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DISTURBANCE AND ITS EFFECTS ON ARCHAEOLOGICAL SIGNIFICANCE AND INTEGRITY

By

Jason Alan Kennedy

A Thesis
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Master of Arts
in Applied Anthropology
in the Department of Anthropology and Middle Eastern Cultures

Mississippi State, Mississippi

August 2011

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DISTURBANCE AND ITS EFFECTS ON ARCHAEOLOGICAL SIGNIFICANCE

AND INTEGRITY

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Pages in Study: 112

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Significance and integrity are key concepts for archaeology, and how they are judged is determined by an archaeologist's perceptions of disturbance. This thesis explicitly considers these concepts and how they relate to evolutionary theory and National Register eligibility. A site with known disturbance was chosen to determine whether it could be judged significant assuming that there was no disturbance. Controlled surface collection, magnetometer survey, excavation and landowner interview data were used to determine whether what made the site significant had been lost due to disturbance. The results indicate that the co-mingling of occupations in the plow zone normally would have prevented the site from being determined eligible. However, because of the clusters of Gulf Formational-period diagnostics and intact Early Archaic midden, the site was determined significant. If future work were to be performed, occupation-based work focusing on the artifact clusters and the Archaic midden is recommended.

DEDICATION

This thesis is dedicated to my family, especially my mother Judy, and my friend James “Jay” McCarthy. Without your support, this work would have never been possible.

> --What archaeologists have routinely failed to appreciate—from their nineteenth-century beginnings to the new archaeology’s call to science—is that becoming scientific means *acquiring the ability to be wrong*, not just unpopular.-- Robert C. Dunnell

ACKNOWLEDGEMENTS

I would like to give thanks to the numerous people that have helped me along towards the completion of this work. First my thanks go out to my committee members Drs. Evan Peacock, Janet Rafferty and James Hardin who have given their guidance and recommendations. I would also like to thank Dr. Nicholas Herrmann for assistance with the initial setup work for excavation and Jeffrey Alvey and Keith Baca of the Cobb Institute for helping me with my endless questions. Thanks is also due to the field crew who assisted with the excavation and magnetometer survey and who were willing to become human popsicles during that time: Bradley Carlock, Rocco DeGregory, Janice Greenslade, Kate Manning, Michael McCoy, Jesse Morton, and Joseph Smith.

I am also indebted to the staff at Earth Search, Inc. during the years that I have been with them. Especially of note are Jill-Karen Yakubik, Aubra "Butch" Lee, Rhonda Smith, David Bruner, John Rawls and Jason Parrish for constant encouragement, Katherine Lemberg and Eylene Parrish for computer and GIS assistance, and the rest of the field staff for tolerating my antics. Finally I would like to thank my dear friends who have had to listen to me rant and rave throughout the years and given moral support, Aidan, Andee, Brie, Cliff, Dawn, Daniel, Jay, Jarrod, Jerry, Kris, Keith, Matt, Pepper, Robert, Scott, and Shannon.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

In recent years, the archaeological literature has paid great attention to the meaning of significance (e.g., Altschul 2005; Ames 1998; Barnes et al. 1980; Baugher 2005; Bruier 1996; Butler 1987; Darvill 2005; Fisher 1980; Glassow 1977a, 1977b; Grandison 1998; Green, 1998; Hardesty and Little 2000; King 1985; Kleinhans 1996; Klinger and Raab 1980; Leone and Potter 1992; Lilley and Williams 2005; Little 2005; Lynott 1980; Maslowski 1996; Mathers et al. 2005; Peacock 1996; Raab and Klinger 1977, 1979; Reed 1987; Schelberg 1996; Schiffer and House 1977; D. Scott 1990; R. Scott 1996; Sharrock and Grayson 1979; D. Smith 1990; L. Smith 2005; Swidler and Yeatts 2005; Tainter 1979; Tainter and Bagley 2005; Tainter and Lucas 1983; Tomlan 1998; Van West 1998), but the concepts of disturbance and integrity have only been discussed as an aside in relation to the topic until recently (Carr 2008; Miller 2008). While a demonstration of significance is necessary for archaeologists to argue for inclusion of a site on the National Register of Historic Places, disturbance may be the most frequent reason for a site to be deemed ineligible (NPS 2002). Significance involves not just *what* must be considered, but *why* a site is considered when determining the eligibility of sites. When using Criterion D of 36 CFR 60.4 (Code of Federal Regulations), the answer is that the site must "have yielded, or may be likely to yield, information important in prehistory or history." "Put simply, this means that sites are identified as significant based on contemporary research questions" (Peacock 1996:43).

Integrity is the other factor that must be examined and where disturbance has its greatest impact. Unlike significance, integrity as an archaeological concept has not been as extensively discussed (Carr 2008; Miller 2008), and thus information is normally gleaned from government documents such as 36 CFR 60.4 and the National Register Bulletins. It is here that an element of confusion can be introduced. Because government language allows for loose interpretation, there does not appear to be a standardized understanding of integrity. Site files kept by the states are one example. When looking at state site files, it can be seen that one archaeologist may list a site as 100% disturbed simply because it has been plowed. However, a different archaeologist might report a much lower degree of disturbance for the same site. This illustrates how integrity, when used as a synonym for disturbance, is left to interpretation.

The goal of this research is to examine the concepts of significance and integrity to understand how the two are related to the determination of eligibility of archaeological sites for the National Register, and how these concepts are conditioned by perceptions of disturbance. Following a discussion of these concepts is description of fieldwork undertaken at a study site and what types of disturbance have affected it where integrity is concerned. The site will first be assessed for significance assuming there was no disturbance. This is done by positing research questions that could be addressed based upon analysis of surface-collected materials, in a manner similar to that traditionally practiced in cultural resource management (CRM). The results of field and lab work will then be used to see if what could be argued to make the site significant has been lost due to disturbance. Proposed methods of examining the site include analysis of a previously made controlled surface collection, excavation of test units, geophysical survey, and interviews with the landowner. This work will contribute to the previous archaeological literature by examining how disturbance and integrity influence the determination of eligibility for the National Register.

CHAPTER II

BACKGROUND ON CONCEPTUAL ISSUES

Important words will be underlined and defined to ensure that the reader comprehends the vocabulary that is imperative for the basis of this thesis. Archaeological literature in general could benefit from defining terms as a standard practice. Different authors often are not aware of, or do not acknowledge, previous definitions of terms they employ, and this includes discussion of site significance (Dunnell 1978:192).

> Even a cursory scan of the literature reveals that notions of "value," "significance," and "importance" are rather vague and ill-defined, and that these terms are used interchangeably. Key questions such as, valuable to whom? significant in what context? or important for what? rarely seem to be asked, and yet they lie at the heart of the debate (Darvill 2005:21-22).

Concerning conceptual constructs in general, "the problem with these varying definitions and usages lies less in the existence of differences than in the fact that the particular definition being used is frequently not made explicit but must be extracted from its context" (Rafferty 1985:115). Mathers et al. (2005:172) state that, "as archaeologists the contexts and language we use clearly matter, and nowhere more so than in our individual and collective decisions to assess significance, and thereby influence what remains of the archaeological record" (see also Schiffer 1985:24, 1987:17). However, it should be stated at this point that this is not necessarily a cry for standardization of categorical terms, as the essentialist metaphysic is inimical to the investigation of change in archaeology (Dunnell 1971), but for explicitness of the subject and definitions.

An explicit definition of some basic archaeological concepts must therefore be expressed before an understanding of the federal process related to significance assessment and consideration of integrity can be gained. From a CRM perspective, "An archaeological site represents a three dimensional information storage matrix" (Neumann and Sanford 2001:35). From a scientific perspective, all archaeological phenomena may be analyzed along the dimensions of space, time and form. Before discussing these definitions, two additional concepts also need to be reviewed, as the understanding of space, time, and form of artifacts helps in understanding these concepts. These two concepts are occupation and component.

Robert C. Dunnell defines occupation as:

> a spatial cluster of discrete objects which can reasonably be assumed to be the product of a single group of people at that particular locality deposited over a period of continuous residence comparable to other such units in the same study (1971:151).

In other words, occupations are artifacts at the scale of assemblage that display continuity in space, time and form (Dunnell 1971; Parrish and Peacock 2006; Rafferty 2001, 2003, 2008). It is important to recognize that this is an archaeological phenomenon, not a behavioral term.

Space

Where occupations are concerned, <u>space</u> refers to artifact clusters in three dimensions that are treated as associated. This is distinct from the "site" concept. Sites are modern constructions used to describe aggregates of artifacts that are deposited at a particular locale (Dunnell 1992). Willey and Phillips stated that a site is:

> the smallest unit of space dealt with by the archaeologist and the most difficult to define. Its physical limits, which may vary from a few square meters to as many square miles, are often impossible to fix. About the

> only requirement ordinarily demanded of the site is that it be fairly continuously covered by remains of former occupation, and the general idea is that these pertain to a single unit of settlement, which may be anything from a small camp to a large city (2001:18).

It is also important to note that Willey and Phillips use the term occupation as a behavioral descriptor, whereas Dunnell (1971) uses occupation as an analytical unit. As Dunnell and Dancey (1983:271) have noted, sites have traditionally been used as the "primary means of associating artifacts as assemblages," a practice which confuses site with occupation. More recently, Dunnell (1992:36) proposes that the term site can be kept as long as the definition simply means "location of" and the term plays no role as an analytical unit. While government literature treats sites as the archaeological entity of interest because the National Register saves locations, it also should be noted that federal regulations never mention site as an analytical unit, but only in reference to data sets, which conforms to Dunnell's use of artifact clusters in his definition of occupation. However, it is the artifacts that compose the occupation and their relationships to one another that can make the occupation significant. This is why disturbance must be accounted for when analyzing the data sets, as it affects artifact relationships, and why adequate testing with proper spatial control is necessary, to document the degree of disturbance and to ascertain whether artifacts from separate occupations are mixed.

In assessing significance, therefore, one should focus on occupations rather than on sites or components. Willey and Phillips (2001:21) define component as, "a manifestation of a given archaeological phase at a specific site." In traditional usage, artifact types are used to define phases. Willey and Phillips state that a phase is:

> an archaeological unit possessing traits sufficiently characteristic to distinguish it from all other units similarly conceived, whether of the same or other cultures or civilizations, spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief interval of time. (2001:22)

Willey and Phillips' definition of phase indicates that phase is meant to be a class, not a phenomenological unit as it would be used by later culture historians: "In reality, they [components] often are members of groups rather than classes, as components of a particular phase may have no formal defining criteria in common" (Fox [1998:58, cited in Rafferty 2001:348]). Groups represent "an aggregate of actual objects or events, either physically or conceptually associated as a unit" (Dunnell 1971:88). However, phases themselves do not possess physical attributes; it is the artifacts that display the attributes of the types and modes. As Dunnell (1971:158), states, "phase is a paradigmatic class of occupations defined by [artifact] types and modes." Dunnell's definition of phase is that of a conceptual unit, i.e., a class. Therefore, information about occupations making up the members of phases must be inferred from the artifacts.

"Adopting this view, the archaeological record is most usefully conceived as a more or less continuous distribution of artifacts over the land surface with highly variable density characteristics" (Dunnell and Dancey 1983:272). The artifacts that are associated with one another define occupations seen across the land surface. A site may have many clusters of artifacts which can overlap to varying degrees and which may represent different occupations. As artifacts are discrete objects that may be either portable or non-portable, such as features, "artifacts can supply the smaller-scale observational unit" (Dunnell 1992:33). Locating artifacts by their discrete boundaries using controlled surface collections or "siteless" survey may allow delineation of occupations at a site (Rafferty 2001, 2008). Some authors (e.g., Rafferty 2001:347; Sullivan 1992:100) have said that occupation also fills the need for a systematic unit of phenomena that can be classified to address a problem at the settlement-pattern scale. This leaves the term "site" to simply mean the location of artifacts, which is appropriate for a management unit.

Time

"Gaining chronological control of the archaeological data is essential to understanding variability in both space and time" (Rafferty 2003:169). In terms of occupations, the continuous use of a place by a people of one lineage or cultural tradition is seen as time. Time can be inferred from the artifact clusters if they "can be reasonably assumed to be the product of a single group of people at that particular locality deposited over a period of continuous residence" (Dunnell 1971:151). In practice, "use" is not observed: any site could have witnessed short periods of abandonment that would not be visible in the archaeological record. "Continuous use," or continuity along the dimension of time, must therefore be inferred from the archaeological record. There are several methods of determining whether the artifacts from spatial clusters represent a single lineage. The overlapping of artifact styles through time at the location is perhaps the most straightforward approach. Local ceramic and lithic chronologies (e.g., Burris 2006; Edmonds 2009; Rafferty 1994) can be used to see if the diagnostic artifact styles overlap, indicating "continuous" occupation at a site, and where the occupation fits within previously known regional chronologies.

The use of stratigraphy has typically served to provide boundaries for occupations during excavation (Lyman et al. 1997:181, Rafferty 2001:347). Seriation and cross dating are two other methods which can be used to obtain temporal information from the attributes of the artifacts. O'Brien and Lyman (2000:286-287, cited in Rafferty 2001:348) state that "Seriation can play a major role in confirming that the assemblages are part of one lineage, since this is necessary in order for successful seriations to be produced by the overlapping of artifact classes through time." While seriation usually is employed in comparing artifact assemblages from different sites, those from intrasite locales also may be seriatable (e.g., Rafferty 2008). Additionally, absolute dating, when combined with the other methods, has been used to good effect (Rafferty 2001, 2008).

Form

Form refers to functional and stylistic variability displayed in the archaeological record (Dunnell 1978:199). Stylistic attributes are used to define diagnostic artifacts or in seriation, while functional attributes are traits that can be argued to be under selection, at whatever analytical scale is appropriate for the question being addressed (Dunnell 1978:199). At the occupation level, the presence of associated, different artifact types is an aspect of form traditionally discussed as "site function."

The Role of Disturbance in Significance Assessment

Because occupation is the highest scale of artifact, occupations are analyzed at smaller scales, i.e., that of discrete artifact (Dunnell 1971). Occupations are the phenomena that can provide the data sets used during the evaluation of a site for inclusion on the National Register. From this perspective, disturbance would be due to degradation of artifacts and/or to mixing of occupations, thus affecting artifact associations and possibly limiting or causing other difficulties in analyzing separate occupations. Depending on the degree to which artifacts have been affected by disturbance, the potential for data sets to be applied to particular research questions will be affected (Little et al. 2000). So what, exactly, is considered to be archaeological disturbance?

Sites rarely, if ever, remain exactly the same as they were when artifacts were first deposited. This is due to the changes that have affected the site since the time of deposition. These changes are more commonly referred to as disturbance. Disturbance is a term that is widely known, and one that has been discussed regarding a wide variety of factors affecting the archaeological record, such as bioturbation (Johnson 1989; Stafford and Tyson 1989), plowing (Baker 1978; Dunnell and Dancey 1983; Dunnell and Simek 1995; Odell and Cowan 1990; Redman and Watson 1970; Roper 1976; Schiffer 1985, 1987), and formation processes in general (Schiffer 1972, 1987). However, in the federal regulations, the words disturbance or disturbed are typically used as general terms with respect to archaeological properties, with plowing frequently being noted as a specific kind of disturbance (Little et al. 2002).

Webster's (1998) defines disturbance as "1: the act of disturbing or the state of being disturbed. 2: the act of disturbing. 3: a tumult or commotion; especially, of a public order," with disturb being defined as "1: destroy the repose, tranquility, or peace of. 2: to agitate the mind of; trouble. 3: to upset the order, system, or progression of. 4: to interrupt; break in on. 5: to inconvenience." While this definition conveys part of the archaeological meaning of disturbance, it is not sufficient. Disturbance, as an archaeological concept, would be better defined as *any change to an occupation due to cultural and/or natural processes that transform materials from state to state in the archaeological context but does not involve the material re-entering systemic context* (adopted from Schiffer 1987:121). Schiffer (1987) also notes that decay of materials is not disturbance per se but simply the effect of non-cultural formation processes. Different forms of disturbance can range from minor fragmenting of the archaeological record to the total removal of a site. Archaeologists must also remember that even performing archaeological work disturbs sites. Nevertheless, sites can be found to be important regardless of disturbance if some aspect of the site, or any occupation thereof, is found to be significant.

The determination of whether or not a given occupation is eligible for inclusion in the National Register is one of, if not the most, important decisions that faces the modern archaeologist working in the United States. To make a decision on eligibility of an occupation after it has been identified, the significance of the occupation and its integrity must be judged. However, before one can judge what is significant, one must know what significance is. Significance is perhaps the most important consideration for eligibility and potentially the most complex. Webster's (1998) states that significance is: "1: that which has signified meaning. 2: quality of being significant. 3: importance." Because of government involvement in the preservation of sites of historical and archaeological significance, regulations were created to aid in determining what is significant. These regulations are what archaeologists use to determine whether the entity in question belongs on the National Register of Historic Places. The definitions for different types of entities are listed under 36 CFR 60.4, Criteria for Evaluation, and are as follows:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> (A) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (B) that are associated with the lives of persons significant in our past; or
>
> (C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (D) that have yielded, or may be likely to yield, information important in prehistory or history.

While it is possible for a property to be considered eligible under multiple criteria, it is the research questions stemming from Criterion D that are usually employed for archaeological sites (Hardesty and Little 2000:33). Thomas H. King (2004:114) notes that, when determining whether a site is significant, it is not necessary to know that there are significant data as long as it is probable that such data can be obtained. Therefore, for a site to qualify under Criterion D, it has to yield or may be likely to yield information important for answering research questions.

Related to discussions on significance are the two additional points of value/importance and representativeness. These are factors that are considered during the evaluation of eligibility, as both are aspects of significance. Value/importance is considered when examining the historic contexts of a property. Consideration of other groups, besides archaeologists, who might find value/importance in the area being surveyed, is appropriate (Baugher 1998, 2005). Before work begins, those groups that place value/importance on the location may be identified and contacted. In doing so, the values of these other groups can be considered during significance determination (Baugher 1998, 2005; Boyd et al. 2005; Clark 2005; Lilley and Williams 2005). For this thesis, only those aspects of significance related to scientific value are considered.

