GAINING NEW PERSPECTIVES ON THE PAST: AN APPLICATION OF GIS AT THE BEST FARM

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Abstract

Archeologists from the University of Maryland participating in a multi-year Archeological Identification and Evaluation Study at Monocacy National Battlefield are using a variety of field recovery techniques as well as a geographic information system (GIS) to evaluate an historic property known as *L'Hermitage*, or Best Farm, located in Frederick County, Maryland. Recovery techniques range from intensive shovel testing to a metal-detector survey, tailored to the varied archeological contexts at the site. GIS has been used in concert with these field techniques to address the challenges of site scale and time sequence, as well as to inform the research methodology of the project in a timely and economical manner.

Introduction

In a rural oasis thirty miles north of Washington, D.C., forty miles west of Baltimore, and just south of Frederick, Maryland, is Monocacy National Battlefield (Figure 1). Here, in 2001, archeologists from the University of Maryland conducted an intensive survey at *L'Hermitage*, a site popularly known as the Best Farm (Figure 2). This survey is the first phase of a multi-year Identification and Evaluation Study, and is intended to provide National Park Service officials with information that will aid in long- and short-term management decisions. Conducted under the auspices of an existing cooperative agreement between the University of Maryland and the National Park Service, National Capital Region, Regional Archeology Program, the project has additional support from the Center for Heritage Resource Studies at the University of Maryland, Department of Anthropology.

Created by congressional legislation in 1934, Monocacy National Battlefield comprises nearly 1,650 acres in Frederick County, Maryland, and commemorates the Civil War battle that occurred in the area on July 8 and 9, 1864. Since the properties relevant to the battle remained in private ownership until the 1980s, park lands were not open to the public until 1991 (National Park Service 2000:1-3). The 274-acre Best Farm was among the properties acquired by the Park Service in 1993 and is the current focus of archeological inquiry at the park. The farm is bounded by an industrial park on the north, Interstate 270 on the west, and the Monocacy River on the east and south (Figure 3).

With the large scale of the project — both in the area encompassed and the long time span of human occupation at the site — an integral part of the evaluation of the Best Farm site has been a geographic information system (GIS). Project archeologists have been using GIS since the project's inception to answer key research questions and perform spatial analyses in a timely manner. Logistical challenges imposed by the site's large acreage were surmounted by using the GIS to model scenarios before starting fieldwork, which helped shape the approach taken for metal detecting, and also by adapting a variety of field techniques to different locations within the site. Using GIS to assist in planning for future field seasons will further reduce the continuing challenges of site size. This planning

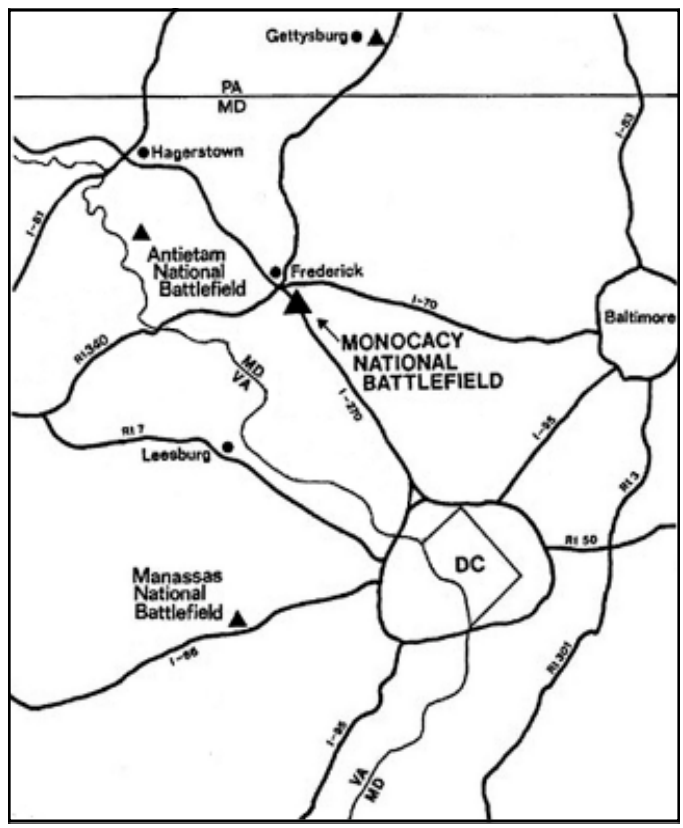

FIGURE 1. Monocacy National Battlefield, Frederick County, Maryland.

FIGURE 2. Looking west over the present-day Best Farm from Maryland Route 355.

will include posing research questions and visualizing query results in the GIS, thereby helping to set a priority order for fieldwork through a better understanding of the spatial relationships of artifact assemblages. Finally, the challenges of understanding the diverse occupational patterns at the site may be addressed by using GIS to visualize the sequence of historic and prehistoric contexts that may be found at the Best Farm.

Historical Context

The contemporary Best Farm and surrounding lands were originally patented in 1740 as *Locust Level* by land speculator Daniel Dulaney. By 1756, the tract comprised 3,902 acres, extending from the intersection of the Buckeystown Pike and present-day Maryland Route 355 almost all the way to Ballenger Creek. Dulaney appears to have utilized a standardized lease requiring lessees to build a dwelling of a specific minimum size, with a stone or brick chimney, as well as a barn. It is likely that several mid-eighteenth century structures existed on the *Locust Level* tract. Some of these structures are believed to be extant on the present-day Best Farm (Reed 1999:57).

In 1795, Daniel Dulaney sold 457 acres of *Resurvey on Locust Level* to Mademoiselle Victoire Pauline Marie Gabrielle de la Vincendiere, the eldest daughter of a French family who fled civil unrest in San Domingue (Haiti) and relocated to Frederick in the 1790s (NPS 2000:10; Reed 1999:57; Rivers 2001:36). In 1798, Victoire purchased an additional 291 acres from James Marshall, bringing the to-

