consists of construction tools, farm tools, toys, blacksmithing debris, and miscellaneous items. Only 14 artifacts in the Activities Group were recovered. These items include four bolts, three nuts, five screws, and two washers. Two pieces of a horse's harness were recovered. These items most likely represent harnesses used on horses in the period of the village; however, it is known that horses played an important role in the Battle of Fort Recovery. Fourteen pieces of wire were recovered, with 6 fragments having visible barbs for barbed wire fencing.

Five marbles were recovered from the Fort Recovery site. They were generally found in levels of medium depth, suggesting children in the families of the village of Fort Recovery used them. A wheel was recovered in Parcel 9, which could have been part of a toy truck.

Fifty-one pieces of slag were recovered from the site. These fragments were usually recovered in association with the 304 pieces of coal and charcoal. The majority of these items were found in shallow levels; they most likely represent more modern activities from the third quarter of the 1800s and later.

A piece of printing type, with a letter character visible on one side, was recovered. This piece would have been used in a printing press.

At the bottom of a post-hole feature, an iron strike-a-light (Figure 104) was recovered. The strike-a-light fit over the hands and was used to strike a flint nodule to make sparks for starting fires.

A piece of lighting hardware was recovered that is believed to be from a lantern; its association with the densest deposits of chimney glass supports this conclusion.

Site Chronology

Two stratigraphic analysis methods were used to establish the chronology of the site. These methods were developed by Groover (2003). The first method involved calculating a mean artifact date (MAD) for each excavation level, based on known manufacturing dates of ceramics, nail types, and window glass. The dates were then sorted by decades, and the artifacts totaled and graphed for each decade. The second method involved totaling and graphing artifacts strictly by level. In this method, each level in the different units would be totaled together. The second analysis method involving totaling artifact counts by levels for all units was used due to small sample size.

Sorting artifact types by decade intervals based on MADs is more appropriate for sites with a larger number of excavation units and individual excavation levels.

The main excavation block was located in Parcel 8, where fort related features were located. The overall stratigraphic distribution of artifacts is tri-modal for the entire Parcel 8 sample (Figure 108). This distribution is fairly consistent across the functional types, with some important variations.

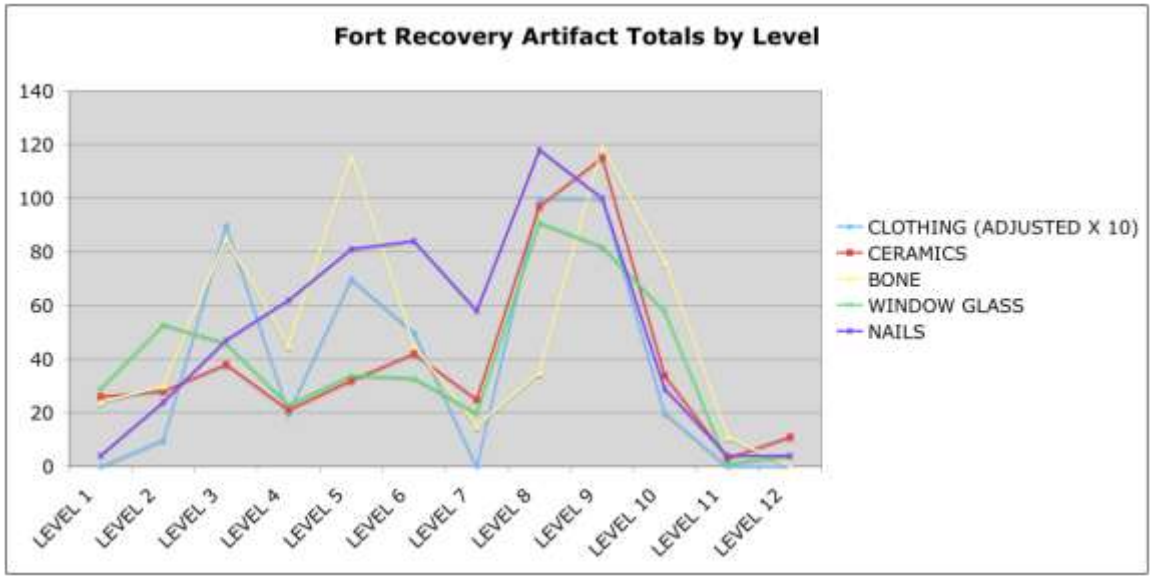

Figure 108: Parcel 8 artifact totals by level.

The MAD method, while less preferred in this instance, was still performed. The results, like the level counts, shows a tri-modal distribution (Figure 109). However, it appears that the large number of cut nails skewed the results. The MAD graph without the cut nails demonstrates that the 1860 peak was not created solely by the large amount of cut nails (Figure 110). If the MAD graph is taken at face value, the first peak must have occurred in the early period of the town of Fort Recovery. The second peak would have occurred near the turn of the 20th century. The final peak would have occurred in the 1930's. The three artifacts peak probably correspond to dwelling construction during the early post fort period on Parcel 8, dwelling additions or renovations at the turn of the 20th century, and dwelling razing during the WPA period when Parcel 8 was purchased to be developed as a historic site.

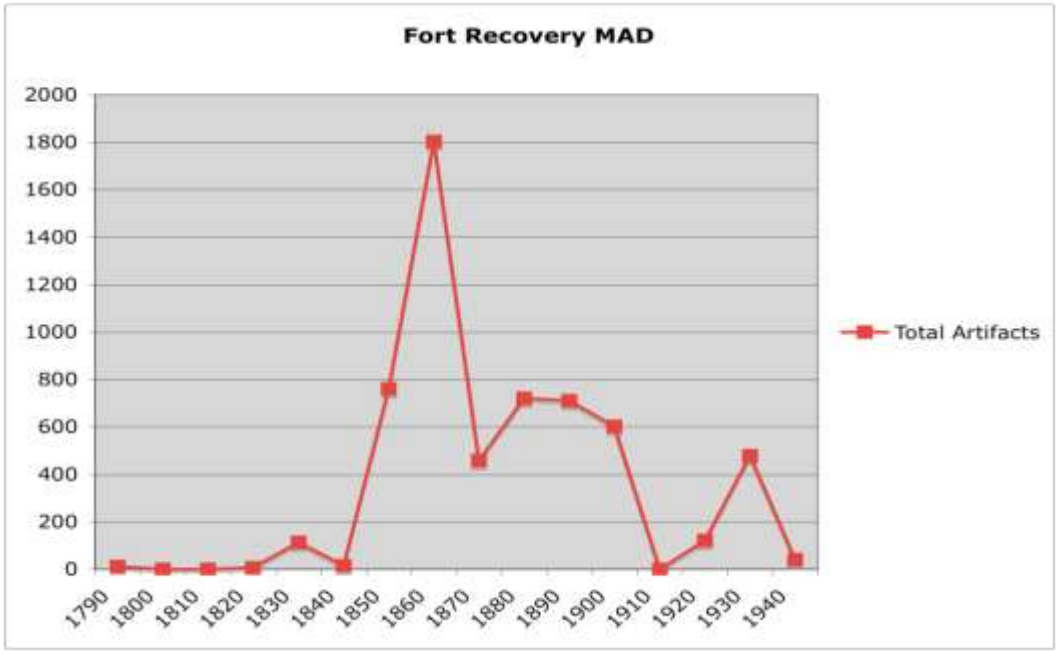

Figure 109: Parcel 8 mean artifact dating graph (with cut nails).

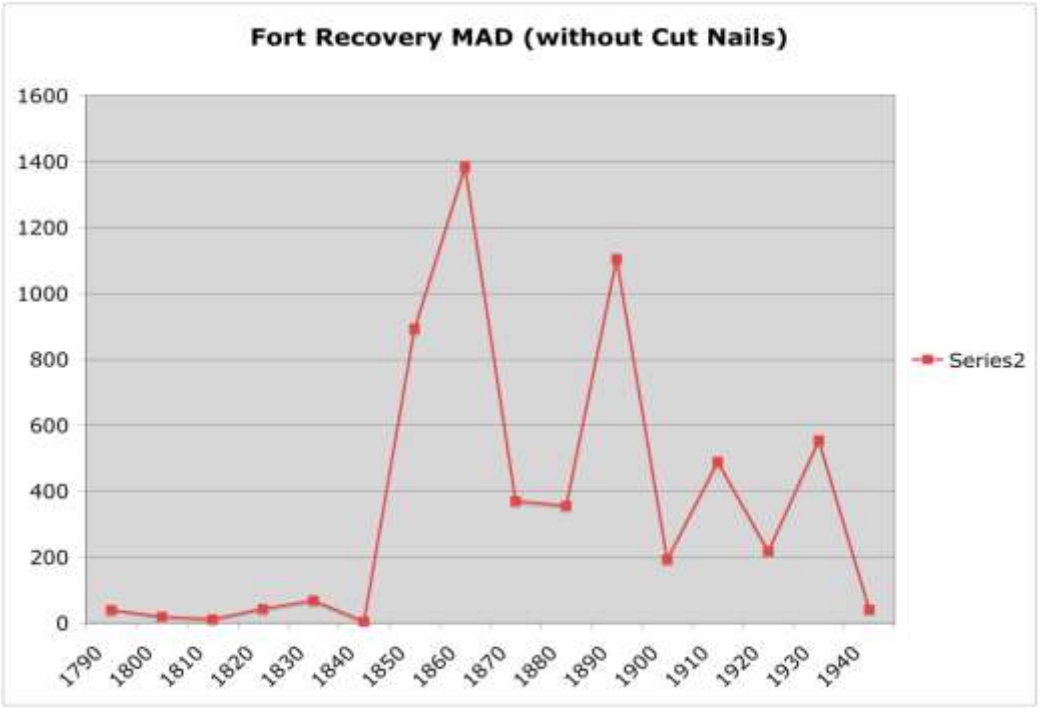

Figure 110: Parcel 8 mean artifact dating graph (without cut nails).

Parcel 9 consisted of one excavation unit, Unit 1. The number of artifacts is far less than that recovered from Parcel 8. Unit 1 was also not excavated to sterile subsoil,

because time was allocated to Parcel 8 with its fort period features. Given those constraints, the MAD graph seems to show the beginnings of a bi-modal pattern.

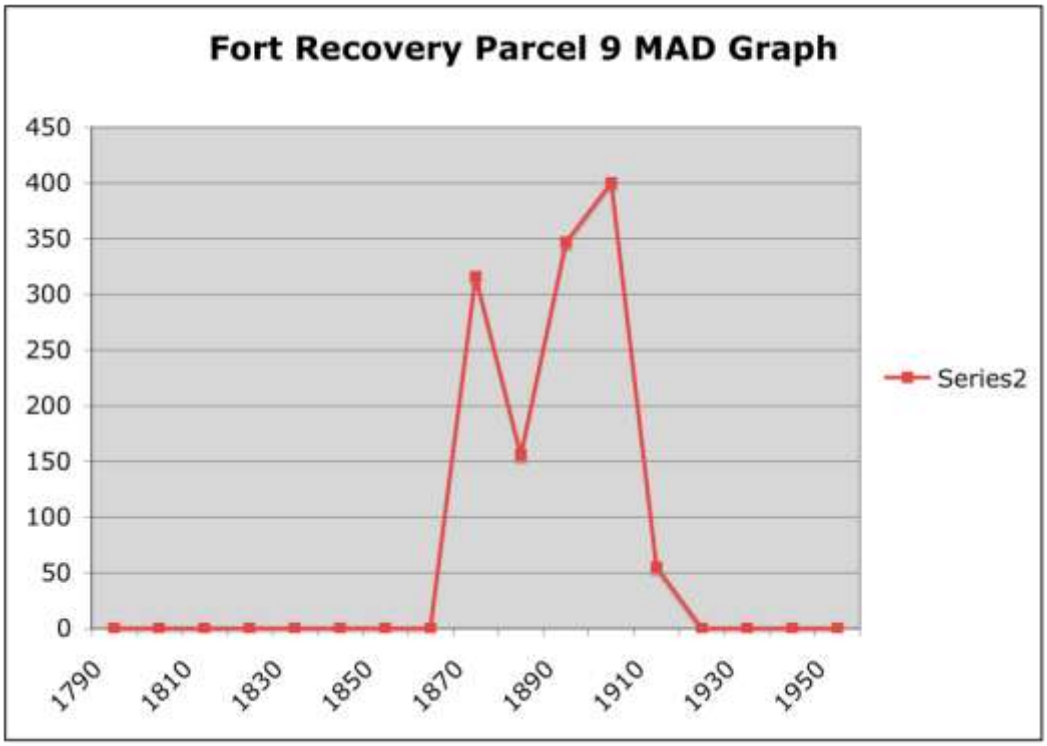

Figure 111: Parcel 9 mean artifact dating graph.

When graphed by levels the same artifact distributions seems to appear (Figure 112), despite the fact that the early levels did not always show clear procession of latest/highest to earliest/lowest chronology. A few features encountered with later dates than their levels seem to support this notion of disturbance between intermixing levels.

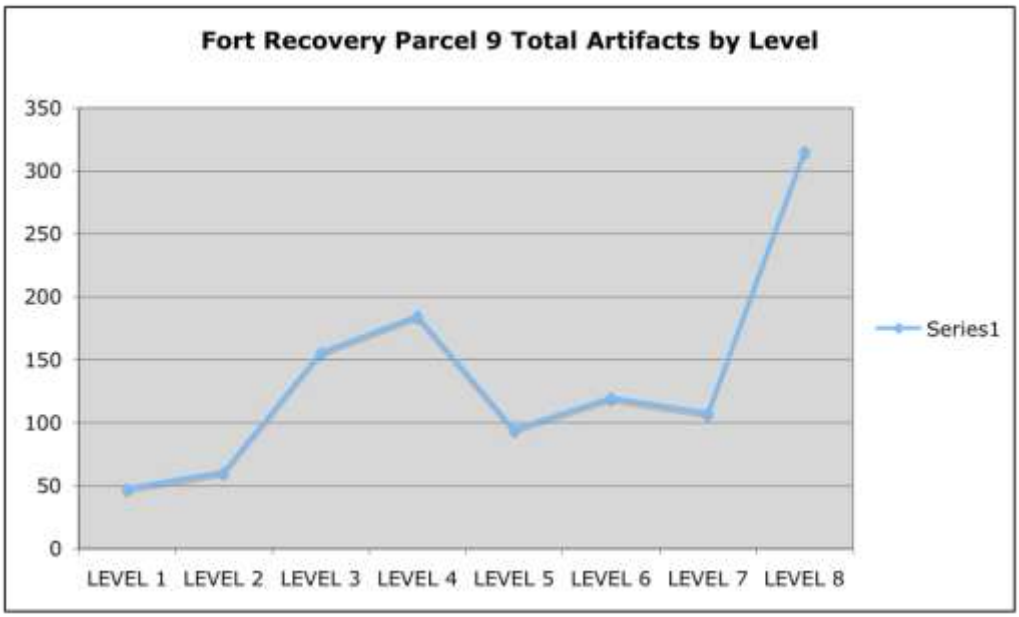

Figure 112: Parcel 9 artifact totals by level.

The distribution of ceramics in Parcel 8 for the most part conforms to the tri-modal pattern seen overall (Figure 113). One important variation is the pearlware and creamware samples in Level 12 (which was a deep feature), which looks to be starting a fourth modal spike. This is important because these two ceramic types are fort ceramic types seen at sites such as Fort Southwest Point (Smith 1993). While the majority of the pearlware and creamware is either in secondary context or was reused, this early spike may represent a use nearer to the ceramics' manufacture date and the original fort period.

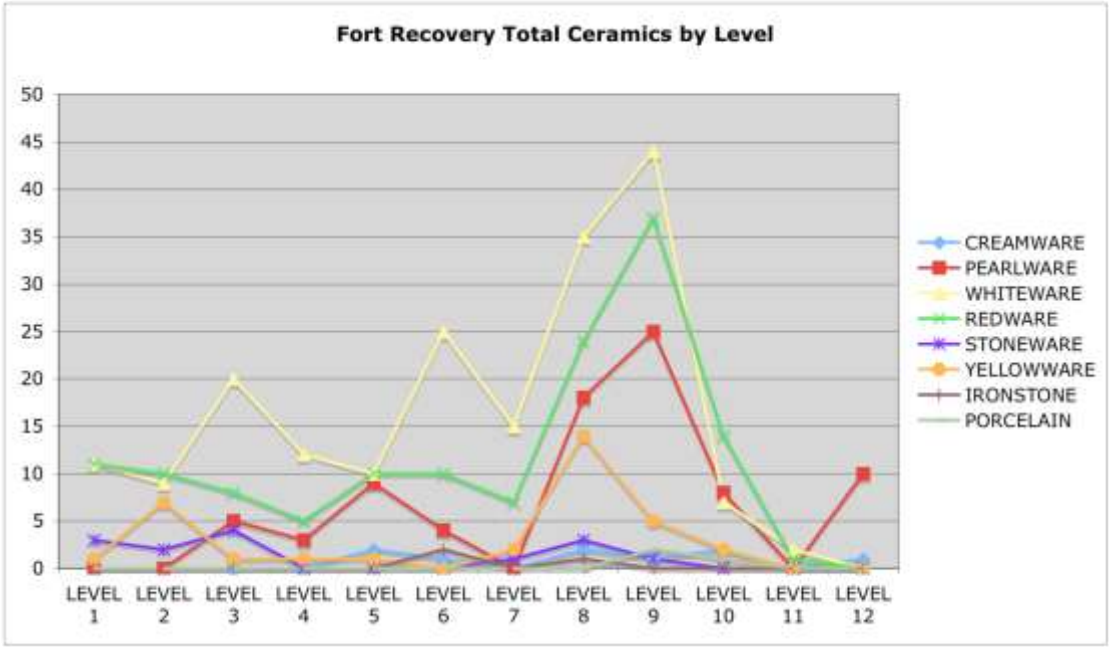

Figure 113: Parcel 8 total ceramic artifacts by level.

