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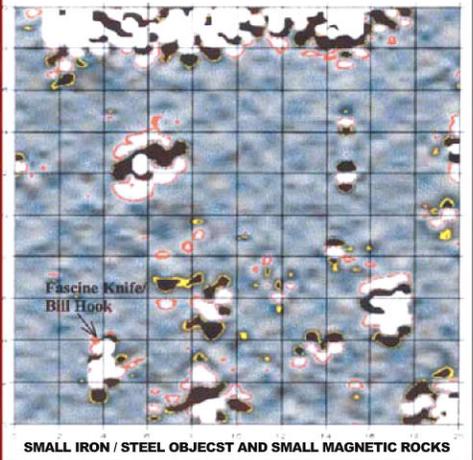
REPORT OF A SPECIALIZED
INTENSIVE (LOCATIONAL) SURVEY
LEXINGTON BATTLE ROAD
HANSCOM AIR FORCE BASE
MIDDLESEX COUNTY, MASSACHUSETTS

PREPARED BY
JOHN MILNER ASSOCIATES, INC.
LITTLETON, MASSACHUSETTS

MAY 2007



**BATTLE ROAD-NORTH-WEST SECTION
MAGNETIC FIELD GRADIENT SURVEY**



SMALL IRON / STEEL OBJECTS AND SMALL MAGNETIC ROCKS

**REPORT OF A SPECIALIZED
INTENSIVE (LOCATIONAL) SURVEY
LEXINGTON BATTLE ROAD
HANSCOM AIR FORCE BASE
MIDDLESEX COUNTY, MASSACHUSETTS**

Prepared for

Hanscom Air Force Base, 66 MSG/CE
Donald Morris
Chief Environmental Wing
120 Grenier Street
Hanscom AFB, MA 01731

Prepared by

Barbara Donohue

John Milner Associates, Inc.
410 Great Road, Suite B-12
Littleton, MA 01460

May 2007

MANAGEMENT SUMMARY

On behalf of Hanscom Air Force Base, the Air Force Center for Environmental Excellence requested that a specialized archeological survey, consisting of a metal-detector survey followed by field excavation, be conducted in the areas with potential for battlefield debris. The survey would focus on resources associated with the Battle of April 19, 1775. The Air Force Center for Environmental Excellence originally contracted TN & Associates, which in turn subcontracted Timelines, Inc. (now John Milner Associates, Inc.) to conduct the recommended specialized archeological survey. The metal detector survey, conducted in October of 2003, recovered five artifacts highly likely to be associated with the battle and two that less likely but possibly with the battle. Battle-related artifacts were recovered from three loci indicating the possibility that activity areas associated with the battle existed. To determine if activity areas were present, a magnetic field gradient survey was conducted in November of 2004. While the presence of activity areas could not be determined, a fascine knife, believed to be from the time period under study and possibly associated with the battle, was recovered.

Another phase of field investigation, consisting of the excavation of shovel test pits, a metal detector survey, and a magnetic field gradient survey, was conducted in November of 2005 in association with the transfer of a parcel of land to Minute Man National Historical Park. The property to be transferred had potential for battlefield debris as well as prehistoric and historic archeological resources. No prehistoric artifacts or activity areas or artifacts associated with the battle were identified.

The transfer of the property to Minute Man National Historical Park will, in effect, bisect the battlefield site. JMA therefore recommends that the boundaries of the battlefield site that remains in Hanscom AFB should be defined and included within the overall site boundaries associated with the Battle of April 19, 1775.

Historic research suggests that the recovered battle-related artifacts could be associated with British flanking troops firing at the Lincoln and/or Lexington Minute Men, Pitcairn's troops firing at Parker's Minute Men, or both scenarios occurring simultaneously. Secondary sources suggest that Lincoln Minute Man William Thorning was involved in fighting the British flankers in close proximity to the project area. Therefore, JMA recommends that additional historic research be conducted to locate the origin of the William Thorning story, as information contained in that source may clarify interpretation of the field results and facilitate interpretive efforts at Minute Man National Historical Park.

Documentary research conducted for the survey revealed that features associated with the Thomas Nelson Sr. Farm Site (19-MD-347/HA6), in particular landscape characteristics that may be associated with the Battle of April 19, 1775, may be present within Hanscom Air Force Base. Features and/or artifacts associated with this eighteenth century farm may also be present. JMA therefore recommends that further documentary research be conducted to determine the extent of the 30-acre parcel that Thomas Nelson Sr. purchased in 1770 in order to clarify its present-day boundaries.

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1.0 INTRODUCTION

As a result of a recent update of the 1996 Cultural Resource Management Plan (CRMP) (Earth Tech 1996) for Hanscom Air Force Base (AFB) (Figure 1), several new priority recommendations have been identified (TN & Associates, Inc. and Timelines, Inc. 2001) (Figure 1). Previously, a reconnaissance survey (King et al. 1992) identified 34 areas of moderate and high potential for archeological resources within the base. An intensive (locational) survey was then conducted in those areas of potential (Abell et al. 1998). Only one site (LEX-HA-9), an early twentieth-century dump, was identified. No further work was recommended for the site. The survey did note that battlefield debris, such as musket balls, gun flints, buttons, etc associated with the Battle of April 19, 1775 "may still exist within and beyond the confines of the areas tested during this survey" in isolated pockets of preservation (Abell et al. 1998). The survey therefore recommended "Hanscom AFB not engage in any ground disturbing activities in the above mentioned areas until the need for a specialized archeological survey focusing on aspects of the Battle of April 19, 1775, is confirmed" (Abell et al. 1998).

On behalf of Hanscom Air Force Base (Hanscom AFB), the Air Force Center for Environmental Excellence (AFCEE) requested a specialized archeological survey consisting of a metal-detector survey followed by field excavation to be conducted in the areas with potential for battlefield debris. The survey would focus on resources associated with the Battle of April 19, 1775 in accordance with the primary federal laws governing protection of cultural resources including: the National Historic Preservation Act (NHPA) of 1966, as amended; the Archaeological Resources Protection Act (ARPA); Executive Order (EO) 11593, *Protection and Enhancement of the Cultural Environment*; and Air Force Instruction (AFI) 32-7065, *Cultural Resource Management*. The survey would also be conducted in compliance with Massachusetts General Laws, Chapter 9, Section 26-27c, as amended by Chapter 254 of the Acts of 1988 (950 CMR 71), and MEPA (301 CMR 11).

AFCEE contracted TN & Associates, who subcontracted with Timelines, Inc. (now John Milner Associates, Inc. [JMA]) to conduct the recommended specialized archeological survey. The metal detector survey was conducted in October of 2003 in six areas (Areas 13, 14, 26, 27, 28, and 31) (Figure 2) along the southern perimeter of the base that lay in close proximity to Battle Road, the documented location of the Battle of April 19, 1775. While no artifacts were recovered from Areas 13, 14, 26, 27, and 28, twelve artifacts were recovered from Area 31, at least five of which are believed to be associated with the battle. The battle-related artifacts were recovered from three loci that may be associated with former activity areas.

Representatives from Timelines, Hanscom AFB, and AFCEE conducted a walkover of the project area and a discussion ensued regarding additional metal detecting, as well as other geophysical testing that might identify areas associated with the battle. The metal detector survey was extended to Area 29 because artifacts from the battle were recovered directly to the south in Area 31, an intact stone wall traverses the area, and intact soils were revealed during the previous intensive (locational) survey (Figure 2). It was also decided to conduct further geophysical testing in Area 31. An addendum to Permit No. 2600 was submitted to the Massachusetts Historical Commission (MHC) to conduct a magnetic field gradient survey in Area 31 to the east of an unnamed stream that crossed the parcel where the battle-related artifacts were recovered. The survey was conducted by Timelines, Inc. in November of 2004. As a result of that survey an additional six artifacts were recovered, all believed to be from the time period under study. Of particular interest was the recovery of a fascine knife/bill hook.

Pursuant to Public Law 102-488-October 24, 1992, 106STAT.3135, a 3.802-acre parcel of land within the western portion of Area 31 in Hanscom AFB would be transferred to Minute Man National Historical Park (MIMA). The parcel is depicted on a map entitled "Boundary Map NARO-406-20015C" dated June 1991. This western section of Area 31, located between a wetland area to the east and Airport Road to the west, which is included in the proposed conveyance, had not been included in the previous magnetic field gradient survey. The area is considered to have high potential for battlefield debris as well as high potential for prehistoric and historic archeological resources. Given security concerns for the base, a fence will be constructed to separate the transferred MIMA parcel from Hanscom AFB (Figure 3) and the present fence that separates MIMA from Hanscom AFB will be removed.