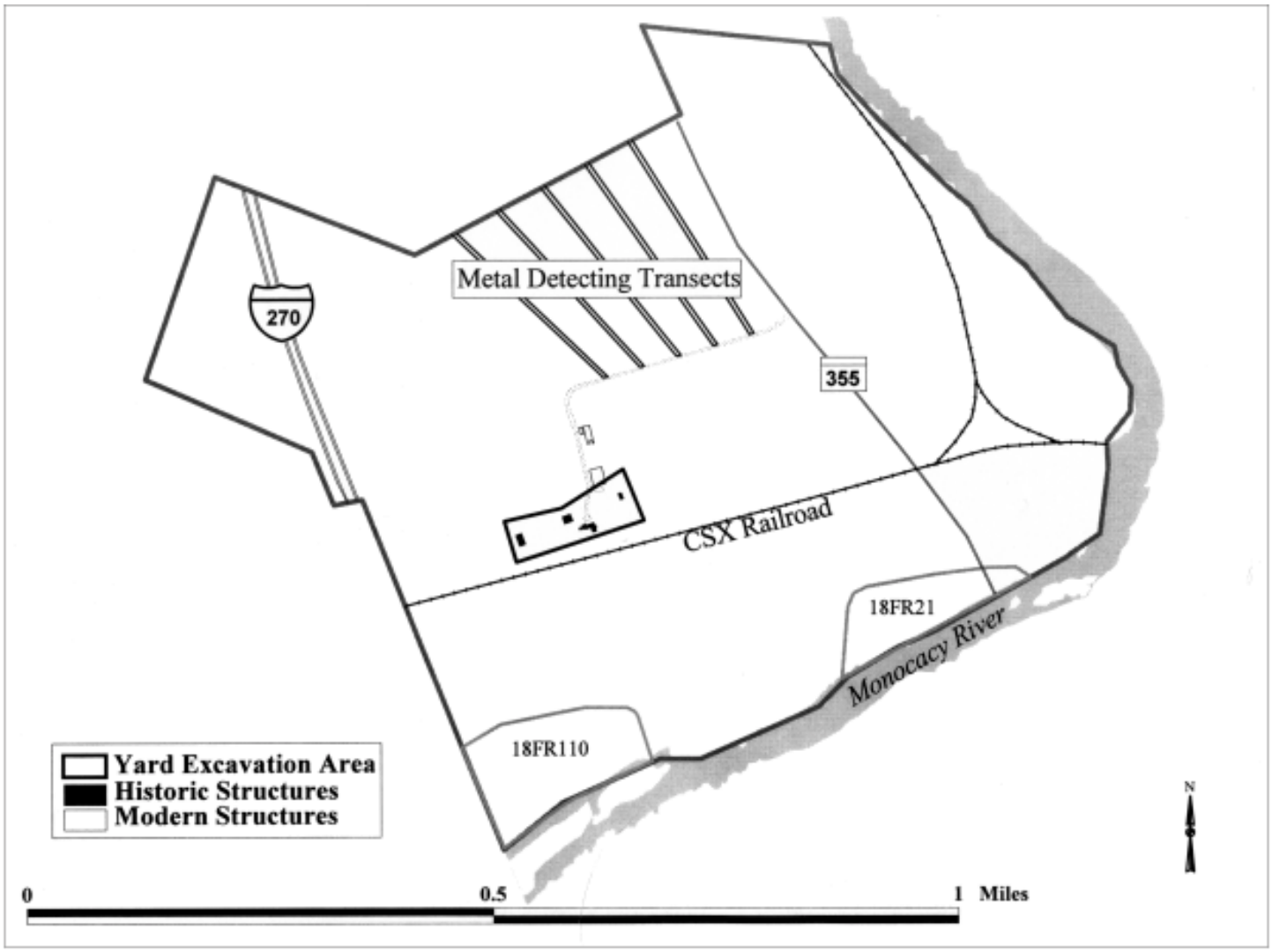

FIGURE 3. An overview of the project area bounded by an industrial park to the north, Interstate 270 on the west, and the Monocacy River on the east and south. Two prehistoric sites, 18FR110 and 18FR21, are located on the farm on the northern bank of the Monocacy. During the 2001 field season, archeological surveys were conducted in the field containing these prehistoric sites, in the farm yard surrounding the main building cluster (which comprises the eighteenth-century tenant house, the main house, and the stone barn shown in Figure 6), as well as in the field to the north of the building cluster where the five metal detector transects are outlined. In all, over 107 acres were surveyed during the 2001 field season.

tal acreage to 748. The Vincendieres named the plantation *L'Hermitage*.

Little is known about the Vincendieres prior to their arrival in Frederick County. It appears that they came either from France or directly from San Domingue, and were in residence in the area by at least 1794 (Reed 1999:59; Rivers 2001:36). Several buildings from the period of the Vincendieres' ownership remain on the property, including a small stone and log structure northeast of the main house that may have been an early tenant house built by a lessee of Daniel Dulaney (Figure 4). The Vincendieres added a log second story to this structure in the 1790s, as well as interior improvements (NPS 2000:11). Also in the 1790s, the family built the main house, improving on an existing stone structure to make a large manor house. A freestanding log kitchen stood to the rear of the main house, and was incorporated into the main structure in the 1860s (Figure 5). Finally, a large hipped-roof stone barn (Figure 6) sits well behind the other buildings on the farm. Its unusual appearance is "indicative of French traditions" and may be one of the improvements reflected in an unusually high property tax assessment for 1798 (Reed 1999:70).

The Vincendieres lived on *L'Hermitage* until 1827,

FIGURE 4. The eighteenth-century tenant house.

FIGURE 5. The main house.

when it was sold to John Brien for $24,025, more than ten times the amount of its 1798 assessment (NPS 2000:11). Brien, a real estate developer involved with the iron industry in Frederick and Washington counties, does not appear in the 1830 census, and must have died by 1834 when his estate was sold to settle his debts (Reed 1999:61). The 748-acre *L'Hermitage* property was purchased by John H. McElfresh in 1835 and, in 1837, McElfresh acquired an additional 13.5 acres to form *Resurvey on the Hermitage*. McElfresh probably never lived on the property, and is recorded as residing in "Frederick City" on the 1840 census.

McElfresh died in 1841 and the property was left

FIGURE 6. The hipped-roof stone barn.

to four heirs: Anna May, Henry, Ariana, and Caspar, who divided the property into *North* and *South Hermitage* in 1852. Ariana McElfresh Trail and her husband, Charles E. Trail, owned the 426-acre *South Hermitage*. A large oak grove existed on the property (Hotchkiss 1864), as did a forebay or "swisser"-style bank barn which was built just north of the smaller log-and-stone dwelling, a small log smokehouse behind the manor house, and a timber frame wagon shed/corncrib which was constructed between the stone barn and the dwellings. *South Hermitage* was never again owner-occupied, but remained in the possession of the Trail family until the National Park Service acquired it in 1993 (Reed 1999:26; Temkin 2000:26). Today, the property is popularly referred to as the Best Farm, after the tenant who was living there during the Civil War.

Beginning in October 1998, the Best Farm became the focus of development activities at Monocacy National Battlefield. Park planning documents propose to adaptively reuse a modern dairy (Figure 7) on the property as the primary park visitor center, and also call for the restoration of the Best Farmstead. If implemented, the restoration of the Best Farm would provide Monocacy National Battlefield with much-needed exhibit space that would allow the park to explore a number of interpretive themes, including prehistoric Native American land use, western frontier settlement, plantations and enslaved life, railroad transportation, the effect of the Civil War on the civilian population, and changing agricultural practices and modernization in the area.

Methodological Issues

The Archeological Identification and Evaluation Study at the Best Farm presents a number of methodological challenges which require the archeology team to utilize

FIGURE 7. The modern dairy is under consideration for adaptive reuse as the primary park visitor center.

a variety of recovery and analytical techniques. These techniques were adapted to different locations within the site based on each area's context and the research questions to be answered. Additionally, the methods needed to accommodate the site's long period of occupation, its size, pre-existing landscape conditions, and park priorities outside the archeological investigation.

The project area's long period of human interaction, representing nearly the full range of human occupation in Maryland, was the first challenge. In fact, given that the property making up the Best Farm was patented as early as 1740, it is possible that it has been continuously occupied from as early as 4000 B.C. into the late twentieth century (Little 1995:62). There are two recorded prehistoric sites in the project area: 18FR110, containing Late Archaic through Late Woodland period components; and 18FR21, with occupations spanning the Archaic through Woodland periods (Goodwin et al. 1990:14-15). Although the park is not proposing any development activities that will impact these sites, park officials were interested in establishing a tighter chronology for both sites as well as further delineating each site's boundaries. A controlled surface collection of these sites yielded numerous diagnostic artifacts for cataloging and analysis, the extent of which was entered into the project's GIS to help delineate the sites' boundaries more precisely.