The MAD graph constructed for the different ceramic types shows a similar pattern (Figure 114). The early dates show a possible fourth peak during the early pioneer period (1820's and 1830's) and may be related to some activity in Parcel 9 during the fort period.

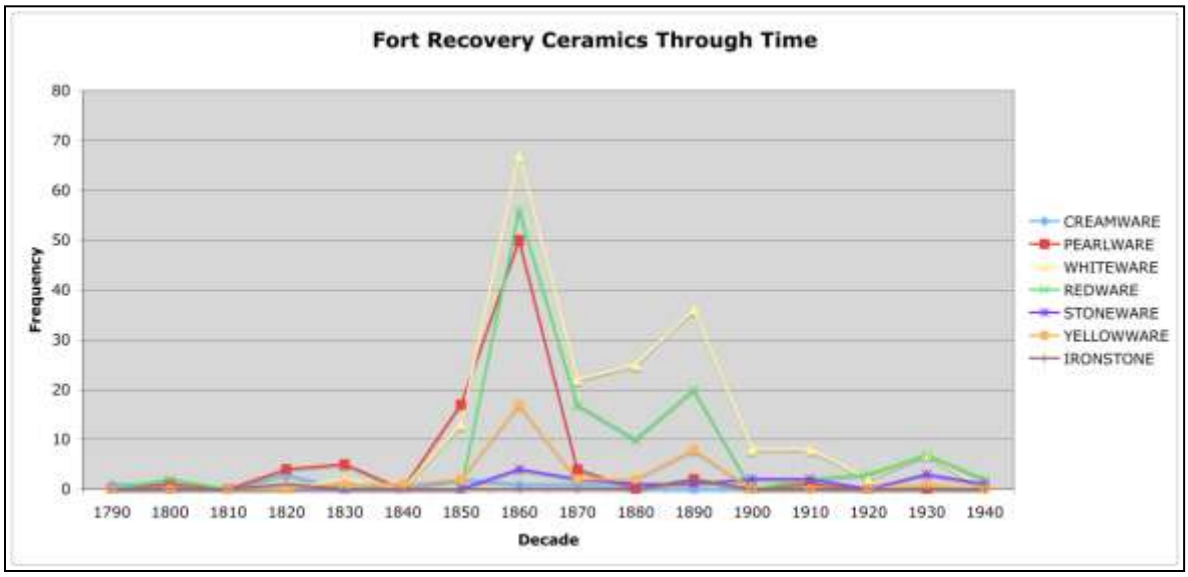

Figure 114: Parcel 8 ceramics mean artifact dating graph.

An important observation in the distribution of ceramics in Parcel 9 is the presence (if small) of pearlware (Figure 115 and Figure 116). This seems to support the interpretation used in Parcel 8 that much of the pearlware is in secondary context or reused.

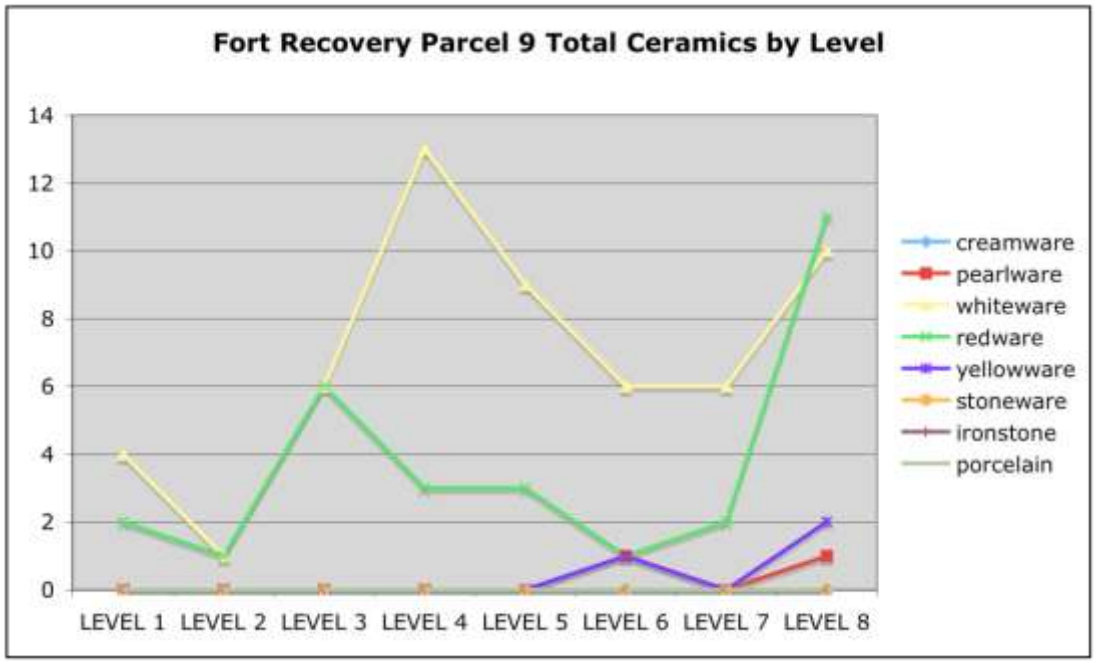

Figure 115: Parcel 9 total ceramic artifacts by level.

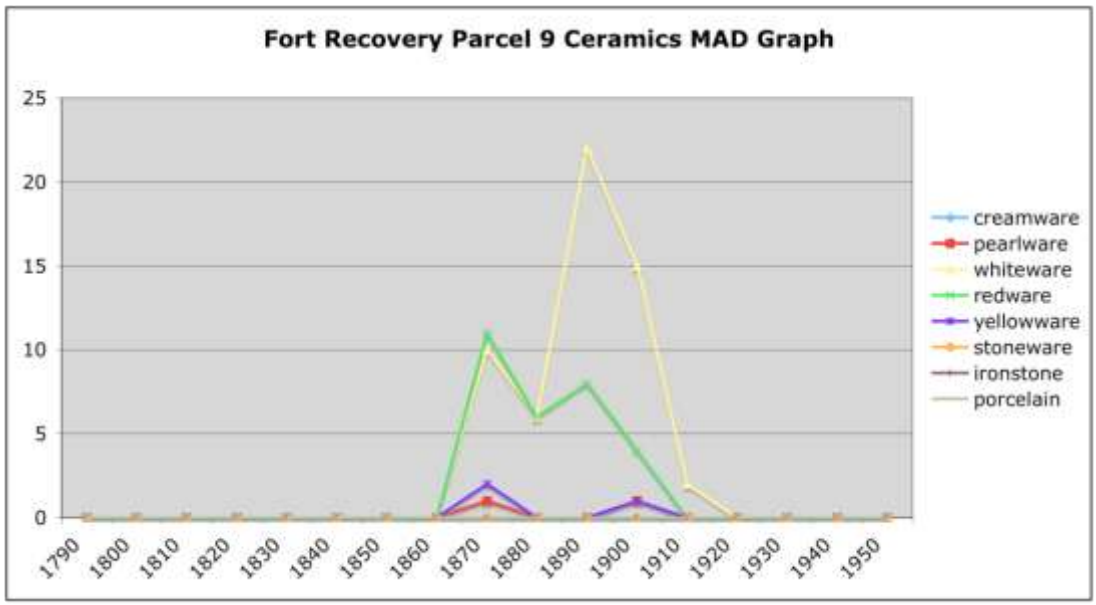

Figure 116: Parcel 9 ceramics mean artifact dating graph.

While window glass appears to conform to the tri-modal model, nails provide an important exception to the rule (Figure 117). While the stratigraphic distribution seems to suggest the three peaks, the troughs are absent in the nail distribution. Only the clear peak in Level 8 seems to suggest the level of patterning seen in the other functional groups.

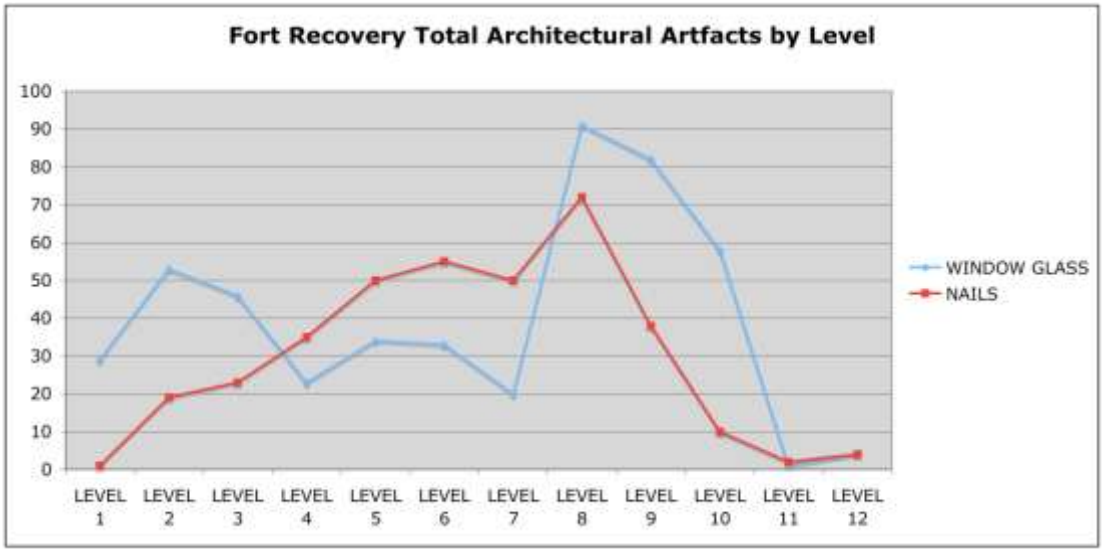

Figure 117: Parcel 8 total architecture artifacts by level.

The bi-model pattern seems to continue with architectural artifacts in Parcel 9 (Figure 118 and Figure 119).

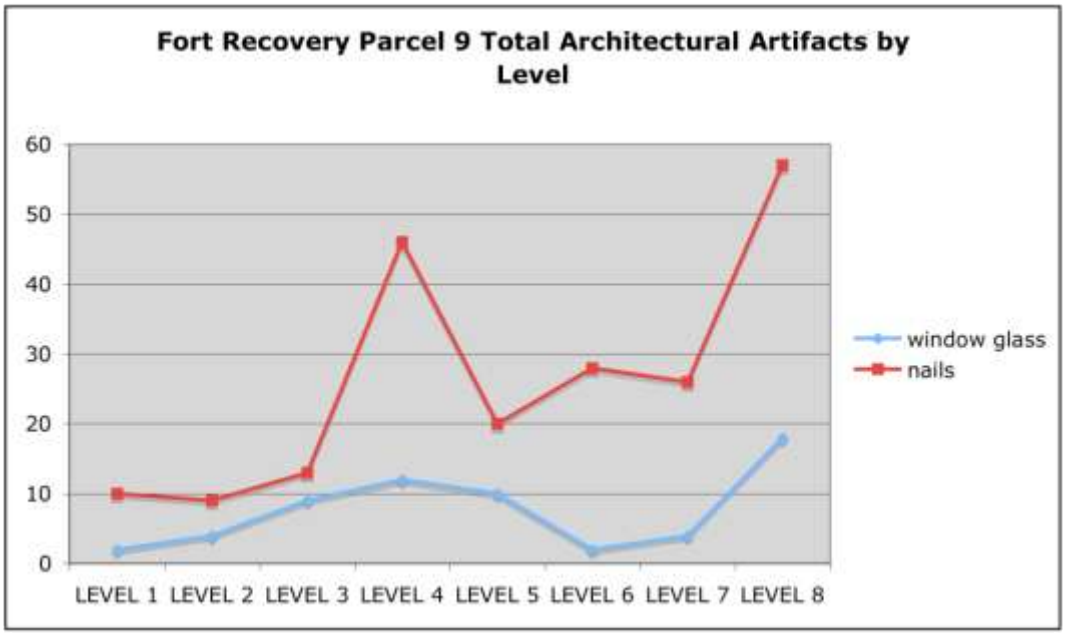

Figure 118: Parcel 9 total architecture artifacts by level.

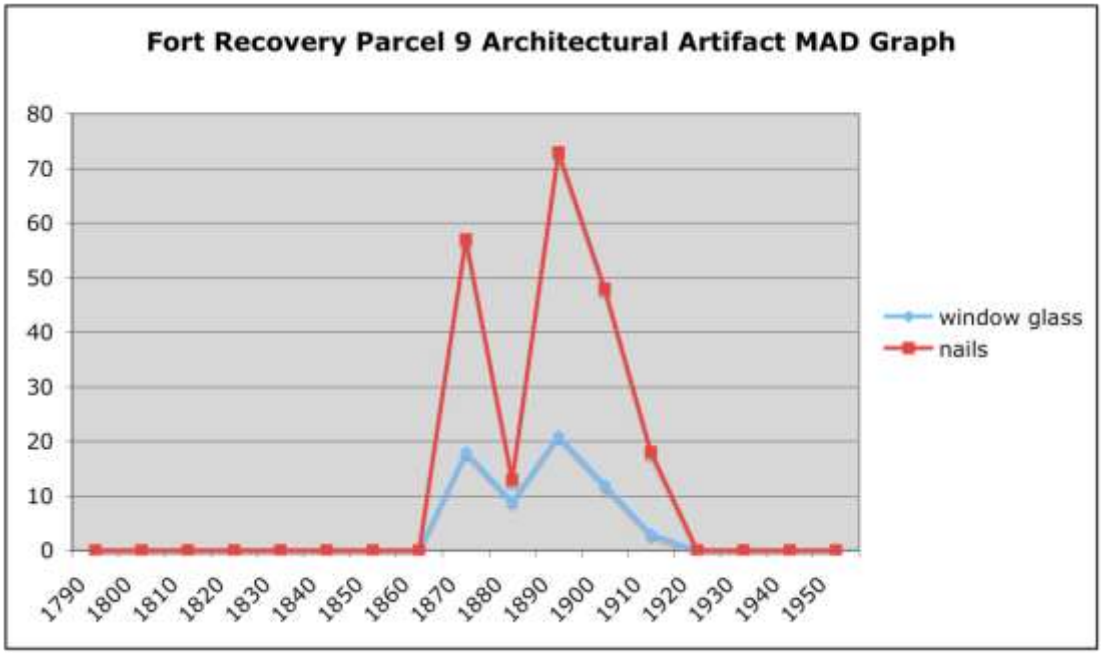

Figure 119: Parcel 9 architecture mean artifact dating graph.

The presence or lack of shell is important for establishing a chronology at the Fort Recovery site. The Wabash River, a vital physical feature in understanding the 1791 and 1794 battles, no longer runs on its same course. The 1888 Mercer County Atlas shows the rerouting of the river partially completed. The absence of a first peak (and barely a second) in the distribution of shell in Parcel 8 seems to suggest that the first peak represents deposits after the rerouting of the Wabash River away from the excavation site (Figure 120).

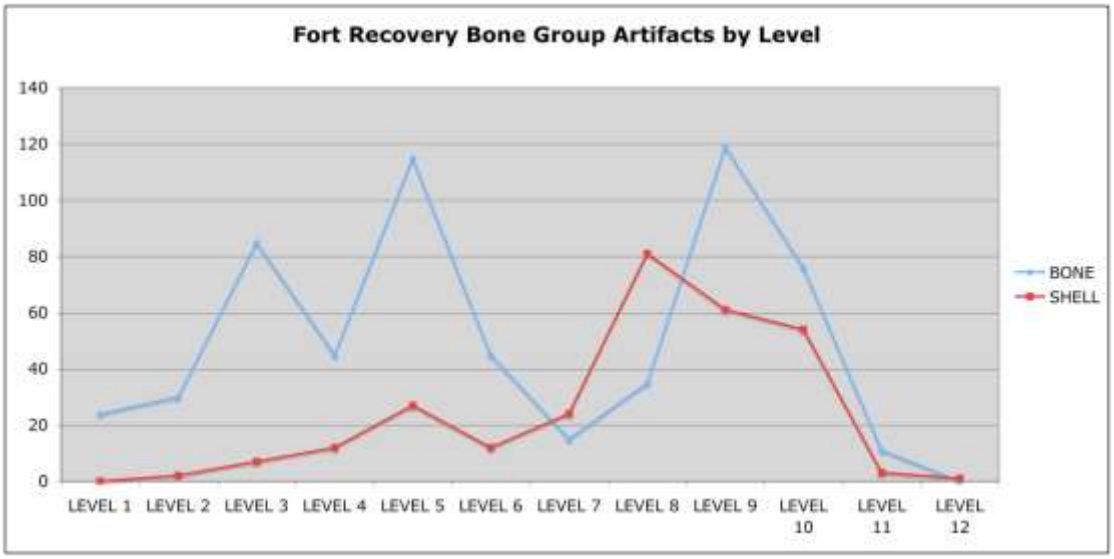

Figure 120: Parcel 8 total bone and shell artifacts by level.

In Parcel 9, shell increases in the older provenances, just as expected; it is the time the river was rerouted (Figure 121 and Figure 122).