Representativeness is considered to see if the type of occupation is one that has been rarely included on the National Register. An occupation that is considered unique is a prime example of a location that could be considered significant, as it is the only representative of that phenomenon. "In essence, the idea of representativeness was intended to convey the idea of a sample of cultural remains from a given geographic area that accurately reflected the range of human cultures and activities that had taken place there through time" (Mathers et al. 2005:161). "As with the idea of research value, one of the assumptions underlying the idea of representativeness is that a site or place will have inherent qualities that make it either unique or common" (Smith 2005:80).

Problems with the use of representativeness occur when an occupation is believed to belong to a type for which a large number of similar occupations already has been preserved. This can happen when the occupation is placed into a preexisting, essentialist category such as "lithic scatter." Using preexisting categories without careful consideration of what an occupation truly represents biases the archaeological record for future generations (Dunnell 1984). Researchers have suggested that one way to offset this biasing of the archaeological record is that sites on government-owned land should automatically be protected and avoided as a way to preserve them for the future (Lipe 1974; Tainter 1987, cited in Peacock 1996:45).

Unfortunately, the use of essentialist categories is prevalent in CRM. This has come about because CRM is most often done on a contract basis, so that the fieldwork, analysis, and reporting all have deadlines for each project. These ever-present deadlines are aggravated by contractors and government project managers who wait until the last moment before contacting CRM firms to conduct work and then apply pressure to the company to finish the work as fast as possible. Altschul comments on one federal project: "The U.S. Army requires the use of the project area now, not at some time in the future when we have a better understanding of the cultural landscape" (Altschul 2005:204-205). While Altschul came up with an inventive solution for his particular project, many others do not. "Instead, cultural resource management has evolved into a technical field in which important and irrevocable decisions are made on the basis of prescribed regulations applied without critical thought" (Tainter and Bagley 2005:70). While this criticism is harsh, it is true that CRM must follow government regulations and codes of law. Furthermore, even when the case is made for a site's eligibility, "the United States government ultimately determines the significance of a site" (Baugher

2005:252). Consequently, it becomes even more important that archaeologists critically evaluate the factors that can make a site eligible for the National Register. One of the factors considered when attempting to gauge a site's significance is whether or not the site still has integrity.

While the concept of significance has been discussed at length in other literature, integrity has mostly been discussed in relation to architecture or historic sites (Altschul 2005; Ames 1998; Baugher 1998, 2005; Darvill 2005; Grandison 1998; Green 1998; Hardesty and Little 2000; Lilley and Williams 2005; Little 2005; Mathers et al. 2005; Smith 2005; Swidler and Yeatts 2005; Tainter and Bagley 2005; Tomlan 1998; Van West 1998). Even the National Register Bulletin goes to great lengths in discussing integrity in respect to Criteria A, B, and C but says little regarding Criterion D. To understand integrity in relation to archaeological sites, explicit definitions are again needed.

Webster's (1998) defines integrity as "1: the quality or state of being complete; unbroken condition; wholeness; entirety. 2: the quality or state of being unimpaired; perfect condition; soundness." In government documents (NPS 2002), "Integrity is the ability of a property to convey its significance." It is by these definitions that archaeological sites are judged. It seems that these definitions entail conflicting notions. Webster's definition shows that what is being considered starts with integrity. At some point thereafter, the object may lose integrity. This is the definition of integrity that is used by the layperson. On the other hand, the definition that the government uses, and which archaeologists must therefore adopt, has a more negative connotation. However, this is with good reason, as it is a demonstrated fact that sites experience the effects of preservation biases and post-depositional alteration from myriad different sources, especially disturbance. Unless the historical significance of the property is so great that it obviously overcomes any lack of integrity, integrity must be demonstrated. This is usually accomplished by testing, which can include obtaining surface data, employing geophysical methods, and excavation.

The government lists the sequence of steps for evaluating the eligibility of a property for inclusion in the *National Register Bulletin: Guidelines for Evaluating and Registering Archeological Properties* (Little et al. 2000:20):

1. Categorize the property;
2. Determine which historic context(s) the property represents;
3. Determine whether the property is significant under the National Register criteria;
4. Determine if the property represents a type usually excluded from the National Register;
5. Determine whether the property retains integrity.

It is important to note that, via this process, integrity assessment is the last step which is undertaken when a property is evaluated; e.g., Little et al. (2000:20) state that, "The assessment of integrity is the final step in the sequence and should not be used as an initial step with which to screen properties." These steps guide the evaluation of properties that are being considered under Criteria A, B, and C.

For properties that are being considered under Criterion D, *The National Register Bulletin: Guidelines for Evaluating and Registering Archeological Properties* (Little et al. 2000:29) gives these steps for determining eligibility:

1. Identify the property's data set(s) or categories of archeological, historical, or ecological information.
2. Identify the historic context(s), that is, the appropriate historical and archeological framework in which to evaluate the property.

3. Identify the important research question(s) that the property's data sets can be expected to address.

4. Taking archeological integrity into consideration, evaluate the data sets in terms of their potential and known ability to answer research questions.

5. Identify the important information that an archeological study of the property has yielded or is likely to yield.

As these steps illustrate, the first step is to identify the data sets. Obviously, the kinds of data than can be produced will vary from site to site, but once initial work has been completed, a basic corpus of potential data will be identified. This leads to the ability to understand the historic or prehistoric contexts that are present. From here, the formation of important research questions can allow the determination of the significance of the site.

A mistake that could be made is to assume that only sites that do not show signs of disturbance have integrity. In truth, disturbance varies from site to site, just as the different types of disturbance can affect sites in various ways. Moreover, disturbance may not affect the information that the site holds; i.e., it may not affect the different aspects of integrity that are important to the site. These aspects are location, design, setting, materials, workmanship, feeling, and association (NPS 2002); they are considered the essential physical qualities that are used to evaluate the integrity of the property. While a historic property "will always possess several, and usually most, of the aspects" (NPS 2002), for archaeological properties attention is primarily given to the potential to yield information and less attention given to the overall condition or other aspects of the property (NPS 2002). The steps for considering integrity can again be found in *The National Register Bulletin: Guidelines for Evaluating and Registering Archeological Properties* (Little et al. 2000:36):

1. Determine the essential physical qualities that must be present if the property is to represent its significance.

2. Determine if those qualities are discernible enough to convey their significance.

3. With reference to the relevant historic context(s), determine if the property needs to be compared with similar properties, which might be necessary with particularly rare properties.

4. Based on the significance and physical qualities, determine what aspects of integrity are vital to the property and whether they are present.

Thomas H. King (2004:114) notes that, "the bottom line is that the place can't be so screwed up that it no longer contains or exhibits whatever made it significant in the first place." Hence, a site with good artifact preservation and a single, continuous lineage (i.e., a single occupation, *sensu* Rafferty 2001) may still be significant even though it has been plowed to subsoil. In fact, the very topic of plowed sites is also addressed in *National Register Bulletin: Guidelines for Evaluating and Registering Archeological Properties* (Little et al. 2000:38;):

> One of the most common questions asked about archaeological sites and integrity is: Can a plowed site be eligible for listing in the National Register? The answer, which relates to integrity of location and design, is: If plowing has displaced artifacts to some extent, but the activity areas or the important information at the site are still discernable, then the site still has integrity of location or design. If not then the site has no integrity of location or design.

This is due to the fact that the artifacts from the occupation can be demonstrated to be temporally and functionally related. On the other hand, at a severely disturbed site with multiple, non-sequent occupations, integrity has most likely been compromised to the point that the site loses what made it significant, as the artifacts would have been temporally mixed. A determination of how intact the archaeological record is must be made to assess the integrity of a site.

For this thesis, in a twist on usual practice, a site was chosen based on the fact that it was known to have been disturbed by a number of factors. The goal is to assess the site's integrity (i.e., its ability to provide answers to research questions) as though it had never been disturbed, then to assess the nature and degree of disturbance, and finally to revisit the research questions to document the extent to which integrity has been compromised.

CHAPTER III

SITE BACKGROUND

The location investigated for this thesis is simply known as 22OK1076. The site was originally recorded in 2003 as part of Mississippi State University's archaeological field school. Information about the site was obtained from the Mississippi Department of Archives and History site card recorded by Dr. Janet Rafferty. Natural setting is not listed for the site, but the map indicates that it is on the first terrace just south of Six Mile Creek in extreme northern Oktibbeha County (Figure 3.1). This site is privately owned by Mr. Eddie Strickland. It was in a fallow field at the time of recording. Previous disturbance is known to include cultivation and some land leveling by the owner, during which midden was exposed, with the top portion of the deposit being used to fill adjacent low spots (Janet Rafferty, personal communication 2008). Soils are recorded as a silty clay loam of the Urbo soil series (Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx). The site dimensions are recorded as 8,000 m^2 (100 m long by 80 m wide). Elevation is recorded as 245 feet above sea level. Heavy artifact density was recorded, with site chronology recorded as Archaic; it is also known that pottery was present at the site (Janet Rafferty, personal communication 2008), indicating a post-Archaic occupation. In 2005, a subsequent MSU field school conducted a controlled surface collection (CSC) at the site in conditions of high surface visibility due to plowing. The site surface was divided into 351 4x4 m grid

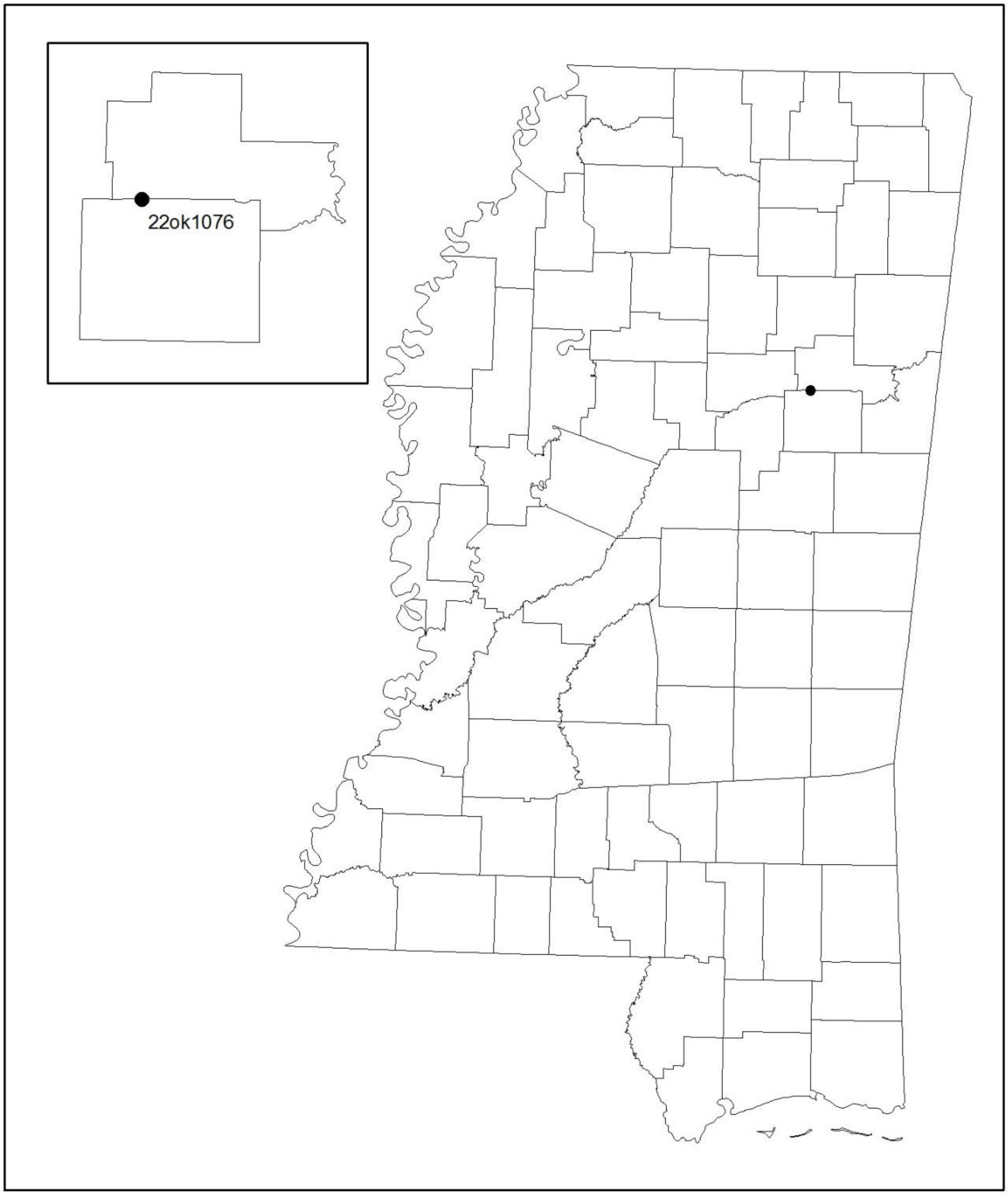

Figure 3.1 Location of 22OK1076 in Oktibbeha County near border with Clay County, Mississippi.

units, oriented on the cardinal directions, which were further divided into 2x2 m squares, totaling 1,404 collection units. Collection was not timed, but an effort was made to collect every artifact visible on the surface. The collected artifacts were given provenience by their grid and square locations.

Table 3.1 Diagnostics from the Controlled Surface Collection

CSC Diagnostics	
Early Archaic	
UID Basally Ground Expanding Base	1
Big Sandy Base	1
Decatur Point	1
Becker Base	1
Middle Archaic	
UID Middle Archaic Base	1
Benton Base	2
Late Archaic-Gulf Formational	
UID Gulf Formational -Middle Woodland Base	1
Gary Base	2
Flint Creek Base	12
Flint Creek Point	3
Fiber-Tempered Sherds	81
Sand-Tempered Pinched Sherds	4
Sand-Tempered Punctated Sherds	1
Middle Woodland	
Tombigbee Stemmed Base	9
Tombigbee Stemmed Point	1
Sand-Tempered Fabric Marked Sherds	3

Evidence of the earliest use of 22OK1076 comes from the Early Archaic period. An unidentified, basally ground expanding stem point, Big Sandy, Decatur, and Becker points were found during the CSC (Table 3.1; Figure 3.2). Information on Early Archaic projectile points shows that they retain attributes that are similar to those found during thePaleoindian period, mainly the continued use of basal and lateral grinding (McGahey 1996, 2000:41). McGahey (1996:356, 2000:41) notes that, "The [Early Archaic] population seems to have exploded in the Northeast [Mississippi], increasing by about seven-fold over the preceding Paleoindian period" when using diagnostic artifacts as an

Figure 3.2 Projectile Points from Controlled Surface Collection.

NOTE: From top to bottom, left to right: Row 1) Big Sandy; Decatur; Becker; Row 2) Benton; Gulf Formational-Middle Woodland; Gary; Row 3) Flint Creek Points; Row 4) Tombigbee Stemmed Points indicator. As heat-treating raw lithics came into use, it allowed for a greater range of material to be workable (McGahey 2000:41). One example is the heavy use of Kosciusko quartzite to make Pine Tree points (McGahey 1999). The first development of sites known as midden mounds is recognized by Rafferty et al. (1980) in Early Archaic components in the lower levels at the East Aberdeen site (22MO819), and by extensive later work by Bense (1987) in the Tombigbee drainage. Evidence of subsistence during this time includes but is not limited to hickory nuts, nutting and grinding stones implying processing of plant foods, and bones from deer, turkey and turtle (McGahey 2000; Rafferty et al. 1980). "During the early-Holocene interval, the rapid northward migration of cool-temperate, mesic tree species was followed by their expansion in dominance throughout the mid-latitudes of the southeastern United States" (Delcourt and Delcourt 1985:19). "Cool-temperate, mesic trees included sugar maple *(Acer saccharum),* beech, black walnut, butternut *(Juglans cinerea),* and elm" (Delcourt and Delcourt 1996:227).

During the Middle Archaic period, 22OK1076 appears to have been only sparsely occupied. One unidentified base with Middle Archaic characteristics (wide stem relative to blade width) and two Benton points made from local gravel chert were located during the CSC. The Middle Archaic in North Mississippi roughly coincides with the Middle Holocene Interval known as the Hypisithermal or Altithermal, 8500 to 4000 B.P. (Delcourt and Delcourt 1985; McGahey 2000). During this time, warmer and drier conditions led to an eastward expansion of the prairie from the Great Plains and a decrease in available surface water (Delcourt and Delcourt 1985; Meltzer 1999). "Settlement patterns seem to have been focused on the larger streams, possibly because water was scarce in many of the smaller ones" (McGahey 2000:88). As during previous periods, the transition into the Middle Archaic has been arbitrarily defined. McGahey

(2000:87) places the date range at 8000 to 5000 BP and notes that as the period continues, tools become increasingly crude in their manufacture. At the same time, there appears to be an expansion of the regional tool kit. McGahey (2000:87) notes that during the Middle Archaic there are increasing numbers of nutting and milling stones and ground and grooved stone axes, as well as "the zenith of prehistoric lapidary work [stone beads]in the southeastern United States, if not the whole of North America."

The major archaeological occurrence during this time is known as the Benton Interaction Sphere (Meeks 1999; Peacock 1988). One of the defining traits of this time period is the strong preference for the use of non-local Fort Payne chert (Alvey 2003, 2005; Meeks 1999; Peacock 1988; Rafferty et al. 1980). The Benton Interaction Sphere was centered on the tri-state area of Tennessee, Alabama and Mississippi, extending to the southern end of the Tombigbee Hills to the south and west, at least as far south as Clay County, Mississippi (Peacock 1988:16). The midden mound sites exhibit an apparent increase of activity during this time, as numerous sites in the area, such as the Trice site (22LE827), East Aberdeen (22MO819), Emmett O'Neal (22TS954), Poplar (22IT576), Walnut (22IT539), and Hickory (22IT621) show extensive occupation (Alexander 1983; Alvey 2003, 2005; Bense 1987; Rafferty et al. 1980).