Since the magnetic field gradient survey was only conducted in the eastern section of Area 31, a comparable survey was proposed by Timelines that included more metal detection and a field investigation consisting of the excavation of shovel test pits in areas of prehistoric and historic archeological potential. The survey also included the excavation of shovel test pits at the location of the posts for the proposed fence and a metal detector survey within its construction impact zone (Figure 3). A meeting ensued between Barbara Donohue (Principal Investigator, Timelines then JMA), Dr. Lewis Somers (GeoScan Research), Don Morris and Greg Cravedi (Environmental Department, Hanscom AFB), and Steven Pendery (National Parks Service [NPS]). A walkover was conducted within Area 31 following the meeting and the proposed research design was agreed upon. Mr. Pendery emphasized that minimal disturbance from field testing was preferred within the MIMA parcel.

On May 20, 2005, State Archaeologist's Permit #2600 was further amended to include the above described survey work for the western section of Area 31 and the location of the proposed fence. That survey was conducted by JMA in November of 2005. While no artifacts clearly associated with the Battle of April 19, 1775 were recovered from the metal detector survey, magnetic field gradient survey, or the excavation of the shovel test pits, four artifacts (two from the metal detector survey and two from the magnetic field gradient survey) that may be associated with the time period under study were recovered and sent to conservation. No prehistoric artifacts were recovered.

Timelines and JMA staff included Barbara Donohue (Principal Investigator/Principal Historian), Martin Dudek and Karen Michalec (Field Supervisors), Joshua Silver, Alan Smith, Brian Lever, Tom Maillot, Ronald Dalton and Walter Donohue, Jr. (Field Technicians), Martin Dudek (Laboratory Director), Sarah Ruch (Graphics Specialist), and Margy Schoettle (Production Supervisor). The metal detector survey was conducted under the direction of Alvin Lynn and Dr. Lewis Somers conducted the magnetic field gradient survey. The recovered artifacts were conserved at the Mashantucket Pequot Museum and Research Center under the direction of Douglas Currie.

2.0 ENVIRONMENTAL CONTEXT

Hanscom AFB is located primarily within the Shawsheen River drainage, the headwaters of which are within the boundaries of the base in a swampy area to the east of Scott Circle. Prior to the construction of the base, the headwaters began in a small pond and the river drained northeast through a large wetland before emptying into the Merrimack River. The Shawsheen and its nearby tributary, Kiln Brook, receive the majority of surface runoff from the base. A small area in the southern section of the base is drained by Hobbs Brook into the Cambridge Reservoir (Abell et al.1998).

The base lies within the Eastern Plateau of the Coastal Lowlands region, a low-lying plateau that is generally less than 500 ft. above sea level (asl) and sloping gently towards the sea. The highest location in the base is Katahdin Hill (300 asl), which is located within the southeastern section of the base.

Table 1. Soil Types and Characteristics Within the Southern Boundary of Hanscom AFB (Figure 5).

Map Symbol	Soil Name	Slope	Drainage	Description
35B	Hinckley Loamy Sand	3-8%	Excessive	Soils formed on glacial outwash plain, terraces, kames, and eskers
259	Udorthents-Urban Land complex	0-25%	N/A	Construction areas where soil has been excavated and/or deposited.
113B	Canton fine sandy loam	3-8%	Good	Upland soil formed in glacial till, ground moraine and ice-contact stratified drift; very to extremely stony surface (unless stones removed) and stones below surface.
40	Scarboro loamy sand	0-3%	Very poor	Soil formed in glacial outwash, found in depressions of glacial outwash plains and terraces.
8D	Hollis Rock outcrop-Charleton complex	15-25%	Somewhat excessive	Soil mixed with rock outcrops, containing moderate to steep slopes, stony and extremely stony surfaces.
7B	Charlton-Hollis-Rock outcrop complex	3-8%	Well to excessive	Soil mixed with rock outcrops, containing steep slopes, stony and extremely stony surfaces.

During the Pleistocene Era, when the glaciers advanced they eroded the natural bedrock and mixed rock particles into the ice. As the glaciers retreated these particles were deposited as till, drumlins, kames, and kame terraces. Glacial Lake Concord, which was formed from melting and recession of the glaciers, covered most of the base during the Pleistocene Era (Figure 4). The northern and central sections of the base contain glacial-outwash deposits originating from the lake, and the eastern section of the base contains poorly sorted, unstratified, older glacial till

(Abell et al.1998). Andover granite, a light to medium gray muscovite-biotite granite with pegmatitic masses, is the predominant bedrock underlying the base. Assabet quartz diorite and Shawsheen gneiss are present in the base's northeast section. Bedrock outcrops occur in various locations (Abell et al.1998).

Soil types within the southern boundary of Hanscom AFB (from west to east) consist of Hinckley loamy sand (35B), Udorthents-Urban Land complex (259), Canton fine sandy loam (113B), Scarboro loamy sand (7B) (Figure 5) (United States Department of Agriculture 1986).

3.0 RESEARCH DESIGN

The purpose of an intensive (locational) survey is to conduct a "systematic and detailed archaeological field investigation for the purpose of locating and identifying the sites which exist in a given area" (950 CMR 70.04). In particular this survey is designed to locate sites that may contain battlefield debris associated with the Battle of April 19, 1775.

To this end, the specialized intensive (locational) survey consisted of:

- 1) documentary research,
- 2) metal detector survey with ground-truthing,
- 3) magnetic field gradient survey with ground-truthing,
- 4) the excavation of shovel test pits,
- 4) process and analysis of recovered materials,
- 5) making recommendations for additional field testing, if necessary, and
- 6) conservation of battle-related artifacts.

3.1 RESULTS OF PREVIOUS SURVEYS

3.1.1 ARCHEOLOGICAL INVESTIGATIONS AT MIMA

MIMA was established in 1959 to commemorate the events of April 19, 1775. A four-volume report (Towle and MacMahon 1987, 1986a, 1986b, and 1986c) documents three years of work analyzing collections and evaluating site interpretation for archeological surveys conducted within the park from 1963 to 1986. Within this report, the surveyed areas are divided into five zones. Proceeding from west to east, these zones are: the North Bridge Area, the Wayside Area, the Virginia Road Area, the Nelson Road Area, and the Fiske Hill Area (Towle and MacMahon 1986a, b, c and 1987) (Figure 6). Archeological investigations within these areas were site-specific and designed to investigate the 1775 landscape (Towle and MacMahon 1987). These investigations have revealed information about the various farmsteads that were located along Battle Road (known as Concord Road prior to the 1775 battle) and provide information about the location of Battle Road in the Fiske Hill Area.

The North Bridge Area is noted for the confrontation between the Concord Minute Men and the British on the north side of the Concord River where the "shot heard 'round the world'" was fired (Towle and MacMahon 1986a). While the Wayside Area has been investigated because it was the residence of several noted nineteenth-century writers, it was also occupied during the Battle of April 19th (Towle and MacMahon 1986b). The Virginia Road Area, located midway between Lexington and Concord, witnessed some of the first skirmishes of the battle (Towle and MacMahon 1986b). Within the Nelson Road Area, the British captured Paul Revere and pursued William Dawes. During the British retreat they were fired on by the colonists and the British ransacked the Bull Tavern for food and drink (Towle and MacMahon 1986c). Three events associated with the retreat of the British troops occurred within the Fiske Hill Area. Before the British entered Lexington Center, they traversed Fiske Hill; during the retreat, a British soldier was killed near the Fiske well after looting the house; and five mortally wounded British soldiers were abandoned in the Fiske parlor and later buried in the garden (Towle and MacMahon 1987).

In the current investigation, the areas under study are more closely associated with the location of the Nelson Road Area, which included the archeological investigations of the Bull Tavern Site,

the Jacob Whittemore Site, the Tabitha Nelson Site (also the Thomas Nelson, Sr. Site), the Thomas Nelson, Jr. Site, Site 24 (possibly associated with Christopher Mudgin's homesite and/or Thomas Nelson, Jr.'s homestead), the Josiah Nelson Site, Site 22 (location of an eighteenth-century dwelling house, conjectured to be where William Dawes hid from the British), and Site 23 (living surface/cellar floor with unclear association of period or function) (Towle and MacMahon 1986c) (Figure 7).

Of the eight sites excavated within the Nelson Road Area only 24 (.0008%) out of a total of 31,071 artifacts were related to weapons (16 weaponry/accouterments and 8 gun flints) (Towle and MacMahon 1986c). While artifacts associated with the battle could have been reused or collected by others through the years, these results could also reflect how or where the battle was being fought.

3.1.2 ARCHEOLOGICAL INVESTIGATIONS AT HANSCOM AFB

As a result of a reconnaissance survey (King et al.1992) consisting of extensive background research, a walkover survey, and limited subsurface testing, 34 areas of moderate to high potential for archeological resources were identified within Hanscom AFB (Figure 2). The survey noted that while there is considerable disturbance along the southern boundary of the base related to "the construction of residential buildings, roadways and recreation areas" as well as sand and gravel activities, there are also "isolated areas of undisturbed soils". The survey concluded that as the southern boundary of the base, adjacent to MIMA, was "within the April 19, 1775 battlefield area" it "may have greater historical importance" (King et al.1992). Specifically, sites associated with the events of that day, including Bloody Angle, Nelson's Boulders, and Parker's Revenge may be located within the southern boundary of Hanscom AFB.