As previously noted, another methodological challenge is the large size of the project area. The National Park Service owns the southern 274 acres of the original 748-acre Vincendiere plantation. In order to evaluate the full acreage in a timely fashion, and within the parameters of the project budget, a number of different field strategies were employed during the 2001 field season: an intensive shovel test pit (STP) survey, field walkover surveys, and a metal-detecting survey. Local volunteers, including members of the Friends of Monocacy Battlefield and the Archeological Society of Maryland, were organized to help with everything from field surveys and excavation to the washing and processing of artifacts, and contributed greatly to the success of the project.

Additionally, portions of the property around the cluster of buildings were covered by over 1,400 tons of very roughly finished concrete, which was poured while the property was still in private ownership to facilitate the movement of hogs and dairy cattle, and to manage large amounts of animal waste. Of the 5.4 acres that make up the building cluster at the Best Farm, just under one acre was covered by concrete. This one-acre area includes portions of the property to the west of the eighteenth-century settlement house, east of the modern pole barn and dairy, northeast and south of the modern car barn, and between the nineteenth-century corncrib and eighteenth-century stone barn (Figure 8).

Finally, as the land is still under agricultural lease, it was necessary for the archeology team to operate within the predetermined agricultural schedule, which often prevented the use of damaging field survey methods in the areas under cultivation.

While these various logistical challenges made it necessary for the archeology team to experiment with different methodological and analytical approaches, each approach was selected with the overarching goal of providing the National Park Service with as much information as possible to aid in the long-term management, protection, and interpretation of the Best Farm. During 2001, an intensive shovel test pit survey of the Best Farm yard was the first step in meeting this goal.

Shovel Test Pit Survey

Archeologists conducted an intensive shovel test pit (STP) survey in the yard areas surrounding the main house and cluster of historic support structures at the Best Farm. STPs were excavated on a ten-foot interval in order to locate and identify historic and/or prehistoric archeological deposits, and to assess the archeological integrity of the area. A total of 562 STPs were excavated in the Best Farm yard area.

With such a high number of STPs, it was necessary to have a means to organize information in the field, and to provide a basis for the analysis and interpretation of spatial relationships. Accordingly, high potential STPs were identified based on the presence of large concentrations of artifacts, rock, mortar, or brick, as well as differential soil which may represent subsurface archeological features. By analyzing the STP data in concert with existing historical documentation, archeologists were able to identify areas with a high potential for archeological features and remnant historic structures. A total of 86 high potential

FIGURE 8. Concrete removal progresses during the 2001 field season while project team members excavate shovel test pits by the eighteenth-century tenant house.

STPs were identified, which will be considered for more intensive investigation during the second phase of this project (Figure 9).

Areas Excluded From STP Survey

This STP survey encompasses the majority of the uncultivated areas surrounding the existing structures at the Best Farm. Three portions of the property were excluded from the STP survey: a deflated area to the south of the main house and north of the railroad, the area around the modern pole barn and dairy, and the area between the nineteenth-century corncrib and eighteenth-century stone barn. The deflated area was not tested because it is at least two to three feet below existing grade, and may have been bulldozed to create the berm surrounding a modern trench silo constructed in the 1980s southwest of the main house. This area may be considered for testing at a later date. The area surrounding the modern pole barn and south of the modern dairy will be reserved for archeological compliance investigations, as the dairy is being considered for adaptive reuse as the primary park visitor center.

The other area excluded from the STP survey during the 2001 field season is between the nineteenth-century corncrib and eighteenth-century stone barn. Approximately one-third of an acre in this area was covered with roughly finished concrete over a foot thick. Once the concrete was removed, it became evident that a high level of ground disturbance exists in this area.

In order to get a sense of the level of ground disturbance, exploratory backhoe trenches were dug approximately five to six feet in depth. Profiles of the backhoe

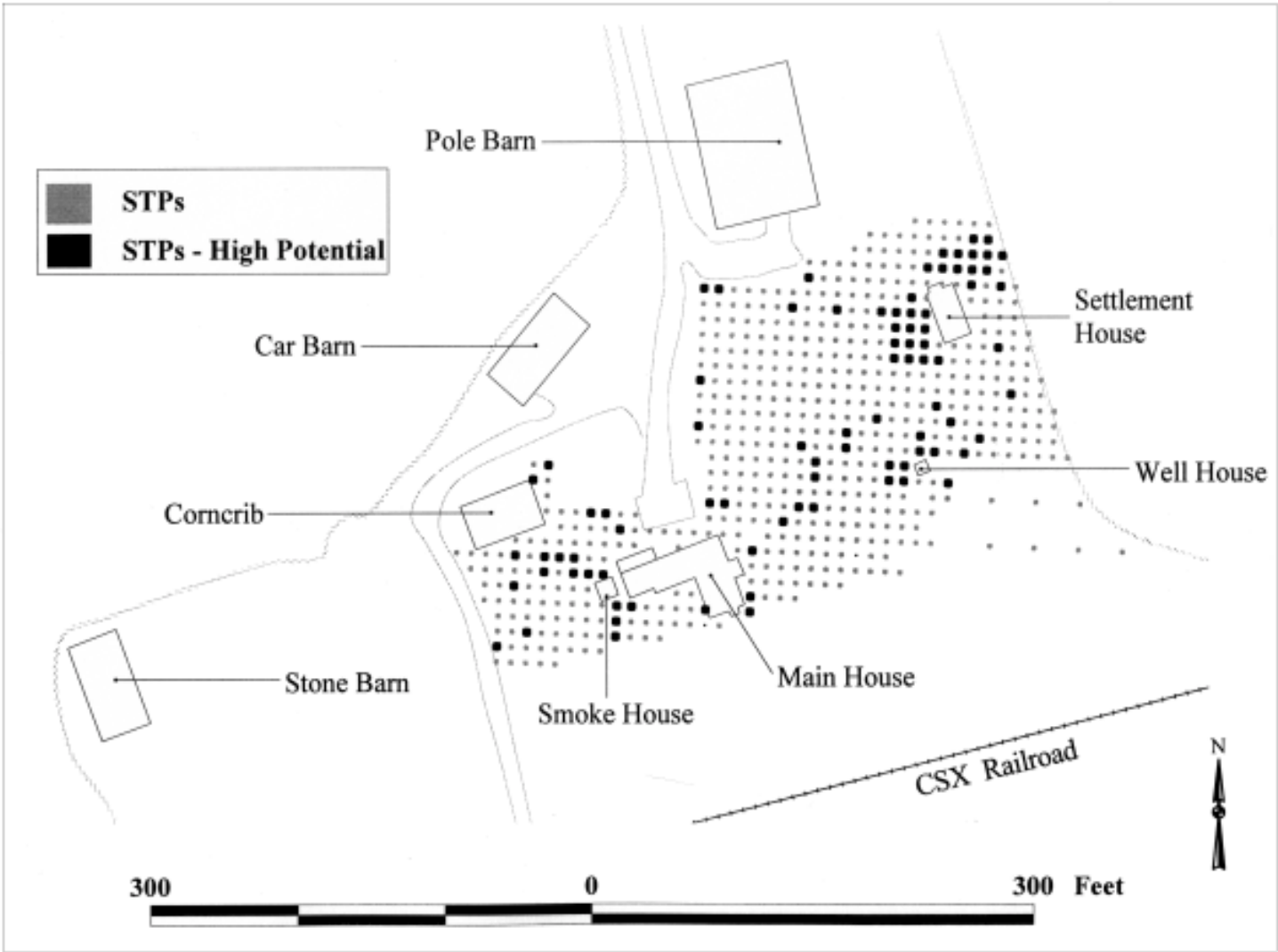

FIGURE 9. The intensive shovel test pit (STP) survey of the Best Farm yard during the 2001 field season comprised 562 test locations in a 10 x 10-foot grid. Eighty-six of these STPs were deemed "high potential" and will be evaluated further during the 2002 field season.

trenches indicate a disturbed stratum up to one foot in depth, which will be removed prior to additional testing in the area (Figure 10). The STP survey will be extended into this area during the 2002 field season.