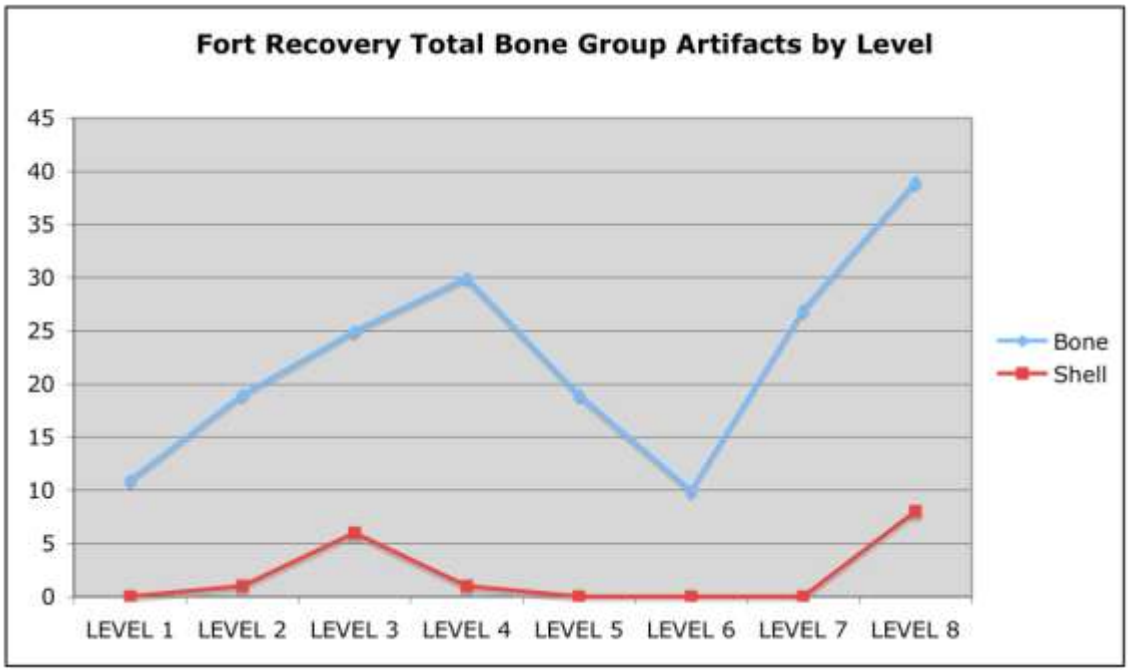

Figure 121: Parcel 9 total bone and shell artifacts by level.

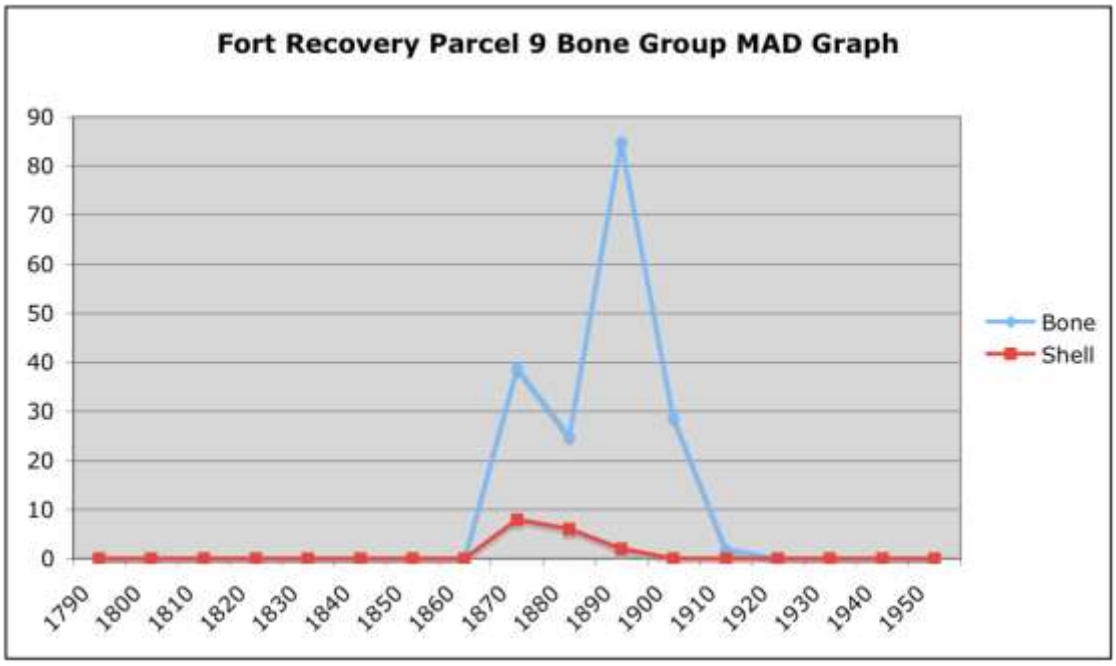

Figure 122: Parcel 9 bone and shell mean artifact dating graph.

The distribution of slag in Parcel 8 only peaks in the first of the three peaks; coal and charcoal, while represented in all three, is severely reduced after the first (Figure 123). It could be concluded that only peak one represents a period when coal burning was widespread and common, such as after the very end of the 19th century and the beginning of the 20th century.

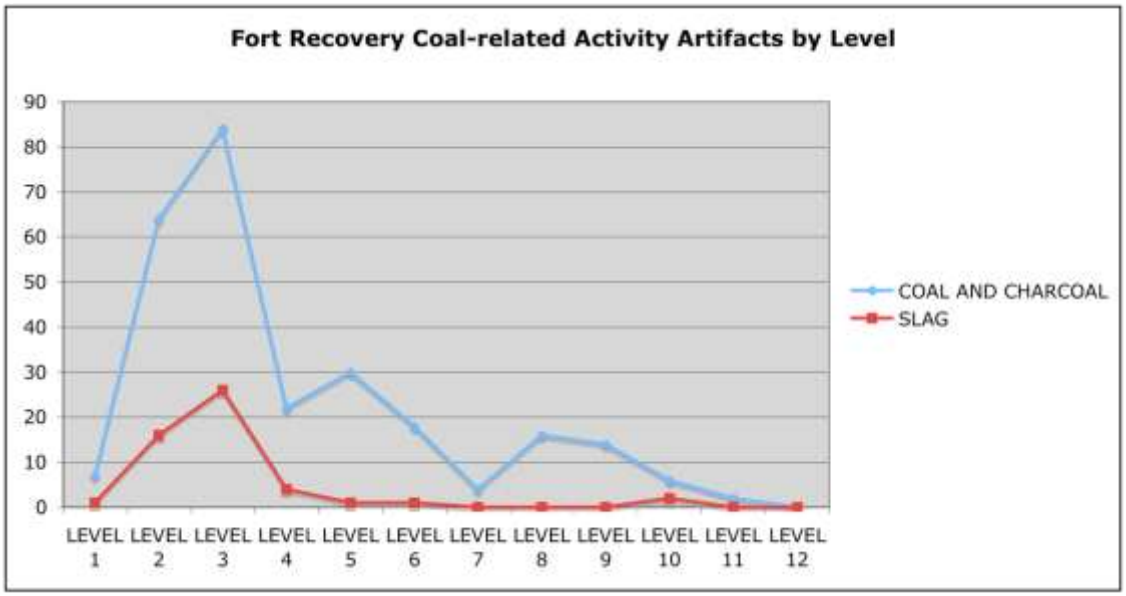

Figure 123: Parcel 8 total coal-related artifacts by level.

Analysis by Occupation Period

The occupation periods of the Fort Recovery site can be divided into fort period, pioneer period, town residence period (1840s-1930s), and WPA/OHS/post-1930s period and can be analyzed for both Parcel 8 and Parcel 9.

Parcel 8

In terms of artifacts, there are few fort period artifacts in their original context. One exception is the presence of pearlware and creamware in the deepest features. There is a clear break between pearlware and creamware and later ceramics that appear in higher levels that were probably recycled. The use of shell buttons found in deep features could also be either fort of early settler period.

While the difference between fort and pioneer artifacts is ambiguous, the line showing the beginning of the town is sharp and distinct. In both the MAD graph and the window glass graph, the early town residence period shows a large increase in artifact totals. The majority of the artifacts recovered belong to this time period.

Historic records retrieved from the Mercer County Courthouse in Celina, Ohio, aided in reconstructing the ownership of "Out Lot 5" which corresponds to Parcel 8 (Table 9).

Table 9: Chronology of Parcel 8 "Out Lot 5"

Year	Grantor	Grantee	Partition
1934	Henry Sunderman	OHS	
1903	Bernard Krenning	Amelia Sunderman	
1876	William Krenning*		West
1876	J. Anthony*		East
1876	Jacob Anthony	John H. W. Krenning	East
1872	Wessel Meinerding	William Krenning	West
1870	William Herron	Wessel Meinerding	West
1867	William & Marry M. Anthony	Jacob Anthony	East
1866	Lewis & Jane Oswald	William Anthony	East
1865	J.W. Muthert & J.W. Krenning	Lewis Oswalt	East
1865	David Beardslee	Krenning, J.W. and Co.	East
1864	John M. & Ellen Ruckman	William Herron	West
1857	David Beardslee	John M. Ruckman	West
1838	William McDaniel	Obel Beardslee	
1837	William McDaniel*		

The high level of turnover and splitting of the property are not the only problems for establishing the identity of occupants in Parcel 8. It is very likely that the property owners did not live there. The Krennings, who owned the property from the 1870's until the beginning of the 20th century, were known to have lived on the property that corresponds to Parcel 9 (Bicentennial Book Committee 1990:109).

It is known that a house existed on Parcel 8. However, despite searching tax records in the Mercer County Courthouse, it was not possible to determine the date of its construction or the identity of its residents. The earliest map showing the house is the 1888 county atlas (Griffing 1888). This would provide two possible hypotheses. First the Krennings constructed the house within a decade prior to the completion of the atlas. The second hypothesis, a more likely explanation due to early architectural artifacts, is that the house was constructed during the Beardslee family's ownership of the property in the 1840's. If the first hypothesis proves correct, then a previous structure must have

occupied the site to account for the early peak in construction artifacts. Likewise, the pre-1840s deposits could be related to the original Fort Recovery construction in 1793.

An important photograph was located that showed the parcel at some point in the late 19th or early 20th century and cites the image as "February, 1853" (Bicentennial Book Committee 1990:37). This photograph showed the house that stood on Parcel 8. Two different names were found attached to this house on different photographs. The first was the name "Muthert". The second was "Hugh Kolp". The name Muthert appears in the deed records in 1865, but doesn't represent a large period of time (Mercer County Archives 1965). Hugh Kolp, based on the 1930 census records, rented a house on Boundary Street (Ancestry.com Operations, Inc. 1930). All previous records show Kolp, or his father-in-law, Benjamin Roop, as owning the property where they lived (Ancestry.com Operations, Inc. 1910, 1920). It is possible for a time in the late 1920's and early 1930's, Hugh Kolp rented the house from the Sunderman family, and it was their name that was associated with the house.

If the three major periods of continual ownership do correspond to the three peaks in the archeological record, the first peak would occur between 1838 and the late 1850's and early 1860's. During thi period the property was undivided and owned by the Beardslee family (Mercer County Archives 1838, 1857). The late 1830s artifact peak probably corresponds to construction of the dwelling. The next peak corresponds to the Krenning period, dating from the 1870's to 1903. This event probably represents a dwelling renovation episode. The next peak is just after this, from 1903 to 1934, when the Sunderman family owned the lot (Mercer County Archives 1903, 1934), immediately prior to the purchase of the property as a historic preserve. Presumably the dwelling was destroyed at this time. There is also a connection, however, between the Sunderman and Krenning families. Amelia, whose name appears on the deed in 1903, was J. H. W. Krenning's daughter (Mercer County Archives 1903; Scranton 1907).

The shell deposits in these periods seem to support these dates. Shell is present in the first peak, barely in the second, but not in the third. The river was rerouted in the late 19th century. If the artifacts correlate to this period, it is probably the beginning of the Krenning ownership that it represents. This hypothesis only requires the mean artifact dating graph to be pushed back 10 years.

Without clear understanding of the residential history of the lots, it is hard to link artifacts to specific households. When the Ohio State Archaeological and Historical Society purchased "Out Lot 5" in 1934 they also "reserve[d] a two-story frame dwelling on the above described tract of land, and also reserve[d] the right to remove the same there from, said above mentioned building to be removed within two years from this date (Mercer County Archives 1934)." This dwelling removal or destruction event in the middle 1930s accounts for the appearance of a final artifact peak in the architecture artifacts, such as window glass and nails.

Parcel 9

Parcel 9 consisted of Unit 1, which did not contain any fort period or pioneer period artifacts. The history of Parcel 9 correlates with the history of George W.

Krenning. He moved to Fort Recovery with his father, J. H. W. Krenning in 1869 (earlier in the decade they resided in Fort Recovery but left and then returned). George married in 1875, and is listed in the Federal Census records in 1880 (Ancestry.com Operations, Inc. 1880). The size of his family swells to five by 1900, shrinking down to two early in the 20th century after his death (Ancestry.com Operations, Inc. 1900, 1910, 1920, 1930; Scranton 1907). A family cycle graph was constructed for this unit, even though the procedure should be used with a larger sample size (Figure 124).

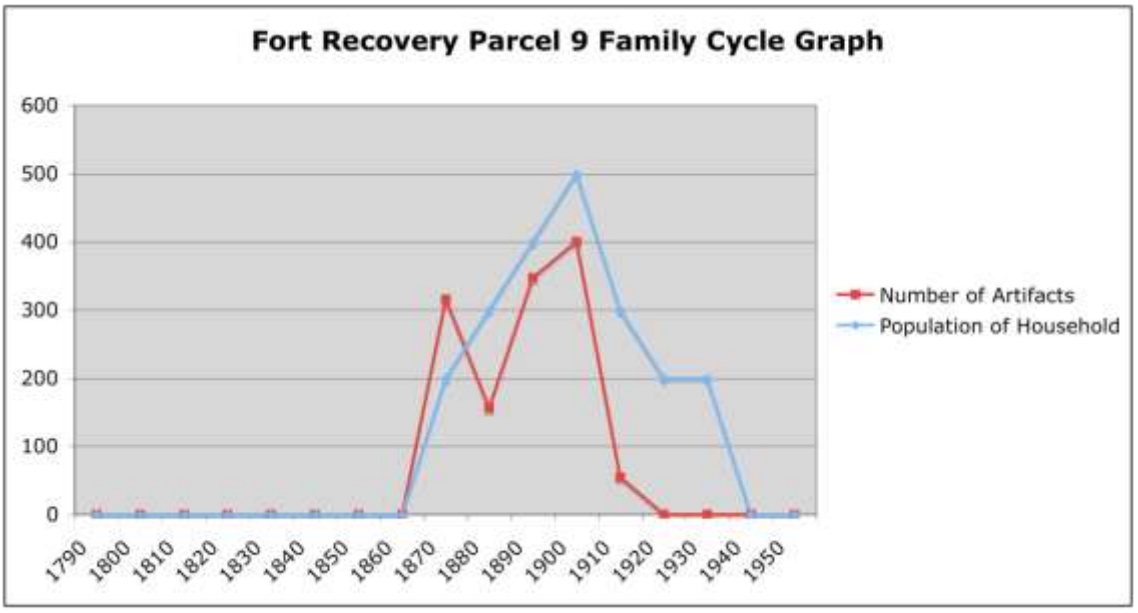

Figure 124: Parcel 9 family cycle graph.

The two data sets for Parcel 9 agree with one another overall. The early artifact peak could be related to the increased depth of the final level, if it does not represent the earlier household to occupy the house that predated George and Harriet Krenning. Pre-1860s artifacts indicate a dwelling was occupied in the lot before the Krennings lived there.

At some point in the early 20th century, the Krenning house was moved from its location on Parcel 9. There are three photographs showing the house in its original spot, in its new location on Boundary Street, and the moving of the house down Wayne Street (Bicentennial Book Committee 1990:296).

In 1947, Mrs. George Krenning, at the time living in New Haven, Connecticut, gave the deed to the Krenning Lot on Wayne Street to the Fort Recovery Historical Society (Bicentennial Book Committee 1990:109). The parcel now contains a walk-by museum owned by the Fort Recovery Historical Society, a meeting room, and a log cabin replica.

Analysis of the Faunal Remains from the Fort Recovery Excavations
S. Homes Hogue and Elodia Leavitt

This research uses the faunal materials from excavations at Fort Recovery during the summer 2011 to better understand the diet and food preparation associated with the occupation. Most of the remains are associated with Parcel 8 and the post-fort domestic deposits. Three main questions were addressed in this study. First, what animal foods were used during this time period, second, how did domesticated and wild foods contribute to the diet, and third how were the bones modified.

Faunal remains used in this study were recovered from the sub-surface excavations. Excavation of the units employed 5 cm arbitrary levels and all fill was screened through ¼ inch screen. Faunal analysis was performed in the Bioarchaeology Lab at Ball State University. The analysis was completed with the aid of the faunal comparative collection housed in the Bioarchaeology Lab located in the Department of Anthropology, Ball State University. The data was analyzed and organized according to unit and arbitrary levels. Because so few skeletal elements were associated with the individual levels, following the completion of the analysis one table (Table 10) was constructed for the entire site to better understand the function of the animals in the post-fort diet. In addition, the faunal materials were organized to reflect dated stratum for Parcel 8 and Unit 1 for Parcel 9. This allowed diachronic change in faunal use and bone modifications to be observed.

The faunal material was examined using standard zooarcheological methods (Reitz and Wing 1999). When possible, each specimen was identified to species and at least to class (unidentified mammal, unidentified aves, etc.). When class could not be identified, the specimen was labeled as miscellaneous unidentified. Element side (right or left), section (epiphysis, proximal, distal, etc.) was recorded for each specimen, and level of maturity (immature, adult, old adult), was noted where preservation permitted. All specimens were weighed to the nearest .01 gram. Bone modifications classified as sawed, cut, burned, gnawed and worked are also included in the analysis. Ante mortem bone fractures were also recorded. Sawing appears on bone as parallel striations located on the modified surface. Cuts are as shallow incisions on the bone surface generally associated with cutting meat around the joint area. Bone modified by exposure to fire during preparation or after discard is classified as burned. Generally black indicates the bone was smoked or set in a fire for a short length of time while white bone indicates extensive burning in temperatures exceeding 800^{o} centigrade or 1472^{o} F (Ubelaker 1989). When bone is gnawed it indicates that bone was not buried. Gnawing is usually the result of animals, likely to be in a domestic setting, such as rodents (generally rats and mice) or dogs. Rodents leave linear notches on the bone and gnaw bone for protein and calcium while dogs and other canids often gnaw on the ends of long bones (Ubelaker 1989). When bone elements are modified by humans for tool use, they are identified as worked bone (Reitz and Weinand 1995).