In 1998 an intensive (locational) survey was conducted at Hanscom AFB in the 34 areas designated as having moderate to high potential for archeological resources (Abell et al. 1998). The testing methodology for the intensive (locational) survey consisted of the excavation of 40 x 40-cm shovel test pits at 25-m intervals. As a result of that survey it was concluded that "no evidence of the military engagement between the British Army and the Colonial Militia was encountered; not even in those parts of Hanscom AFB which border Minute Man National Historic Park: Section F (Areas 13 and 14); Section I (Areas 27 and 28), and Section L (Area 31). However, archeological manifestations of the skirmishes fought that day, such as burials of British soldiers and battlefield debris (musket balls, gun flints, buttons, etc.) may still exist at Hanscom AFB in isolated pockets of preservation. Battlefields represent a unique type of archaeological site. The location of burials or battlefield debris would require a more intensive form of archaeological survey; one that employed detection technology such as ground-penetrating radar for burials and metal detectors for the ballistic evidence" (Abell et al. 1998).

3.2 DOCUMENTARY RESEARCH

Research was conducted at the Boston Public Library, Minuteman Research Center in Concord, Massachusetts Historical Society, Massachusetts State Archives, Massachusetts State House Library, Lexington Historical Society as well as the Newton, Watertown, Lexington, and Concord libraries. Interviews and additional information was gathered from Christopher Fox, Curator at the Fort Ticonderoga Museum in New York; Marty Fahey, Donald Hafner, and Mike Ryan, historians and members of the Lincoln Minute Men; and Cristina Bauer, Curatorial Assistant, for the Higgins Armory Museum.

The purpose of the documentary research was to identify information that would contribute to a general understanding of the Battle of April 19, 1775 and to identify details associated with specific events of the battle. The research strategy entailed going from recent to past secondary histories describing the battle to primary sources, such as depositions and diaries of both British and Americans soldiers. Primary and secondary sources quickly revealed that while a generalized sequence of the day's events can be established, detailed information associated with the battle remains unknown.

Perhaps the most complete analysis of the primary and secondary sources that recount the day's events was done by Douglas P Sabin, a staff historian for MIMA. Sabin found many secondary sources to be either inaccurate in certain details, descriptive without bibliographic reference, or subject to the author's bias. Depositions taken from both British and Americans soldiers providing testimony for the occurrences at Lexington Green and at North Bridge in Concord, were for the most part subjective (Anonymous 1775). While diaries from two British soldiers, MacKenzie and Sutherland, provide accounts of the battle in adequate detail, they too have been subject to various interpretations. Sabin concluded that there is no objective account of the entire battle (Sabin 1987). Even today's militia companies, which have done considerable research on the battle, and recent historical accounts of the battle (such as Fisher 1995) have little specific information about the day's activities (Historians of the Council of Minute Men 1977). Additional research was conducted following the field investigation to aid in the identification and analysis of recovered artifacts.

3.3 METAL DETECTOR SURVEY (OCTOBER 2003)

A preliminary walkover of the project area was conducted by Timelines archeologists Barbara Donohue and Ronald Dalton. The purpose of the walkover was to visually assess the areas identified as having the potential for remains of the Battle of April 19, 1775 as well as to evaluate any impact or disturbance that may have occurred since the 1998 intensive (locational) survey. While none of the excavated test pits and some of the surface features (such as a dirt path in Area 13) identified in the 1998 survey were visually identified, there was no indication of additional disturbance.

Even though the 1998 intensive (locational) survey did not reveal evidence of the military engagement between the British and the colonists, test pits were excavated at 25-m. intervals—a considerable distance when looking for small items. As with most archeological surveys, test pits were excavated on relatively flat terrain. While the flat high areas along Battle Road were used by both sides to watch the movements of their opponents, sloped areas were also used by the colonists and the British flanking units during the battle.

Since the colonial militia was fighting at times from elevated positions behind trees and stone walls facing towards Battle Road, the sloped locations within the areas under study have just as much potential for battlefield debris as the locations with flat terrain. Sloped areas may even have more potential for battlefield debris, as the high ground was utilized by both sides to observe their enemies' actions. Battle remains, such as musket balls and articles of clothing left on flat, easy to reach areas would probably have been taken by people of that period for reuse or pot-hunted by others through time. As noted in a diary entry of Dr. David McClure, British Lt. Edward Hull, who had been shot three times, relayed to the doctor that "When I fell, our people [the British]

stripped me of my coat, vest, and shirt, and your people of my shoes and buckles” (McClure 1878). Therefore the metal detector survey was conducted on both flat and sloped areas.

It has been shown that “the controlled, systematic use of metal detectors represents an advanced method for locating and illuminating artifact distributions at battlefield sites” (Fox, Jr. 1993:67). As with most such surveys, the basic strategy includes three phases: orientation, inventory, and inventory evaluation. Orientation establishes spatial control using a defined grid in order to identify the location of each find precisely. The inventory phase involves three sequential operations: survey, artifact recovery, and artifact recording. During the survey phase, metal-detector operators align themselves side by side while traversing the area under study and a supervisor maintains orientation and proper spacing. When a metal object is detected, the location is pin-flagged and the operator moves on. In order to more precisely locate the buried object (generally, objects are located approximately six inches, or 15 cm, below surface [bs]), the metal-detector operator returns, and further refines the location that has been pin-flagged in order to allow greater accuracy in excavating the object. The object is then excavated. At a minimum, recorded information includes the location of the artifact within the grid and its depth below surface. The inventory phase focused on battle-related items only.

The metal detector survey was conducted by Mr. Alvin Lynn with the assistance of Timelines’ archeologists. Mr. Lynn has had considerable experience in metal-detector surveys of battlefields including both standing and running battles. Three 750 GTX Garrett metal detectors were used for the survey. Prior to beginning the survey, Mr. Lynn instructed the Timelines’ team on the use of a metal detector. Various objects of lead (including a musket ball), brass, and iron were laid on the grass in order to provide initial readings for each type of material.

Prior to beginning the survey, 40 x 40-m grids were laid out across the area under study, with either 20 x 20 m or 10 x 10 m grids used in confined areas. Mr. Lynn had one metal detector operator at each end of the grid, with himself in the middle. The end operators moved towards the middle while Mr. Lynn moved towards the end. The grids were surveyed in one direction and then surveyed across at 90 degrees for complete coverage. A pin flag was placed in areas where an object was detected and following the initial traverse, a metal detector was used in areas that were pin-flagged to refine the horizontal and vertical limits of the subsurface object before excavation. The object was then excavated by trowel and/or shovel. If the recovered object was considered to have potential as battlefield-related debris, its location was recorded with a hand-held GPS, and the object was bagged for later processing and analysis.

3.4 MAGNETIC FIELD GRADIENT SURVEY (NOVEMBER 2004)

A magnetic field gradient survey was conducted in Area 31 where the metal detector survey recovered battlefield-related debris from three loci suggesting the presence of activity areas. Given the large area encompassed by Area 31, the temporal limits associated with the battle under study, and the ephemeral nature of expected archeological deposits, a magnetic field gradient survey followed by the ground truthing of selected anomalies was considered a cost-effective approach for locating activity areas that may be present.

The magnetic field gradient survey (hereafter magnetometer survey) is conducted by scanning a project area in a north-south direction with a magnetometer, an instrument with a combination of two or more closely mounted magnetic sensors. Data samples are collected at discrete intervals with a data sample density appropriate for locating expected resources. When collected the data

sample is digitized and logged automatically along with the grid number, gridline, and position along that line. The collected data is then downloaded to a computer for processing.

The magnetometer measures the strength of magnetic fields. Within this context an archeological site has three principal components: the magnetic field associated with the archeological feature, the magnetic field associated with the soils and sediments, and the earth's magnetic field. While the earth's magnetic field has a strength of 30,000 to 60,000 nT (nanotesla), the magnetic field associated with a typical North American prehistoric archeological feature is in the range of 0.1 to 50 nT and the magnetic field associated with a typical North American historic archeological feature is in the range of 0.1 to 1000 nT (Somers 2002).

The emphasis of this type of survey is detecting and mapping the magnetic field differences associated with archeological and geological features. The archeological record has two basic properties or mechanisms that create measurable magnetic fields—remnant magnetization and magnetic susceptibility. Remnant magnetization is a permanent magnetic effect associated with iron and steel objects as well as ceramics, hearths, fire pits, fire-altered soils and some rock. Many cultural objects and processes can increase the magnetic susceptibility of the soil and these changes can be mapped. Magnetometer surveys have been successful in finding small activity areas within the main confine as well as locating larger features such as the quartermaster corral at Fort Phil Kearny in Buffalo, Wyoming (Figure 8).