Results of the STP Survey

As noted, the STP survey resulted in the identification of 86 STPs deemed to be of high potential. After further cataloging and analysis of the artifacts and features they contain, each will be considered for further exploration during the next field season. These 86 units, however, represent an area of 8,600 square feet, so a priority order must be established based on the research questions to be investigated in order to leverage limited project resources. GIS gives project researchers an important tool for visualizing the spatial relationships and types of artifact assemblages in the STPs and making these priority decisions.

Using GIS to Answer Survey Questions: An Example from the 2001 Field Season

One long-term goal of the research project at the Best Farm is to uncover evidence of the original eighteenth-century appearance of *L'Hermitage*, the plantation assembled by the Vincendiere family in the 1790s. Primary historical research has thus far failed to reveal much about the eighteenth- and early nineteenth-century built environment of the site.

The intensive survey of the yard area of the present-day Best Farm was in part aimed at identifying

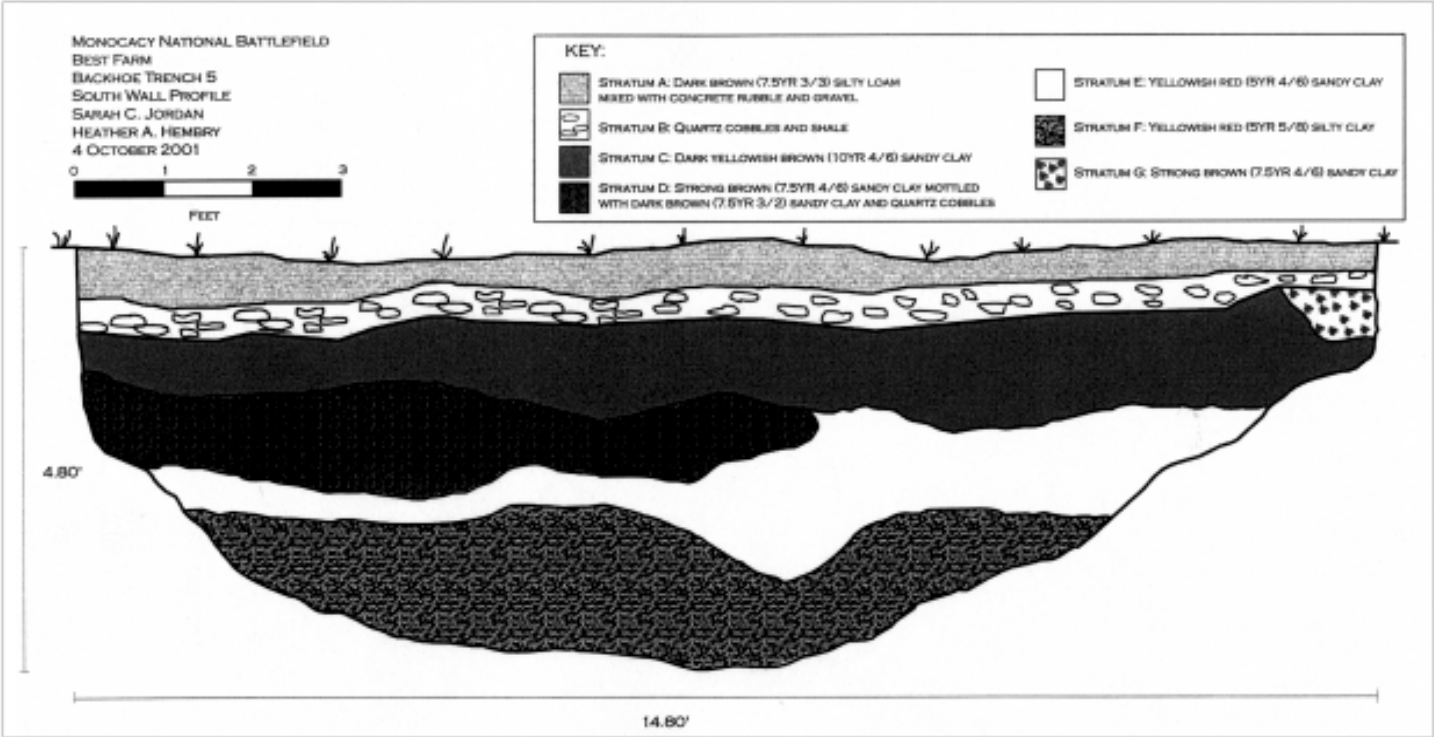

FIGURE 10. Detailed backhoe trench profiles, such as that shown above, were drawn to visualize soil strata and determine the level of disturbance.

archeological evidence of eighteenth- and nineteenth-century structures at *L'Hermitage*. Accordingly, as part of the data analysis for this 2001 intensive STP survey and to focus inquiry for the 2002 field season, a research question that might be investigated using GIS is, Where should excavation be focused during the next field season in order to have the highest potential for examining the eighteenth-century landscape including the period of the Vincendieres' occupation of the site from the 1790s until 1827, when the family sold the property?

First, to establish provenience for each artifact and feature recovered, a three-dimensional location for each item had to be created; that is, each artifact or feature needed to be geo-located on the site with its depth recorded. A site-specific coordinate grid was used to provide project archeologists with an accurate system for recording artifact and feature locations. Project staff then used an electronic total station to set out and survey all STPs, as well as all other archeological data-collection units and landscape features, with reference to the site grid (Figure 11). These spatial data were downloaded into computer aided design (CAD) software to create the layers that compose our base map, and then imported from the CAD software into the project's GIS as point, polygon, and arc layers.

With artifacts and features geo-located, raw attribute data from field notes were entered into a database designed to track each STP. These attributes detailed artifacts' characteristics and were aggregated as record sets in the database. In this system, a record set for each archeological unit forms a "tree" of records in a parent-child relationship. For example, at the top "parent" level, an STP record contains high-level information about the unit such as date excavated, excavator, and geo-location within the site grid, while its "child" records detail the strata and levels within the STP. Each stratum's detail has as many child records as necessary to itemize all artifacts or features found. The parent record is coded with the appropriate grid coordinates to allow linkage to the spatial records for the site.

The spatial data were then joined with the attribute data within the GIS software program allowing queries to be performed from two directions — either spatially against the map features established by surveys or on the attribute data. Additionally, an intranet-based interface was developed to allow a researcher to "click" on an archeological unit and pull up detailed research notes with attached drawings and photographs. This interface was designed to simplify navigation of the attribute data and to provide an easy means of sharing the information on a network.