There is a marked increase in artifacts at 22OK1076 that can be associated with the Late Archaic-Gulf Formational when compared to the numbers from previous periods. One unidentified point base of Gulf Formational to Middle Woodland age, two Gary bases, and fifteen Flint Creek points (bases=12, points=3) were found. Dates for the Late Archaic-Gulf Formational period are generally given as 5000 to 2500 B.P. (McGahey 2000). "Hunting and gathering continued to be the main way of life, although tentative steps toward domestication of plants were underway and led to the increasing utilization of manipulated plant resources" (McGahey 2000:136). Climate became cooler and wetter, similar to modern conditions, as time progressed (Delcourt and Delcourt 1985). Early in the period, Poverty Point came to dominance. This aceramic culture sat at the center of a wide-ranging trade network with complex political and social organization until ca 3100-3000 B.P. (Adelsberger and Kidder 2007:85).

Sometime near the end of the Poverty Point culture, pottery was introduced to the Southeast. Early ceramics are fiber-tempered, but this practice was soon followed by the adoption of sand as a tempering agent (Jenkins 1981,1982). Ceramic sherds from 22OK1076 that could be definitively associated with the Gulf Formational period include fiber-tempered, sand-tempered pinched, and sand-tempered punctated. The increase in artifact density is interesting when compared to midden mound sites in the Tombigbee River Valley. Midden mound sites there show abandonment during the Gulf Formational period, as first recognized by Rafferty et al. (1980) with similar results being seen in the work of Bense (1987).

Figure 3.3 Ceramics from Controlled Surface Collection.

NOTE: From top to bottom, left to right: Row 1) Fiber-Tempered Plain; Fiber-Tempered Punctated (2); Row 2) Sand-Tempered Incised; Sand-Tempered Punctated; Sand-Tempered Pinched (2); Row 3) Sand-Tempered Nicked Rim; Sand-Tempered Burnished; Sand-Tempered Fabric Marked; Row 4) Sand-Tempered Fabric Marked Red Slipped; Sand-Tempered Red Slipped; Grog-Tempered Punctated

Early Woodland-period cultural characteristics are not seen in the Southeast as they are in other parts of the eastern North America, but rather the cultural sequence in the region proceeds from the Gulf Formational to the Middle Woodland period (Jenkins 1981). Tombigbee Stemmed (n bases=9, n points=1) is the last chronologically diagnostic lithic form that has been found at 22OK1076 (Table 3.1). Likewise, sand-tempered fabric-marked is the last temporally distinct diagnostic ceramic type found at the site (Table 3.1, Figure 3.3). McGahey (2000) says that many points made during the beginning of the Woodland period in Mississippi consist of transitional types that resemble those made during Gulf Formational times, with overall size diminishing as time progressed.

During the Middle Woodland period, ca. 2500 – 1350 B.P., an increase in activities such as the construction of burial mounds and other earthworks has been noted as indicating a rise in ceremonialism (Jenkins 1982; McGahey 2000). Signs of increased trade are seen in exotic goods from inside the burial mounds (Jenkins 1982). While some authors (Jenkins 1982; Jenkins and Krause 1986) have taken this to mean that people were becoming "increasingly sedentary" (i.e., less mobile), Rafferty (1994, 1996, 2002, 2003, 2008) has suggested that local populations became sedentary earlier in the Gulf Formational period, when pottery became common. Subsistence information derived from Middle Woodland sites in Mississippi suggests limited use of cultigens prior to the introduction of maize in the Mississippian period, ca. 1000 AD (Gremillion 2002).

During the Late Woodland period, the introduction of the bow led to a rapid change in projectile point types. McGahey (2000:198) gives the approximate date of this change around 500 AD. At the same time, diagnostic ceramic styles begin to show heavy use of pottery that was grog-tempered, with grog-tempered cordmarked becoming common around 550 AD (though it has been noted as early as 300 – 450 AD) (Jenkins 1981:82; Rafferty 2003:170). The few grog-tempered sherds from 22OK1076 likely are from earlier wares; no certain Late Woodland or later-period diagnostics were recovered from the site. This may be due to the land leveling by the landowner, as discussed in a later chapter.

CHAPTER IV

RESEARCH QUESTIONS

As stated earlier, for a site to qualify for the National Register of Historic Places under Criterion D, it has to "have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR 60.4). Data potential is a large factor in this criterion, as it is not always apparent at the Phase I survey level what questions can be asked or what may be important for specialist studies. A researcher who specializes in lithics will most likely ask different questions of an occupation than those of a faunal specialist. Regardless, both researchers will rely upon the artifacts to pose their questions. "Implicit in the wording…in much of the archaeological literature is a scale best designated as that of portable discrete object, identifiable in that when moved, its component parts remain in the same spatial relationship to each other. A hammer, a coffee cup, and a dog are examples of this scale" (Dunnell 1971:147-148). So long as artifacts can be associated with discrete occupations of a continuous lineage, addressable research questions can always be put forward or re-examined by future researchers. In the case of 22OK1076, various research questions became apparent based on initial analysis of the CSC collection (Table 3.1).

Occupation Analysis

Occupation analysis is a necessary first step for this thesis, as the extent to which research integrity is compromised depends upon whether one or more occupations is present and, if the latter, whether they have been mixed. Much of the work in the state conducted by Rafferty (1980, 1994, 2002, 2003, 2008) uses survey data, with a primary focus in the Black Prairie and the Upper-Central Tombigbee River Drainage. "Settlement pattern analysis is dependent on well-thought-out delineation of occupations, following the understanding that occupations should be basic units, along with individual artifacts and features, for studying both variability and change in landscape use" (Rafferty 2008:99). This has also been part of the goal to understand the development of sedentary populations:

> Artifacts in surface collections made during site survey are often used only for component definition, then ignored. Such collections should have considerable potential for illuminating site function, at least in the sense of allowing identification of different occupations in a settlement pattern. These kinds of site may turn out to be correlated with environmental variables in a meaningful way, allowing some hypotheses about settlement pattern change to be generated for testing on excavated materials (Rafferty 1980:91).

One of the important considerations when delineating occupations for settlement pattern or any other type of analysis is that the method greatly benefits from precise recording of the spatial attributes of the artifacts (Rafferty 2008). When combining CSC with stratigraphic excavation, if the occupations represented are from single cultural tradition, and are of comparable duration their assemblages will come together in a seriation (Dunnell 1970; Rafferty 2008; see also Parrish and Peacock 2006). Geophysical and CSC data also inform on this topic, as they are complementary methods for revealing artifact clusters or a lack thereof.

Site Use and Permanence of Occupation

One common research goal in northern Mississippi has been to try to determine the use of prehistoric sites by examining traits that are under selection (Alvey 2003, 2005; Rafferty 1980). There have been two separate methods of determining site use in the study area: identification of lithic reduction stages at the Trice site, 22LE827, by Alvey (2003, 2005), and the examination of categories of lithic artifacts by Rafferty (1980). Of the two, the method used by Rafferty (1980) was chosen because of the volume of lithic artifacts that was known to be present at the 22OK1076 (Table 4.1). Additionally, Alvey (2003, 2005) and Rafferty (1994) used seven indicators that reflected whether a site was a functionally specialized short-term occupation or a longer-term habitation locus. Rafferty (1994:412-416) stated that six variables could be correlated with year-round habitation at a site, with a seventh that also indicates sedentariness. These six indicators are: distance to permanent water, artifact density, tool diversity, site size, presence of midden, and presence of burials. The other indicator that was used—ratio of potsherds to lithic artifacts—measures the relative importance of ceramics. These six indicators are used here to characterize site use in general terms (i.e., via description of the formal tool types and other artifact classes present) and to compare the data from the CSC to the data from excavation to see if indicators of site use change over time.

Table 4.1 Artifact Counts from Controlled Surface Collection

Artifact Types			
Lithics		**Ceramics**	
Biface Fragment	16	**Fiber-Tempered Total**	81
Biface Base	25	Fiber-Tempered Eroded	36
Biface	8	Fiber-Tempered Plain	42
Core	11	Fiber-Tempered Punctated	3
Other Tool	3	**Sand-Tempered Total**	337
Other Tool Fragment	1	Sand-Tempered Eroded	149
Sandstone Tool	47	Sand-Tempered Plain	163
Sandstone Tool Fragment	17	Sand-Tempered Incised	2
Debitage	899	Sand-Tempered Pinched	4
Heated Sandstone	874	Sand-Tempered Burnished	1
Other Coarse Lithic	697	Sand-Tempered Punctated	1
Fire Cracked Rock	10	Sand-Tempered Nicked Rim	1
Other Artifacts		Sand-Tempered Red Slipped	13
Fired Clay	342	Sand-Tempered Fabric Marked	2
Bone	29	Sand-Tempered Red Slipped Fabric Marked	1
Fossil Shell	8	**Grog-Tempered Total**	28
Charcoal	3	Grog-Tempered Eroded	20
		Grog-Tempered Plain	1
		Grog Tempered-Punctated	7

Much like early hypotheses on when native peoples began to construct mounds, the timing of early sedentariness has been a subject of consideration. Part of this likely is connected to antiquated, normative beliefs about the behavior of native peoples. Jenkins and Krause (1986:58,66) state that populations of the local Middle Woodland period, Miller I and Miller II phases were only "semi-sedentary." In recent work, Jenkins and Krause (2009) argue that changes used to differentiate the Terminal Woodland from the Mississippian (beginning ca. 1050 B.P.) period are due to agricultural migrants who assimilated the local Woodland populations, explicitly inferred to have been mobile hunter-gatherers. Jenkins (1981:30) concludes that with the transition to the Mississippian period, the change in subsistence brought about a number of additional changes, such as hierarchical settlement patterns. This is apparently due to the thought that sedentariness is an inevitable result of the adoption of agriculture, without consideration of other factors.

This differs from research compiled by Rafferty (1980, 1994, 1996, 2002, 2003, 2008) that indicates populations were becoming sedentary much earlier. "Similarity over the cultural periods in site location by soil type might be attributed to sedentary habitation sites being located in places that could be occupied comfortably year round, with special-purpose site locations not being so constrained" (Rafferty 1996:236). This work uses occupation analysis for the comparison of lineages and the examination of site function to suggest sedentariness (Rafferty 1996). Using these methods, does 22OK1076 show signs of being a sedentary occupation, and if so, at what point in its occupational history?

Rafferty et al. (1980:275) note that there appears to be a point of temporary abandonment of the East Aberdeen site in the Gulf Formational after intensive use in the Archaic. Later work by Bense (1987:403) appears to support this observation for the central Tombigbee Valley in general, as it was noted that populations appear to become more dispersed following the Altithermal. Based on the increased frequency of diagnostic lithic artifacts after the Gulf Formational period, it appears there was an increase in site use at 22OK1076 at that time. It may be that interior sites like 22OK1076 reflect whe and where settlement patterns first became sedentary in North Mississippi.

Two other lines of inquiry for determining whether or not an occupation is sedentary are examination of subsistence remains and the proportion of non-local lithics. Floral and faunal remains can be used to interpret subsistence and potentially to judge seasonality, and hence inform on settlement pattern studies (Alvey 2003, 2005; Peacock 1988; Rafferty 2002). "Archaeologically recovered faunal remains provide data for reconstructing the character of subsistence pursuits, including the species of animals used, the mix and relative contributions of these species, how procurement activities varied seasonally, and how they may have changed over time" (Jackson 2008:274-275). Similar information can be obtained when examining floral taxa, remembering that the processing and burning that leads to the preservation of floral and faunal remains leads to a pre-depositional bias. While faunal remains from the CSC are few and fragmentary, excavated faunal and floral material has the potential to inform on season(s) of occupation at 22OK1076.

Understanding preference in lithic materials also can be an important question when examining mobility. For example, Kosciusko Quartzite was a favored material in the Early Archaic in northern Mississippi, when it is thought by some to have been used due to more favorable lithics being unobtainable as gravel bars in the rivers were silted over (Brookes 1999; McGahey 1999). Also well documented is the heavy use of Fort Payne chert during the Middle Archaic, especially to make Benton points (Brookes 1999; Meeks 1999; Peacock 1988; Rafferty et al. 1980). It has been suggested that what materials were acquired and how they were used may also be an indicator of population mobility and consequent access to non-local material (Bense 1987; Meltzer 1999; Rafferty et al. 1980). Tools and debitage were examined to determine the preference for non-local lithic material at 22OK1076.

Such questions may be addressable from another angle, following the work of Bruce (2000, 2001b). He discusses bipolar reduction or radial fracturing of projectile points at 22PO691, an interior site in Pontotoc County dating primarily to the late Middle Archaic period. Radial fracturing should not be confused with *pieces esquillees*, a French term used by Brookes (1979) to refer to broken points at the Early Archaic Hester site in

Monroe County. Bruce (2001b:62) clarifies that *pieces esquillees* are an unintentional side effect of using tools as wedges and should not be confused with point that have been radial fractured, though both are defined as bipolar tools. Instead, radial fracturing uses a finished or nearly finished biface as raw material that is broken to produce a new tool, rather than a tool that is broken during use (Bruce 2001b:62; 2000:177). This question is of interest because, as Bruce (2000:177) notes, radial fracturing may be a sign that there is sparse workable lithic material in the immediate vicinity for relatively non-mobile populations; i.e., "that reliance on local stone is commonly taken as an indicator of reduced settlement mobility, an interpretation that seems reasonable on its face, and one that would have necessitated broader diet breadth" (Meltzer 1999:412). Bruce (2000, 2001b) views radial fracturing of spent bifaces via bipolar reduction as a means of conserving valuable, hard-to-obtain raw material by the creation of wedge-shaped pieces that could be used for other tools. If bipolar reduction is an indicator of reduced settlement mobility, sites like 22OK1076 could potentially be useful for this type of question. Because 46 of the 49 projectile points recovered from 22OK1076 (Tables 3.1 and 4.2) were fragmented, they may be used to inform on this topic.

In sum, the major research problem to be addressed at 22OK1076 involves the nature of the settlement as it relates to broader settlement pattern questions. Indicators of the permanence of occupation will include direct measures (seasonal indicators in floral and faunal remains) and indirect measures (e.g., presence/absence of midden, presence of burials, number of tool types present, presence/absence of radial fracturing of bifaces). Whether such indicators change over time at the site will be investigated. The number of occupations present at the site will be determined, and the degree to which the potential for addressing the stated research problem has been compromised by disturbance will be elucidated.

CHAPTER V

FIELD METHODS

Primary consideration of 22OK1076 is based on the CSC. Subsequent field methods were designed to provide more information on the number of occupations present and data related to permanence of occupation, as described in the previous chapter. It also was designed to assess the degree of disturbance at the site. This level of investigation is equivalent to Phase II testing.

Controlled Surface Collection

Controlled surface collection, or CSC, is one of the best-known methods discussed in this proposal. This method is widely used (Dunnell and Simek 1995; Killion et al 1989; Odell and Cowan 1987; Rafferty 1994, 2003; Redman and Watson 1970; Roper 1976) to gather surface artifacts quickly and in a controlled manner. A grid is laid out, and the artifacts are bagged separately from different proveniences (Sullivan 1992:103). Grid size varies on a case-by-case basis but typically varies between 2 and 6 m (Killion et al 1989:283; Redman and Watson 1970:280; Roper 1976:373). Mapping locations of artifacts is made relatively simple due to the collection method. For even greater precision, individual artifacts can be piece-plotted for exact provenience. This is a plus over general surface collections (GSC), as all artifacts from GSCs are placed in a single bag, making it impossible to determine association beyond the level of "site" (Rafferty 2003:172). Maintaining provenience via CSC allows for occupation analysis if disturbance can be addressed (Killion 1989; Rafferty 1994; 2003). There are drawbacks to controlled surface collections. While the ability to resize the grid is useful, the larger the grid units become, the more resolution is lost, though increasing the size may be necessary on large sites. Unfortunately, once a CSC is done at a particular resolution, it cannot be redone at a finer resolution (Dunnell and Dancey 1983:278-279). Dunnell and Dancey (1983:278) note that it is important to randomize the crew assignments, to spread ability and attitude to minimize bias that may be introduced. The MSU field school students conducted the previous CSC over a number of days, with changing crew assignments day-to-day.

One of the biggest arguments against the validity of surface collections is that plowing displaces artifacts. It has been stated, however, that the argument rests on the use of general surface collections, not controlled surface collections, as all remaining spatial information is lost during a general surface collection (Dunnell and Dancey 1983:269-270). Various authors (Baker 1978; Dunnell and Dancey 1983; Dunnell and Simek 1995; Odell and Cowan 1990; Redman and Watson 1970; Roper 1976) have discussed the effects of plowing, and the consensus is that plowing is not enough of a disturbance to disregard surface data. Dunnell and Simek (1995) comment on plow zone processes and note how, once plowing of a surface begins, it is not long before artifact size is no longer degrading and lateral displacement has stabilized. "There is, of course, no doubt that tillage does destroy some archaeological information and that spatial distributions in plowed fields are to some extent a function of tillage" (Dunnell and Simek 1995:306). In other words, the spatial resolution of the original phenomena is lowered. Dunnell (1992:27) also notes, however, that all assemblages are accretionary phenomena and typically start out as surface deposits. The CSC methods employed by

MSU and described in Chapter III were precise enough to allow the construction of detailed artifact distribution maps, which had not been done prior to this thesis.

Landowner Contact

Although not technically a field method, it was assumed that interviewing the landowner would provide information related to past disturbance at 22OK1076. Often overlooked, contacting the property owner can at times provide valuable information and should, if possible, be one of the first steps taken before the start of fieldwork. If the landowner has used the property for agricultural purposes, he or she may be able to give information about the equipment and previous plowing methods. It is also important to remember that, if on a project in which eminent domain is being enacted or there are other reasons that could cause a negative relationship with the landowner, communication may be difficult. However, positive contact with landowners has proved useful for past research and sometimes provided anecdotal comments about past site conditions and disturbance (Dunnell and Simek 1995; Odell and Cowan 1990). In the case of the study site, more specific information regarding land leveling is of particular interest.

On December 16, 2010, a short interview was conducted with Charles Peay. He stated that his family had owned the property before selling it to Eddie Strickland. Mr. Peay recalled that his family had used the property from approximately 1961 to 1978, and that the property had been used as pasture with the exception of one year around 1976 when it had been planted in soybeans. He stated that his family had cleared the bank of the creek of trees and brush and that there was no "mound" at the site but rather a push pile that had been made from clearing the bank (Interview with Charles Peay 12/16/10).