A constructive method for comparing similarities and differences in faunal collections among sites is to observe the percentages of weight or minimum number of

individuals for specific faunal categories. The faunal categories used in this study are domestic mammal, wild mammal, domestic bird, wild bird, reptile, fish, and commensal.

Identified Fauna

Table 10 provides an inventory of the animal species identified in the collection for the entire site. The collection included eight mammal species, one bird species, and unidentified turtle and fish. A short description of animals identified at Fort Recovery follows.

Table 10: Bone number, weight, and weight and bone percentages for faunal materials at Fort Recovery.

Species	*Genius, Species*	Number of Bones	Weight gms	Percentage Weight	Percentage of Bones
Mammals					
Cattle	*Bos taurus*	9	129.13	11.70	1.34
Pig	*Sus Scrofa*	52	438.43	39.73	7.71
Sheep	*Ovis aries*	1	13.1	1.18	0.15
Deer	*Odocoileus virginianus*	4	11.53	1.04	0.59
Dog	*Canis familiaris*	1	0.46	0.0004	0.15
Raccoon	*Procyon lotor*	1	0.29	0.0002	0.15
Rat	*Rattus sp.*	3	0.63	0.0005	0.45
Gray Squirrel	*Sciurus carolinensis*	2	0.73	0.0007	0.30
Unidentified Rodent		2	0.33	0.0002	0.30
Unidentified Large Mammal		126	274.54	24.88	18.69
Unidentified Small Mammal		5	15.29	1.38	0.74
Unidentified Mammal		213	119.99	10.87	31.60
Aves					
Chicken	*Gallus gallus*	4	3.15	0.0028	0.59
Unid Bird		37	5.55	0.0050	5.49
Reptile					
Unid Turtle		1	0.14	0.0001	0.15
Pisces					
Unid Fish		4	0.63	0.0005	0.59
Miscellaneous Unidentified		209	89.55	8.11	31.01
Total		674	1103.47	99.00	100.00
Burned Bone		17	7.28	0.65	2.52
Unburned bone		657	1096.19	99.35	97.48

Domestic mammals

Pig (*Sus scrofa*) was the most prevalent domestic mammal identified in the sample and represented 40 percent of the total faunal weight indicating its popularity as a food item. One major advantage to raising pigs is that they require little direct care, adapt well to either free-range or being confined to a pen (Carson 1985:2), and can gain about two pounds from every 15-25 pounds of feed. A dressed pig carcass can yield 65-80

percent usable meat (Towne and Wentworth 1950:7-8). Pork is easy to preserve through salting or smoking (Towne and Wentworth 1950:249).

Cattle (*Bos Taurus*) are typically described as difficult and burdensome animals to raise. One problem with raising cattle is the time and cost involved in raising them (Towne and Wentworth 1950:7-8). Cattle depend on grain and grass or proper meat yield and if not properly provided meat yield can be adversely affected. Cattle yield about 50-60 percent meat when dressed and is not as easy to preserve as pork (Tomhave 1925:275).

Carson (1985:2) suggests that sheep (*Ovis aries*) were never very popular in America because people quickly acquired the taste for deer. Mutton was a minor food source during the eighteenth century and its popularity declined further in the nineteenth century (Hilliard 1972:141-144). Sheep was, however, a source of wool for clothing, mostly for use in the home (Hilliard 1972:141-142).

Wild Mammals

Several wild mammals, probably used for food, were identified in the faunal collection. These include deer (*Oldocoileus virginianus*), raccoon (*Procyon lotor*), and gray squirrel (*Sciurus carolinensis*). All 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 prefer bottomland forests along marshes, streams and rivers as well as agricultural and wooded urban sites (Choate et al. 1994). The gray squirrel prefers hardwood forest but have adapted to mixed forests, city parks, and urban areas (Choate et al. 1994).

Commensal Species

Commensal species include animals found near or around human habitations but are not generally consumed by humans. These animals include pets, pest, vermin and animals that feed on them. Canis species, snakes, amphibians, rats and mice are common examples of commensal species. The only canis species identified in the collection was the domestic dog (*Canis lupus familiaris*). Rodents made up the majority of the commensal species identified in the collection. Rodent species generally prefer forested areas which can provide protection from the elements but rodent species have adapted well to other habitats including forest edge, disturbed landscapes, clearings, and overgrown clearings (Choate et al. 1994).

Domestic Birds

The only domestic bird species identified in the faunal collection was chicken (*Gallus gallus*). Chicken, like pigs, are relatively easy to keep since they can be confined to a pen or raised free-range. Chickens, in addition to animal protein, no doubt provided eggs for food and the feathers could have been used in furnishings (Hilliard 1972: 46-67).

Results

The Site

Table 10 provides a summary of the bone total, weight total, and weight and bone percentages for the faunal sample. A total of 674 bones were present weighing 1103.47 grams. Most of the identified bone was mammal which represented 90.78 percent of the bone weight and 62 percent of the total bones identified. Mammal was dominated by pig, 39.73 percent of bone weight, and cattle, 11.7 percent of total bone weight. Sheep and deer followed with 1.10 and 1.04 percent of the bone weight respectively. Miscellaneous unidentified bone made up 8.11 percent of the total weight and 31.01 percent of the total bones. These consisted primarily of very small bone fragments which could not be identified to class but are more than likely mammal. Chicken, unidentified bird, fish, and turtle followed in class representation.

Bone modifications were few, with only 58 bones (8.6 percent of the total) recoded with modifications or fractures. Most of the bones (36 bones or 62.1 percent of those modified) were sawed indicating that meat was probably available from a nearby butcher. Interestingly, pig teeth were identified suggesting that some pigs were probably raised and butchered on-site. Most of the burned bones were white and calcined indicating long exposures to high temperatures. Four bones had rodent gnaw marks suggesting bones may not have been covered soon after discard.

Parcels 8 and 9

Table 11 and Table 12 show the number of bones, weight, and percentage of number and weight for the faunal samples associated with Parcels 8 and 9. In all cases large mammal, mostly domestic, dominate the different levels. To better understand changes in faunal use from the Fort Recovery time period through the 21st century, the weight percentages of animal categories are compared for levels in Parcels 8 and levels in Parcel 9 (Figure 125 and Figure 126). Unfortunately the number of bones identified to the animal groups (domestic mammal, wild mammal, domestic bird, wild bird, reptile, fish, and commensal) for each stratum for both parcels are too small for this study to be particularly useful. Any patterns observed are highly biased by the small sample size and the results should be considered preliminary at best.

Table 11: Bone number, weight, and weight and bone percentages for Parcel 8 materials at Fort Recovery.

Stratum 1 - 20th-21st century

Species	*Genius, Species*	Number of Bones	Weight gms	Percentage Bone	Percentage Weight
Mammals					
Pig	*Sus Scrofa*	8	36.13	4.65	21.89
Deer	*Odocoileus virginianus*	1	2.06	0.58	1.25
Rat	*Rattus sp.*	1	0.24	0.58	0.15
Unidentified Large Mammal		33	64.73	19.19	39.21
Unidentified Small Mammal		1	0.46	0.58	0.28
Unidentified Mammal		83	51.12	48.26	30.97
Aves					

Chicken	*Gallus gallus*	1	0.91	0.58	0.55
Unid Bird		9	1.44	5.23	0.87
Pisces					
Unid Fish		1	0.14	0.58	0.08
Miscellaneous Unidentified		34	7.85	19.77	4.75
Total		172	165.08	100	100.00
Burned Bone		3	0.49	1.74	0.30
Unburned bone		169	164.59	98.26	99.70

Stratum 2 - 19th-20th century

Species	***Genius, Species***	**Number of Bones**	**Weight gms**	**Percentage Bone**	**Percentage Weight**
Mammals					
Cattle	*Bos taurus*	1	11.23	1.39	11.80
Pig	*Sus Scrofa*	8	39.65	11.11	41.67
Unidentified Large Mammal		6	6.44	8.33	6.77
Unidentified Small Mammal		3	14.03	4.17	14.74
Unidentified Mammal		19	15.02	26.39	15.78
Aves					
Unid Bird		6	2.69	8.33	2.83
Pisces					
Unid Fish		1	0.17	1.39	0.18
Miscellaneous Unidentified		28	5.93	38.89	6.23
Total		72	95.16	100	100.00
Burned Bone		0	0	0	0.00
Unburned bone		72	95.16	100	100.00

Stratum 3 - 1800s to Present

Species	***Genius, Species***	**Number of Bones**	**Weight gms**	**Percentage Bone**	**Percentage Weight**
Mammals					
Cattle	*Bos taurus*	1	10.51	2.08	8.93
Pig	*Sus Scrofa*	4	52.47	8.33	44.60
Gray Squirrel	*Sciurus carolinensis*	2	0.55	4.17	0.47
Unid Rodent		1	0.06	2.08	0.05
Unidentified Large Mammal		6	25.06	12.5	21.30
Unidentified Small Mammal		1	0.37	2.08	0.31
Unidentified Mammal		2	1.28	4.17	1.09
Aves					
Chicken	*Gallus gallus*	1	1.42	2.08	1.21
Unid Bird		2	0.45	4.17	0.38
Pisces					
Unid Fish		1	0.09	2.08	0.08
Miscellaneous Unidentified		27	25.39	56.25	21.58
Total		48	117.65	99.99	100.00
Burned Bone		1	0.28	2.08	0.24

Unburned bone		47	117.37	97.92	99.76

Stratum 4 - Fort Recovery Period to 1850s

Species	***Genius, Species***	**Number of Bones**	**Weight gms**	**Percentage Bone**	**Percentage Weight**
Mammals					
Cattle	*Bos taurus*	1	9.6	2.7	7.76
Pig	*Sus Scrofa*	11	64.04	29.73	51.74
Deer	*Odocoileus virginianus*	2	7.76	5.41	6.27
Unidentified Large Mammal		1	17.61	2.7	14.23
Unidentified Mammal		5	1.77	13.51	1.43
Aves					
Unid Bird		1	0.21	2.7	0.17
Miscellaneous Unidentified		16	22.79	43.24	18.40
Total		37	123.78	99.99	100.00
Burned Bone		0	0	0	0.00
Unburned bone		37	123.78	100	100.00

Table 12: Bone number, weight, and weight and bone percentages for Parcel 9 materials at Fort Recovery.

Stratum 1- 20th century

Species	***Genius, Species***	**Number of Bones**	**Weight gms**	**Percentage Bone**	**Percentage Weight**
Mammals					
Pig	*Sus Scrofa*	1	0.98	3.45	2.76
Unidentified Large Mammal		9	28.23	31.03	79.36
Unidentified Mammal		13	5.53	44.83	15.55
Miscellaneous Unidentified		6	0.83	20.69	2.33
Total		29	35.57	100	100.00
Burned Bone		3	2.98	10.34	2.81
Unburned bone		26	32.59	89.36	97.19

Stratum 2 - 19th Century to Modern

Species	***Genius, Species***	**Number of Bones**	**Weight gms**	**Percentage Bone**	**Percentage Weight**
Mammals					
Pig	*Sus Scrofa*	4	20.09	7.14	49.85
Rat	*Rattus sp.*	1	0.22	1.79	0.55
Unidentified Large Mammal		9	8.69	16.07	21.56
Unidentified Mammal		22	8.84	39.29	21.94
Aves					
Chicken	*Gallus gallus*	1	0.18	1.79	0.45
Unid Bird		5	0.67	8.93	1.66

Miscellaneous Unidentified	14	1.61	25	3.99
Total	56	40.3	100.01	100.00
Burned Bone	0	0	0	0.00
Unburned bone	56	40.3	100	100.00

Stratum 3 - 19th and 20th century

Species	***Genius, Species***	**Number of Bones**	**Weight gms**	**Percentage Bone**	**Percentage Weight**
Unidentified Large Mammal		8	8.39	44.44	50.27
Aves					
Chicken	*Gallus gallus*				
Unid Bird		2	0.55	11.11	3.30
Pisces					
Unid Fish		1	0.21	5.56	1.26
Miscellaneous Unidentified		7	7.54	38.89	45.18
Total		18	16.69	100	100.01
Burned Bone		0	0	0	0.00
Unburned bone		18	16.69	100	100.00

Stratum 4 - 19th Century

Species	***Genius, Species***	**Number of Bones**	**Weight gms**	**Percentage Bone**	**Percentage Weight**
Mammals					
Cattle	*Bos taurus*	2	23.22	2.99	21.15
Pig	*Sus Scrofa*	5	57.38	7.46	52.28
Gray Squirrel	*Sciurus carolinensis*	1	0.18	1.49	0.16
Unid Rodent		2	0.27	2.99	0.25
Unidentified Large Mammal		18	20.1	26.87	18.31
Unidentified Mammal		26	6.52	38.81	5.94
Aves					
Unid Bird		1	0.07	1.49	0.06
Miscellaneous Unidentified		12	2.03	17.91	1.85
Total		67	109.77	100.01	100.00
Burned Bone		1	0.3	1.49	0.27
Unburned bone		66	109.47	98.51	99.73

Figure 125 compares the animal categories for the temporal periods identified for Parcel 8. Only remains identified to one of the seven animal categories are included. Stratum 1 was dated to the 20th-21st century; Stratum 2 dated to the 19th-20th century; Stratum 3 date to the 1800s to present; and Stratum 4 to the Fort Recovery Period and first half of 1800. "n" is the number of bones actually identified to category. Clearly domestic mammal dominates the faunal categories in all four time periods. Of particular interest is the Fort Recovery period represented by Stratum 4. In this level, wild mammal is represented more than in any other period. One interpretation is that while domestic

animals such as pig and cattle were available during the early occupation of the area, wild mammal was hunted to supplement the diet. Through time, as the area becomes more urban, the percentage of wild mammal deceases in its representation and possible use.

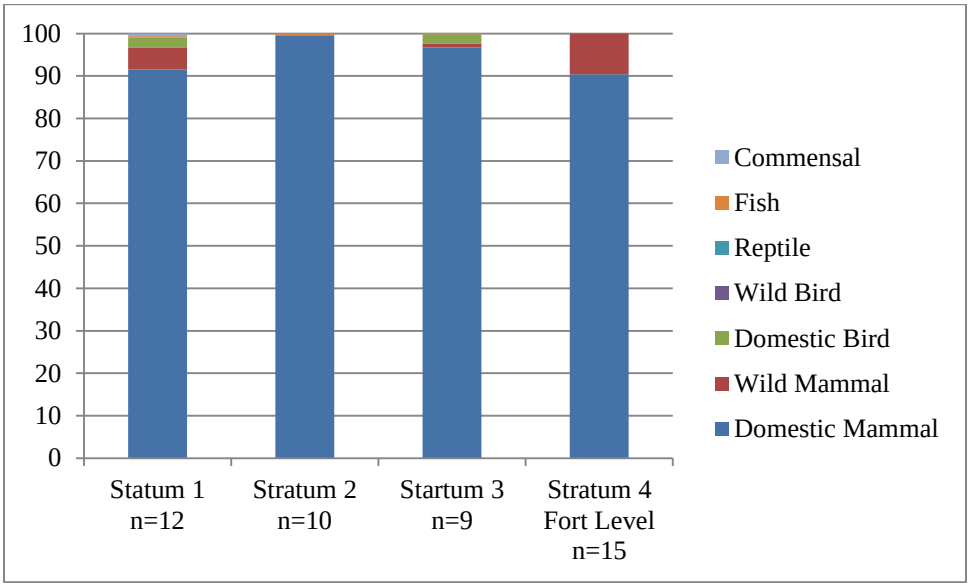

Figure 125: Percentage of weight for each faunal category for Parcel 8.

Figure 126 compares the animal categories for the temporal periods identified for Parcel 9. Only remains identified to one of the seven animal categories are included. Stratum 1 is dated to the 20th century; Stratum 2 to the19th century to Modern; Stratum 3 is dated to the 19th and 20th century; and Stratum 4 to the 19th century. "n" is the number of bones actually identified to category. For Parcel 9 domestic mammals again seem to dominate except in Stratum 3 where none were identified. It should be mentioned that eight large mammal bones (representing over 50 percent of the total animal weight in the stratum) are present in the Stratum 3 sample, but none could be identified as either wild or domestic species.

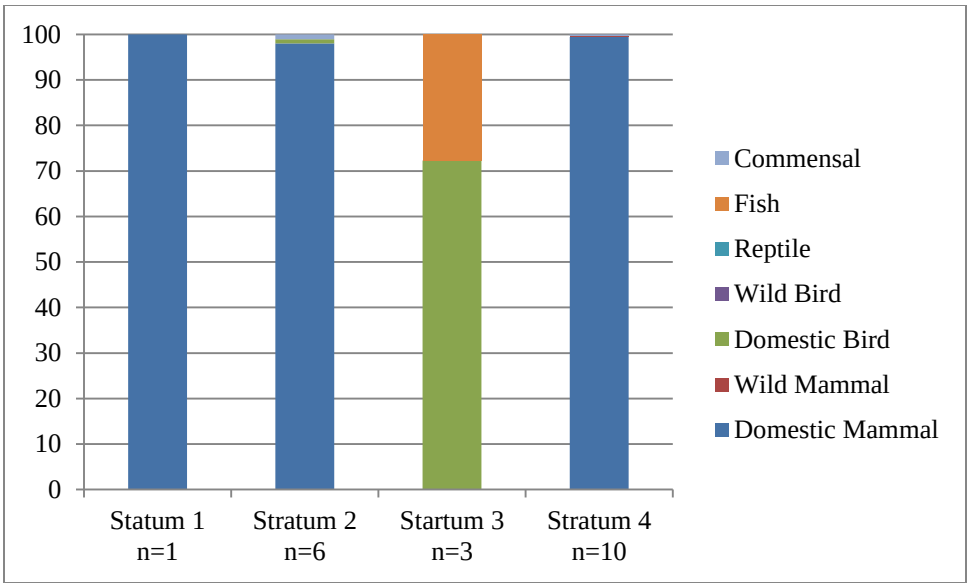

Figure 126: Percentage of weight for each faunal category for Parcel 9, Unit 1.