While collecting the data sample, problems associated with field methodology, instrument electronics, and geologic clutter, can occur. The principal survey design issues for the proposed survey were a data-sample density great enough to ensure individual artifact detection and a combination of instrument selection and data processing capable of minimizing artifact obscuring “clutter” associated with the subsurface and surficial geology. The survey was conducted with a FM 256 fluxgate gradiometer manufactured by Geoscan Research. This instrument has two sensors (A and B) mounted vertically 0.5 m apart. In operation sensor B, data is subtracted from sensor A data and the difference is recorded. In order to conduct a successful archeo-magnetic survey of weak features (whether prehistoric or a small historic artifact) it is necessary that the A and B measurements be recorded simultaneously, thus minimizing the magnitude of magnetic clutter associated with the area's geology.

The data-sample density consisted of 16 and 32 samples per square meter. The format was 2 x 8 and 2 x 16 samples per meter (N-S x E-W, respectively). The data was processed using Geoplot 3.0 a software processing and analysis package designed specifically for use with magnetic gradiometer data. Geoplot 3.0 contains the various highpass, lowpass, median variance and nonlinear filters required to bring out small weak magnetic anomalies in the presence of obscuring clutter (Figure 9). Dr. Lewis Somers conducted the survey with assistance from Timelines and JMA archeologists. The Principal Investigator, Barbara Donohue, and Dr. Lewis Somers determined the locations for archeological ground-truthing of select magnetic anomalies.

3.5 FIELD INVESTIGATION FOR THE WESTERN SECTION OF AREA 31 (NOVEMBER 2005)

Prior to conveying the 3.802-acre parcel of land to MIMA, the area was surveyed to determine if the property contained archeological resources. The field investigation for the western section of

Area 31 consisted of a metal detector survey followed by a magnetometer survey, both accompanied by limited ground-truthing, in order to locate battlefield debris and/or activity areas associated with the Battle of April 19, 1775. The two surveys complimented previous work conducted in the eastern section of Area 31. Environmental indicators within the parcel (relatively flat, well-drained soils adjacent to an unnamed stream with associated wetlands), the identification of natural soils within the area (King et al. 1992), and the number of registered sites within close proximity (Abell et al. 1998) conferred a high potential for prehistoric archeological sites. As the location of the eighteenth century Tabitha Nelson House Site is suspected to be located adjacent to the southwest boundary of the project area, this area also has a high potential for historic archeological sites (Figure 10). Therefore the field investigation within the western section of Area 31 included the excavation of 50 x 50 cm shovel test pits (STPs) in areas of high potential for prehistoric and historic archeological resources.

3.6 FIELD INVESTIGATION FOR THE FENCE SURVEY (NOVEMBER 2005)

The location of the fence line and the proposed fence posts were marked prior to the field investigation by the Hanscom civil engineering staff (Figure 3). The field investigation for the fence survey consisted of the excavation of 50 x 50 cm shovel test pits and/or coring at the location of the proposed fence posts. Shovel test pits were excavated at fence post locations within undisturbed sections of the fence line. Fence post locations with seemingly disturbed sections were initially tested by coring; a shovel test pit was then excavated if no disturbance was noted in the core. Given the area's sensitivity for battlefield debris, the construction impact zone was scanned by a metal detector.

3.7 LABORATORY PROCESSING AND ANALYSIS

All information was recorded on appropriate field forms, and then bagged for later processing and analysis in the JMA laboratory at Littleton, MA. Only historic cultural materials that appeared to hold an association with the events of April 19, 1775 were sent to the Mashantucket Pequot Museum and Research Center in Mashantucket, CT and conserved to professional standards by Douglas Currie, the Head of Curation. Following the conservation process the artifacts were returned to JMA's laboratory and recatalogued, if necessary. All information was then entered into the Alpha-Four computer cataloguing system for analysis. The results of the documentary research, artifact conservation and analysis formed the basis for recommendations about the need for additional field investigations to assess the site's significance and eligibility for listing in the National Register of Historic Places.

The scope of work for conservation consisted of:

- 1) Pretreatment photo-documentation;
- 2) Radiography of corroded metal;
- 3) Additional mechanical cleaning where possible, including air abrasion where possible;
- 4) Chemical treatment where necessary for corrosion removal or stabilization;
- 5) Corrosion inhibitor on both cuprous metal and iron;
- 6) Sealing consolidant as needed on both cuprous metal and iron; and
- 7) Storage boxes and packaging/mounts for long-term curation storage according to Federal Government Standards and Guidelines.

3.8 BATTLE THEORY

Modeling combat behavior is a complicated issue in which parameters range from disciplined to disorderly behavior. Psychological conditions that induce individuals to face death, such as loyalty, friendship, confidence, and responsibility to others, generally underlie tactical stability. Under tactically stable conditions, the good of the military unit guides individual actions. As order may be difficult to maintain given a variety of circumstances, disorganization and confusion may occur. Without warning, disintegration can result from “collective indiscipline” (when soldiers refuse to enter battle) or from the shock of an enemy attack. The behavior that follows can include soldiers bunching together, refusing to fire, or fleeing en masse or individually (Fox, Jr. 1993). The concepts of “win” and “lose,” according to a commander’s view, may not be the same as those by which his men measure their involvement. Their view is much simpler and centers on the issue of personal survival. Battle, for the ordinary soldier is a small-scale situation that will be fought by its own ethics (Keegan 1978). Disintegration revolves around an erosion of moral commitment and is complete at the moment of surrender or death. While soldiers who have escaped can be regrouped, this generally only occurs with the aid of newly deployed troops (Fox, Jr. 1993).

Aristocratic officers, who were often described as the “dregs of humanity,” commanded the British Regulars. As with other European countries of that period, military discipline and command were more approximate than actual. Standing armies were a mix of volunteers, mercenaries, pressed men, and prisoners of war (Childs 2001). Nevertheless, the British soldier practiced uniformity in drill discipline and maneuvers. Typically, the British employed linear tactics in a battle, tactics that developed as a direct result of the introduction of the flintlock musket and the bayonet in the latter half of the seventeenth century. When in battle, the troops were deployed in two or three ranks for volley firing, while an additional rank stood a few paces back to replace casualties in the front ranks. Troops would move forward firing another volley or two before attacking with the bayonet. Precision in firing rapidly and discipline in keeping ranks were the most important elements of linear tactics (Brooks 1999; Darling 1992).

The militia existed as an integral part of colonial life since the 1620s. It was formed as a civilian army maintained by each town to meet the demands of the “tough, crude, hostile new world” (Hambrick-Stowe and Smerlas 1976). Its ranks included every male between the ages of 16 and 60; men took their place according to age or social rank (Gross 1976). The colonial militia operated as a legal military organization and is generally perceived as having a warlike outlook that resulted from fighting the Native Americans (Keegan 1996). In February of 1775, two British spies reported that after watching the militia train in Framingham, the colonial commander recommended that if they [the militia] practiced patience, coolness, and bravery during battle they would always conquer (Historians of the Council of Minute Men 1977).

While the militia marched to Battle Road in company formation, they maneuvered and fought as individuals (Coburn 1912). The colonial militia was not prepared to fight the British in an open field situation with little or no cover, especially as they were untrained with the use of the bayonet. Yet they were well-trained and well-equipped to fight a fast-moving battle using the terrain to their advantage. While not trained with parade ground drills, they did practice more realistic training in marksmanship and bush fighting (Brooks 1999). During the battle, the Americans were “never more than a dozen or a score, side by side, and usually not more than two or three. Their position was a sheltered one; behind the walls; among the trees; even within houses” (Coburn 1912).

The fact that the colonial forces shot from concealed locations rather than following British procedure of face to face combat made them appear cowardly to the British forces. Americans used a light skirmish line rather than formal patterns of battle. Following the American Revolution, all European armies used the skirmish line rather than the heavy infantry mass (Birnbaum 1986). It was not until 1778 that the Official Regulations for the American Army were written detailing training, drill procedures, and field maneuvers (Schultz 1982).

It is evident from the various renditions of the Battle of April 19, 1775 that the British left Boston and were returning from Concord in formation (Figure 11). Various British reports of the day state that after the running battle started by Meriam's Corner, the soldiers were fleeing from the opposition before reaching reinforcements in Lexington. Clearly, the British were not expecting resistance from such a large contingent of colonial forces. Previous studies have shown that the dichotomy between predictable combat behavior and the deviation from that behavior can be recognized in the physical traces of battle (Fox, Jr. 1993). It is therefore expected that if battlefield remains are identified, individual behavior may be discerned. The absence of gun-related items in the archeological assemblage recovered from the Nelson Road Area of MIMA (Towle and MacMahon 1986c) could be an indication that combat occurred within the areas under study at Hanscom AFB.