Much of the information learned from Mr. Peay does not correspond with the account from Mr. Strickland. Mr. Stickland recalls that he purchased the property in 1975 to use for farming, and at that time there was no push pile. Soon after acquiring the property, he used a tractor pan scraper to pull soil from the area surrounding an old creek channel to fill it. He said that he noted the darker soils of the site as he scraped around the creek and that there was a high spot, which he believed was due to the creek bank (i.e., that it was a natural levee). As he recalls, there were two to three branches of the creek that wove in a low lying area [north of the site?] and that before the creek was channelized, animals would leave the area around the creek during winter inundation. After he filled the relic creek channels, the land was cultivated until recent years when he began to use the property as pasture (Interview with Eddie Strickland 12/30/10).

2010 Fieldwork

Fieldwork at 22OK1076 was carried out December 12-18 and December 24, 2010. Weather during the week of December 12-17 was exceptionally cold for early winter in north Mississippi. Preliminary work on December 12 consisted of Dr. Evan Peacock, Dr. Janet Rafferty, Dr. Nick Herrmann, and Jason Kennedy, the author, going to the site and locating the original site datum using the original GPS device. The datum was then verified with a total station-mounted GPS, which was used to lay out part of the grid for the magnetometer survey.

Geophysical or remote sensing methods are used to survey without the destruction that is caused by shovel testing or excavation (Johnson 2006a, 2006b, 2008; Kvamme 2006; Lockhart and Green 2006). The various methods include aerial survey, ground penetrating radar (GPR), conductivity, magnetometry, resistivity, and magnetic susceptibility. In this thesis, the geophysical method employed was magnetometry, using a device known as a fluxgate gradiometer that has been shown to be useful to archaeologists (Kvamme 2006:213). The device (a Geoscan FM-256) works by the detection of the differences in the Earth's magnetic field (Kvamme 2006:213). The gradiometer is not capable of detecting individual portable artifacts with the exception of those made of ferrous material, but is extremely useful for showing the location of buried features, especially when they are arranged in regular geometric shapes (Johnson 2008:346; Kvamme 2006:222). Another benefit of the use of geophysical methods is that they are complementary to controlled surface collections (Rafferty 2008). Data collected from the use of geophysical methods are compared to the data collected from the CSC to determine if areas of archaeological interest (e.g., feature clusters related to separate occupations) can be located with both sets of data.

Geophysical methods used during fieldwork were oriented based on the original GPS point for datum that was used for the controlled surface collection. Previous survey methods in the local area that have produced positive results have used 20 x 20 m square survey blocks using parallel traverses (Alvey et al. 2004), which also was done at 22OK1076. The traverse intervals were 50 cm apart, with four readings being taken per meter along each traverse line, following Alvey et al (2004).

In addition to magnetometry, excavation was used to delineate the vertical extent of occupations and to assess the degree of disturbance at the site. Two excavation units 1 x 1 m in size were placed to test individual areas where CSC data and magnetic survey suggested the presence of intact subsurface deposits (features or depositional layers that have not suffered from disturbance beyond low-level bioturbation). Excavation units were dug in natural levels with arbitrary 10 cm levels within natural levels. The plow zone was removed as a single level in each unit. Soil was dry screened through quarter-inch wire mesh. Features were excavated separately, with fill taken for flotation. Limited hand stripping was used to test other areas of the site where magnetic anomalies occurred.

Because human remains (a single molar) were identified during the course of the CSC (Table 1), there is the potential for bioarchaeological research at 22OK1076. Hogue (2008:184) states that some potential questions may include "prehistoric health, disease, diet, status and sexual division of labor." Due to the sensitive nature of Native American burials, however, it was decided that if remains were encountered during excavation, only the most basic work would be performed. Precise locations of remains and associated features would be recorded and standardized forms, photographs and drawings for osteological analysis were to be used to record as much observable data as possible with the remains *in situ* (Hogue 2008:194). After documentation, units with remains were to be carefully backfilled. As it happened, no burials were encountered in excavation at the site.

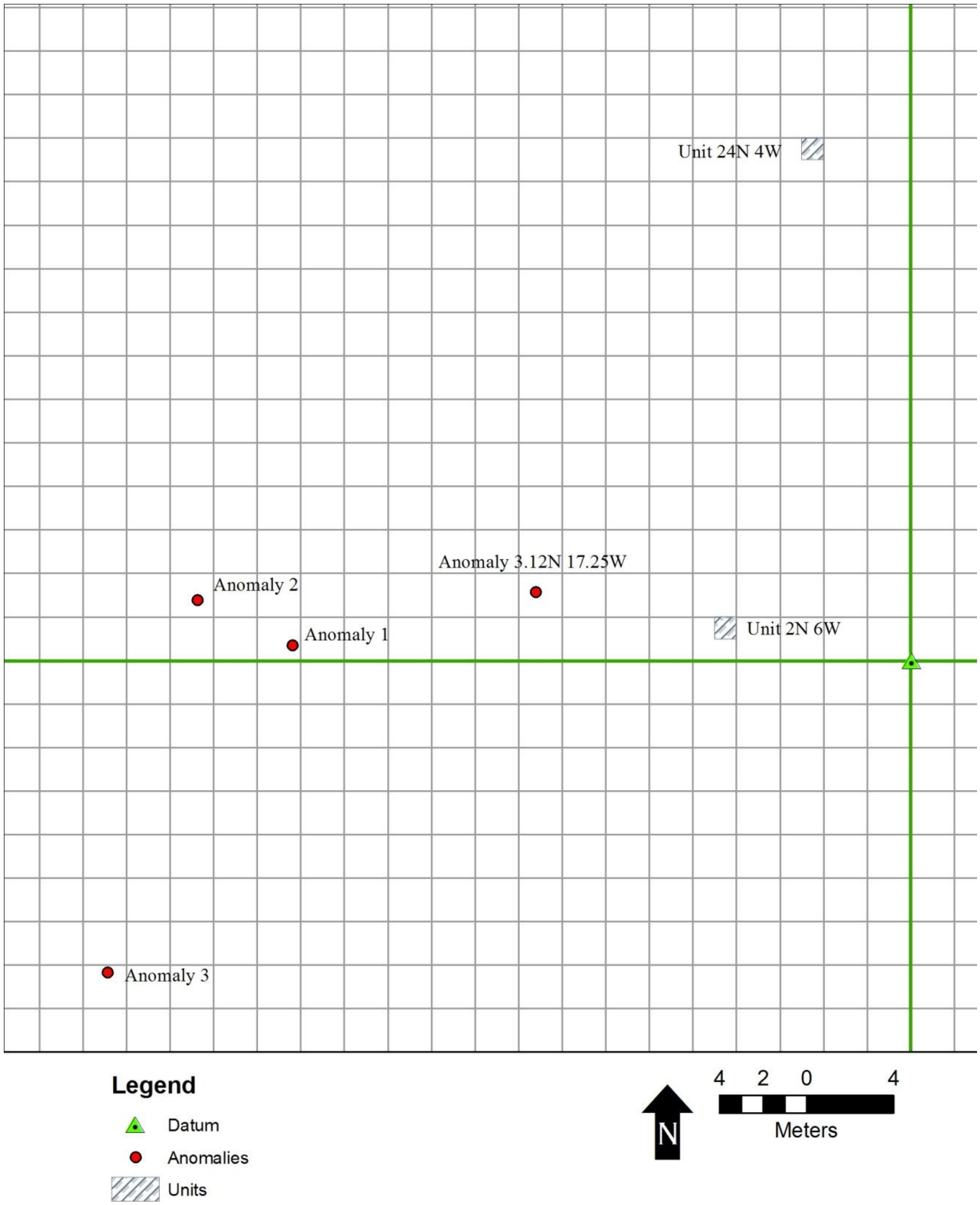

Figure 5.1 Unit and Anomaly Locations

Over the course of the week, Dr. Janet Rafferty oversaw the magnetometry survey and Dr. Evan Peacock assisted the author with directing the excavations. Bradley

Carlock, Rocco DeGregory, Janice Greenslade, Kate Manning, Michael McCoy, Jesse Morton, and Joseph Smith worked as field personnel. The remainder of the grid was laid out on December 13. All grid coordinates were oriented via the northeast corner of every unit and stakes were shot in using the total station. Two 1x1 m units were decided upon, 2N6W and 24N4W, each located in an artifact concentration as determined from analysis of the CSC artifacts (Figure 5.1). Excavation progressed extremely slowly due to frozen ground and clayey soils. The cold weather also appeared to affect the battery of the magnetometer so that only two-20x20 m grid squares, SQ 40N20W and SQ 40N0E, were surveyed. Several buckets of fill were taken back to the lab to thaw and deflocculate. Work continued on December 14, with excavators making slow progress due to the temperature and difficulty of dry screening the clay soils. Zone A as well as the first level of Zone B was completed in both units (see next chapter). The geophysical survey completed an additional three 20 x 20 m grid squares, SQ 40N20E, 40N40E, and 20N20W, before the cold temperatures drained the battery of the magnetometer.

On December 15, the decision was made to return all excavated soils to the lab for water screening to expedite fieldwork. The speed of digging increased, with work focusing on 24N4W while the magnetometer worked near 2N6W. Zone B, Levels 2 and 3 were finished in 24N4W, as was Zone B, Level 2 in 2N6W. Magnetometry work was completed for SQ 20N0E, 20N20E and 0N20W.

The weather was warmer on December 16 and saw Unit 2N6W finished, with the floor cleaning being labeled as Zone B, Level 3. The transit was brought out to the field again to plot in three magnetic anomalies (see next chapter) as well as the elevations within the site grid. As the day progressed, sporadic rain showers interrupted work. As the excavation of 2N6W was nearly finished, soil cores were taken across Anomaly 3, partially across Anomaly 1, and the magnetometer survey of 0N0E and half of 20N40E was finished before stopping for the day due to rain.

Work on December 17 saw the removal of Zone A from Anomaly 1 and Anomaly 3.12N17.25W and the finishing of excavation unit 2N6W after livestock had impacted the unit. Anomaly 1 showed what was first thought to be a feature, but after bisecting this was determined to be an area with an absence of ferrous staining when compared to the surrounding soil. After Zone A was removed from Anomaly 3.12N17.25W, it was revealed that the clay subsoil was much shallower in this area. A large fragment of a Benton point was found at the transition between Zone A and the subsoil. After that, Dr. Peacock examined the ped structure of soils from the excavation units before they were backfilled. During magnetometer survey that day, SQs 0N20E, 0N40E, 20S0E, and 20S20E were scanned. Final backfilling was completed on December 18 and off-site soil samples were taken on December 24 for comparison with soil samples that were taken during excavation.

CHAPTER VI

LABORATORY AND ANALYTICAL METHODS

The first step in work at 22OK1076 was to determine the number of occupations. It was decided to map the artifacts collected from the CSC by their grid locations after analysis. Temporal placement of the occupation(s) represented at 22OK1076 was accomplished by comparison with previously published work in the general area. By examining the lithic and ceramic lineages, the question of occupational duration was addressed. Duration was measured by comparing the lithic and ceramic artifacts from the site with currently accepted chronologies using McGahey (2000) for lithics and Rafferty (2003) for ceramics. Possible temporal gaps in the Early Archaic to Middle Woodland artifacts from the CSC were investigated using recognized diagnostic artifact spans, while artifact numbers were mapped to look for clustering that might suggest multiple occupations.

During the CSC, each 4x4 m collection square was divided into fours and each subunit named by the northeast corner of each square and then labeled by quadrant: northeast, northwest, southeast and southwest. Each 2x2 m quadrant was then given a bag number for collecting artifacts. The author analyzed the artifacts by using McGahey's (2000) point guide to identify bifaces and Jenkins' (1981) work for ceramics. Lithics were also grouped by material type: chert, ferruginous sandstone, or other coarse lithics, and by type of modification. Gravel cherts were considered local materials and all others, including Tallahatta Quartzite, were treated as non-local or exotic. Artifacts were recognized as heat-treated by reddish colors and glossiness for chert and very dark red coloration for heated sandstone. Presence of flaking, pitting, pecking or grinding was used to define other material modification for tool use. Fire cracked rock was defined as possessing the characteristic signs of heat damage but fracturing of the artifact was determined not to be from flaking.

Artifact density mapping was achieved by tabulating all artifacts from each quadrant (Appendix A). This allowed for the first count of total artifacts at the site (Table 4.1). After this was completed, each square was renamed by its northeast corner for conversion into a database. ArcGIS 9.3 was chosen because of the ability to easily change data sets to quickly view different attributes of the database. The ET GeoWizards 9.3.1 extension was used to draw the grid squares in ArcGIS, allowing each grid in ArcGIS to be linked to each database entry. This allowed the database information to geo-reference to the site datum so that each grid square would also be geo-referenced. Maps were then made using categories from the CSC.

CHAPTER VII

ANALYTIC RESULTS

Occupation Analysis

The bifaces and ceramics from the CSC were plotted on a graph to visualize the temporal spans that could potentially be covered by each artifact to check for continuous occupation. Three discrete occupations were identified from the graph (Figure 7.1). While there were projectile points that arguably could have been used to cover the gaps in the time span, this would be using diagnostics that have less precision when compared to artifacts with more strongly defined chronological dates. Using the most conservative estimate of occupation spans, these gaps in the lithic lineage indicate multiple occupations, in the Early and Middle Archaic and Gulf Formational through Middle Woodland. Because the site was demonstrated to encompass multiple occupations, the CSC was mapped to attempt to delineate the occupations spatially (Figures 7.2, 7.3, 7.4, and 7.5).

With the completion of the maps, it was noticed that the majority of artifacts came from the area west of the north-south datum line. Both ceramics and sandstone tools were heavily clustered in this portion of the site. It also contained the majority of heated sandstone and other coarse lithics, though these were more evenly distributed to the east cataloguing process (Janet Rafferty, personal communication, 2010). After completion of the magnetometry survey, it was possible to determine that the site below ground surface mirrored the mapped artifacts from the surface collection (Figure 7.6).

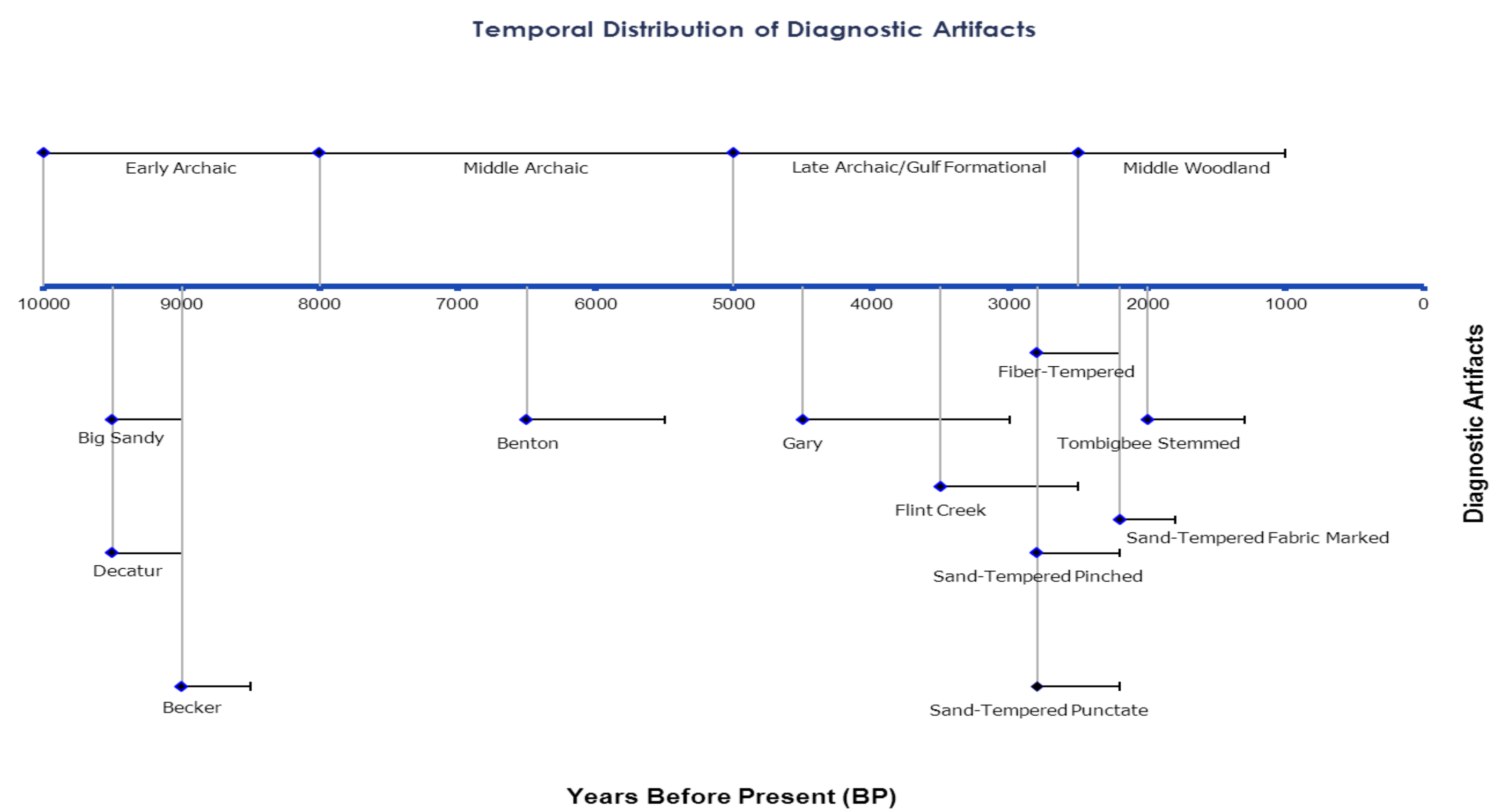

Figure 7.1 Chronological Spans for Temporally Diagnostic Artifacts (Projectile Points and Fiber- and Sand-Tempered Ceramics)