When bone modifications are considered for Parcel 8 (Table 13), sawed bone dominates the sample. Interestingly, no sawed bone is associated with Fort Recovery occupation in Stratum 4. This suggest that the inhabitants of the fort and early settlers in the area may had free-ranging pigs and cattle at their disposal and meat processed through butcher shops became available later in the second half of the 19th century.

Table 13: Bone modifications for Parcel 8 (S represents Stratum and follows the number of bones modified for the level.

Species/Group	Gnaw	Fractures	Saw	Burn
Mammals				
Cattle	-	-	1 S3	-
Pig	2 S1, 1 S4	-	5 S1, 1 S2, 1 S3	-
Sheep	-	-	1 S2, 1 S3	-
Dog	1 S1	-	-	-
Unidentified Large Mammal	-	-	6 S1,	-
Unidentified Mammal	-	-	2 S1	-
Aves	-	-	-	-
Unidentified Bird	-	-	1 S1	-
Miscellaneous Unidentified	-	-	1 S3	3 White S1, 1 White S3
Total	**4**	**0**	**20**	**4**

Reitz and Wing (1999) maintain that in circumstances where an animal has been butchered on-site, an expected number of elements for body regions should be present. To examine this question, the percentage of cranial, rib, vertebra, fore quarter, hind

quarter, and feet elements were calculated for each of the levels. If pigs are being raised and butchered on-site, all of these element regions would be expected to be present in the sample. Figure 127 compares the percentage of element regions among the four strata. The Fort Recovery occupation, Stratum 4, has more element regions represented than any other level. Unfortunately these percentages are based on a small sample of pig elements, but the comparisons do imply that pigs were raised rather than the meat purchased from butcher stores. There were not enough bones present to replicate this method for cattle.

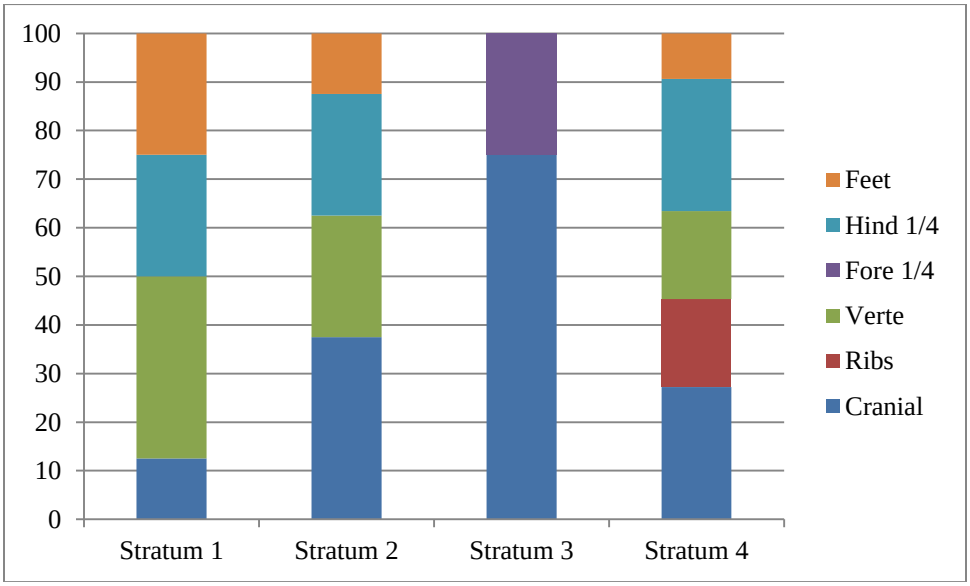

Figure 127: Comparisons of pig bone element regions identified in the Parcel 8 strata.

Sawed and burned bone dominates the Parcel 9 sample (Table 14). The relatively large number of sawed bones in the later dating samples again suggests meat markets may have been present as the town became more populated.

Table 14: Bone modifications for Parcel 9 (S represents Stratum and follows the number of bones modified for the level.

Species/Group	Gnaw	Fractures	Saw	Burn
Mammals				
Pig	-	-	1 S4	-
Unidentified Large Mammal	-	-	1 S1, 3 S2, 1 S4	-
Unidentified Small Mammal	-	-	-	3 White S1, 1 Gray S4
Total	**0**	**0**	**6**	**4**

Conclusion

Based on this analysis, domestic animals appear to dominate the animal diet with supplementary meat provided by some wild mammals, especially during the occupation

of Fort Recovery and the decades that followed. During the Fort Recovery period, it is possible that pigs were raised and butchered at the site. Through time and as the population increased in the area, the presence of meat markets replaced the need to raise pork. Grayson has documented that for faunal collections, smaller samples are more likely to be biased than larger samples from a site (Grayson 1984). According to several scholars, archeological faunal collections should contain at least 200 individuals (MNI) or 1,400 identifiable bones (NISP number of identified specimens to species) to provide reliable interpretations (Grayson 1973, 1984; Wing and Brown 1979). A sample size of 674 bones representing multiple areas and levels at the Fort Recovery site are not nearly enough to make sound judgments and any interpretations presented in this study should be considered preliminary at best. Future research related to faunal use at the site must include a larger, more representative sample, focus on specific activity areas, and integrate more precise temporal controls.

Battle / Fort Reconstruction and GIS Data Modeling

By Deb Hollon

The main differences between the landscape of 1791 and that of 1794 are the construction of Fort Recovery and the clearing of trees to a distance of 200 to 250 yards around the fort. The fort was constructed on the east side of the Wabash River on part of the high ground occupied by St. Clair in 1791. The location of the camp of the Northwest Indian Confederacy is not known.

The use of a geographic information system (GIS) allows for a comparison of data and for modeling the various elements of the battle and its combatants. All GIS work in this analysis was conducted with ESRI's ArcGIS 10. Details of the parameters for each function used are listed in Appendix F.

Spatial Analysis of Artifact Data

As noted in Chapter 4 concerning the Battle of the Wabash, artifacts were found by individual collectors, the Ball State University field school, and the ABPP project crew were scattered over an area encompassing over 110 acres (Figure 128). The fact that two battles took place on the same area in such a short time frame makes it difficult to determine which artifacts are associated with which battle. Spatial analyses using a GIS may assist in making such a determination. For example, the stacked musket balls discussed earlier in connection with the 1791 battle were found approximately 200 yards north of the possible fort location. This would have been well within the area which had been cleared of trees by the fort's commander and so would not have been a likely spot to have neatly placed several musket balls. The location of this find would seem to indicate that the musket balls were from the earlier Battle of the Wabash.

Other artifacts found by collectors which were discussed in relation to the 1791 battle could, alternatively, be related to the 1794 battle (Figure 129). The shell fragment was found approximately 600 yards to the west-northwest from the possible fort location.

The round shot found in Buck Run was approximately 255 yards to the west-southwest of the fort. Finally, the tomahawk was found approximately 600 yards to the southwest of the fort. These items will be discussed in greater detail below.

Metal detector surveys discovered multiple artifacts possibly from the time period of the two battles (Figure 130). Unspent lead shot was found approximately 120 yards northwest of the possible fort location. Lead fragments, unspent lead shot, a buckle, a long bolt, a possible ladle for making shot, and a possible bayonet piece were discovered west of the fort. These items range from approximately 650 to 800 yards west of the northwest corner of the possible fort location. Most are in a relative line at 15 to 30 yard intervals with the farthest west artifact being approximately 60 yards beyond the main cluster. As with the collector artifacts, these items will be discussed further in later sections.

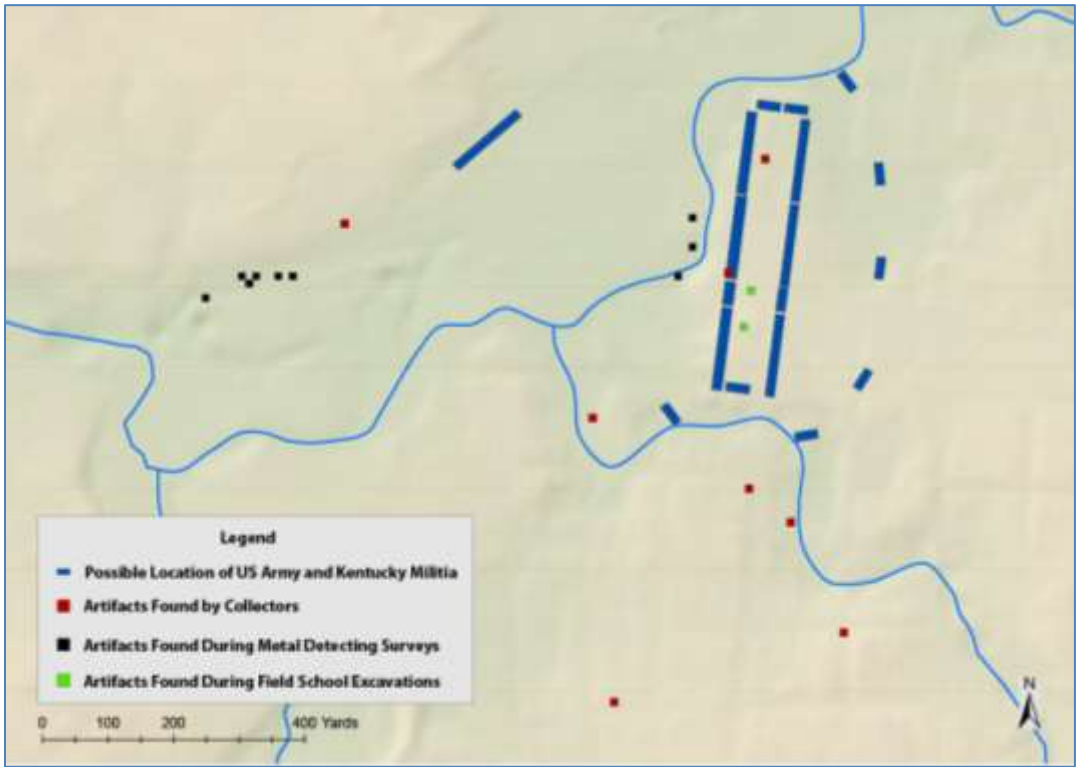

Figure 128: Artifacts found in study area.

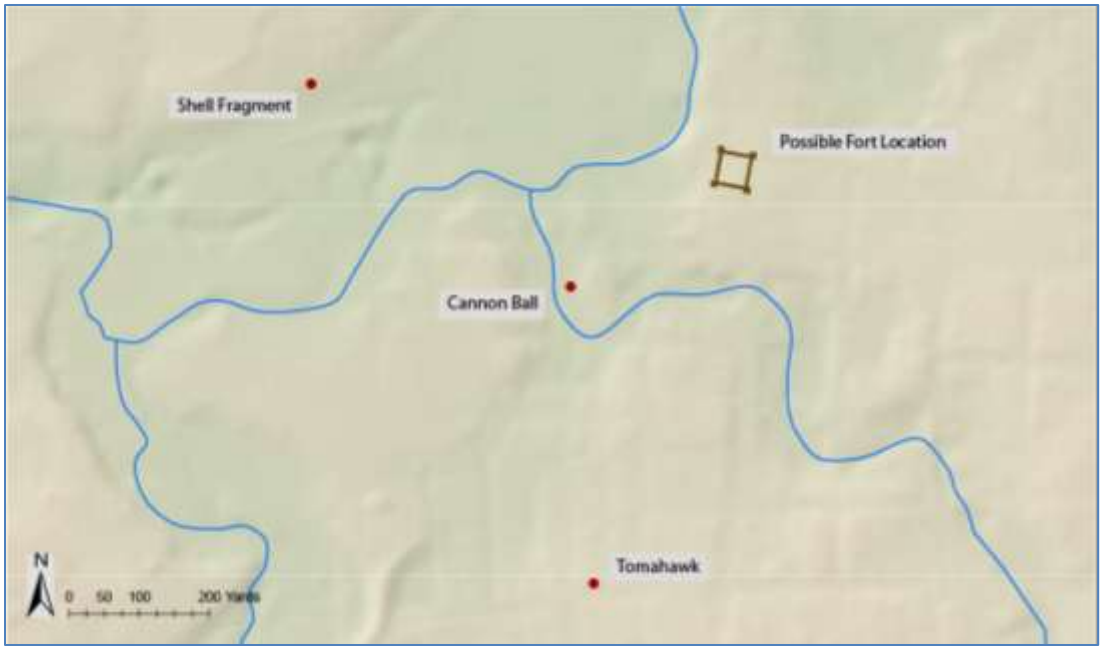

Figure 129: Location of collector found shell fragment, round shot and tomahawk.

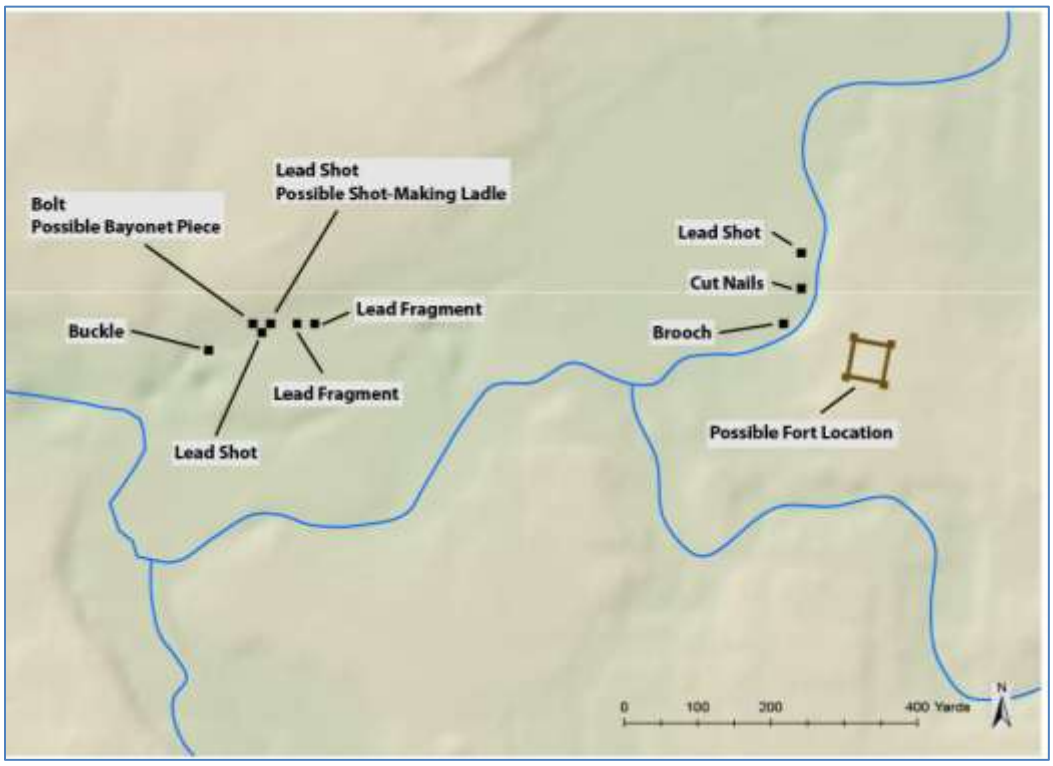

Figure 130: Battle era artifacts found during metal detector survey.

The size and exact location of Fort Recovery have not been determined. Various sources have stated the size of the fort to be 150 x 350 Feet (Nelson, 1992), 120 x 120 feet (Davidson, 2010), and 150 x 150 feet. There have been suggestions of documents which would indicate that the Greenville Treaty Line ran along one wall of the fort, however research of maps at the county courthouse and investigation of Israel Ludlow's Greeenville Treaty Line survey notes at the state archives did not substantiate any of these claims. Using the wall trench excavated by the field school as a base for the north wall of the fort, several versions in different sizes were created for use in the GIS analyses (Figure 131, Figure 132, and Figure 133).

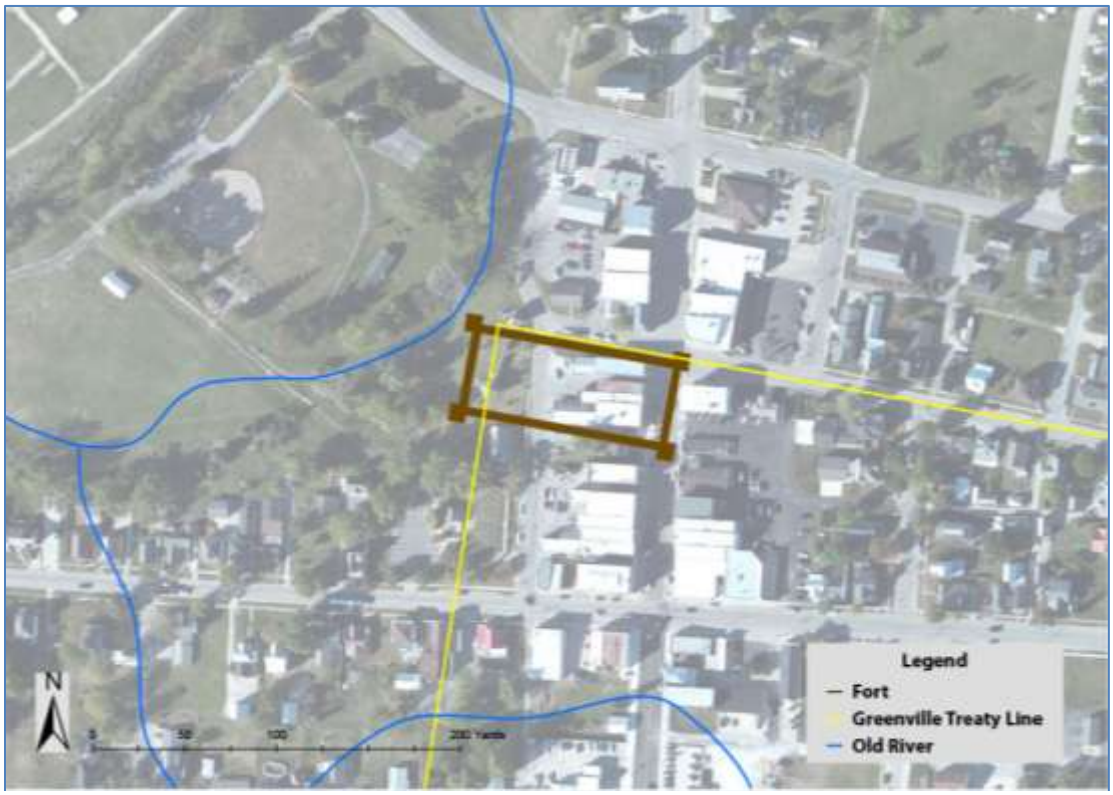

Figure 131: GIS Model of 150 x 350 feet fort on modern Fort Recovery landscape.