With spatial characteristics established and attribute data entered for each artifact, the query for the sample research question was set up. This entailed defining key factors for evaluation: period-indicative artifacts such as ceramics and nails, in-the-field STP priority assignment,

FIGURE 11. Authors Joy Beasley and Tom Gwaltney use a total station to collect survey data at the Best Farm.

and context-dependent factors (e.g., proximity to landscape features, such as structures, drainages, tree lines, and fence remnants). Each factor was evaluated and weighted to reflect its relative importance with respect to the example research query with some factors treated as "binary" factors. These "binary" factors act as an "off switch" designating a location as ineligible for excavation regardless of other factors' ratings.

Non-binary factors were weighted based on their relative importance to the research question. Wrought nails were given the highest consideration as they have a *terminus ante quem* of circa 1820 in this part of Maryland. The presence of differential soil horizons or ceramics was also deemed significant, as soil changes sometimes indicate buried archeological features. Similarly, certain categories of ceramics, though problematic, often provide reasonable relative dates, at least for *terminus post quem* determinations. The 86 STPs identified as "high-potential," based on a preliminary analysis of artifact assemblages, were also considered.

Within each factor, a rating scale was developed to focus on those areas of the greatest interest with regard to the period prior to and during the Vincendieres' occupation of the Best Farm. Ratings were assigned on a scale from zero to three, with lower values indicating a factor that does not contribute to our interpretation of the landscape from our research perspective, and higher values indicating a factor more highly correlated with the eighteenth and early nineteenth centuries.

Once rating scales were established and weightings for each factor considered, coverages for each factor were analyzed in the GIS and ratings assigned to the spatial extent of those archeological units that matched the appropriate classification. Each factor was then reclassified and an overlay operation was performed to create a composite coverage for the high potential area under investigation. A composite "excavation potential" scale was then constructed.

Discussion of GIS Research Query

The result is a choropleth map that was created using this compositing technique. The areas surrounding STPs with the highest potential for excavation of eighteenth-century and early nineteenth-century features are evident (Figure 12). A large concentration of higher potential areas can be seen to the northeast of the settlement house, which is believed to date from the mid-eighteenth century. A northwest to southeast alignment of higher potential STPs may also be seen along the western edge of the settlement house. Additional locations are concentrated near the smokehouse and between the corncrib and main house. These areas of concentration are indicative of eighteenth- or early nineteenth-century features and may represent an archeological signature of the Vincendieres' occupation of *L'Hermitage*. These concentrations will be considered for further investigation during Phase II of the project. Using a GIS to visualize information in this way is useful in organizing and interpreting data in an expedient manner and in allowing priorities to be set for areas that warrant further investigation.

Metal-Detector Survey

Metal-detector surveys have been used by many archeologists working in battlefield contexts, and have demonstrated that systematic metal-detector surveys can be effectively combined with primary historical research and electronic data manipulation in order to isolate the distinctive signatures of military activities on the landscape (Legg and Smith 1989; Smith 1994; Scott and Hunt 1998; Cornelison 2000; Potter et al. 2000; Sterling and Slaughter 2000). These studies also have proven that more conventional survey methods such as shovel testing are often "ineffective in the recovery and identification of battle-related deposits" (Reeves 2001a:7).

While GIS is being used after the completion of fieldwork to analyze the Best Farm yard STP assemblages, GIS was used in the development of the research design

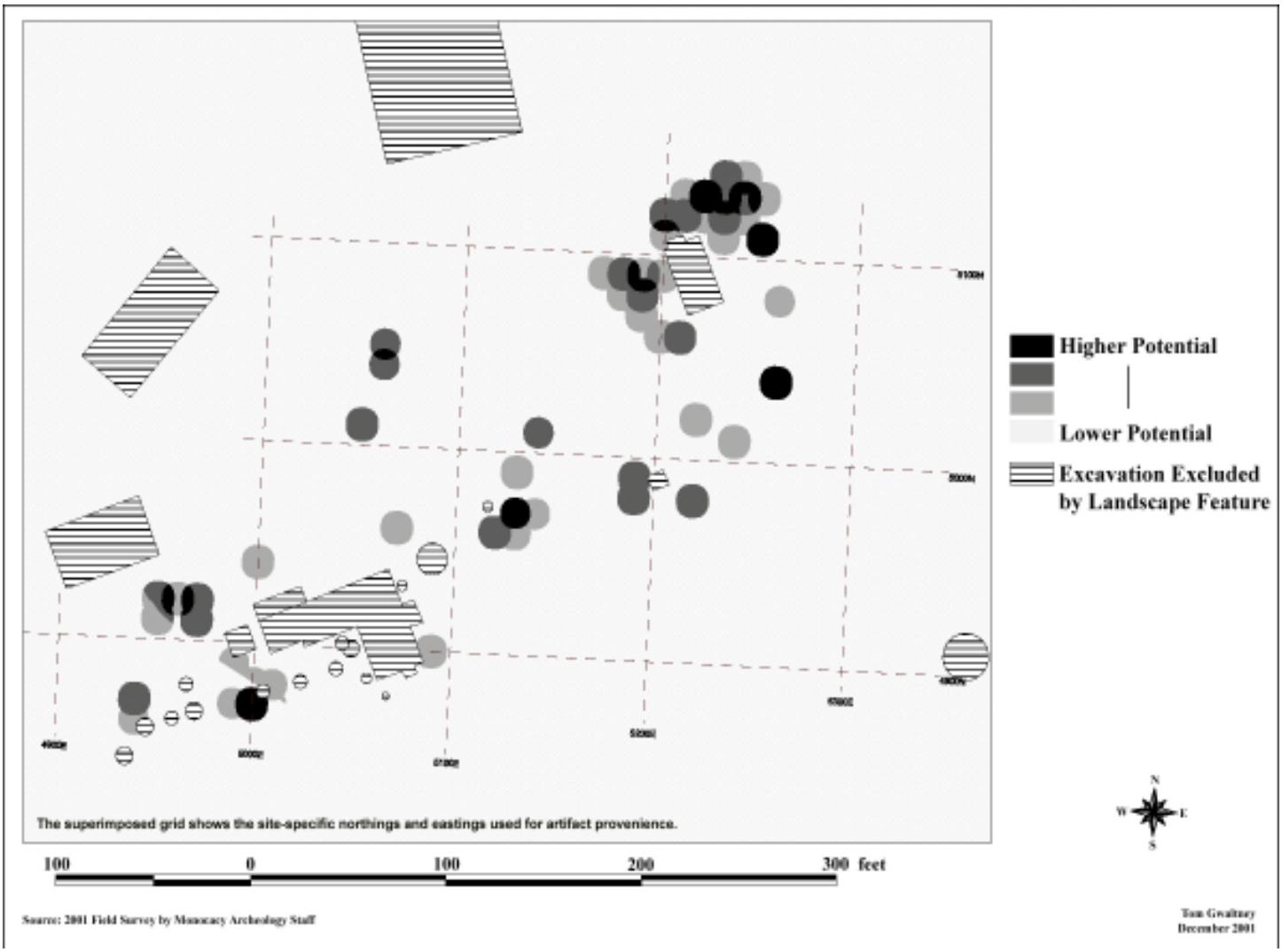

FIGURE 12. The result of a sample research question (in this instance, "Where should excavation be focused in order to have highest potential to examine the 18th-century landscape?") is a choropleth map depicting areas of highest potential clustered around the 18th-century settlement house, to the southwest of the main house, and between the main house and the corncrib.

for the metal-detector survey. The metal-detector survey was initially aimed at isolating artillery placements during the Battle of Monocacy, which are detailed on the 1864 map of the Battle of Monocacy by cartographer Jedediah Hotchkiss. Hotchkiss also depicted a woodlot — the Best Grove — on the northern property border of the Best Farm (Figure 13). GIS was used to analyze the location of this grove as well as present-day field boundaries with respect to those depicted on Hotchkiss' map in order to provide perspective in laying out the metal-detector survey transects.