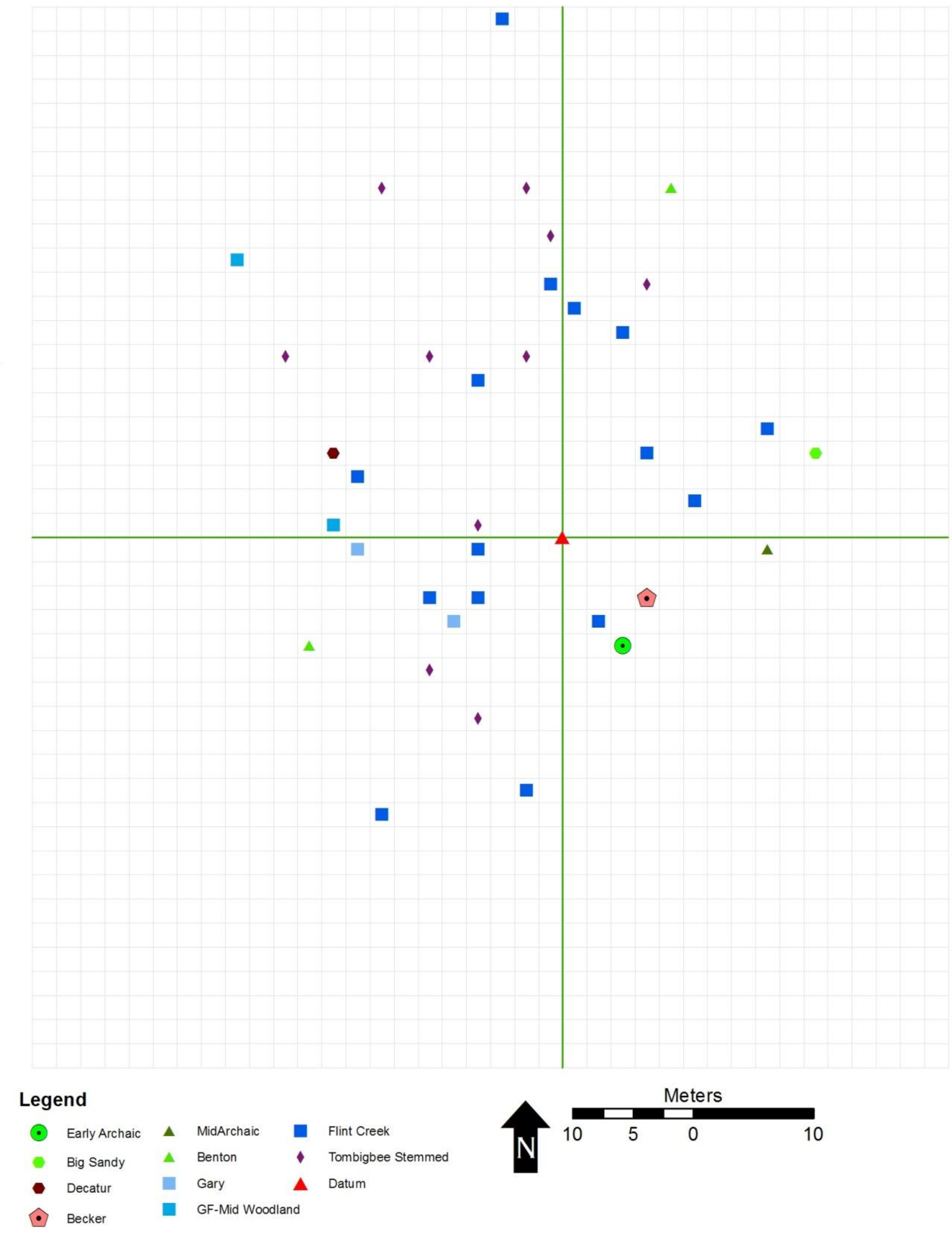

Figure 7.2 Projectile Point Map

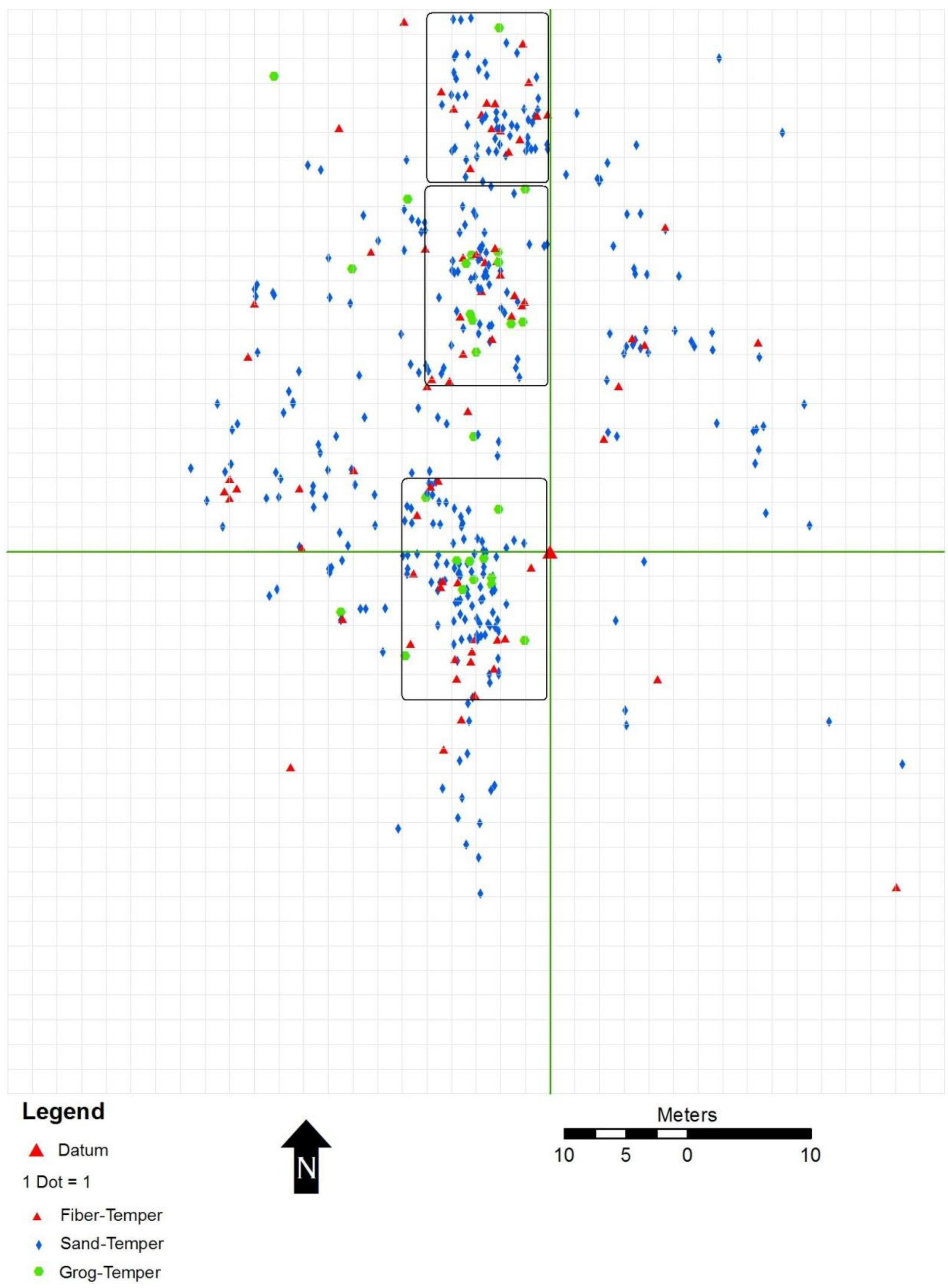

Figure 7.3 Ceramics by Temper

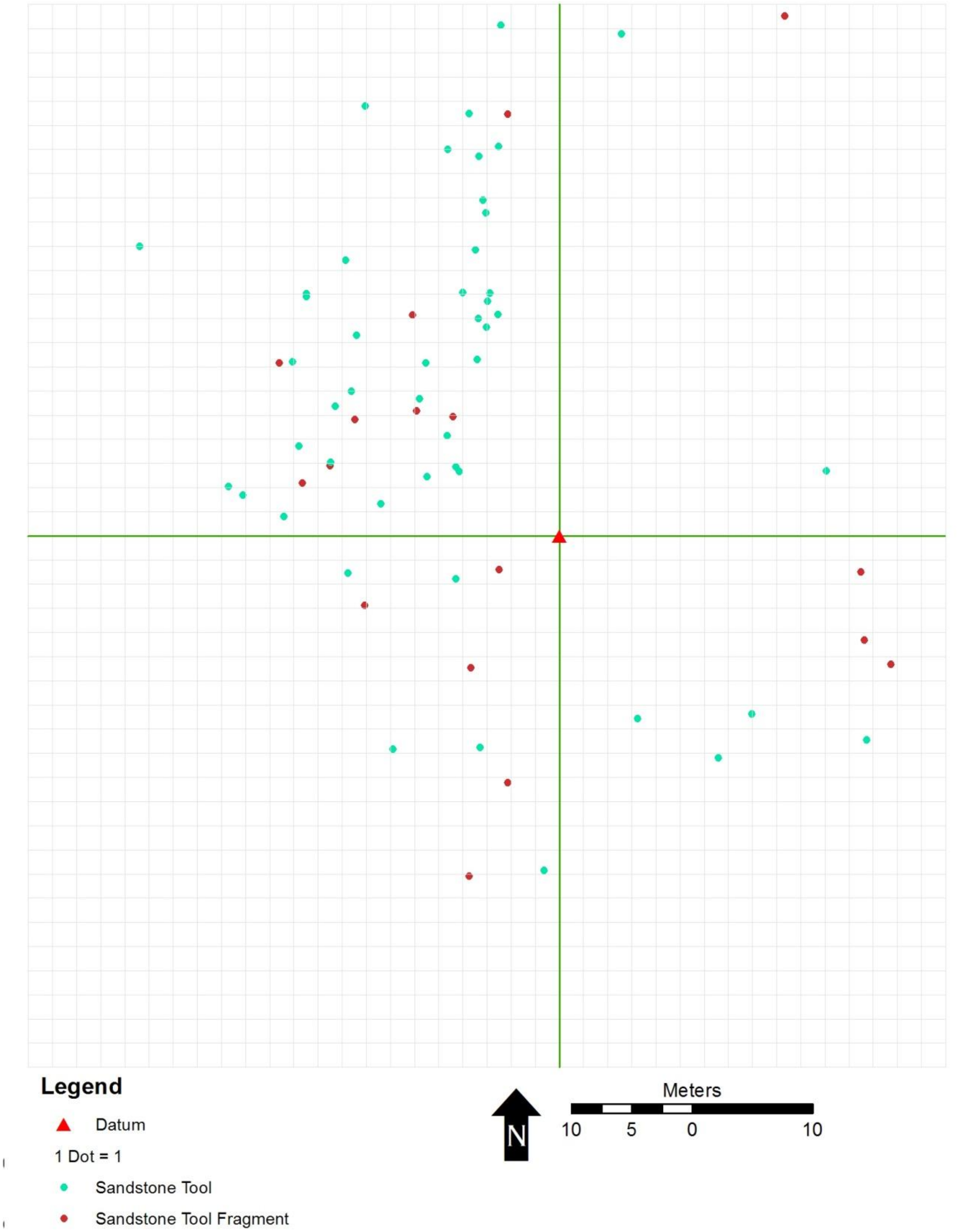

Figure 7.4 Sandstone Tools and Tool Fragments

Figure 7.5 Heated Sandstone and Other Coarse Lithics

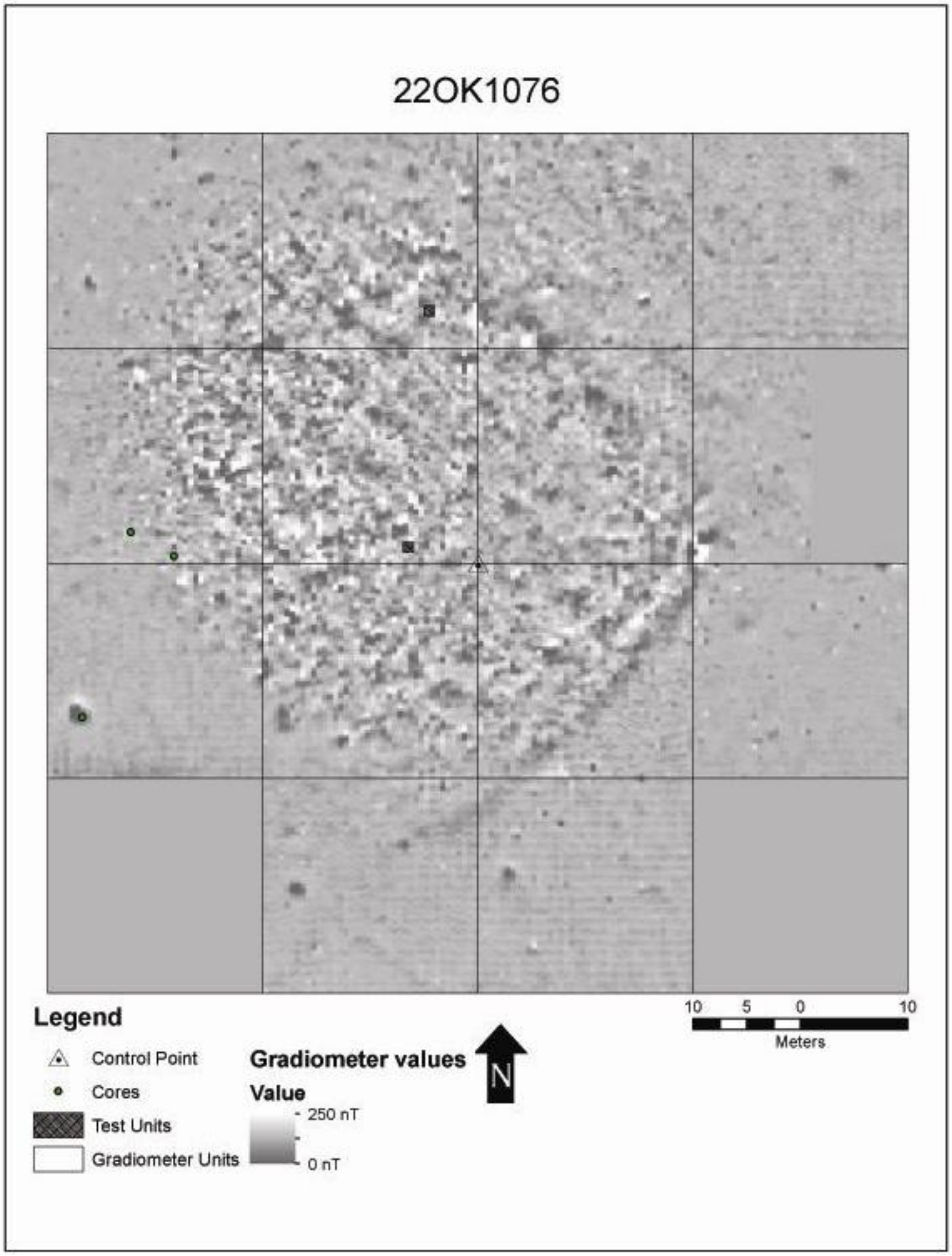

Figure 7.6 Magnetometer Survey Image

Upon examination (Figure 7.3), three clusters were noted on the maps containing both ceramics and chronologically defined lithics. All contained a mixed of fiber-, sand- and grog-tempered sherds as well as Gulf Formational-Middle Woodland lithics, though the southern cluster showed fewer fiber-tempered wares in its northern portion and the northern cluster had a single grog-tempered sherd. The clusters appeared to be broadly contemporaneous, and it was decided to place a unit in the northern and southern cluster to test whether they represented spatially discrete occupations. Chronologically distinct bifaces also showed an interesting pattern, as earlier bifaces were noticed to encircle the outer edge of the site. This may be a result of later materials having been scraped away, as described earlier but it would be expected that the pottery would be similarly affected.

It was decided to test the spatial correlations of the ceramic temper modes using phi values (Thomas 1986:419-423). "Values of phi vary between 1 and –1, with positive values indicating positive correlations" (Rafferty 2001:352). Rafferty (2001) had previously used phi values to test correlations of gray chert to later varieties of ceramics at a late Mississippian/Protohistoric site in Oktibbeha County. In this case, phi values were used to check whether the different ceramic modes were related to the same, or multiple, occupations. The phi analysis showed that the distribution of fiber-tempered sherds was more closely related to that of sand-tempered sherds than sand-tempered was to grog-tempered, though both had positive correlations (Table 7.1). In addition, seriation was used to see if the ceramic clusters were of comparable age. However, when the clusters were seriated, a bimodal curve was observed (Table 7.2). As all the ceramics could be expected to be from the same cultural tradition based on characteristics described in Jenkins (1981), and as the classes are known to be historical based on published seriations, the most probable cause of bimodality is that the clusters are of different durations.

Table 7.1 Phi Values Comparing the Distribution of Sand-Temper to the Distributions of Fiber and Grog-Temper

Area	Fiber	Grog
Entire Site	0.395	0.213
Northern Cluster	0.437	-0.142
Central Cluster	0.575	0.438
Southern Cluster	0.356	0.039

Table 7.2 Temper Mode Values for the Three Ceramic Clusters

Counts	Fiber	Sand	Grog
North	16	55	1
Center	22	62	12
South	19	93	11
Percentages	Fiber	Sand	Grog
North	22.22	76.38	1.38
Center	22.92	64.58	12.5
South	15.45	75.61	8.94

To determine which cluster had the longest duration, the phi value for each cluster was calculated. A stronger correlation between both fiber to sand-tempered and sand to grog-tempered ceramics was expected in the cluster with the longest duration. These calculations (Table 7.1) showed that there was in fact a reasonably strong correlation for all clusters when looking at fiber and sand-temper. For sand to grog-temper, there was a strong correlation for the center cluster, but a weak correlation for the southern cluster and a negative correlation for the northern cluster. From this it would appear that the center cluster is of the longest duration, with use of the northern cluster being discontinued before the introduction of grog-tempering.