Figure 132: GIS Model of 120 x 120 feet fort on modern Fort Recovery landscape.

Figure 133: GIS Model of 150 x 150 feet fort on modern Fort Recovery landscape.

Additional Analysis of Terrain Using KOCOA Methodology

Key Terrain

As in the Battle of the Wabash, the key terrain at the Battle of Fort Recovery was a piece of high, cleared ground along the eastern bank of the Wabash River. The fort had been built on the site of the earlier battle. Unlike the 1791 battle, however, the river itself and the steep banks along it did not come into play in the later action. The initial attack began along the road to the southeast and, as a result, the terrain to the west of the fort was not a factor.

Observation and Field of Fire

As with the earlier battle, the ability of the individuals in the fort to see the gathering warriors of the Northwest Indian Confederacy played a significant part in the beginning stages of the Battle of Fort Recovery. Figure 134 shows the areas visible to those in the fort: the regions in color are visible; the regions in gray are not visible. It should be noted that this analysis is based solely on elevation and does not include information concerning ground cover. This was a highly wooded area which would have decreased visibility.

Weaponry at the Battle of Fort Recovery was very similar to that of the Battle of the Wabash three years earlier – Charleville and Brown Bess muskets, rifles, and six- and three-pounder cannon. In addition, Wayne's troops had brought howitzers on the campaign. The field of fire for each individual weapon was constructed using a viewshed analysis. Figure 135 reflect the fields of fire for the Charleville musket, rifle, and six-pounder shooting canister shot from the fort. The lack of tree cover for the Confederacy in the second battle would have greatly impacted the outcome.

Metal detector surveys in Parcel 6 (Fort Site Park) uncovered lead shot as well as positive readings in several trees. Figure 136 compares the locations of the trees (red dots) to the effective ranges of the Charleville musket (light gray), rifle (medium gray), and six-pounder gun firing canister shot (black). Based on their relative locations, all three trees are outside of the effective range for both the cannon and the musket. If the metal in the trees is from the time of the battle, it seems most likely that it would be rifle shot. It should also be noted, however, that those trees would have been well within the 200-250 yards which historical accounts state was cleared by Capt. Gibson shortly after the fort was constructed.

As noted above, the collector artifacts include a shell fragment and solid round shot. The shell fragment was found approximately 600 yards to the west-northwest of the fort. When the cannon field of fire is adjusted to account for the range of a six-pounder firing explosive shell, the location of the shell fragment falls well within the calculated field of fire (Figure 137). The shell fragment's location in relation to the guns as stated in the historical accounts and sketches of the camp would seem to indicate that the fragment was placed at its location during one of the two battles.

The round shot found by a collector in Buck Run's gully and discussed in association with the 1791 battle might possibly have been fired from the fort. The same six- and three-pounder guns were at both battles. However, the angle of a cannon being fired from the blockhouses would not have placed a cannonball in the location in which it was found. Figure 138 shows that round shot fired from the fort would have landed farther to the southeast.

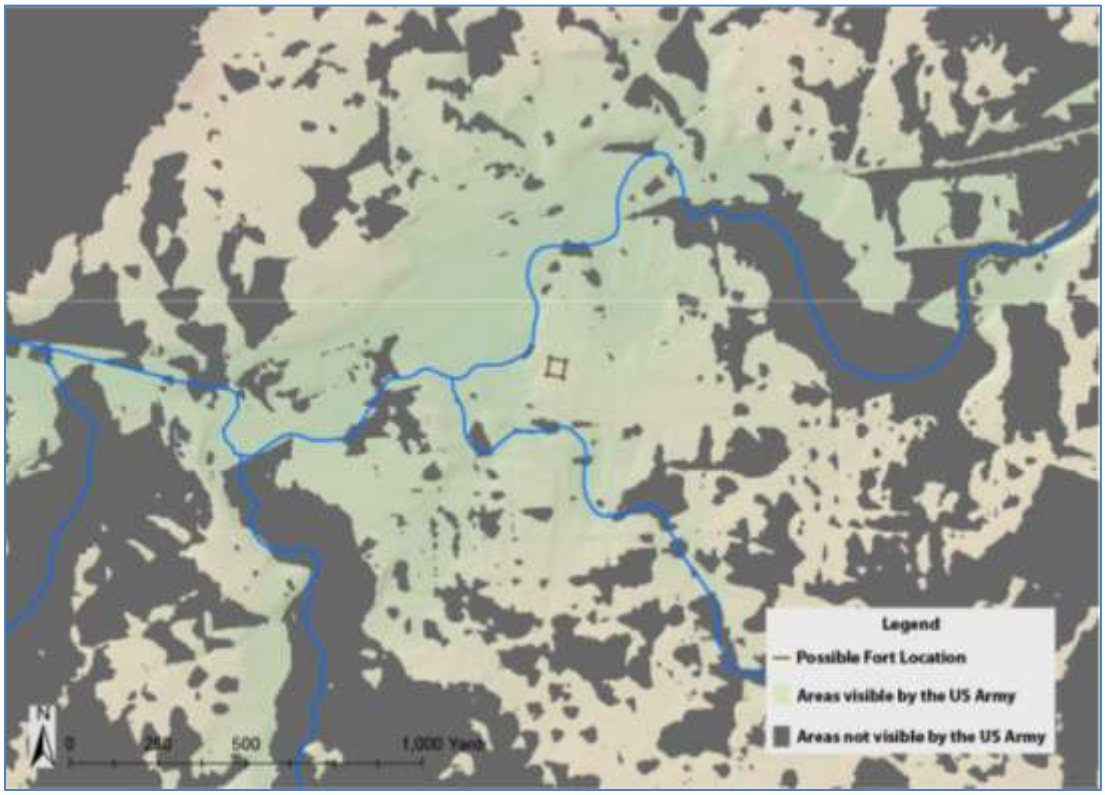

Figure 134: Visibility from Fort Recovery.

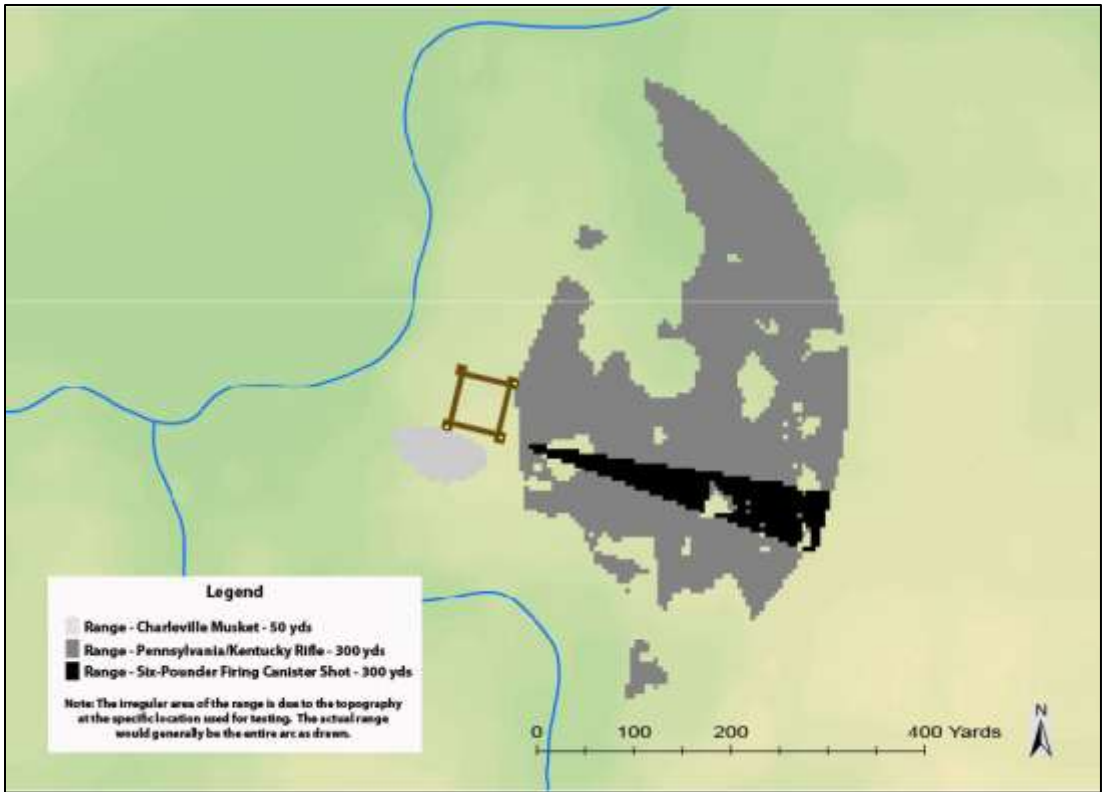

Figure 135: Field of fire for weapons fired from the fort.

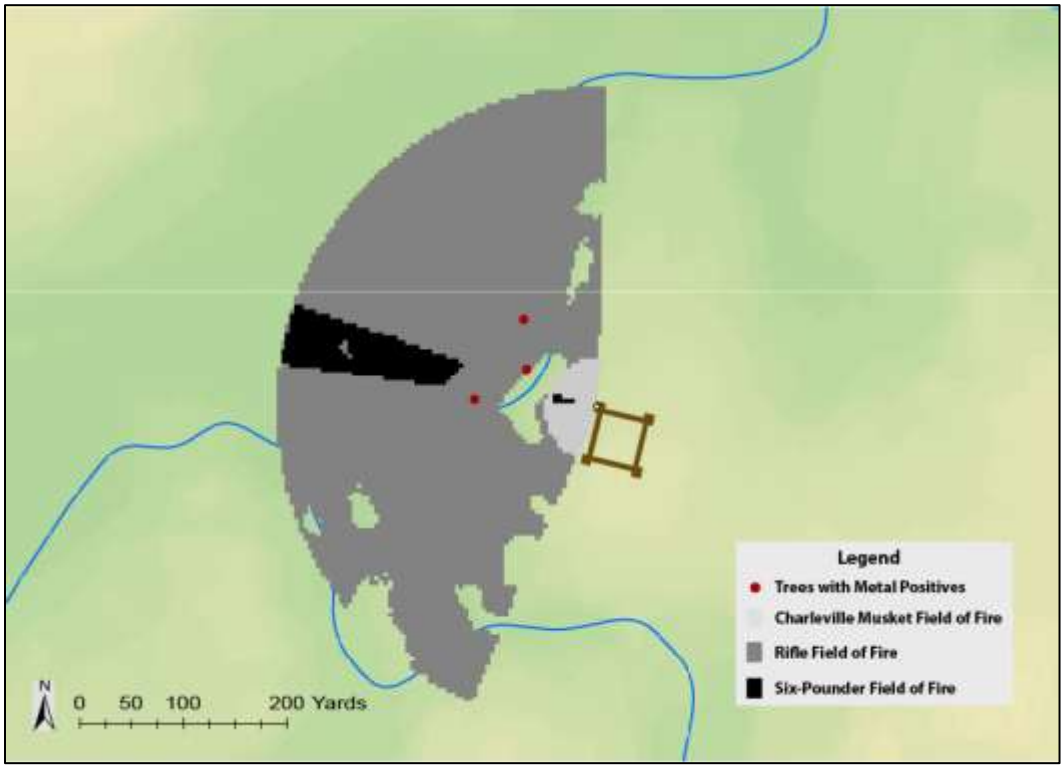

Figure 136: Locations of trees with positive metal detector readings.

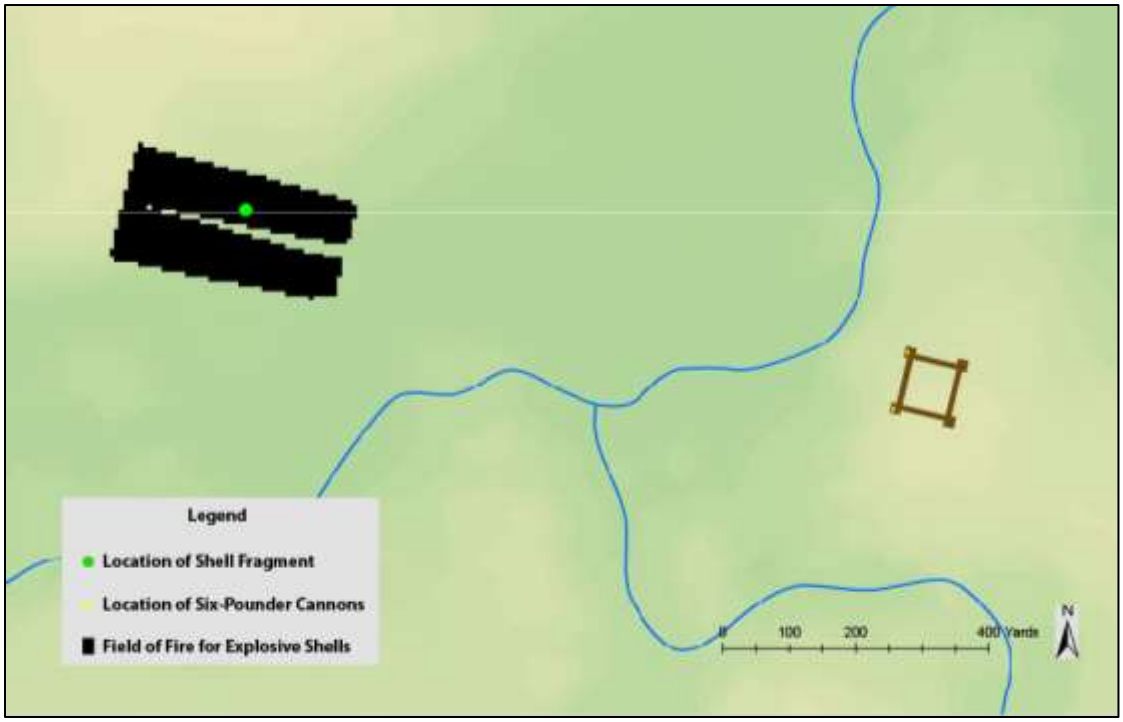

Figure 137: Field of fire for explosive shell fired from the fort.

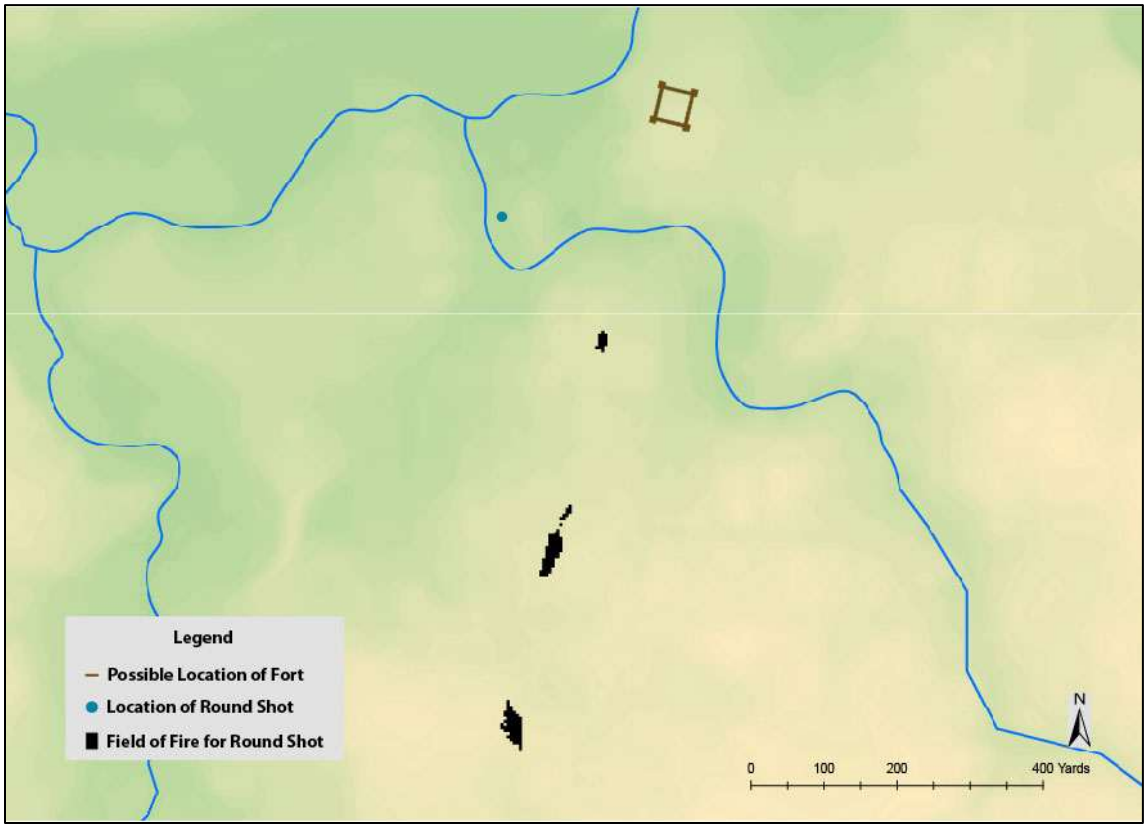

Figure 138: Field of fire for round shot fired from the fort.