4.0 HISTORIC CONTEXT

The following narrative uses both primary and secondary sources in describing the events along Battle Road on April 19, 1775. An attempt has been made to relate as much detail as possible, even that which is questionable, in order to provide a broad basis for the interpretation of the field investigation.

At the First Provincial Congress, on October 26, 1774, a Committee of Safety was appointed with the following directive: “When ever they shall judge it Necessary for the safety and Defence of the Inhabitants of this province and their Property against such person or persons aforesaid to alarm, muster, and cause to be assembled with the utmost expedition, and compleatly armed accourtied and supplied with provisions sufficient for their support in the march to the place of Rendezvous, such and so many of the Militia of this Province as they shall judge necessary for the ends aforesaid” (Historians of the Council of Minute Men 1977). The militia formed the basis of the colonial combat forces. While the alarm list for the militia initially consisted of all able-bodied men, it later included older men, young boys, and the less agile. Under the above resolve a more active force, known as the Minute Men, were formed to be ready to march at a moment’s notice on the orders of either the Committee of Safety or, in an emergency, their own officers. A report to the Provincial Congress on December 10 recommended, “The improvement of the Militia in general in the Military art has been therefore thought necessary, & strongly recommended by this Congress. We now think that particular care should be taken by the Towns and districts in this Colony, that each of the minute men not already provided therewith, should immediately be equipped with an effective Fire arm, bayonet, Pouch, Knapsack, thirty rounds of Cartridges and Ball, and that they be disciplined three times a week and oftener as opportunity may offer” (Historians of the Council of Minute Men 1977). The men were compensated by their town and in the case of a general muster by the province.

On February 9, 1775, the Second Provincial Congress convened and followed the same recommendations as the first. General officers were chosen and the officer of each regiment reported their numbers and equipment to the Congress. The militia was still being organized when the events of April 19th occurred. Their response to the alarm on April 19, 1775, formed the beginnings of America’s first organized army.

As a result of the Stamp Act and other taxes, tensions were building between the British and the Colonists in 1775. General Gage, head of the British forces in Boston, was under orders from the Secretary of State for North America in Britain to initiate offensive operations in Boston by arresting Samuel Adams and John Hancock. Instead, Gage decided to capture the military supplies in Concord first. His plan was to send 10 companies of light infantry, 10 companies of grenadiers, and a company of Royal Marines on a nighttime march to Concord, surprise the townspeople, capture or destroy the military supplies, and then return to Boston before local militia units could be mobilized (Brooks 1999). The colonists discovered Gage’s plan. As the Provincial Congress had resolved that if the British marched, they would “oppose their march to the last extremety” Paul Revere’s midnight ride to alert the countryside of the imminent danger ensued (Keegan 1996). Joining Revere along the way were William Dawes and Dr. Samuel Prescott. Prior to the main contingent of British troops’ reaching Lexington, several of the advanced troops encountered Revere, Dawes, and Prescott. While Revere was detained and held by the British, Dawes, having been thrown by his horse in an effort to escape, marched to Lexington. Prescott, after jumping his horse over a stone wall, escaped into the woods along a

farm road that led to a ravine by the headwaters of the Shawsheen River and was able to alert the residents of Lexington (Coburn 1912).

Between 10:00 and 11:00 pm on April 18, 1775, 21 companies of British Regulars and a small group of Loyalist volunteers (who acted as scouts and guides) under the command of Lt. Colonel Francis Smith, with a detachment of Marines under the command of Major John Pitcairn, met on the shore of Cambridge Marsh (now Lechmere Point) (Brooks 1999; Darling 1992). According to Mackenzie's diary, the British troops included: the 4th, 5th, 10th, 18th (Royal Irish), 23rd, 38th, 43rd, 47th, 59th grenadier regiments; the 4th, 5th, 10th, 23rd, 38th, 43rd, 47th, 59th light infantry regiments; and the 1st and 2nd Marines (French 1926).

The grenadiers, described as heavy men who were heavily armed, were reputed to be the most fearless fighters of the British army. The light infantry, described as "brisk" men with lighter equipment, were generally smaller in build as they served as flankers patrolling each side of a marching column to prevent attacks. As flanking troops marched through wooded areas with considerable underbrush, they had to be both fearless and nimble. In 1775 the British regiments were below their normal strength in Boston, so the exact number of soldiers that gathered for the march to Concord is unclear. While British estimates indicate approximately 700 troops, American estimates vary from 800 to 1,000 British troops that were gathered for the march to Concord (Andrews, Jr. 2002, French 1932, Murdock 1923).

Each British soldier took 36 rounds of powder and ball and enough provisions for a day's march (Brooks 1999). After the British left Cambridge Marsh, they had to march through swamps for several hours before they finally began their march along the "Great Road," passing through Cambridge, Menotomy (now Arlington), Lexington, and Lincoln before they reached Concord (Figure 12). An account of an officer from one of the flank companies noted: "Their [British] march across the marches into the high road, was hasty and fatiguing, and they were obliged to wade, halfway up their thighs, through two Inlets, the tide being by that time, up" (French 1926). Flanking units were used in the initial stages of the march to stop any colonists they might encounter, in order to insure the element of surprise in Concord.

At 5:00 am, after completing a 12-mile march the British reached Lexington Common (Dana 1924). Prior to the events of April 19th, the town of Lexington organized about 170 men over the age of 16 into either an alarm, militia, or Minute Man group. Captain John Parker's Company of Minute Men numbered slightly over 100 nearly all of whom were farmers, some were tradesmen (blacksmiths, wheelwrights, and clockmakers); there were a dozen father-and-son combinations, and one slave, Prince Estabrook. Parker, described as "a stout, large-framed man of medium height" was an experienced soldier having fought in the French and Indian War (Parker 1889). During the winter of 1774/1775 the town had acquired powder, musket balls, and some muskets. During the spring of 1775, the Lexington men were busy with their crops and therefore had little time to muster. As gunpowder was in short supply there was little reason for musket practice. The only order that had been issued to Parker from the Provincial Congress was on March 30, 1775 saying that the military force should be gathered "and an army of observation immediately formed, to act solely, on the defensive so long as it can be justified on the principle of reason and self-preservation" whenever British troops numbering more than 500 march out of Boston (Fischer 1994; Tourtellot 1959).

While accounts vary as to who fired the first shot, fighting broke out between the two forces and ultimately eight of Parker's men were killed and 10 were wounded (Figure 13) (Birnbaum 1986).

The British proceeded on their march to Concord as “the rebels appeared at a distance on all sides, gathering towards the town, but made no attack” (Sutherland and Pope 1927). The British remained in Concord for four hours searching for munitions. During that time the colonial militia was gathering on the outskirts of the town. By the time the British had completed their mission and were ready to return to Boston, a group of more than 500 Minute Men had gathered outside of Concord. As the British tried to leave, fighting ensued at North Bridge where the “shot heard round the world” was fired (Keegan 1996). As the hills around Concord were believed to be swarming with Minute Men, British flanking units were deployed. One member of the light infantry noted: “As soon as they [colonial forces] found the troops had got into a Column of march, they grew bolder, extended themselves on the flanks and rear of the Column” (Figure 11) (French 1926).

Heading towards Meriam’s Hill the British were protected by their flanking units who secured a high ridge that ran along the north side of the road and a brook on the south side. Reverend Edmund Foster wrote an account of his recollections of the events of April 19th in a letter to Colonel Daniel Shattuck of Concord in 1825. According to Foster after the alarm guns were fired at sunrise, he borrowed accouterments and set off for Concord (Ripley 1832; Frothingham 1851; Sabin 1985a). Just as Foster answered the alarm at dawn on April the 19th so did many others. Following the “ringing of the meetinghouse bell” men from Chelmsford formed into two militia companies, 61 men led by Capt. Oliver Barron and 43 led by Capt. Moses Parker. While the Chelmsford men who lived near Carlisle went directly to Concord, the companies led by Barron and Parker went to Meriam’s Corner. In Reading, 270 men formed four units (80 in the First Parish Militia Company, 71 in the Second Parish Company, 61 in the Third Parish Company, and 58 Minute Men). Unbeknownst to the British over 1,500 colonial forces, consisting of militia regiments from 27 nearby towns, had gathered at Meriam’s Corner where several country roads converged (Historians of the Council of Minute Men 1977).

Foster joined up with the Reading militia in Bedford and upon arriving at Meriam’s Hill he saw from 80 to 100 flankers on the high ground with the rest of the British troops marching along the road. The flankers marched down the hill, crossed a small bridge, and then shot a volley towards the colonial forces who were laying in wait behind the buildings and stone walls of the Meriam farmhouse (Figure 14) (Ripley 1832; Sabin 1985a). It appeared to one British soldier that “men had dropped from the clouds” (Frothingham 1851). During the fighting that ensued, British grenadiers charged up the hillside with bayonets in order to take the high ground, but were forced to retreat and return to their line of march on the road due to the overwhelming fire of the Minute Men (Coburn 1912; Murdock 1923; Sabin 1985a; Andrews, Jr. 2002).