After excavation, materials from the plowzone of 2N6W and 24N4W were found to be similar to the materials found in the CSC clusters (Appendix B). A single impact-fractured Flint Creek point and 138 flakes were located in Zone A of 2N6W. Ceramics recovered in the same unit include 27 fiber-tempered sherds, 49 sand-tempered sherds, and 4 grog-tempered sherds. For 24N4W, artifacts consisted of 73 flakes, 7 fiber-tempered sherds, 28 sand-tempered sherds and a single grog-tempered sherd. Small chalk nodules were also recovered in Zone A in both units, though it was not possible to determine if these were related to the prehistoric occupations or modern agricultural activity. It would appear from the interview with Mr. Strickland, the maps of the CSC artifact collection, and from the artifacts recovered from excavation of Zone A that the current plowzone was created after the original land surface was scraped away. After the original surface was used to fill the relict creek channel, the exposed midden was then cultivated, creating the current plowzone. This means that the artifact distribution is meaningful and that the artifact clusters seen in the CSC maps were created by prehistoric occupations rather than accidentally from the removal of the original ground surface. This may also be the reason that Archaic projectile points were near the surface at the southern edge of the site. If the site was originally a mound/high spot as Mr. Strickland stated, then the outer edges would have likely had less midden buildup, meaning that less soil would have to be removed to get to the older deposits.

Below the plowzone of each unit, a layer of undisturbed midden was found. Unit 2N6W contained a Tombigbee Stemmed base, a Flint Creek base, and a drill made from Fort Payne chert in the first level of Zone B, as well as nine sand-tempered sherds (n=9) and one fiber-tempered sherd (n=1) (Figures 7.12 and 7.17). While no further temporal diagnostics were found in this unit, it continued to a depth of 48 cmbd (Figures 7.7 and

7.8). Unit 4N24W yielded eleven sand-tempered sherds just below the plowzone and a Decatur point was found in a lower level (Figures 7.12 and 7.17). A single fiber-tempered sherd was found near the bottom of this unit, but this was likely due to one of the several krotovina that were noticed during excavation. Unit 4N24W terminated at a depth of 40.5 cmbd (Figures 7.9 and 7.10). Small lumps of displaced Zone C (7.5 YR 5.1 gray silty clay) were found in both units and were at first thought to indicate that the site was disturbed to subsoil. Upon examining the ped structure of the soil, it was determined that the ped structure of both units was sub-angular, blocky with clay skins or films. This evidence was noted as indicating the presence of intact midden, as clay skins represent the *in situ* transport of clay particles through the profile (Peacock pers. comm.).

There was a decrease in artifact density as depth increased in the units, especially near the bottom. Part of this is likely due to the increased use of the site for sedentary purposes during the Gulf Formational to Middle Woodland, as a sedentary occupation could be reasonably expected to deposit an increased amount of material. Another reason is that some of the artifacts near the bottom could have been displaced by krotovina. Additionally, soils below the actual midden may have been stained from leaching of organics from above. Since the soil texture of the midden and the subsoil below were both silty clay and no change in stratigraphy was observed, leeching may have occurred and have been accelerated from the stripping the original ground surface and subsequent plowing. This would mean that the actual midden is much thinner that is visually apparent.

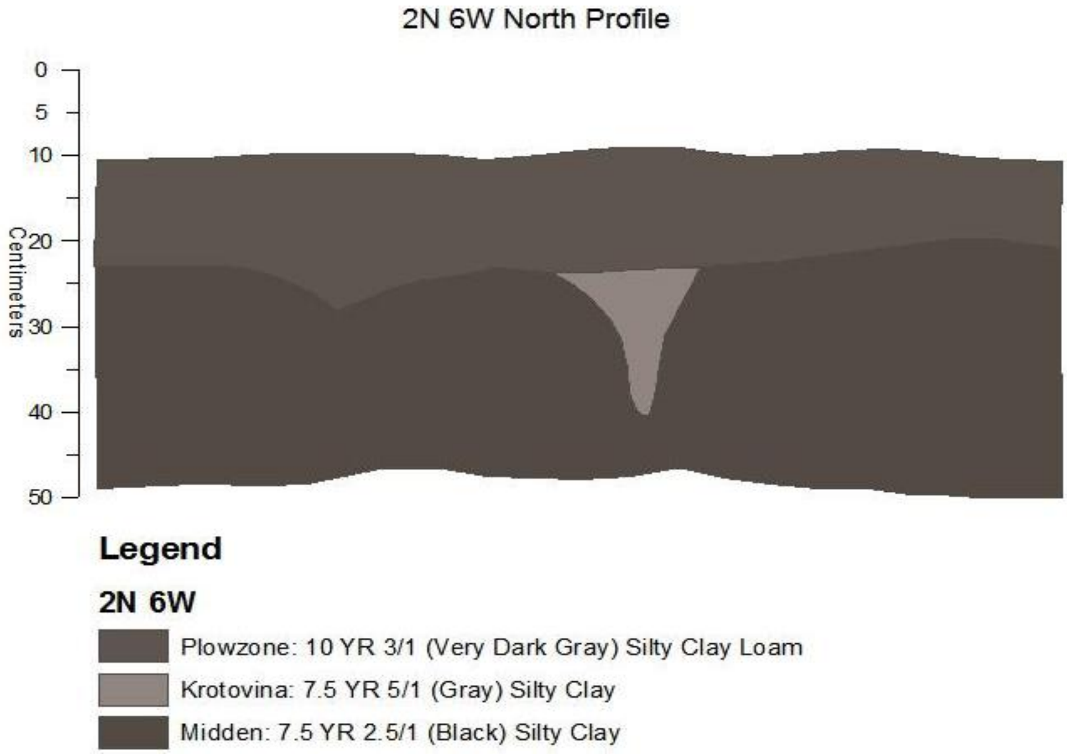

Figure 7.7 Unit 2N 6W Profile

Figure 7.8 Unit 2N 6W Profile Photograph

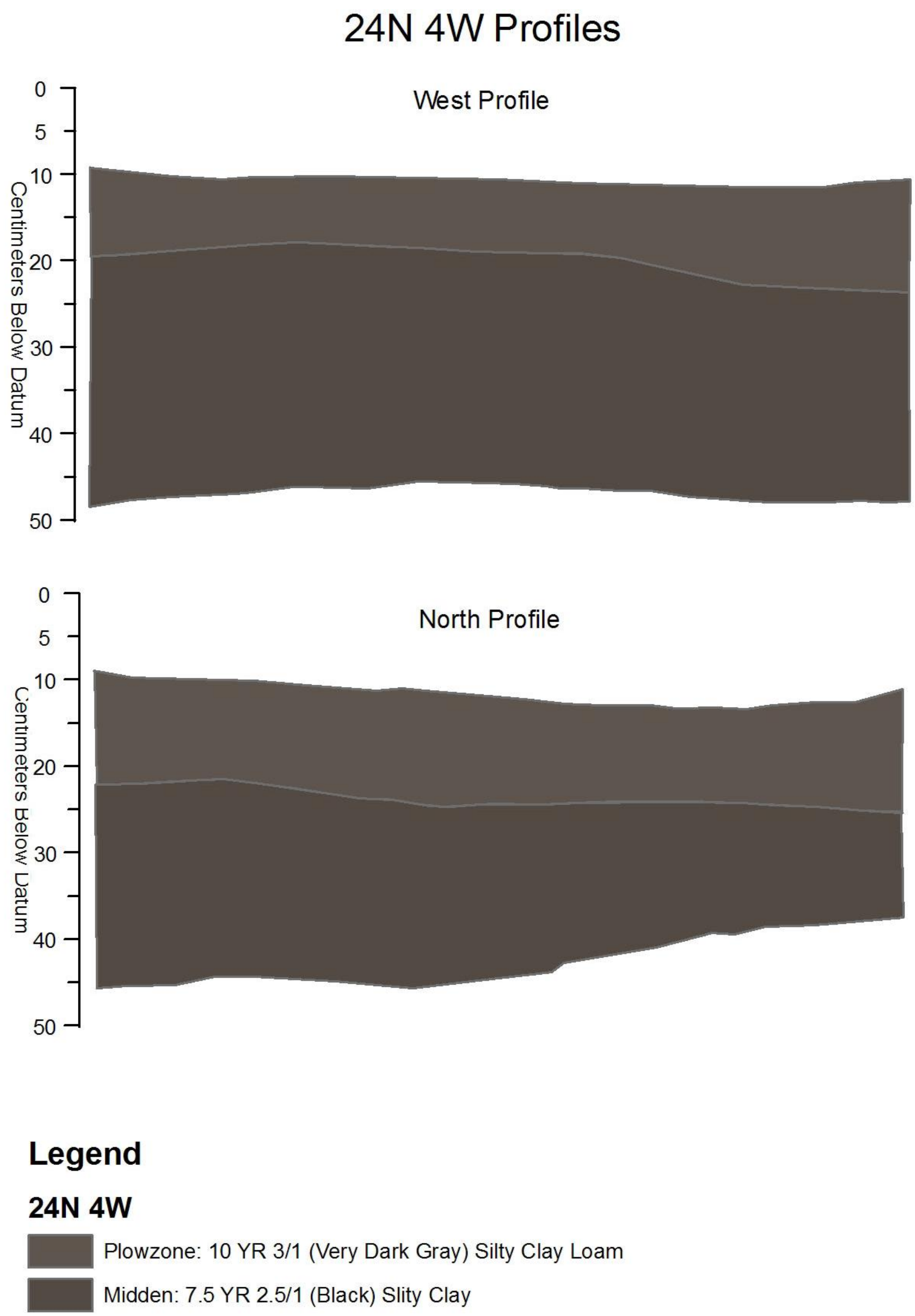

Figure 7.9 Unit 24N 4W Profiles

Figure 7.10 Unit 24N 4W Base of Unit

In addition to excavation units, the magnetometer image was examined. From the magnetic image, the site could be seen from the change in the magnetic background due to highs and lows in the recorded magnetism. The magnetic background was measured to be approximately 125 to 175 nT and though there was little difference is the gradiometer measurements, with the lows being 0 nT to highs of 250 nT, changes in magnetism within the site were still measurable enough to be seen. This image matches up with the greatest concretion of artifacts mapped from the CSC. While the site was distinct enough to seen, evidence of features was not observed. Because features were not apparent in the magnetic image, several magnetic anomalies (Figure 7.6) were examined. These anomalies were noticed in the magnetometer image after returning from the field to process the daily data. These were locations that showed identifiable highs and lows compared to surrounding magnetic data. Anomalies 1 and 3 were found to be magnetic lows and anomaly 2 was a magnetic high. The first attempt to determine what the anomalies were was to core across them from north to south after they had been located via the total station. Soils from the cores showed a two-zone stratigraphy of 10 YR 4/2 (dark grayish brown) mottled with 7.5 YR 5/1 (gray) silty clay loam that varied in depth from 18 to 50 cmbs and was underlain by 7.5 YR 6/1 (gray) silty clay. Because of the similarity of the samples from the anomalies, the decision was made to expose the most distinct of the anomalies, Anomaly 3 to the southwest and another high magnetic anomaly at 3.12N and 17.25W. It was seen that at Anomaly 3, the magnetometer had detected a location with no ferrous or manganese staining compared to the surrounding soils causing the magnetic low (Figure 7.11). In the case of 3.12N 17.25W (Figure 5.1), the magnetic anomaly was simply a place where the plow zone was shallow, with subsoil immediately under it. The only artifact located outside of the units via excavation was a fractured Benton point located beneath the plowzone on the interface of the sterile subsoil at Anomaly 3.12N17.25W (F in Figure 7.12).

When the magnetometry and excavation results were compared to the CSC maps, it was found that the multiple occupations could only be delineated spatially using the temporal diagnostics. Though there were very few diagnostics for some ceramic types, only 24 sand-temper sherds with surface finish besides plain or eroded, the temper modes could be used in broader scale settlement pattern analysis using the three ceramic clusters. The diagnostic lithics could also be used in settlement pattern analysis in looking at the locations of different projectile point types across the region. This is because the single diagnostics for the Archaic still represent the presence of use during a particular time, even though they were not able to be associated with other clustered artifacts.

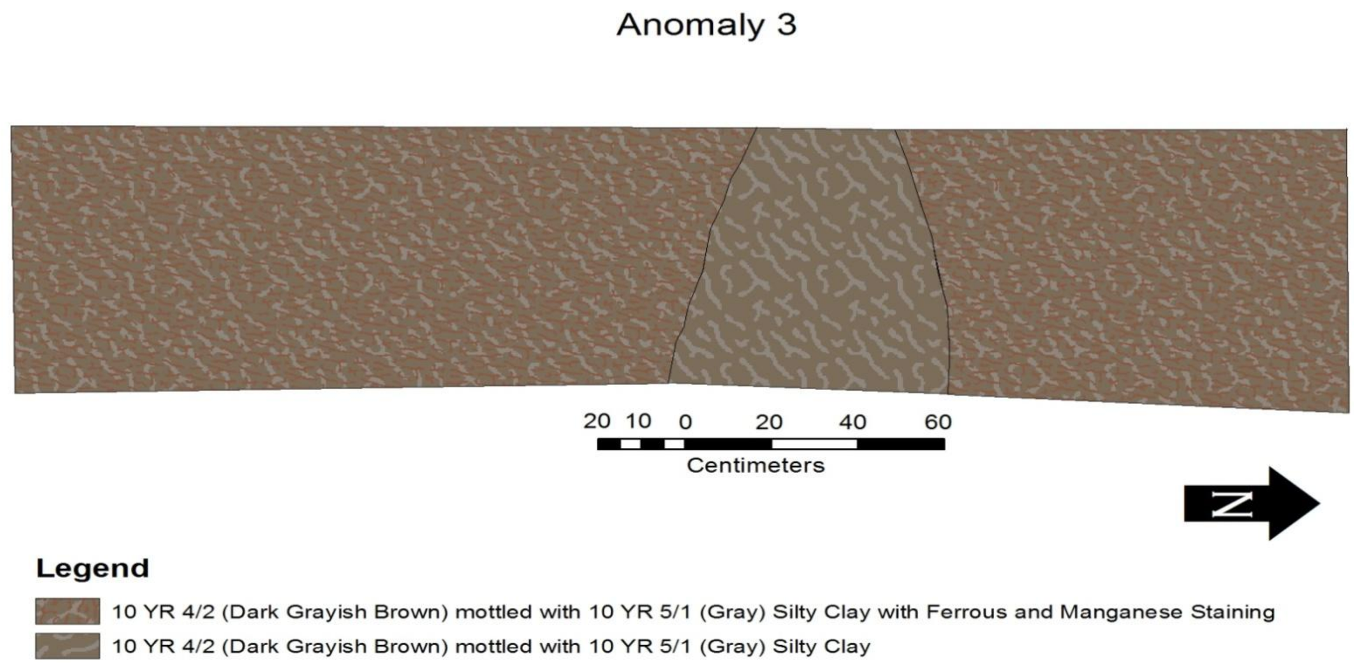

Figure 7.11 Anomaly 3 Plan View Below Plow Zone

Figure 7.12 Projectile Points from Excavation

NOTE: From top to bottom, left to right: Row 1) Flint Creek; Row 2) Tombigbee Stemmed; Flint Creek; Drill; Row 3) Decatur; Benton

Figure 7.13 Ceramics from Excavation

NOTE: From top to bottom, left to right: Row 1) Fiber-Tempered Punctated Interior and Exterior Red Slipped; Row 2) Fiber-Tempered Punctated Interior Red Slipped; Sand-Tempered Fabric Marked

Site Use

Tool diversity (see Rafferty1994:412) was examined in relation to site use. Tools recovered include projectile points, drills, grinding stones, pitted stones, hammerstones, adzes, and wedges. This showed higher tool diversity than the short-duration sites recorded by Rafferty (1994) that averaged 3.8 different tool types. The site was recognized as containing midden when it was first recorded, and this was verified by excavation. The presence of burials was indicated from a human molar that was found during the CSC. The presence of midden, a large number of tool types, and presumed burials indicates that 22OK1076 was a habitation site of relatively long duration rather than a special-purpose or limited activity site of any kind. However, as only projectile points, among these artifacts, are temporally diagnostic and, as mentioned above, the occupations could not be completely separated, it was not possible to determine if the site had been used as a special-purpose site for limited activity prior to sedentary habitation.

Permanence of Occupation

During the CSC, a large amount of heated sandstone and other coarse lithics, primarily non-heat treated sandstone, was collected (1,571 out of 3,435 total artifacts). Because such sandstone has not been obviously modified as a tool it is not used often for artifact counts. Presumably it is artifactual, however, so indicators that involve artifact counts will be given both with and without sandstone. Site size was refigured at this point, as the original estimation of 8,000 square meters covered a much larger area than

artifacts mapped from the CSC. When the area was refigured based on artifact distributions, site size was determined to be 4,125 m^2 (75 m long by 55 m wide). Using the corrected site size, artifact density is calculated at 832.73 artifacts per 1,000 sq m. If "unmodified" and burned sandstone is excluded, artifact density is 451.88 artifacts per 1,000 sq m.

The distance to permanent water is different today than during prehistory. Currently, the closest permanent water is the channelized Sun Creek, approximately 350 meters to the north. However, examination of the 1959 USGS map ("Pheba quadrangle, Mississippi" 1:62,500), which was recorded prior to land leveling by Mr. Stickland, the original location of the creek was along the northern edge of the site and may have partially bordered the site in the past (Figure 7.13).

Regarding tool diversity, Rafferty (1994:412) states that at sedentary settlements, a large diversity of tool types should be present. In this area, these might include "projectile points, drills, grinding stones, pitted stones, hammerstones, adzes, axes and celts, wedges, grooved stones, and atlatl weights" (Rafferty 1994:412). Seven of these ten categories were recovered at 22OK1076 (no atlatl weights, grooved stones, axes or celts were recovered). This showed higher tool diversity than the short-duration sites that averaged 3.8 different tool types discussed by Rafferty (1994). As noted above, the presence of midden and (presumably) burials also can be taken as an indicator of sedentariness.