Cover and Concealment

During the first stage of the battle, trees along the sides of the road served to conceal the attacking forces of the Confederacy. The convoy travelling along the road was not aware of their presence until ambushed. That advantage disappeared, however, during the second stage of the battle. The trees surrounding the fort up to 200 to 250 yards had been cleared away on the commander's orders (Nelson 1992; Starkey 1998). This greatly reduced the ability of the Confederacy warriors to conceal themselves as they attacked the fort.

One large difference for the U.S. Army in the second battle was the existence of the fort. The army was able to retreat into the fort where the walls provided cover from the gunfire of the Confederacy. This advantage probably dictated the difference in the outcome of the battle than that of the Battle of the Wabash.

Artifacts found by collectors as well as during the metal detector surveys were in locations well away from the fort. The tomahawk found by a collector was approximately 600 yards to the southwest of the fort. Artifacts including lead shot and a possible ladle for making shot were found approximately 650 to 800 yards west of the northwest corner of the possible fort location. These items were found in areas which would have been visible from the fort (Figure 139). This model, however, is based strictly on the terrain and does not account for the wooded conditions in the area.

Historical accounts describe the battle as beginning along St. Clair's Trace to the southeast of the fort. However, the Battle of Fort Recovery lasted two days. During the night between, the members of the Confederacy wouldn't have been concerned so much with concealing their camps as staying out of range of the firearms in the fort. These locations are within the effective range of only explosive shell and even that is only possible if the cannon were levered around to another angle. It is possible that the tomahawk and artifacts found during the metal detector survey could be evidence of Northwest Indian Confederacy camps the night of 30 June 1794.

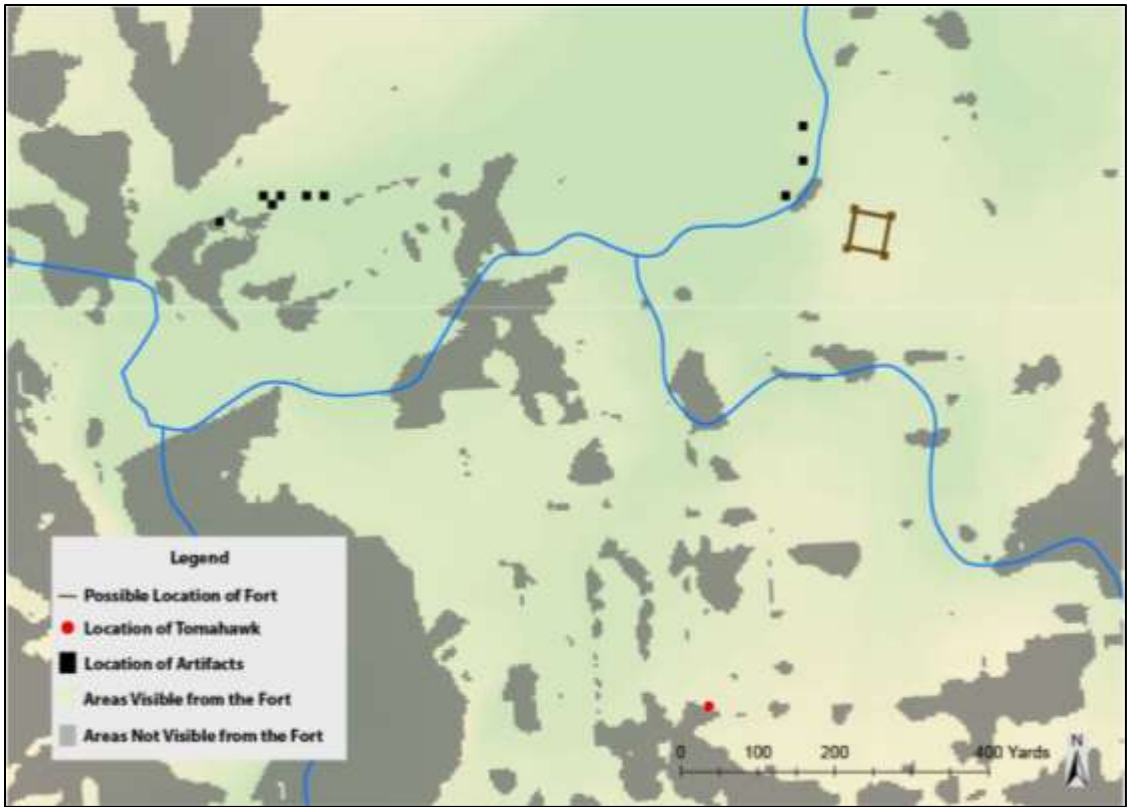

Figure 139: Locations of tomahawk and artifacts found by metal detecting survey.

Obstacles

The terrain of the battlefield and the surrounding area impeded the movement of the two armies at different levels. For the Northwest Indian Confederacy, the terrain was generally unrestricted and presented no barriers to movement. For the convoy and fort garrison, the vegetation severely restricted and presented a significant obstacle to movement during the initial stages of the battle. The dense woods on either side of the road channeled their retreat toward the fort. As noted above, the Wabash River and the sides of its ravine did not factor into the Battle of Fort Recovery.

For the Northwest Indian Confederacy, the terrain during the Battle of Fort Recovery was complex. The existing obstacles of the natural terrain were generally unrestricted and presented no barriers to movement. However, one new reinforcing obstacle inhibiting the actions of the Confederacy in the second battle was the fort itself. The warriors of the Confederacy could not effectively fire on the U.S. Army nor could they attack them in hand-to-hand combat as they had two-and-a-half years earlier.

Avenues of Approach and Retreat

The convoy moved southward along St Clair's Trace the morning of 30 June 1794 as it left Fort Recovery to return to Fort Washington. After the attack, that same road served as an avenue of retreat for the convoy back to the fort (Figure 140). As noted above, that avenue of retreat was limited to the road due to the dense woods on either

side. The approach of the Northwest Indian Confederacy to the point of the ambush is unknown because the location of their camp the night before is not known.

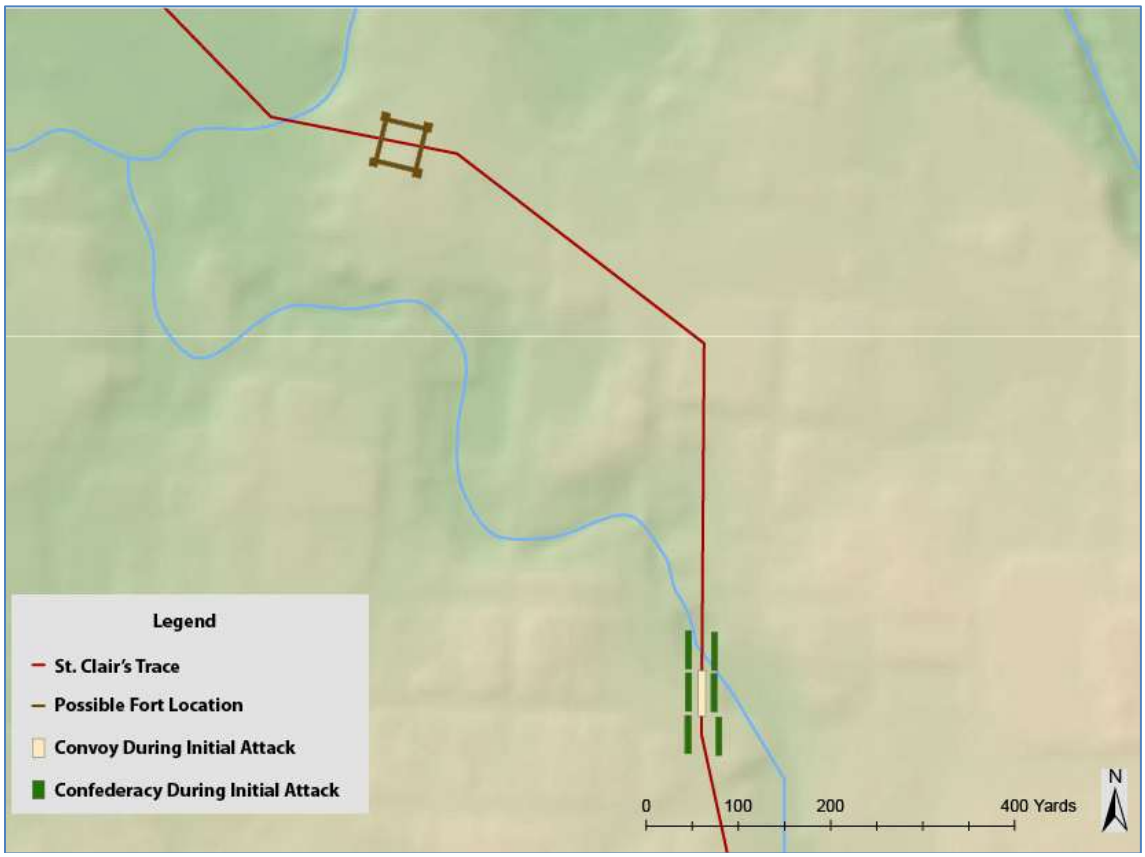

Figure 140: Avenue of approach and retreat for the Army and convoy.

Identification of Battlefield Boundaries – Battle of Fort Recovery

Based on individual accounts of the two battles and contemporary sketches of the camp, the original research design for this investigation identified a 97 acre core area for the two battles. Archeological investigations and GIS modeling indicate that the battlefield boundary should be extended to encompass an area totaling approximately 650 acres (Figure 141). Enlarging the boundary of the battlefield area allows for the inclusion of the artifacts found during metal detector surveys, areas of interest based on gradiometer data, and the possible location where the convoy was attacked.

Future research should investigate all of these factors in an effort to gain a more complete view of the Battle of Fort Recovery. Research on the expanded battlefield area could include investigation of unsubstantiated reports of battle era artifacts found by collectors northwest of the 97 acre core area but within the expanded battlefield area. Several informants told about artifacts found in these expanded areas, but these findings were not confirmed during this study. Limited excavation of the area west of the original battlefield boundaries where multiple battle era artifacts were found could also provide

clues to the function of that location and the surrounding landscape during the battle. The expanded battlefield area encompasses a much larger and more realistic view of the area surrounding the fort – archeological investigations in this expanded area could provide much missing information on the movements of the Confederacy the night of 30 June. The results of these future investigations of the expanded battlefield area could provide a more historically accurate picture of the Battle of Fort Recovery, especially from the Native American perspective.

Based on the results of the GIS data modeling the KOCOA analysis for the Battle of Fort Recovery has been updated as shown in Table 15.

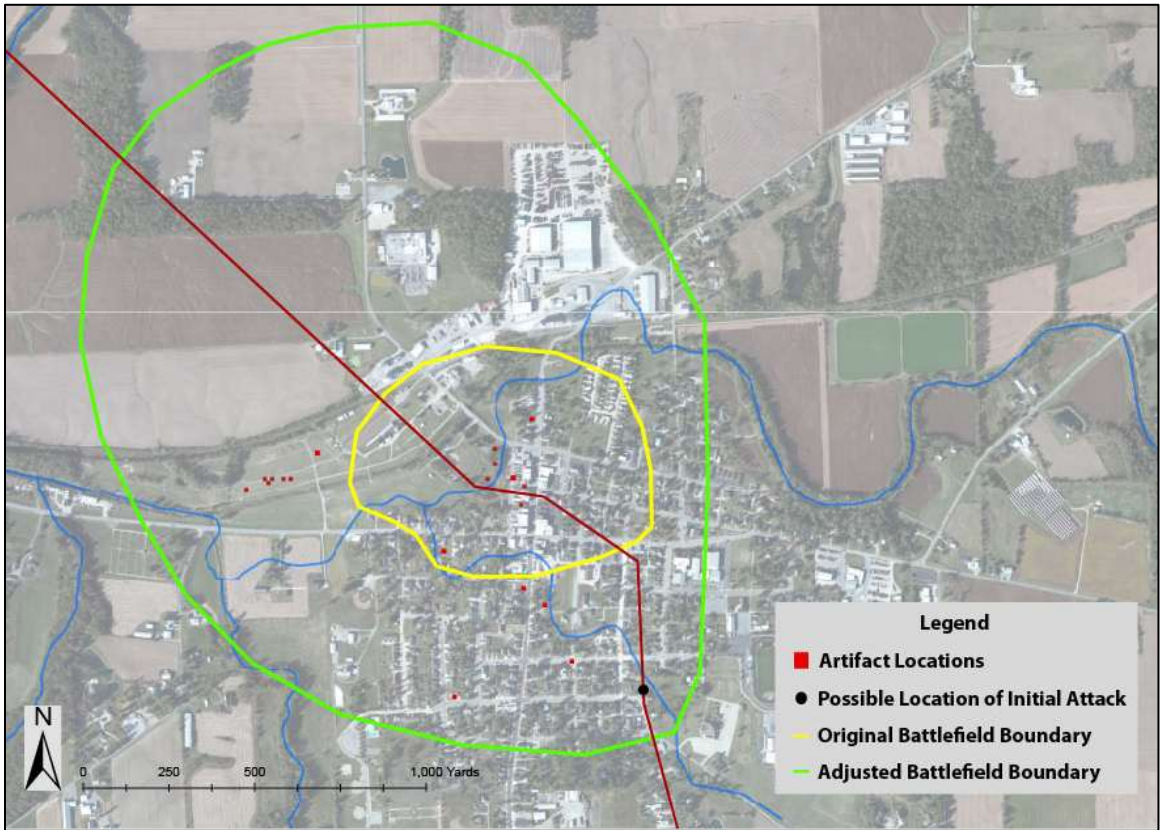

Figure 141: Adjusted battlefield boundaries - Battle of Fort Recovery 1794.

Table 15: Updated KOCOA Analysis - Battle of Fort Recovery, 1794.
Key Defining Features updated based on GIS Model Data
(updates in *bold italics*)

Terrain and Topographic Features					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Unknown piece of ground	400 yards from Fort Recovery	Where convoy camped the night before the battle	Unknown current location	Key Terrain	Setting
Unknown piece of ground	½ mile south of Fort Recovery	Where convoy was attacked	Unknown current location	Key Terrain	Setting
Level high ground on bank of Wabash River	***Possible site of Fort Recovery – southwest side of Wabash River***	***GIS visibility analysis depicts limited observation capabilities toward the southeast of the fort; allowed for surprise attack on the convoy***	***Approximate location of current for reconstruction***	***Key Terrain; Observation and Field of Fire***	***Location, Setting***
Terrain generally and effective range of weapons	***Throughout battlefield***	***Through GIS, determined terrain's impact on and artifact locations in relation to field of fire.***	***NA***	***Key Terrain; Observation and Field of Fire; Cover and Concealment***	***Location, Setting***
Road and Transportation Networks					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Road to the south (most likely St. Clair's Trace)	South of Fort Recovery	Convoy was traveling this road when they were attacked	If St. Clair's Trace, this is most likely the current location of SR 49	Avenue of Retreat (for solders)	Setting
Fortifications					
Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**
Fort Recovery	On Wabash River, at site of the Battle of the Wabash 1791	Indians attacked convoy that was delivering supplies to Fort Recovery and was camped just	Approximate location of current fort reconstruction	Obstacle (for Indians); Avenue of Retreat (for soldiers); Cover	Location, Setting, Association

		outside Fort Recovery; attacked soldiers fled to the fort		and Concealment (for solders)	

Key Defining Features compiled from Carter (1987), DeRegnaucourt (1996), Knapke (1990), Rohr and Meiring (1991), and Slocum (1910).

Chapter VI. Interpretations, Recommendations and Conclusions

By Christine Keller

Research Objectives

As stated in Chapter I, a specific set of questions guided this project. The results of these research objectives have been detailed in previous chapters and are summarized below. Although our archeological sample size was relatively small given the size of the battlefield, the GIS data model that was created using KOCOA and historical research is fully supported by the results of our archeology surveys and field excavations. This direct correlation between the archeology and the GIS data model provides great potential for future research and testing of the GIS data model.

What is the overall geographic extent of both battles?
As outlined in the GIS Data Modeling sections for the Battle of the Wabash (Chapter IV) and the Battle of Fort Recovery (Chapter V), it is recommended that the geographic extent for both battles be greatly extended. Specifically for the Battle of the Wabash, the geographic extent should be significantly expanded to include 630 acres encompassing the original 97 acre core battlefield. This expansion includes the entire Native American crescent formation staging area and the over 1,500 warriors' likely path at the start of the battle when surrounding St. Clair's army. This path was calculated based on least cost path analysis and visibility studies as part of the KOCOA analysis and GIS data modeling. Historical accounts often present the battle as starting when the Kentucky militia was attacked by the warriors and subsequently fled across the river and back into St. Clair's main encampment. By expanding the geographic extent of the battlefield, the area will incorporate the true start of the battle and also acknowledge the Native American tactics of using the landscape and terrain as part of their overall battle strategy.