GIS and the Metal-Detector Survey

The Best Grove was a managed woodlot where Robert E. Lee's general staff camped briefly in 1862 prior to the Antietam campaign (Hotchkiss 1864; Grove 1928:238). Subsequently, both Union and Confederate troops passed through the area in 1863, ultimately engaging one another in battle in 1864 (cf. Figure 13). Planning for the metal-detector survey of the Best Grove area was initially aimed at isolating the positions of three Confederate artillery batteries engaged on the property during the Battle of Monocacy: the Allegheny Artillery commanded by Captain John C. Carpenter, the Fluvanna Artillery commanded by Captain John L. Massie, and the Amherst Artillery commanded by Captain Thomas J. Kirkpatrick. According to Jedediah Hotchkiss' 1864 map (Figure 14), the four guns of the Allegheny Artillery and a two-gun section of the Fluvanna Artillery were placed in the fields west and northwest of the main house, while the Amherst Artillery went into battery northeast of the house, near

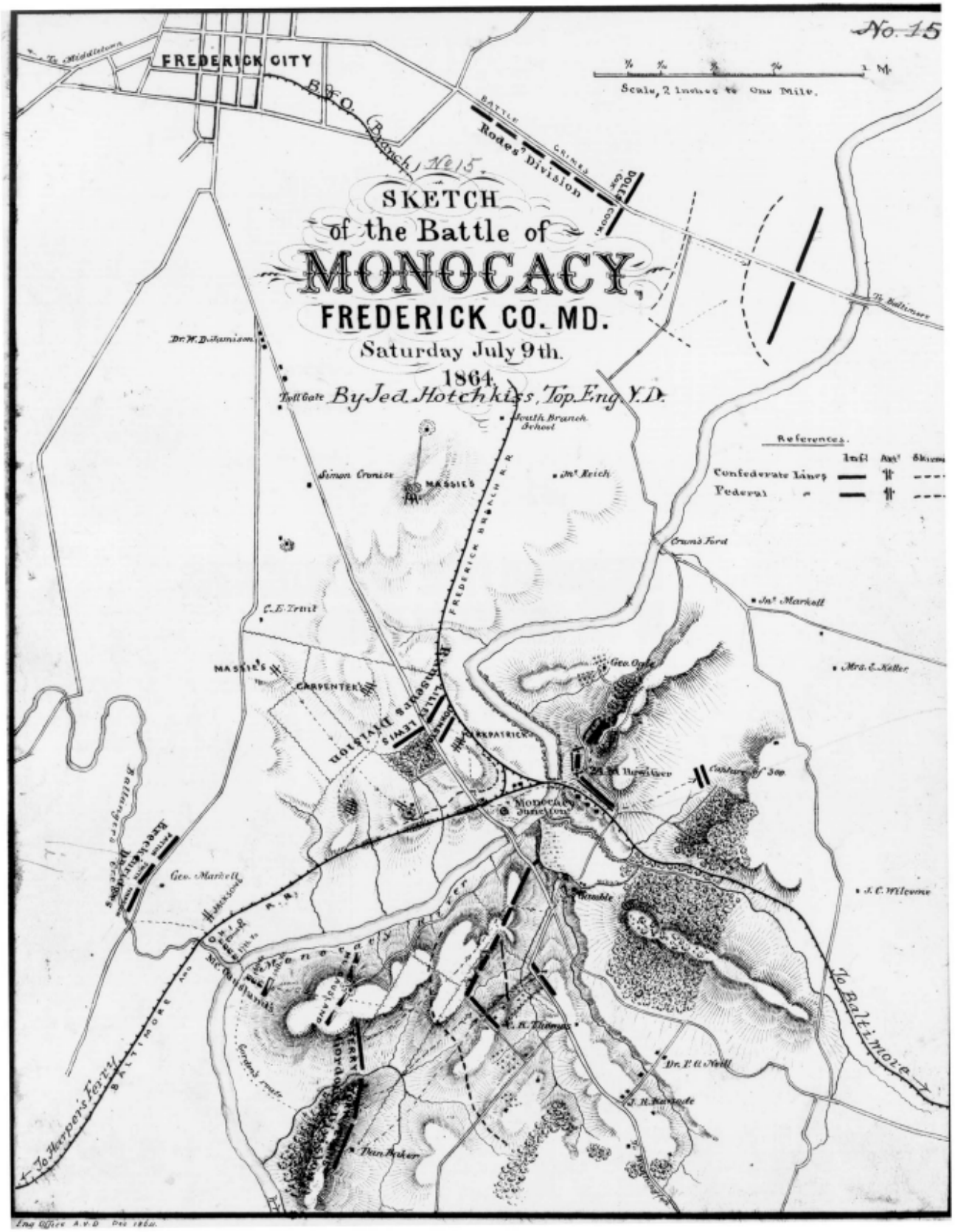

FIGURE 13. The 1864 Jedediah Hotchkiss map of the Battle of Monocacy depicts the disposition of Union and Confederate troops.