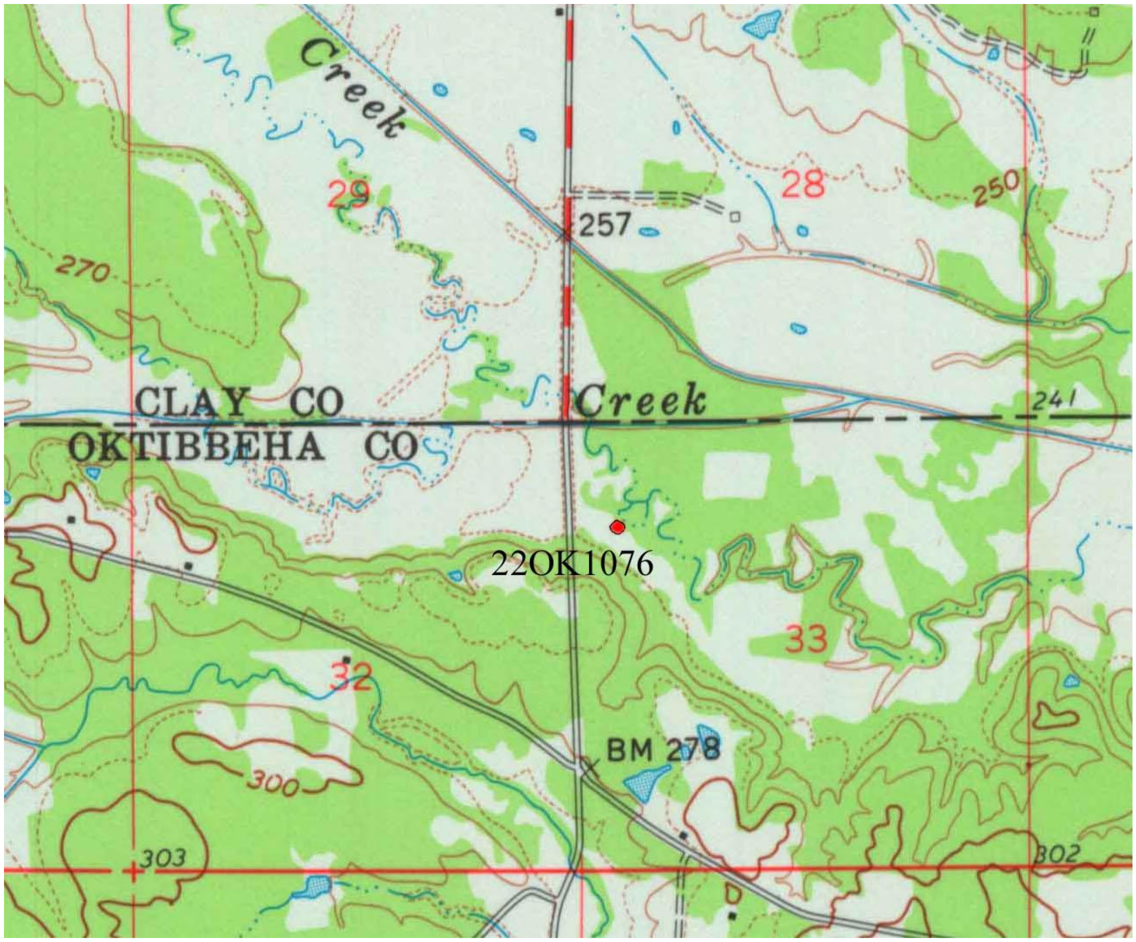

Figure 7.14 Site Location from 1959 USGS Map ("Pheba quadrangle, Mississippi" 1:62,500.

Because of the long period of time that is potentially covered from the initial use of the site to the introduction of ceramics, approximately 6,700 years, the ratio of ceramics to lithics is not as good an indicator for sedentariness as it would be at single-occupation sites. For the CSC, 5.85 lithics per ceramic were found when the sandstone was included and 2.35 lithics per ceramic were found when sandstone was excluded.

Because the occupations could not be completed separated using surface data, the indicators of artifact density, tool diversity, and the ratio of ceramics to lithics were re-examined using data from below the plowzone. Artifact density for the two units was found to be 280.5 artifacts per square meter with sandstone included and 250.5 artifacts per square meter without sandstone, suggesting that there is still a substantial volume of artifacts below the plowzone. Tool diversity decreased during excavation, from seven categories of tools to five. However, the small sample size recovered from the two 1 x 1 m units falls close to 5.7 tool types of longer-duration sites from Rafferty (1994). Finally, the subsurface ratio of ceramics to lithics was found to be 11.25 lithics per ceramic with sandstone included and 8.75 lithics per ceramic with sandstone excluded.

The amount of faunal material that was recovered from 22OK1076 was extremely limited for both the CSC and excavation. Only 29 small bone fragments were located during the CSC. Only one turtle shell fragment and the human molar could be identified. Faunal remains below the plowzone included four possible turtle shell fragments and two possible deer tooth fragments. No botanical remains were identified from either the CSC or screened excavation materials, and charcoal from flotation samples was too small and fragmentary to be identified. While charcoal flecks were noted in the midden, they were small and sparse overall. While the presence of deer and turtle suggests habitation during the spring and summer according to work by Jackson (2008) and nutting stones could be taken to be an indicator of the collection of nuts in the fall (Bruce 2001a), due to the small sample size of faunal material, it is difficult to make a seasonality determination.

Non-local lithic material was also sparse at 22OK1076 during the CSC. Only 6 projectile points and 38 pieces of debitage of non-local (i.e., other than Tuscaloosa gravel) material were recovered during the CSC, (4.24%) out of a total of 1,037 chert artifacts. Exotic materials from excavation were found in slightly higher numbers. Totals of lithic from excavation were 67 non-local flakes and a drill of Fort Payne chert (n=1), recovered from a total of 327 non-sandstone lithics for a total of 20.49%. When the plowzone is compared to the midden, 27 out of 190 lithics were exotic (14.21%) in the plowzone and 40 out of 148 midden lithics were exotic (27.03%) in the midden, again when sandstone is excluded. Of the four points that were made from exotic lithic materials, two are early Archaic (unidentified Early Archaic and Big Sandy point bases) and two are Gulf Formational (Flint Creek and unidentified Gulf Formational/Middle Woodland point bases).

Most of the information related to chronology, sedentariness, and site function was obtained during initial analysis. However, it was later realized that lithic material needed to be re-examined to answer questions related to radial fracturing. Bifaces and biface fragments were analyzed to determine if they showed signs of radial fracturing. Bruce (2001b:62) stated that radial fracturing is done by striking at the center of the biface while on a support or striking the biface on a margin. From Bruce's (2001b:63) work, "six types of radial break fragments were identified, as were four attributes that are considered characteristic of this reduction technique." These fragments included "triangular, wedge, medial, distal/proximal, longitudinal and non-orientable fragments" (Bruce 2001b:63). The attributes used to identify if a biface fragment was created by radial fracturing included "identifiable point of percussor impact, columnar eraillures, exaggerated compression rings and extreme crushing" (Bruce 2001b:69); alternatively, a biface is broken or fractured from being struck on the edge when being used as a wedge, a *pieces esquillees* is created (Bruce 2001b:62). If evidence of neither type of blow was found on a broken biface, breakage was recorded as tool use snap or impact fracture.

When the projectile points from the CSC were examined for the presence of radial fracturing, only one (second from left row 3 in Figure 3.2) was noticed as possessing the appropriate characteristics for a point of percussor impact to make a proximal fragment, with no other attributes noted. The majority of breaks (38 of 46) were the result of tool snap, which makes a single latitudal break across the biface. The remaining seven showed that they had been used as wedges or *pieces esquillees*, with impact observed to the edge of the biface. Of the seven projectile points and fragments that were found during excavation, four showed signs of tool snap. There was also one that was broken from an impact fracture, and the final two were *pieces esquillees*.

While there were few whole projectile points at 22OK1076, this does not appear to be the result of bifaces being radially fractured. Bruce (2001a) stated that at 22PO691, where radial fracturing was identified, there were no cores located. This could indicate that radial fracturing would be a last resort for lithic material. While there was a limited amount of non-local lithics at 22OK1076, when the relative lack of radial fracturing is considered, it seems to point to limited availability of exotic raw materials but a greater abundance of local material. This would appear to indicate that mobility was limited, but a concrete determination of sedentariness cannot be made from the lithic artifacts.

In summary, the presence of multiple occupations (based on a conservative read of diagnostic artifact spans) could only be distinguished spatially in the plowzone using temporally diagnostic artifacts because those artifact associations remained generally intact. This likely reflects only a moderate level of disturbance within the upper part of site 22OK1076. While artifact density and diversity suggest a sedentary occupation, due to limited subsurface sampling it was not possible to determine which occupation at the site was the first to become sedentary, although assuming sedentariness first occurred during the Gulf Formational period, following Rafferty (1980, 1994), seems reasonable. Assessing changes in site use over time proved difficult because of the presence of multiple occupations in the plowzone. Yet, because of the intact midden that was found, the site still has the potential to yield significant information on the use of smaller upland sites by Archaic people, and additional excavations focusing on each cluster identified from the CSC may still be useful for questions related to sedentariness in the Gulf Formational period. Maintaining an occupation-based focus, the ceramic clusters could be used for additional settlement pattern analysis either as individual occupations or combined. Following the regulations laid out for the National Register under 36 CFR60.4, this site meets the qualifications for eligibility.

The above describes the results for testing at the site with the research questions posed as if the site contained no disturbance. As was shown, disturbance affected the ability to use occupation analysis at 22OK1076 but did not prevent it. The disturbance also affected other research questions that examined the plow zone to the degree it was not possible to definitely determine when an occupation at the site became sedentary. If the site had been plowed to subsoil, because of the mixed occupations, the ability of the site to answer the questions would have been more difficult, at best. On the other hand, had the site been a single occupation of continuous lineage, all of the research questions would have still been viable.

CHAPTER VIII

CONCLUSIONS

The greatest impact of this thesis is that it employs methods for examining disturbed sites, methods derived from a more robust theoretical approach than is typically employed in CRM. In using the occupation as the base unit of study, combined with field methods of controlled surface collection, standard excavation practices and geophysical survey, meaningful research questions can be answered so long as occupations at a site have not been co-mingled. In the instance of 22OK1076, multiple occupations are co-mingled in the plowzone though the occupations could still be delineated using diagnostic artifacts. If the site had been recorded in the traditional manner using a general surface collection, all that would have been able to be determined was that the site contained "multiple components" that would be too jumbled to warrant National Register eligibility, although the visible presence of midden might have prompted a call for subsurface testing. The most probable course of action would have been to strip away the plowzone to "gain access to the features below." This is because of the site-based, rather than occupation-based focus of CRM.

"It is not uncommon to strip away unplowed midden to expose pits that are then excavated, even though those pits may be only holes in the subsoil containing remnant blobs of what was stripped away to expose them" (Peacock and Raffferty 2007:122). In the instance of 22OK1076, if the presence of midden had been the determining factor for further testing and the plow zone had been scraped off, as is so often the case in local

Phase II and III work (e.g., Bruce 2001b; Giliberti 1999), the majority of diagnostic artifacts and how they are related in spatial associated clusters would have been lost from the removal of the plow zone. The magnetometer image does not indicate the presence of distinct features, thought this is not altogether surprising considering that the midden is Archaic in nature. Hand stripping over two anomalies did not reveal discrete features, but further work along this line is warranted.

The presence of an intact, Early Archaic to Gulf Formational midden contributes to 22OK1076 being considered significant, as such sites are few in nature (especially in upland areas) and can help illuminate this little-known portion of prehistory. While delineating patterns in the plowzone data was compromised due to disturbance of the artifacts that were not temporal distinct, it still can be suggested that populations had become increasing less mobile, and likely sedentary, by the Gulf Formational period, based on the presence of midden and pottery. Tool diversity also seems to be high, though mixing of materials from different occupations makes this measure of sedentariness hard to apply.

Site 22OK1076 was chosen because it was known to be disturbed. Had a single occupation been present, then a fuller assessment of the role of disturbance as it affects significance determinations could have been made. It would be worth pursuing this line of research at other disturbed sites, as the degree to which disturbance diminishes the research potential of single-occupation sites still needs to be explored.

With the information gained from this work, it would be expected that if 22OK1076 were located inside the Area of Potential Effects for a CRM project, the best course of action would likely be avoidance. If further work were unavoidable, work focusing initially on the artifact clusters would be recommended to examine how small upland sites fit into the regional settlement pattern. Doing so with an occupation-based focus would better illuminate the differences of smaller assemblages. Additionally, shallow five-centimeter levels within the remaining natural stratum should be used to attempt to stratigraphically delineate the Gulf Formational occupations from the Archaic material below. Site use, site seasonality, and indicators of relative mobility should continue to be interesting research topics in an attempt to determine how upland sites were used by Archaic-period and later peoples.

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APPENDIX A

MATERIAL RECOVERED FROM CONTROLLED SURFACE COLLECTION BY UNIT

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
1	0N 0E									3	2	1	2						2														
6	4N 2W									1	3	3	1																				
7	2N 0E									1	3	6	1																				
8	2N 2W									6	5	6	8								1	2											
18	16N 2W	1	1							7	8		8								3												
22	20N 2W									8	1	4	18					1	1			2									1	1	
26	24N 2W									2	7	2	1																				
27	22N 0E		1																														
28	22N 2W									12	4	4	3	1				1	1		2												
31	26N 0E	1		1		1				6	4	4	4							1	1	2											
36	30N 2W		1							4	1	5	4					2			1										1		
37	36N 0E									6	7	5						1	1		3	1											
38	36N 2W										2	1									2	3											
39	34N 0E									6	7	4								1	3	4											
40	34N 2W									4	4	3							2		2												
41	40N 0E									1	5	1							1			1											
42	40N 2W		1																														
43	38N 0E										1	5																	1				
45	44N 0E										3	1																					
48	42N 2W									1	2	3						1				2											
49	4S 0E									5	4	2																					
50	4S 2W									1	6	4	2								1												
51	6S 0E									3	5	6	1																				
52	6S 2W									1	7	2							1														1
57	12S 0E										3	3																					

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
63	18S 0E									2	1	1																					
64	18S 2W										3	1																					
66	20S 2W			1																													
71	26S 0E							1																									
89	4N 4W									1	3	2																			1		
90	4N 6W									4	6	1	1								1	3											
91	2N 4W									5	4	3	2									3											
92	2N 6W		1							2	12	4	2		1						1		1						1				
93	8N 4W																					1											
95	6N 4W									4	4		1		1																		
97	12N 4W									2	4	4	2		6																		
98	12N 6W									3	6	4	5					1															
99	10N 4W	1								1	4	3		1							1	1											
100	10N 6W									2	3	3	4		1																1		
105	4S 4W									2	1	2	4	1							3	2											
106	4S 6W	1					1			3	2	6	7								4	2											
107	6S 4W									5	4	2							1		5	2											
108	6S 6W									1	6	7						1			2								1				
110	16N 6W							1		1		4	1		1																		
112	14N 6W		1							2	3	6	1									1									1		
113	20N 4W							2			2	6	3								2								1				
114	20N 6W				1			1		1	3		2		7			1			1	1									2		
115	18N 4W									3	6	4	1						1		2										1		
116	18N 6W							1		4	2	3	4					1			1												
117	24N 4W									7	1	3	4			1		4			6			1							1		

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
118	24N 6W							1		11	5	3	7					1			2	4									1		1
119	22N 4W							1		7	4	3							1			3											
122	28N 6W							2		4			1								1	3											
123	26N 4W	2								3	3	2			2			2			1	4									1		
124	26N 6W									9	3	4	4			1						1											
126	32N 6W							1		4	2	1	1						1		2												
127	30N 4W				1					2											1	1											
129	36N 4W								1	1		1						2	1		5	1											
130	36N 6W							1				1	1						1		1												
131	34N 4W							1				1	2								2	3			1								
132	34N 6W				1					3											2												
133	40N 4W									5											1	2											
134	40N 6W									4			1								1								1				
135	38N 4W									4	4	1							2														
136	38N 6W									3	3	1									1	2											
137	44N 4W		1					1		1	5	2																			1		
138	44N 6W									1	2	2	1								1	2											
139	42N 4W									1	3	2																					
140	42N 6W									3	2	1			1						3												
141	0N 4W									4	6	5	2								2	3									1		
142	0N 6W		1							9			1								4	3		1							2		
143	2S 4W								1	1			7		1						2	4											2
144	2S 6W				2					15			6					1				3									2		
145	8S 4W									16								1			4												
146	8S 6W				1					15	2	1	2					1	2			1											

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
147	10S 4W									9							2				1												
148	10S 6W								1	6			1					1	1		1												
149	12S 4W									6				1																			
150	12S 6W									5			2		1			1			2												
151	14S 4W									8			2																				
152	14S 6W		1							7																							
154	16S 6W							1		7												2											
155	18S 4W																				2												
156	18S 6W									6																							
157	20S 4W								1	5		1	1																				
158	20S 6W									1		1									2												
159	22S 4W									3	1										1												
160	22S 6W									2											1												
161	24S 4W									1	2	1									1												
163	26S 4W											1	1									1											
166	28S 6W								1																								
168	30S 6W									1																							
176	38S 6W															1																	
178	40S 6W											1																					
181	0N 8W									4	1	2	1								2				1								
182	0N 10W									4	4	4	1	1				1			1	4											
183	2S 8W							1		5	6	3						2			2	1							1				
185	4N 8W									1	2	3									2					1							
186	4N 10W										5								1		2	2											
187	2N 8W									3	1	1	1																				

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
188	2N 10W									4	2	4																					
189	8N 8W										2	2	4								1												
190	8N 10W									1	7	2	3								1												
191	6N 8W							2		9	6	3							2		3	3											
192	6N 10W							1			4	2	1																		1		
193	12N 8W										5	2	7								1	1											
194	12N 10W							1	1	2	4	2	8								1												
195	10N 8W							1	1	1	4	3	3																				
196	10N 10W									5		2	2																				
197	16N 8W									1	3	5	4								3												
198	16N 10W		1					1		7	6	6	21		1						1	2											
199	14N 8W										7	3	8	1				1	2														
207	22N 8W				1			1		2	4		6			1						1											
210	28N 10W									5	1	1									3	2											
212	26N 10W									4	2	1	1					1			1	1											
213	32N 8W									2			3																				
214	32N 10W																												1				
215	30N 8W				1					3	1	2	1																				
216	30N 10W					1				1	1	2																			1		
219	34N 8W							1			2	1																					
223	38N 8W				1					6	1	2							1			1											
225	44N 8W									2	2	2																					
226	44N 10W									3	2	1	2						1														
230	4S 10W			1																													
231	6S 8W		1							6	6											1											