After Meriam’s Corner the British were doggedly pursued along Battle Road and according to Foster, “The battle now began, and was carried on with little or no military discipline and order, on the part of the Americans, during the remainder of that day. Each one sought his own place and opportunity to attack and annoy the enemy from behind trees, rocks, fences, and buildings, as seemed most convenient” (Figure 15) (Ripley 1832). A diary entry of a British officer in one of the flanking companies noted: “The [British] troops returned their fire, but with too much eagerness, so that at first most of it was thrown away for want of that coolness and Steadiness which distinguishes troops who have been inured to service. The contempt, in which they held the Rebels, and perhaps their opinion that they would be sufficiently intimidated by a brisk fire, occasioned this improper conduct; which the Officers did not prevent as they should have done. A good deal of this unsteady conduct may be attributed to the sudden and unexpected commencement of hostilities, and the too great eagerness of the Soldiers in the first Action of a

War. Most of them were young Soldiers who have never been in Action, and had been taught that everything was to be effected by a quick firing. This ineffectual fire gave the Rebels more confidence, as they soon found that notwithstanding there was so much, they suffered but little from it” (French 1926).

The road to the east of Meriam’s Corner, which was built up into a causeway due to the low lying land on each side, gradually rose for a mile before cresting at Hardy’s Hill (also referred to as Brook’s Hill). According to Lt. Sutherland’s account of the day, the British had heavy flanking parties leading up to Hardy’s Hill in an effort to prevent the colonial forces from following the British. After cresting the hill the road descended to a bridge spanning Tanner’s Brook and then climbed eastward to Lincoln where it bent sharply to the northeast. Eastward of Hardy’s Hill the terrain and cover gave the colonists a better opportunity to wait within musket range in concealed ambush positions (Sabin 1985a; Sutherland and Pope 1927).

According to Foster, colonial forces cut across the fields from Meriam’s Corner to take ambush positions within the dense woodlands along both sides of the road. The British troops were caught in a crossfire and their losses were so heavy at the point where the road made a sharp turn after Tanner’s (also called Mill) Brook, that that stretch of road became known as “the Bloody Angle” (Figure 14). At this point the grenadiers were on the road and the light infantry were traveling through the back yards and fields that parallel the road (Ripley 1832). According to the diary of British Lt. John Barker “the Country was an amazing strong one, full of Hills, Woods, stone Walls, &c., which the Rebels did not fail to take advantage of, for they were all lined with People who kept an incessant fire upon us, as we did to upon them but not with the same advantage for they were so concealed there was hardly any seeing them: in this way we marched between 9 and 10 miles, their numbers increasing from all parts, while ours was reduced by deaths, wounds, and fatigue” (Figure 16) (Dana 1924). While the colonists were concentrating on the troops on the road, the flankers proved successful as they closed in on the unsuspecting Minute Men who were hiding behind the trees and firing towards the road (Ripley 1832; Sabin 1985a).

Following Bloody Angle, the road passed the houses of Sgt. John and Sgt. Samuel Hartwell. As the British passed Sgt. Samuel’s house they were hurrying and “anxious in their demeanor” firing into the house (Coburn 1912). Further along the road by the Josiah Nelson house there were many large boulders (now known as the Nelson Boulders) that were used for cover by the Minute Men as they shot at the British. Past the Nelsons, north of Folly Pond and just to the east of where Paul Revere was captured, there were two fields on the north side of the road. The first was “meadowy and scarred with trenches and rough mounds of grass; the second was strewn with huge boulders” (Hersey 1930). William Thorning, a 17-year old Minute Man from Lincoln, is said to have hid in one of the trenches and fired at the British marching along the road. After being fired upon, Thorning ran from the ditch into the woods where he was fired at from a flanking party that was a hundred feet behind him. Thorning hid in another trench until the flankers passed. He then ran into the rocky field and “took his stand behind the jutting corner of a huge boulder, which amply protected his body” where he fired several shots and killed two of the British soldiers. Tradition has it that Thorning was hiding behind one of the boulders that was located around Josiah Nelson’s house when he shot at the flanking troops (Hersey 1930; Coburn 1912; Ripley 1832).

Approaching the Lincoln/Lexington line the terrain to the south was low and wet while to the north was a pasture studded with large granite boulders beyond which was a steep rocky hillside, part of a five-acre woodlot belonging to Tabitha Nelson. The road headed towards the hill and

then veered south around it. In was here that Captain John Parker and his men waited in ambush for the British. Secondary and primary sources have identified this ambush, also known as Parker's Revenge, as a calculated risk taken by Captain Parker to surprise the British on their return to Boston. Parker, and approximately 120 of his men, waited on high ground overlooking the road from 10:00am to 2:00 pm. in order to avenge the deaths of his men earlier that morning. The Cambridge Militia Company (77 men under the command of Captain Samuel Thatcher) was in the area and various accounts suggest that the Cambridge men may have joined Parker from an elevated position on the ridge (Sabin 1985; Coburn 1912).

While some of Parker's men were hidden in the woods on the south of the road, others "took positions in the granite-strewn pasture on the north side of the road just within the town of Lincoln" (Chase 1967). The men on the north went under fire from British flanking units. Parker and the remainder of his forces "waited on the rocky hill where the road entered their town. They knelt grimly on their steep wooded hillside behind large granite boulders as the Regulars approached" (Coburn 1921). The Lexington men then "poured into the retreating enemy a galling and destructive fire as they passed" (Hudson 1913).

A detailed, though undocumented account of the ambush, states that the "slope of the hill was quite abrupt, spotted with outcroppings of ledge, and covered by trees and tangles of brush. The approach from the south and the east were across 200 yards of fields, and to the north Pine Hill rose 100 feet above the road, making any attempt to flank his [Parker's] position quite difficult and slow. He placed his men, upward of 100 of them now, on a line about halfway up the slope and well hidden" (Galvin 1967). When Smith got to this point in the road, the flankers were still busy fighting the colonists in the field of boulders over a little rise behind Nelson's farmyard. On the south side the right flank were splashing through the creek and climbing over a stone wall into Jacob Whittemore's field (Galvin 1967). Following the initial attack the British column stopped momentarily and Major Pitcairn came galloping up, and sent the British forces charging up the rocky hillside, driving Parker's militia to retreat away from the road to the crest of the hill (Coburn 1921). According to some sources Smith was wounded at this location, while other sources believe that he was wounded further to the east at Fiske Hill.

The British then encountered even heavier fire from a steep slope known as the Bluff. In retaliation, the British Royal Marines charged the Bluff, but could not abate the fire that was harassing the troops who were marching along the road. At this point several of the British commanders had been injured and the British marching forces began to panic. According to British Lt. John Barker the colonists "were increasing from all parts while ours was reducing from deaths, wounds and fatigue and we were totally surrounded with such incessant fire as it is impossible to conceive, our ammunition was likewise near expended" (Brooks 1999). Ensign DeBerniere of the light infantry noted that ". . . the light companies were so fatigued with flanking they were scarce able to act, and a great number of wounded scarce able to get forward, made a great confusion" (DeBerniere 1779). A member of the Acton Minute Men described the condition of the British at this point saying that they were "hot and tired, lay on their bellies in the road and drank from puddles when they got further into Lexington" (Historians of the Council of Minute Men 1977). It did not appear that the hoped for reinforcements were coming and either surrender or dispersal of the troops seemed imminent (Murdock 1923).

The British troops soon began to break rank and run down Fiske Hill to the village of Lexington where over a thousand British reinforcements were waiting on the village green. By the time British troops had reached Lexington "there were very few Men had any ammunition left, and so

fatigued that we could not keep flanking parties out” (Dana 1924). Smith’s troops reorganized and proceeded to Charlestown with Percy’s reinforcements. While they reached Charlestown about dusk, the last regiment did not get to their barracks in Boston until after midnight. British casualties from the battle included 73 dead, 174 wounded, and 26 missing while American casualties included 49 dead, 41 wounded, and 5 missing (Andrews, Jr. 2002). On April 20th, 441 militia companies surrounded Boston (Morrissey 2004). The Provincial Congress met on Sunday April 23rd and passed the following resolutions: that an army of 30,000 men be immediately raised for the defense of the Colony and that 13,600 men be immediately raised by this Province. (Historians of the Council of Minute Men 1977).

In his report on the mission to General Gage, Lt. Colonel Smith said that the firing on his troops began in Concord and “increased to a very great degree and continued without the intermission of five minutes, altogether for I believe upwards of eighteen miles; so that I can’t think but it must have been a preconcerted scheme in them, to attack the King’s troops the first favorable opportunity that offered, otherwise, I think they could not, in so short a time from our marching out, have raised such a numerous body, and for so great a space of ground” (Kehoe 1974). Following the battle a letter from a British officer to a friend in London succinctly states the British view of their encounter with the colonists: “Upon our return [from Concord] we were fired upon from every house, barn, ditch, hill, and place that afforded cover; and though the whole Country about us was raised, and they had every superiority which numbers and the knowledge of places could give them, the rebels never made one gallant attempt upon us” (Willard 1925).