Can the battles as recorded in historical documents be tied to surviving landforms, features and archeological remains?
As detailed in the GIS Data Modeling sections and the Updated KOCOA Analysis tables for the Battle of the Wabash (Chapter IV and Table 8) and the Battle of Fort Recovery (Chapter V and Table 15), many landforms still exist from the original battles. Although many individual areas of the battlefield are disturbed by modern day urbanization and development, most of the large-scale landforms and terrain remain intact. The "feel" of the battles are greatly enhanced by the use of KOCOA analysis and GIS data modeling. All battle era archeological remains and features were analyzed using the KOCOA method in context of these remaining landforms. Analysis and interpretation of landforms that have been altered (i.e. the rerouting of the Wabash) can often be interpolated based on KOCOA analysis and GIS data modeling results and historical documentation of the landscape alteration and disturbance.

How did the battles progress and can military movements, encampments, forts, and formations be identified that establish the modern battlefield boundaries and key elements?

The progression of the battles has been critically enhanced by the KOCOA analysis and GIS data modeling done in Chapter IV and V. Much has been written about the U.S. Army movements in the Battle of the Wabash in 1791 and the GIS data modeling based on the archeological results has confirmed many of this past analysis and historical documentation. The movements of Native American forces in the Battle of the Wabash especially benefited by the further analysis with GIS data modeling methods. By calculating the least cost and least visible paths based on the landscape and terrain (using KOCOA analysis), the likely path of the Native American crescent formation and their route to attack St. Clair's outposts can be visualized and further studied.

What artifacts and landscapes survive from the battles to assist in interpretation and preservation planning?
As detailed in Chapter IV and V, artifacts, features and landscapes do exist from both battles and greatly enhance the interpretation of the battles and future preservation planning efforts. Parcel 6, especially in the area of the current fort reconstruction, could still possibly contain features and undoubtedly artifacts from the battles. The trees that contained metal detector hits in Parcel 6 are especially interesting and could be part of future preservation planning efforts and signage. A hot spot of battle era artifacts was found in Parcel 7 slightly outside the original core battlefield area. It is unclear whether this area relates to the Kentucky militia or to the Native Americans. Gradiometer anomalies were also found in this same area but their interpretation is not clear without further study. As stated previously, an intact fort feature was found in Parcel 8 and along with the associated battle era artifacts should be a focus of future interpretation and preservation planning.

In addition to these focus areas in parcels 6, 8, and 9, large-scale landscapes and terrain still survive from the battlefield. The ridge of the Native American crescent formation can still be observed. The old Wabash River channel is still present and presents a much used visual aid in interpretation. Buck Run still partially runs through town and can be used to interpret portions of the battle. Although disturbed, the area of the Kentucky militia and St. Clair's encampment can be observed and visualized within the context of the Native American attack. These large-scale landscapes are now being used by the museum director as part of her interpretation and tours to museum visitors.

What was the location of the original fort, how did the fort's location affect the strategy of the Battle of Fort Recovery, and what is the integrity of the location of the current fort reconstruction?
The Ball State University field school found what was most likely a 17 foot palisade and trench wall that was part of the original Fort Recovery. The location of this palisade segment substantiates and corroborates historical documentation that discusses the general location of the stockade. This trench wall also aligns with the Greenville Treaty Line that was surveyed and marked after Fort Recovery was constructed. It is unclear at this point if the discovered segment represents the south wall or north wall of the fort. Additional research is needed to understand how the location of the fort affected strategy during the Battle of Fort Recovery. The location of the trench wall segment located in Parcel 8 does allow us to analyze the integrity of the location of the current fort

reconstruction. The location of current fort reconstruction most likely partially overlaps the original fort location. The original fort gate would undoubtedly have been farther to the east over current downtown properties with the back wall of the original fort most likely slightly to the west of the current reconstruction. If the palisade and trench wall found in Parcel 8 represents the north fort wall, then the fort reconstruction needs to be shifted only slightly to the south. However, if the palisade and trench wall actually represents the south wall, then the fort reconstruction needs to be shifted at least 100 feet to the north where commercial property is now present.

Statement of NRHP Eligibility

The Fort Recovery Site was included on the National Register of Historic Places in 1971 as reference number 70000509. Although it is not clear from the original nomination form or from the current National Register of Historic places database, the site of the Battle of the Wabash (1791) and the Battle of Fort Recovery (1794) most likely was eligible for the NRHP under Criterion A. The site is clearly associated with two events that made a significant contribution to the broad patterns of our history.

The original nomination form shows the approximate size of the nominated property as five acres with a center point of 40 degrees, 24 minutes, 50 seconds latitude and 84 degrees, 46 minutes, and 51 seconds longitude. This location is approximately 30 yards directly west of the current museum building. It is our recommendation that the geographic location of this site be clarified and expanded to at the very least contain and adequately surround the area where probable fort remnants were discovered in Parcel 8.

It is also our recommendation that this site be considered for eligibility for the National Register of Historic Places (NRHP) under Criterion D. Our research as part of this ABPP grant has shown that the site still yields, and can still yield, information important in history. The discovery of the 17 feet fort palisade wall in Parcel 8 demonstrates that the site contains information that can be used to test various hypotheses regarding the fort location, construction and dimensions. Based upon the results of the Ball State University archeological field school, the Fort Recovery Site (700000509) does indeed possess the seven qualities of integrity. Protection and preservation of the site will insure that that location, design, setting, materials, workmanship, feeling and association of the Fort Recovery Site will remain intact and the site will be available for future archeological investigations.

Further research to support the eligibility of the battlefield site for NRHP Criterion D ("That have yielded or may be likely to yield, information important in history or prehistory") eligibility could include investigation into the following research questions.

- Can additional ground-penetrating radar surveys in the location of the existing 17 ft. fort palisade wall uncover additional sub-surface anomalies that may be fort related?

- Can limited and focused excavation efforts ground truth the results of the above ground-penetrating radar surveys, possibly locating a corner or additional wall of the fort palisade, giving additional knowledge about the structure, size, and landscape placement of the original fort?
- Using the GIS data model constructed in this project, can concentrated and focused metal detector and gradiometer surveys in the areas of the Native American's least visible paths yield artifacts and subsurface features that further explain their battle movements and strategies?
- What additional historical documents exist to support the Native American battle movements and strategies as outlined and hypothesized by the GIS data model constructed as part of this project?
- What artifacts and landscapes survive from the extended battlefield boundaries (as outlined in this project), and how can they assist in interpretation and preservation planning?

Archeologists at Ball State University are working closely with the Ohio SHPO, the Ohio Historical Society (owners of the NRHP portion of the battlefield site), and the Fort Recovery Historical Society (operators and managers of the NRHP portion of the battlefield site) to amend the existing NRHP documentation with both the inclusion of criterion D and the possible expansion of the NRHP boundaries. This includes updating the Ohio Archaeological Inventory (OAI) form for the current and possibly expanded NRHP site 33-MR-117. This collaboration also includes procuring funds for additional preservation, protection and research at the site.

Recommendations for Site Preservation

Based on research conducted as part of this ABPP grant project, several recommendations are being made for site preservation and planning for the area encompassed by the Battle of the Wabash and the Battle of Fort Recovery.

As the location of the discovery of the 17 foot palisade wall, Parcel 8 should be the focus of any future preservation efforts. Plans are already being made for an interpretative sign at the site and a gravel and landscape timber outline of the 17 foot palisade wall and trench. Parcel 8 is adjacent to the current fort reconstruction, the Fort Recovery State Museum and other existing interpretive markers and buildings. As such, the interpretive signage and display on Parcel 8 will be part of the overall Fort Recovery Museum "campus".

Several years ago, the village of Fort Recovery discussed the idea of turning Parcel 8 into a parking lot for downtown businesses. At that time, a single member of the historical society strongly disagreed with the decision and the issue was tabled. Parcel 8 is currently owned by the Ohio Historical Society and they have been involved with all planning and results from the Parcel 8 excavation. Parcel 8 should be protected from all

future development and disturbance. Almost all other fairly undisturbed parcels that could be within the original Fort Recovery stockade are owned by the Ohio Historical Society, the village of Fort Recovery or the Fort Recovery Historical Society. It is recommended that meetings be held with all of these entities to discuss the results of this report and to protect the remaining land that could provide details and clues of the original fort construction.

Unauthorized metal detecting and recovery of artifacts always has been, and continues to be, a threat to the battlefields contained within the Battle of the Wabash and the Battle of Fort Recovery. As part of this ABPP grant, a pamphlet is being produced that not only explains the ABPP project, but explains Ohio archeology laws on both private and public property. These pamphlets will be distributed via the museum throughout the community. Special effort will be made to review these pamphlets with village administrators and property owners within the battlefield areas. In addition to the public's lack of information regarding archeology laws, much confusion exists to property ownership within the village of Fort Recovery. The battlefields are comprised of a mix of land owned by: the village of Fort Recovery, the Ohio Historical Society, the Fort Recovery Historical Society, the Ohio Historical Society leased to the village, private landowners and privately owned Ambassador Park. It is confusing to community members as to who owns what land. We heard accounts from several metal detector hobbyists that they were given "permission" from village employees to metal detect and recover artifacts from Ambassador Park (Parcel 7), since Ambassador Park is owned by the village. This is erroneous, but very understandable, information as Ambassador Park is not owned by the village (it is privately owned by a club), however it is used by the village for several functions. Metal detector hobbyists have been observed on several occasions digging shovel test pits on Ohio Historical Society property in the immediate area of the fort reconstruction. Signage that makes clear that artifact collecting is not allowed on the properties within the battlefield area may help in curtailing this activity.

Education on the importance of reporting artifact finds to the Fort Recovery State Museum and/or the Fort Recovery Historical Society should continue. Numerous new artifact finds were documented during our collector meetings in April 2011. It is not intuitive or made clear to community members that they should bring any artifact finds to the museum for further documentation and analysis. This can also be addressed in our pamphlet. There have been several instances in the last several years where artifacts have been discovered in fill dirt from various construction projects around the village. The spike ax presented by Mr. Alan Mark is one such find. A local metal detector hobbyist combed a back dirt pile from the construction on South Wayne Street in 2009, found the spike ax and promptly sold it to Mr. Mark. There was no realization or thought of bringing it to the museum for further analysis or display. Effort will be made to further educate the public on the proper handling of these types of situations. In addition, it is recommended that archeologists at Ball State University at least be aware of major construction projects around the village with the hopes that arrangements might be made to archeologically monitor these projects when funds and time allow.

The most important recommendation for site preservation is the continued collaboration between Ball State University, the Fort Recovery Historical Society, the

Ohio Historical Society, the Ohio Historic Preservation Office, and Fort Recovery community members. Additional funding has already been procured through Ball State University's Immersive Learning program to produce a documentary and public volume on the history and archeology of Fort Recovery. It is believed that as the public continues to more fully understand the significance of this site and the extent of the battlefield, they will more fully understand the need for preservation and protection. Additional funding applications are being made for the creation of long-range historic preservation and interpretive plans. These plans will help determine how the data from this ABPP grant, specifically the delineation of the battlefield boundaries, can best be used by the community to preserve these battlefields for generations to come.

Future Research

Based on this study, several areas of future archeological research are recommended. These areas include additional research in several areas of Parcel 6, additional analysis of the artifact "hot spot" in Parcel 7, and further investigation of the fort palisade wall found in Parcel 8. In addition, additional acreage based on the extended battlefield boundaries is recommended for feature large-scale survey and research.

Parcel 6 contains the area immediately surrounding the reconstructed fort, museum and land leased by the village of Fort Recovery for use as Fort Site Park. Additional research (perhaps excavation units) is recommended for the corresponding features found on each side of the old Wabash River channel. Additional analysis of the three old-growth trees that contain metal detector hits would be useful. This analysis could be done in conjunction with the field of fire analysis done as part of the GIS data modeling. The areas of Parcel 6 immediately surrounding the fort reconstruction may also still contain deeply buried clues of the original fort construction and associated structures.

The central and western portions of Parcel 7 warrants future research, especially the "hot spot" identified in Chapter IV. A cluster of battle era artifacts was found in this location and based on historical research, it is a bit unclear as to the function of these artifacts and whether they would have been part of the Kentucky militia encampment or used by the Native American warriors. Gradiometer surveys in that area also observed subsurface anomalies in the southwest portion of the "hot spot" area. The morphology, magnetic strength, and layout of these anomalies do little to suggest their origin or affiliation, and additional interpretation will require subsurface archeological investigation. This area of Parcel 7 could benefit from perhaps limited excavation units or well-placed and highly monitored archeological trenches.

Further investigation is recommended in Parcel 8 based on the fort palisade wall discovered during Ball State University's field school. Excavation units could be continued both to the east to Fort Site Street and to the west to Wayne Street to follow the trench wall. Additional ground-penetrating radar is recommended for areas of Fort Site Street, Wayne Street and Boundary Street that align with the discovered trench wall.

Additional background research regarding the development of the downtown commercial blocks in the 1800s surrounding Parcel 8 may also provide additional clues as to any archeological features or artifacts during construction of the village downtown area.

Community Involvement

The involvement and cooperation of the community was a critical factor in the success of this project. The contribution and collaboration of the public was invaluable and demonstrates their commitment to the protection and preservation of this historic site. All future research regarding the Battle of the Wabash and the Battle of Fort Recovery will greatly benefit from involving the community and other interested stakeholders.

The Fort Recovery State Museum, Fort Recovery Historical Society and village of Fort Recovery all fully supported the initial grant application. Village officials and the museum director helped identify property boundaries and owners. A total of 20 landowners gave permission to survey their property within the core battlefield area. These landowners and the village administrator were kept informed of the project through mailings, emails, phone calls and personal visits.

The support continued after the grant was awarded. The Fort Recovery State Museum and Fort Recovery Historical Society made all of their historical resources (books, photos, manuscripts, etc.) available for research. The museum attracts quite a few historians and military experts and all of these contacts were made available to the ABPP researchers and proved invaluable. An ABPP project representative provided monthly updates to the Fort Recovery Historical Society and gave frequent email updates to the museum director and the president of the historical society. The museum newsletter, sent to patrons of the museum, included monthly updates of the ABPP grant. The museum web site was also updated at least monthly with updates of the grant progress especially during the months of field work, when grant progress was most visible to the public.

Media coverage of the grant award was coordinated with the Fort Recovery State Museum director, the Ohio Historical Society and Ball State University. Museum media contacts were sent the official press release and several local newspapers and radio stations covered the press release and grant award.

The ABPP project was featured at the annual Archaeology Fun Fest in October 2010. A presentation was given to the public that discussed the goals of the project, the methods to be used and how the public could assist in the grant research.

Representatives from the museum were asked to speak on the Battle of the Wabash and the Battle of Fort Recovery at the Kalamazoo Living History Show in March 2011. Part of the presentation was given by Christine Keller and highlighted the ABPP grant.

The museum director facilitated and helped organize initial collector meetings in April 2011. Mass mailings were sent to museum patrons and community members

outlining the scope of the grant and asking for information for anyone finding battle era artifacts. Two meetings were used to collect this information and to discuss with attendees the goals of the ABPP progress. Several of the meeting attendees later volunteered in the field during the metal detector surveys.

Geophysical surveys conducted in April through September 2011 were coordinated with landowners, village mowing crews, and users of the various parcels surveyed. Spring field trips to the museum by local elementary schools were coordinated with geophysical field work so the students could learn more about the ABPP project and see archeologists in action. Several groups participated in more in-depth immersive experiences by assisting the archeologists in their work (Figure 142) or receiving a guided tour of the work area and methods. Several local individuals with metal collectors assisted in the geophysical surveys.

Plans for the Ball State University field school held in May and June 2011 were coordinated with the museum, historical society, village and Ohio Historical Society. The location of specific excavation units were mutually agreed upon based on data from a ground-penetrating radar survey conducted in April 2011. The excavation units were in very visible parcels in the community and generated much interest. Additional school field trips in May 2011 toured the excavation units and received guided tours of the site from Ball State archeologists and students. Museum visitors were also encouraged to visit the field school site and talk to the archeologists and students.

The Ohio Historical Society visited the site twice over the course of the field school. These visits were coordinated with the museum director and Ball State archeologists. In addition, an OHS videographer visited the site and filmed the chance discovery of the Charleville musket center band from the excavation units in Parcel 8.

The museum director coordinated more media coverage to highlight the field school methods and results. A media day was held in June with all local and regional media invited. Ball State archeologists and students were interviewed. Ball State University also covered the field school and provided coverage through various print and on-line media outlets.

The geophysical surveys and field school were held within the village of Fort Recovery in full public view. Not a day went by without visitors to the survey area or excavation units. Many community members learned more about the ABPP project and goals through these informal discussions. A more formal public open house was held in June during the last week of the field school (Figure 143). The museum director helped coordinate the media coverage and advertising of this event. Over 200 people visited the site to view the palisade wall and trench discovered by the field school participants. Informative posters, displays and artifacts were available for public view and discussion. Much information was shared by the public on the landscape history of the excavation units and the identification of the artifacts discovered. Children were encouraged to help in the excavation by screening dirt and assisting the Ball State archeologists and students. The village assisted in the closing of the field school site later that week by providing a backhoe and driver to fill in the units.

The museum again provided an opportunity for an ABPP grant update presentation at the Archaeology Fun Fest in October 2011. Student researchers and archeologists participating in the grant gave an update on the results of the grant. Student researchers and archeologists also presented a 90 minute panel discussion at the Great Lakes Historic Conference (Oct 2011) in Grand Rapids on the student learning and community involvement inherent in the ABPP grant project. Additional presentations scheduled include the Ohio Historical Society (Oct 2011), Jay County Historical Society (Oct 2011) and the Society for Historical Archaeology (Jan 2012).

Figure 142: Elementary school field trip students assisting with metal detector shovel test units.

Figure 143: BSU field school open house held in June 2011.

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ARCHEOLOGY OF THE BATTLES OF FORT RECOVERY, MERCER COUNTY, OHIO: EDUCATION AND PROTECTION

A Cooperative Project with
National Park Service American Battlefield Protection Program
Grant # GA-2255-10-002
Ball State University
Ohio Historical Society
Fort Recovery Historical Society

Appendices redacted per ARPA 1979 (section 470hh); not publicly available