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
232	6S 10W	1									4	1	1					1															
234	8S 10W									4	4		1																		1		
235	10S 8W										1																						
236	10S 10W		1							2		1																					
241	16S 8W											3							1														
242	16S 10W									2	2	1																					
243	18S 8W											1									1												
246	20S 10W									2	1																						
248	22S 10W									1		1																					
249	24S 8W										3																						
257	32S 8W									1																							
269	0N 16W	1								1	1	6	2	1							2	2											
271	2S 16W							1		5	1	3	1																				
274	4N 18W									5	7	1	4									1											
275	2N 16W									4	1	1	2									2											
276	2N 18W		1							3	6	1																					
277	8N 16W									2	5	1										1											
278	8N 18W			1				1		2	7		1								1	1											
279	6N 16W		1							2	5	4																					
280	6N 18W								1	3	5	2	5									3											
281	12N 16W										7	2	2																				
282	12N 18W							1		5	5	3	3																				
283	10N 16W								1	2	9	3																1					
284	10N 18W									1	4	3										1											
286	16N 18W	1								4	7	5	8		1																		

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
287	14N 16W							1		4	7	2	4																				
288	14N 18W									4	5	2	5	1																			
289	20N 16W										2	1																					
290	20N 18W									1	4	2	2																				
291	18N 16W							1			6	1																					
292	18N 18W									2	7	8																					
293	24N 16W							1		2	6	3	2									1											1
294	24N 18W									1	2	1	2																				
295	22N 16W									2	2	2	1								1								1				
296	22N 18W									1	5	3																					
299	26N 16W									1			1																				
302	32N 18W									3	4	2										1			1								
305	36N 16W							1		3		1			1			1															
306	36N 18W									3		1																					
309	40N 16W									1	1																						
321	4S 16W				1				1	7	9	3	2						1			1											1
368	2S 22W										4	1	1									2											
369	4N 20W									3																							
371	2N 20W									3	2	3							1			1											
372	2N 22W							1		1	3	2																					
373	8N 20W							1		3	3	2																					
374	8N 22W									4	4	1																	1				
375	6N 20W								1	4	1		2						1			2											
376	6N 22W									1	5	7											1										
377	12N 20W									1	5	2									1	1											

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
378	12N 22W									3	4	5																					
379	10N 20W									2	2	6	1																				
381	16N 20W									3	3	3	2									1											
382	16N 22W		1					1	1	5	1	1																					
383	14N 20W									3	2	4									1	1											
384	14N 22W									1	7	5	1																				
385	20N 20W							1			2	2																					
387	18N 20W									4	3	3	4																				
388	18N 22W									2	2	3										1											
389	24N 20W									1		2																					
390	24N 22W									2	4	1	1			1																	
391	22N 20W							1		2	3		3																				
392	22N 22W									4	7	4							1		2	3											
393	28N 20W									2	2	1																					
395	26N 20W									1	1																						
396	26N 22W												1																				
397	32N 20W										1																						
399	30N 20W									1	1																						
401	36N 20W									1																							
403	34N 20W									3		2																					
405	40N 20W									4																							
406	40N 22W									1			1																				1
407	38N 20W									1	1																						
408	38N 22W									4																							
413	4S 20W									1																							

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
417	8S 20W		1																														
418	8S 22W									1																							
420	10S 22W									1																							
422	12S 22W									1																							
425	16S 20W																	1															
426	16S 22W									2																							
431	22S 20W									1																							
435	26S 20W									1																							
442	4N 26W							1		2	3	3																					
443	2N 24W									3	4	2																					
444	2N 26W									2	4	2									1												
445	8N 24W										8	1	1								1												
446	8N 26W									2	3	3										1											
447	6N 24W									2	6	5							3														
448	6N 26W							1		3	2	1	1					1				1											
449	12N 24W									4	6	3	1																1				
450	12N 26W									1	2	2																	1				
451	10N 24W									3	5	4													1								
453	16N 24W									2	2	1	1		1			1															
462	24N 26W		1																														
482	4S 26W									4	1	1	2																				
513	8N 28W									2	3		1								1												
521	16N 28W									1	4	5	1																				
571	2N 32W									2		1																					
573	8N 32W									1	1																						

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
582	16N 34W									1	1																						
590	24N 34W							1		1		1																					
592	22N 34W									1		1																					
607	10S 32W									1																							
644	22N 38W										1	1																					
725	4S 12W									1	2	1									1												
726	4S 14W									3	2											1								1			
728	6S 14W										2	1																					
729	8S 12W									1												1											
733	12S 12W									2	1																						
737	16S 12W							1																									
740	18S 14W									2																							
743	22S 12W											1										1											
744	22S 14W		1																														
766	4N 14W							1			2											1											
767	2N 12W									4	1	1																					
769	8N 12W									2	5	2			1																		
770	8N 14W									1	3		1						1														
772	6N 14W									4	5				1	1						2											
773	12N 12W									1	3	1																					
774	12N 14W										2	2	2									1											
776	10N 14W									2	4	4	1																				
777	16N 12W									4		3	1																				
778	16N 14W									2	4	3	2														1						
779	14N 12W									5	9	6	1		1																		

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
780	14N 14W									2	2	1	2																				
781	20N 12W								1	1		4																					
782	20N 14W									3	1	2																					
783	18N 12W									2	3	6	1																1				
784	18N 14W									1	1	2																					
785	24N 12W										2	2																					
786	24N 14W										3	5																					
788	22N 14W	1								2	1	4	1																				
789	28N 12W									3	1	2	1																				
790	28N 14W										2										1												
791	26N 12W									7	3	2									1												
792	26N 14W									2	3	1								1													
793	32N 12W									3		1																					
794	32N 14W											1																					
795	30N 12W									1	1	2				1																	
796	30N 14W			1						4	1	1	1																				
798	36N 14W									1		1																					
807	42N 12W											1																					
822	32S 2E										1																						
836	22S 4E										1																						
852	6S 4E											1	1																				
875	20N 2E			1																													
886	32N 4E										1		2									2											
887	32N 2E									2	3	1										1											
890	36N 4E									2	3	4	1								1												

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
891	36N 2E									3	1	1																					
909	38S 6E										1																						
920	26S 8E									1																							
921	26S 6E										1																						
922	20S 8E									3	1																						
923	20S 6E									1	3	1																					
924	22S 8E									1		1																					
925	22S 6E									1																							
926	16S 8E									1	1	1																					
927	16S 6E										1																						
929	18S 6E									1	1																						
930	12S 8E									1	4	3										1											
931	12S 6E									1	1	4	1																				
932	14S 8E							1		2	2	1									1												
933	14S 6E										1																						
935	8S 6E		1																														
936	10S 8E									2	2	4																					
937	10S 6E									1		2																					
938	4S 8E		1							5	1	2	1																				
939	4S 6E									6	1	3										1											
940	6S 8E									1	2	5																					
941	6S 6E									1	1	1																					
942	0N 8E											2									1												
943	0N 6E										1	2																					
944	2S 8E									1	2	3																					

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
945	2S 6E									1																							
946	4N 8E									4	3	6																					
947	4N 6E									1	1	2	1																				
948	2N 8E									3			1																				
950	8N 8E		1																														
951	8N 6E										3	5																					
953	6N 6E										2	5																					
956	10N 8E										7	5																					
957	10N 6E									3	3	7	1						1			2											
958	16N 8E									7	2		1																				
961	14N 6E									5	6	6	4						1										1				
963	20N 6E									4	1	3																					
964	18N 8E	1									5	4	2					2			6												
965	18N 6E		1							9	5	5										2											
966	24N 8E									1	4	3	1									3											
968	22N 8E		1																														
969	22N 6E									12	4	2																					
970	28N 8E									5	4	4	2								1	1											
971	28N 6E									4	6	1	1																				
973	26N 6E									4	1	1									1												
974	32N 8E				1					5	5	1	1																				
975	32N 6E									2	1	2									1	1											
980	34N 8E	1									1	1										1											
984	38N 8E									1	3																						
989	42N 6E							1			3																						

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
992	2S 12E										2	2																					
994	4S 12E									1																							
998	8S 12E											4																					
1001	10S 10E									1									1														
1002	12S 12E									2	1	2																					
1003	12S 10E									1	2	4																					
1004	14S 12E										1																						
1007	16S 10E										4																						
1012	22S 12E										1	3																					
1034	4N 12E		1																														
1040	6N 12E										6	2		1																			
1045	10N 10E										4	5	2																				
1052	18N 12E									4	3		2									3											
1054	24N 12E									1	1	2										1											
1056	22N 12E									1	3	1	1																				
1059	28N 10E									4	5	2							1			1											
1065	30N 10E	1																															
1091	12N 14E									1	7	1									1												
1101	18N 14E									1		1	1								1	1											
1102	24N 16E									1	1	1																					
1103	24N 14E										1	1																					
1109	26N 14E									1	1	1																					
1111	32N 14E									3	1	3																					
1116	34N 16E									1	1																						
1124	6S 16E									1	3																						

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
1125	6S 14E									3	1	1																					
1126	8S 16E										1	1																					
1132	14S 16E							1																									
1137	18S 14E							1		2	1	1																					
1141	22S 14E											2																					
1150	0N 20E									1		1																					
1151	0N 18E			1																													
1152	2S 20E									2	4	2	2				1																
1153	2S 18E									3	1	3	2																				
1154	4N 20E									1	1	1																					
1155	4N 18E									4	4	1									1												
1156	2N 20E											2																					
1158	8N 20E									1		1																					
1159	8N 18E									4	1											1											
1161	6N 18E									1	6	2																					
1162	12N 20E									4	2	5																					
1163	12N 18E	1								6	1	1										1											
1164	10N 20E									4		2																					
1165	10N 18E		1							4		1	3									3											
1167	16N 18E										3											1											
1168	14N 20E									3	1																						
1170	20N 20E									1																							
1173	18N 18E									1		2							1														
1176	22N 20E									2	1	1																					
1179	28N 18E												1																				

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
1183	32N 18E											1																					
1188	34N 20E																					1											
1195	4S 18E									1																							
1197	6S 18E									2	1		1																				
1199	8S 18E											1																					
1200	10S 20E									2	2	3																					
1201	10S 18E									1	2	3																					
1204	14S 20E											1																					
1208	18S 20E										1																						
1209	18S 18E									2																							
1213	22S 18E									1																							
1217	26S 18E											1																					
1219	0N 22E									1		1																					
1221	2S 22E									1	1					1																	
1223	4N 22E										1	1										1											
1225	2N 22E										2																						
1226	8N 24E									1																							
1227	8N 22E			1							1	1																					
1228	6N 24E							1			1																						
1230	12N 24E									1		1																					
1231	12N 22E																					1											
1233	10N 22E									1	1	2																					
1234	16N 24E											1																					
1236	14N 24E										1																						
1237	14N 22E									1		1																					

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
1239	20N 22E									1		1																					
1240	18N 24E									1																							
1241	18N 22E	1											1																				
1242	24N 24E										1																						
1243	24N 22E											1																					
1257	34N 22E											1																					
1259	40N 22E									1		1																					
1263	4S 22E									1		2																					
1264	6S 24E									2		2																					
1266	8S 24E									1																							
1267	8S 22E									1		1																					
1270	12S 24E																					1											
1271	12S 22E											1																					
1272	14S 24E									1																							
1273	14S 22E											1																					
1277	18S 22E	1																															
1279	20S 22E									1		1																					
1280	22S 24E										1																						
1284	26S 24E											1																					
1287	0N 26E									1																							
1288	2S 28E									1																							
1289	2S 26E								1	1	3	1																					
1290	4N 28E									1	1	1																					
1291	4N 26E											2																					
1292	2N 28E													1																			

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
1294	8N 28E										1																						
1297	6N 26E											1																					
1299	12N 26E											1																					
1303	16N 26E										1																						
1304	14N 28E									1																							
1308	18N 28E										1																						
1318	32N 28E											1																					
1322	36N 28E									1	1																						
1323	36N 26E									1																							
1328	38N 28E											1																					
1329	38N 26E										1	1																					
1330	44N 16E									1		1																					
1331	44N 14E									2																							
1333	42N 14E																					1											
1334	44N 20E								1		1																						
1335	44N 18E									1																							
1336	42N 20E									1																							
1337	42N 18E									2																							
1339	4S 26E									1																							
1340	6S 28E									1		1																					
1342	8S 28E										1																						
1343	8S 26E								1			1																					
1344	10S 28E								1																								
1345	10S 26E										1	1																					
1347	12S 26E											1																					

Bag	Unit	Biface Frag	Biface Stem	Biface	Core	Other Tool	Other Tool Frag	Sandstone Tool	SS Tool Frag	Debitage	Heated Sandstone	Coarse Lithic	Fired Clay	Fire Cracked Rock	Bone	Fossil Shell	Charcoal	Fiber Eroded	Fiber Plain	Fiber Punctated	Sand Eroded	Sand Plain	Sand Fabricmarked	Sand Incised	Sand Pinched	Sand Burnished	Sand Punctated	Sand NickedRim	Sand Red Slipped	Sand Fabricmarked Red Slipped	Grog Eroded	Grog Punctated	Grog Plain
1349	14S 26E									1	2																						
1351	16S 26E							1			1	1																					
1355	20S 26E											1																					
1357	22S 26E										1																						
1358	24S 28E										1																						
1363	0N 30E									1																							
1373	6N 30E											1																					
1385	6S 30E										1	1																					
1386	8S 32E											2																					
1390	12S 32E									1																							
1391	12S 30E										1																						
1393	14S 30E										1																						
1395	16S 30E																					1											
1400	22S 32E									1																							
1405	26S 30E																		1														
1406	Lost Provenience					1																											

APPENDIX B

MATERIAL RECOVERED FROM EXCAVATION BY STRATA AND LEVEL

UNIT 2N 6W

Excavation Lot #	E1	E1 Wgt	E5	E5 Wgt	E13	E13 Wgt	E15	E15 Wgt
Stratum/Level	**A1**		**B1**		**B2**		**B3**	
Lithics								
Flint Creek Point Impact Fractured	1							
Tombigbee Stemmed Base			1					
Flint Creek Base			1					
Drill			1					
ground, pecked SS Tool					1			
ground double pitted SS Tool					1			
UID Tip	1							
heat-treated sandstone flakes	4		4		2		1	
non heat-treated sandstone flakes	7		10		6		1	
Non-heat treated Gravel flakes	52		29		12		1	
Heat Treated Gravel flakes	58		18		4			
Tallahatta Quartzite Flakes	3		6		1			
Fort Payne Chert Flake	1		1					
Petrified Wood Flake	1							
Claystone Flake	1				1			
UID Opaque White Chert with Quartz Veins Flake	1							
UID Opaque White Chert Flake			1				1	
UID Pink Chert Flake			1					
UID Purplish Chert Flake	1							
UID Light Grey Chert Flakes	3		2					
UID Grey Chert Flakes	3				2			
UID Dark Grey Chert Flakes	2		1		1			
UID Brown Chert Flake	1							
Rose Quartz			1					
Marcasite	1							
Fire Cracked Rock	3		1				1	
Sandstone < ½ in.	180	127 g	90	50 g	74	57 g	19	9 g
non heat-treated sandstone	13	211 g	6	123 g	6	39 g	1	1 g
heat-treated sandstone	37	847 g	21	550 g	7	69 g	1	3 g
Miscellaneous								
Fired Clay	70	51 g	53	108 g	16	6 g	3	<1 g
Chalk	40	18 g						
Ceramics								
Grog Eroded	4							
Sand Plain	6		1		1			
Sand Plain Rim	1							
Sand Eroded	42		8					
Sand Tempered Fabric Marked			1					
Fiber Tempered Plain	9							
Fiber Tempered Eroded	14							
Fiber Tempered Punctated Red Slipped Interior and Exterior	2							
Fiber Tempered Punctated, Interior Red Slipped			1					
Fiber Tempered Red Slipped Interior and Exterior	1							
Fiber Tempered Red Slipped Interior	1							
Organics								
Burned Bone	3				2		2	
Burned Bone (Poss. Turtle)					1		1	

UNIT 24N 4W

Excavation Lot #	E3	E3 Wgt	E7	E7 Wgt	E9	E9 Wgt	E11	E11 Wgt
Stratum/Level	A1		B1		B2		B3	
Lithics								
1 Midsection of Biface			1					
Decatur Point					1			
Ground SS Tool			1					
Possible Pecked SS Tool			1					
heat-treated sandstone flakes	2		4		4			
non heat-treated sandstone flakes	13		17		18		2	
Non-heat treated Gravel flakes	24		5		3			
Heat Treated Gravel flakes	22		8		7		3	
Tallahatta Quartzite Flakes			5		3		1	
Quartz Flake	1							
Fort Payne Chert Flake	3							
Novaculite flake			1					
Coastal Plain Agate Flake					1			
Claystone Flake			1					
UID Opaque White Chert Flake	1		2		1			
UID Purplish Chert Flake					1			
UID Light Grey Chert Flakes	5		2					
UID Dark Grey Chert Flakes			1					
UID Dark Grey with White Veins Chert Flake			1					
Bangor Chert Flake	1							
UID Brown Chert Flake	1							
Petrified Wood					1			
Sandstone < ½ in.	167	122 g	87	62 g	42	23 g	18	9 g
non heat-treated sandstone	14	76 g	6	31 g	1	99 g		
heat-treated sandstone	21	212 g	8	103 g	2	89 g	1	28 g
Miscellaneous								
Fired Clay	85	44 g	118	55 g	39	21 g	4	2 g
Chalk	55	24g	4					
Ceramics								
Grog Eroded	1							
Sand Plain	6		2					
Sand Plain Rim	1		1					
Sand Eroded	21		8					
Fiber Tempered Plain	2						1	
Fiber Tempered Eroded	5							
Organics								
Charcoal			1					
Burned Bone	1		10		9		5	
Burned Bone (Poss. Turtle)	2		1				1	
Burned Bone (Poss. Deer Tooth)							1	
unburned bone					1			
unburned bone (poss .deer tooth)					1			

UNIT 3.12N 17.25W

Excavation Lot #	E16
Stratum/Level	
Lithics	
Benton Point	1