4.1 KNOWN HISTORIC SITES

While there are no recorded historic archeological sites in the inventory of the MHC for the project area, there have been 49 historic sites identified within two miles of the base (Abell et al. 1998). Of the recorded sites, 29 have been identified as eighteenth-century domestic/agrarian sites. (Those on the MHC inventory include LEX-HA-8, LEX-HA- 7, LEX-HA-6, 19-MD-348, 19-MD-350, and 19-MD-349.) Nine have been identified as nineteenth- to twentieth-century domestic/agrarian sites. (Sites on the MHC inventory include LEX-HA-1, LIN-HA-1, LIN-HA-2, LIN-HA-3, and 19-MD-687). In addition, three have been identified as eighteenth-century rural industrial sites, two have been identified as nineteenth-century rural industrial sites, two have been identified as eighteenth-century school sites (including LIN-HA-11), two have been identified as eighteenth-century commercial sites (including 19-MD-346), and two have been identified as eighteenth-century transportation sites (including 19-MD-352, a section of Battle Road by Fiske Hill in Lexington). Forty-two of the above sites are part of the archeological collections of MIMA.

4.2 EXPECTED HISTORIC ARCHEOLOGICAL RESOURCES

4.2.1 BRITISH ARMS, UNIFORMS, AND EQUIPMENT

The British troops used a smoothbore flintlock musket known as the “Brown Bess,” which was 58 inches long, weighed 15 pounds and had a .75 caliber bore. The musket was designed to carry a 14-inch socket bayonet. The musket fired by striking a piece of flint against a piece of steel, thus producing a shower of sparks that ignited priming powder in the flash pan beneath the steel thereby setting off the charge inside the barrel (Darling 1992; Peterson 1977). With an effective range of from 80 to 100 yards (73 to 91 m.), the British concentrated on firepower and speed of

reloading (about four rounds per minute) rather than accuracy when firing the Brown Bess (Neumann and Kravik 1975). When discussing the musket in a book he published in 1814, British Major George Hanger commented “. . . and as to firing at a man at 200 yards with a common musket, you may just as well fire at the moon and have the same hopes of hitting your object . . . no man was ever killed at 200 yards, by a common soldier’s musket, by the person who aimed at him” (Moore 1967). Officers often used pistols. They had a flintlock form of ignition and were referred to as holster pistols as they were carried in a pair of leather saddle holsters mounted on a horse. Mostly all were made in England and were used by the Americans as well (Moore 1967).

In 1775, British uniforms were for the most part restrictive and non-utilitarian. As the Revolution progressed, most of this restrictive gear changed to more practical attire. The British Regulars wore three-cornered hats, red surcoats made from a cheap grade of wool, coarse white shirts, white waistcoats, and white breeches with black gaiters. A wide belt carried over the left shoulder held a cartridge box; the bayonet and scabbard were on a narrow belt around the soldier’s waist. Officers almost always had a sword, and sometimes either a pistol or short-barreled musket. The Light Infantry or flank companies wore tight black leather helmets with black leather stocks at the neck to keep the soldier’s chin up. Grenadier units wore tall bearskin caps decorated with metal faceplates and back plates that noted regimental affiliation with Roman numerals. As the grenadiers’ hats were top heavy, they were difficult to keep in place. The grenadier also carried a short sword on their waist belts (Figure 17) (Brooks 1999; Darling 1992). Even though the grenadiers had ceased to light fuses for grenades by this time period they still carried a match case on their cartridge box, one of the distinguishing features of their uniform (Peterson 1956:243). Accoutrements, or a soldier’s personal equipment, included cartridge boxes, belts, scabbards, canteens, knapsacks, and powder horns.

4.2.2 COLONIAL MILITIA ARMS, DRESS, AND EQUIPMENT

Massachusetts militia companies did not have a uniform supply of weapons in 1775. Most towns expected men in the militia to supply their own weapons and only armed those who were unable to arm themselves. As local units had to supply their own weapons, a variety of weapons of different caliber were the norm. The three primary weapons, which differed from each other in respect to size, barrel length, caliber, and effective range that were used included the Brown Bess Musket, The New England Fowler, and the Committee of Safety Musket. The New England Fowler differed from the Brown Bess, described above, as it was between 59 and 83 inches long, had a caliber between .50 and .80 with an effective range of from 75 to 100 yards (68 to 91 m). The Committee of Safety Musket was between 56 and 60 inches long, had a caliber of .80 with an effective range of 75 yards (68 m) and often used French, Dutch or American parts (Cain 1995). None of the Massachusetts’ militia was known to have carried long rifles (Fischer 1994). Many armed themselves with weapons not designed for war. While one man might carry a long fowling piece others carried arms of great antiquity “whose origins told the history of the province” (Fischer 1994). While some militia units had muskets that were capable of carrying a bayonet, few owned a bayonet. This was compensated for by carrying “close-in weapons” such as some combination of sword, hunting knife, and tomahawk. The militia also carried short-range fire power or pistols to counter bayonet attacks (Brooks 1999; Peterson 1977).

While a few elite Massachusetts companies dressed in blue coats with red trim most militia units, particularly during this initial confrontation, dressed in everyday clothes. Typically, men wore floppy, wide-brimmed hats, with linen or linen and wool outer dusters or heavier coats that used green or blue dyes. As some found the coats to be too cumbersome, the linen outer duster or

“hunting shirt” was preferred. This pullover shirt had no buttons and was tied with a large belt that could hold a hatchet, a knife and one or two pistols. Cowhide shoes were ornamented with large buckles (Fischer 1994). Everything the men used was their own property so a typical militia company carried an assortment of accouterments, even to the point of using outdated equipment. Bullets and powder were often carried in a powder horn and hunting bag. While cartridge boxes were used by some, they were poorly constructed in comparison to their British counterpart (Cain 1995) (Figure 18). Often their lead musket balls were carefully wrapped in handkerchiefs and carried in pockets or under their hats (Fischer 1994). The variety of items used by the colonial forces has been attributed to the sparse industry in the colonies, attrition in the field, and the lengthy supply routes from Europe (Neumann and Kravic 1975):

Those items required by Massachusetts forces in 1775, as noted in the journal of Arthur Harris of Bridgewater were (Neumann and Kravic 1975):

“Each Soldier to provide himself with
 A Good Fire Arm
 A Steel or Iron Ram Rod & Spring for Same
 A Worm Priming Wire & Brush
 A Bayonet fitted to his Gun
 A Scabard & Belt Therefor
 A Cutting Sword or Tomahawk or Hatchet
 A Pouch Containing a CartridgeBox that will Hold fifteen Rounds of Cartridges at Least
 A Hundred Buck Shot
 A Jack Knife & Tow for Wadding
 Six flints, one pound of Powder
 forty Leaden Balls fitted to the Gun
 A Knapsack & Blankett
 A Canteen or Wood Bottle to Hold 1 quart”

Yet what was required was not always available. Even as late as 1832, when Albert Bryant was called for muster in Lexington he was required to be equipped with a musket, knapsack, cartridge box, priming wire and brush, and two spare flints, but only showed up with a priming wire and brush and two spare flints (Bryant 1900).

4.2.3 *EXPECTED RESULTS*

It appears that a major part of the fighting took the form of a running battle from Meriam’s Corner to Fiske Hill, with British flanking units being used to surprise the colonial forces in the woods to the north and south of the road. While various sources cite the number of British troops who marched to Concord as 600 to 800, all agree that 36 rounds of ammunition were given to each British soldier. These sources also seem to agree that the British troops were practically out of ammunition when they reached Fiske Hill (Brooks 1999; Murdock 1923; and Coburn 1912). This would mean that anywhere from 23,400 to 28,800 musket balls could have been fired by the British before they were joined by reinforcements in Lexington. If linear tactics were followed within 100 yards (91 m) of the proposed survey area, then concentrations of musket balls may be revealed during the metal detection survey.

While the number of colonial militia varies from 1,000 to 1,500 (and higher) in different sources, the number of musket balls carried by each man is not known, but could approximate 30 each, the

number recommended by the Provincial Council on December 10, 1774 (Historians of the Council of Minute Men 1977). If that was the case then anywhere from 30,000 to 45,000 musket balls could have been fired by the colonial forces during the battle. As the colonial forces were more spaced out and not fighting in volleys, concentrations of fired musket balls would not be expected from colonial fire.

Given the restrictive nature of their clothing, the British may have either lost or purposely thrown away items of apparel or unnecessary equipment, as they were under considerable stress during the running battle. While casualties occurred on both sides, it is presumed that any muskets, rifles, small arms, bayonets, knives, or axes would have been retrieved and reused by others. Given the above assumptions expected battlefield debris, from highest to lowest potential, would be musket balls, gun flints, small items associated with British uniforms, and broken, unusable pieces of weapons.