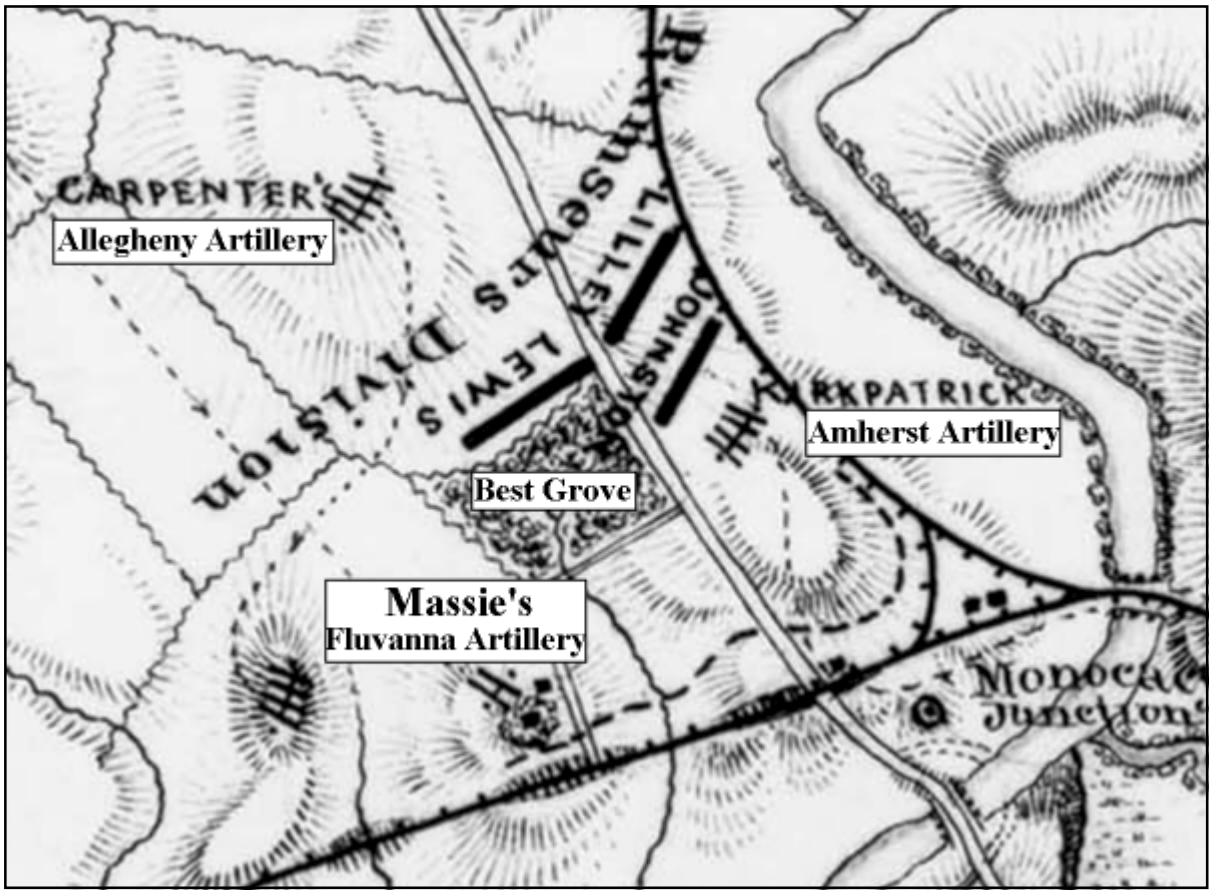

FIGURE 14. Hotchkiss's map shows the placement of Confederate artillery batteries in relation to the Best Farm.

Route 355. The initial research design was aimed at uncovering evidence of these artillery batteries.

Hotchkiss' 1864 map has long been regarded as the definitive resource on troop movements during the Battle of Monocacy. His map is hand-drawn, making it difficult to determine the scale of features recorded on the map. By using GIS to scale the digital site base map with the Hotchkiss map, however, the project team was able to postulate that the current northern property boundary is much further south than that shown on the Hotchkiss map, thus excluding from park boundaries the positions of both the Allegheny and Fluvanna Artillery batteries (Figure 15). It was also evident that the Best Grove was much larger than the Hotchkiss map suggests, potentially encompassing the majority of the area of the metal-detector survey. Consequently, it became clear that rather than uncovering exploded counter-battery ordnance fragments and other artillery-related material in this area, we were more likely to encounter evidence of ephemeral campsites and small-arms projectiles. This discovery helped us make methodological decisions regarding the most efficient and expedient way to sample this area.

An additional benefit of using GIS to overlay the current configuration of the Best Farm with the historic Hotchkiss map is in the modification of the research design for the 2002 field season. The Hotchkiss map indicates that a two-gun section of Massie's battery and the entire Carpenter battery moved south onto the present-day farmlands during the battle. While the research design for the 2001 field season called for the investigation of the 39-acre field north of the farm entrance road, part of the 2002 field season may be focused on locating evidence of these batteries as well as Kirkpatrick's battery on the east side of Route 355.

Methodology

The metal-detector survey was confined to a large field measuring approximately 39 acres on the northern boundary of the property, north of the farm's entrance lane and west of Route 355. Based on the GIS map overlay previously described, much of this area was known to have been in the Best Grove. A full reconnaissance survey of such a large area was impractical in Phase I of the project;

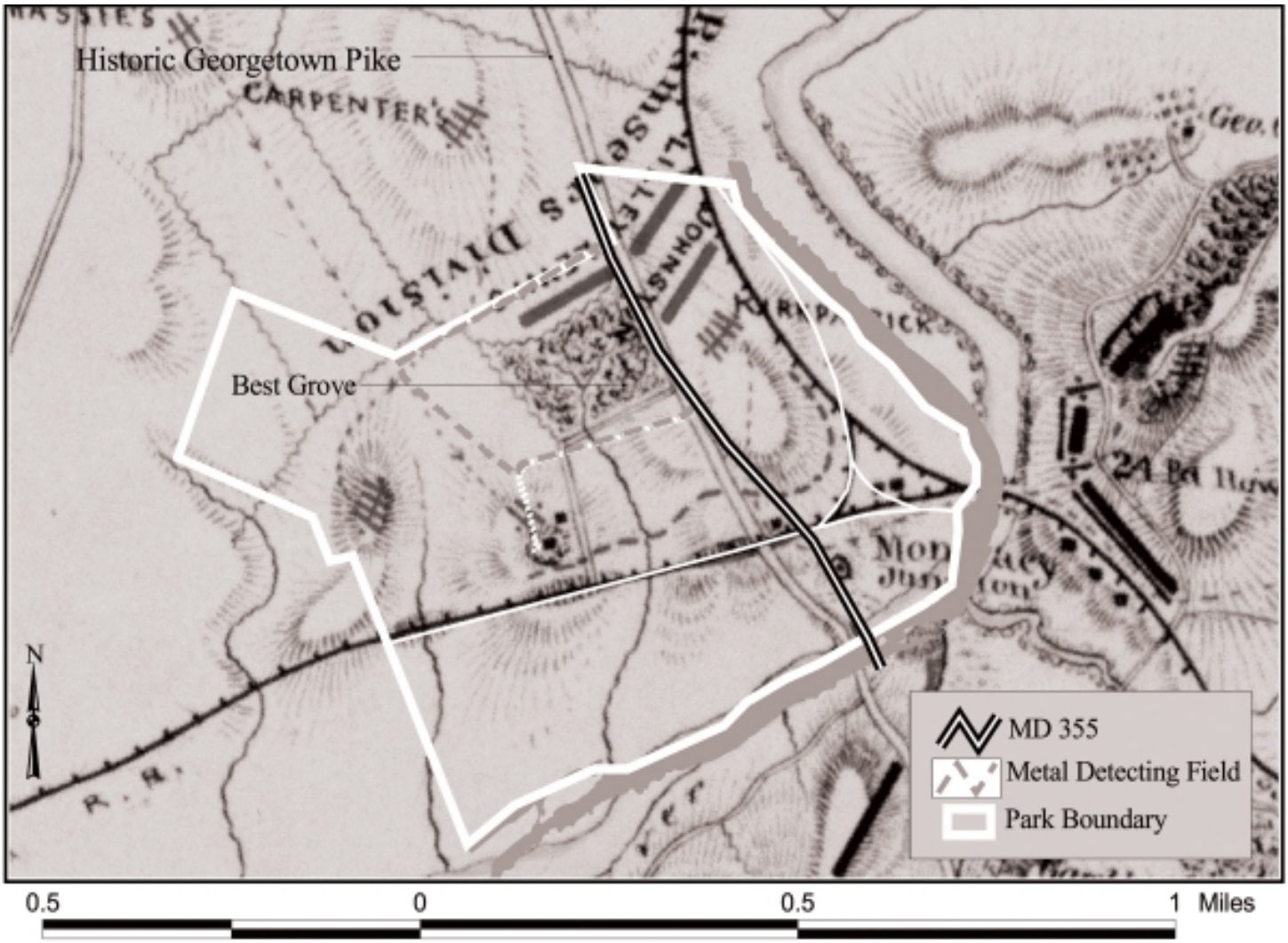

FIGURE 15. Hotchkiss's map was overlaid with the project area base map to determine artillery positions with respect to present-day field boundaries. The current northern property boundary was determined to be much further south than initially expected from a review of the historic map.

therefore, a sampling strategy was employed in order to obtain an 8.4% sample. In a modification to the methodology developed by Sterling and Slaughter (2000), the project area was divided into five transects, each 25 feet wide and 1,100 to 1,300 feet long. The survey area was an irregularly shaped polygon; therefore, transects were set out in a fan shape in order to permit more representative coverage of the area. One hundred percent of the metal-detecting targets were excavated, and each individual target was recorded using a laser transit and electronic data collector, and then all data collected were downloaded into a CAD-based drawing program to create a digital base map. Over 1,800 targets were excavated.

Results of the Metal-Detecting Survey

An interesting and unexpected preliminary result of the metal-detector survey was the discovery of a large concentration of wrought nails in the northwestern quadrant of the field. Nearly 400 complete and partial wrought nails were recovered from a half-acre area in the northern portions of Transects A and B, suggesting the remains of an unrecorded structure (Figure 16).

In order to explore this area more completely, 94 STPs were excavated in the area of the concentration with the hope of uncovering structural features and/or non-metallic artifacts such as ceramics and glassware. However,

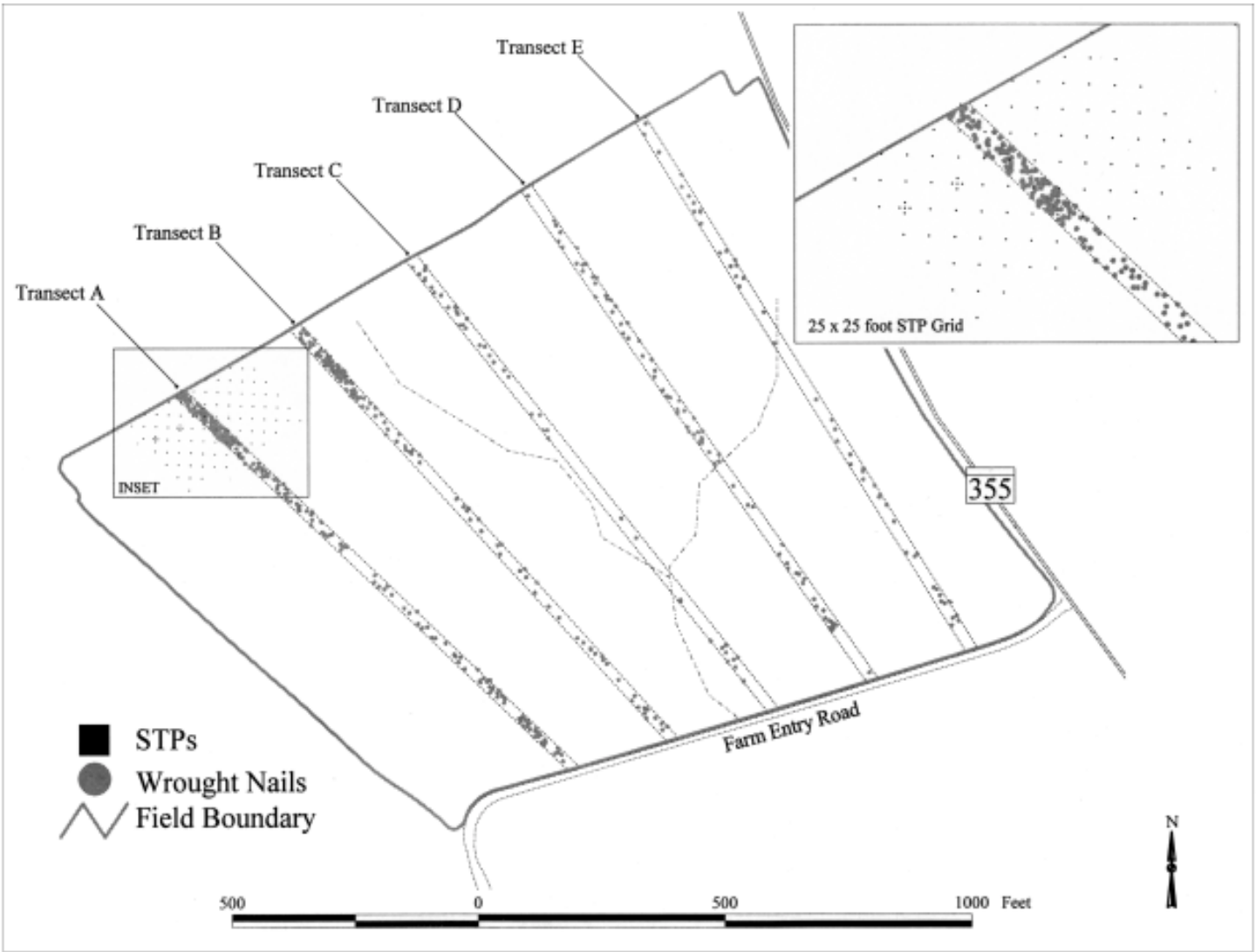

FIGURE 16. The high concentration of wrought nails in metal-detector transects A and B was investigated with a 25 x 25-foot STP grid.

the STP survey in this area failed to yield many artifacts of any sort; in fact, 63 of the 94 STPs were sterile. While 391 wrought nails and nail fragments were excavated from this area during the metal-detector survey, only four wrought nails were recovered from the shovel tests.

Only one feature was uncovered in the STP survey: a possible posthole. A 2.5-foot test excavation unit was placed in the area of the feature in order to explore it further. Unfortunately, it turned out to be the remains of a burnt tree stump, possibly left over from when the Best Grove was cut down in the late nineteenth century as the farm transitioned to dairy production (US Agricultural Census 1850, 1860, 1870, 1880).

Lack of non-metallic artifacts and the absence of any structural features suggest that the wrought nail concentration represents an ephemeral dependency, which experienced a short period of use. Further investigation in this area is necessary in order to interpret it more fully.

The results of the metal-detector survey are interesting from a methodological standpoint, however, for a number of reasons. A key aspect of the metal-detector survey is that archeologists were able to gather an 8.4% sample of a 39-acre field in less than three weeks, significantly less time than shovel testing the same area would have taken, and at a significantly reduced cost in comparison with other forms of remote sensing. Further, nail con-

centrations of this density would not have been uncovered through shovel testing or surface collecting.

Metal-detector surveys have been proven to be the most effective means for data recovery on other battlefield sites by numerous researchers (Reeves 2001a, 2001b; Sterling and Slaughter 2000:310). In our case, however, metal detecting has also been useful in locating artifact concentrations of non-military origin.

Conclusion

Having completed the field season in mid-December 2001, the results detailed here are necessarily preliminary and additional research and investigation will be conducted. While the quality of spatial data is considered high, it is important to note all the attribute data were entered from field notes. These field notes will be standardized through cataloging and analysis.

Using a GIS is like using a well-sharpened trowel: it is a tool that can assist the researcher in revealing patterns, but it cannot do so without an archeologist's understanding of the dynamics of the site and the historical context of the landscapes involved. As research and analysis progress, we will further refine and sharpen this methodology in order to reveal the spatial relationships of artifact assemblages and of the archeological record not previously obtainable in a timely manner.

At present, the Archeological Identification and Evaluation Study of the Best Farm is funded through 2003. As this project is research-driven, future avenues of inquiry will be informed by the priorities of the National Park Service with regard to the Best Farm. By continuing to utilize a combination of shovel test pits, field walkover surveys, and metal detecting in combination with GIS analysis and other field techniques, we hope to be able to uncover a great deal of information about this large and diverse historic site in an efficient and effective manner. This information will help guide future research at the site, and will also help National Park Service administrators make sound long- and short-term planning decisions.

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