5.0 RESULTS OF THE SPECIALIZED SURVEY

5.1 METAL DETECTOR SURVEY

The metal detector survey was conducted in October of 2003. The following will first describe the surveyed area noting the results of the previous intensive (locational) survey (Parsons 1998). Since that survey, a chain link fence had been put up around the perimeter of the base for security following the events of September 11, 2001. The fence does not necessarily follow the boundaries of the base; in some places sections of the base are actually outside the fence. The metal detector survey therefore was conducted both inside and outside of the fence depending on the actual location of the base's property (Figure 2).

5.1.1 AREA 13

Area 13, approximately 3 acres, is located along the southern border of Hanscom AFB and is in close proximity to the site of Paul Revere's Capture (Figure 19, Plate 1). The fence line within this area is well within the boundaries of the base, adjacent to the north boundary of Area 13. Generally the area consists of a narrow swath of cleared land less than 5 m. wide along the south side of the fence. Of the 14 test pits (TPs) excavated during the intensive (locational) survey, areas of disturbance were found along the western end by TPs 13-16 and towards the eastern end by TPs 5 and 6. The remainder of the area is characterized by dense secondary tree growth. There are several areas of rocks and rock rip rap; generally these rocky areas are adjacent to the toe of the slope that forms the southern boundary of Area 13. A gravel road depicted in Figure 19 extending from TP 9 to the northeast and then eastward along the northern boundary of the area was not evident.

Area 13 was first surveyed from west to east and then south to north. The entire area appeared to have witnessed disturbance at some point in the past. Only modern trash was revealed.

5.1.2 AREA 14

Area 14 comprises 4.23 acres, the majority of which consists of steep eroded slopes (Figure 20, Plate 2). The southern end of the parcel is marked by a stone wall and the new chain link fence that runs east-west bisects the base's property. Therefore the metal detector survey was conducted on both sides of the fence. For the most part the area was dominated by young tree growth and dense brush. All of the six TPs previously excavated in this area contained intact soils.

While the intensive (locational) survey was conducted on relatively flat locations the metal detector survey was conducted across the entire area. Forty-meter intervals were marked along the fence with flagging tape so that they could be easily seen through the tree growth. The area was first surveyed north-south and then east-west. While a considerable amount of modern trash was located by the stone wall and the flat areas adjacent to the base housing, nothing other than an occasional piece of modern trash was recovered within the remainder of the surveyed area.

5.1.3 AREA 26

Area 26 was a 4.2-acre parcel that was lightly forested with a northwest-southeast oriented stone wall cutting across its central section. The area was bounded on all sides by base housing (Figure 21; Plate 3). Of the 23 TPs excavated during the previous intensive (locational) survey, the seven located outside of the wooded areas exhibited disturbed soils.

After laying out the grid, the parcel was surveyed north-south and then east-west both on the flat and the sloped areas. Only modern trash was identified.

5.1.4 AREA 27

Area 27 was a 1.8-acre parcel bounded on both the south and east by contemporary stone walls (Figure 22). The terrain was lightly wooded along the chain link fence which provided the southern boundary. After excavating 10 TPs, the previous intensive (locational) survey testing located two areas of disturbance. TPs 1-3 in the eastern section were disturbed from logging activities and TPs 7 and 10 located on a slight ridge exhibited soils that had been graded.

After establishing the 40 m baseline along the chain link fence, the area was surveyed from east to west then north to south. No artifacts were recovered.

5.1.5 AREA 28

Area 28 was an 1.53-acre parcel that was located around the parking lot at the end of Patterson Road (Figure 20). The new chain link fence had been placed around the inside perimeter of this section which for the most part contained dense brush with a lightly wooded area to the south. Of the six TPs excavated in this area, only TP 6 contained intact soils.

Given the extensive disturbance, only the southern section of Area 28 was surveyed with the metal detector. Only minimal amounts of modern trash were identified.

5.1.6 AREA 31

Area 31, comprising 14.3 acres, includes a portion of Katahdin Hill which is the highest point on Hanscom AFB (Figure 23). A swath of man-made land bisects the parcel, which is lightly wooded. Granite outcrops, erratics, and surface rocks are located throughout. The parcel slopes down towards a wetland to the west and is crossed by two intersecting stone walls. The area is bounded by a chain link fence separating the parcel from MIMA to the south, buildings and roadway to the north, a chain link fence to the east, and an unnamed stream to the west. Of the 57 TPs excavated during the previous intensive (locational) survey, disturbance was noted in TPs 37, 38, 40, 41, 46, 47, and 57. An historic dump (LEX-HA-9) dating to the beginning of the twentieth century was located in the extreme southwest section of the parcel.

As a result of the metal detector survey, several modern trash deposits as well as areas of disturbance were noted in Area 31. The northeastern section of the parcel, the location of TPs 1-5, has witnessed various types of disturbance and contained several modern trash deposits, a similar situation was also noted in the wooded area to the south of TP 37. A total of 12 historic artifacts were recovered. All of the artifacts were recovered from under the duff within the first 20 cm of the A Horizon. The location of the artifact was noted on a hand-held GPS and labeled flagging tape was buried at each location. All artifacts were sent out for conservation.

Table 2. Artifacts Recovered from the Metal Detector Survey in Area 31 (Appendix A).

Artifact	Dimensions	Pre-conservation catalogue comments	Post-Conservation Comments
Unfired lead musket ball (Plate 10, middle)	18 mm diameter	Battle related	Battle related, .70 caliber, ball retains pouring sprue from mold casting
Fired lead musket ball (Plate 10, left)	28 x 23 x 9 mm	Battle related	Battle related
Fired lead musket ball (Plate 10, right)	2 cm diameter x 1 cm depth	Battle related	Battle related, retains impression of surface that the fired ball hit (possibly bark)
Cuprous colonial shoe buckle (Plate 12, bottom)	6 x 5.1 cm	Battle related, has design on one side	Likely battle related, from appropriate time period, found near musket ball bullet mold
Ferrous musket ball bullet mold (Plate 12, top)	13 x 3.6 cm	Battle related	Battle related, casting chamber for .50 caliber ball, likely for a pistol
Ferrous oxen shoe (Plate 11, top)	Half shoe, 10.5 cm long	Has two wrought short nails attached, consistent for 18 th C. date	May be battle related, from the appropriate time period
Cuprous ring (Plate 11, bottom)	2.9 cm diameter	Possible accouterment ring used for leather/textile	May be battle related, ring is formed from sheet material rolled to enclose blue silk and cotton textile, textile emerges from flat side of ring, appears to have a colored coating.
Cuprous fitting (Plate 13)		Bent strip with rounded end hole for screw, the other end is bent and split down the middle	Likely battle related, split is not intentional but at the bottom of a worked rounded channel, possibly fitting for bottom of gun (pistol) stock under front barrel associated with a ram rod
Flat ferrous chunk (Plate 14)	6 x 3.8 cm x 8 mm thick	Appears to have a tang, may be base for large knife or sword	Level of corrosion not consistent with time period under study, probably late 19-early 20 th C. tractor/plow part
Silver-plated cuprous spoon (Plate 14)	15 x 3 cm	Has unidentified maker's mark, may date to later period	Inscription on handle: "Rogers & Bro.A1"- post 1858
Eyeglasses and case fragments (Plate 14)		Metal of eyeglasses is bent, case has ferrous fragments with textile or fabric interior	Style and manufacture of glasses indicate late 19 th -early 20 th C.
Cuprous disk (Plate 14)	5.1 cm diameter	Made of stamped metal with raised center and raised concentric ring	Level of corrosion not consistent with period under study, produced with modern steel stamping technology

There appears to be a clear association between the three musket balls, the musket ball bullet mold, the gun fitting, the cuprous shoe buckle and the Battle of April 19, 1775. Artifacts that were identified as being from the same time period that may be associated with the battle are the oxen shoe and the cuprous ring. The battle-related artifacts and those that may be associated with the battle were recovered from three loci, suggesting the existence of former activity areas within

the parcel (Figure 24). Locus 1, located in the western section of Area 31, is associated with the three musket balls, oxen shoe and brass ring (Plates 10 and 11). Locus 2, located upslope and to the east of the Locus 1, is associated with the musket ball bullet mold and colonial shoe buckle (Plate 12). Locus 3, located to the west of the parking lot adjacent to an unnamed stream, is associated with the gun fitting (Plate 13). Following conservation, artifacts that were not considered to be associated with the time period under study included the scissors, flat ferrous chunk, the eyeglasses with case, and the cuprous disk (Plate 14). Given the results of the metal detector survey, the area of potential for battlefield debris appears to be to the west of the swath of man-made land that bisects the parcel as well as to the west of the parking lot for Building 1103 (Figure 24).

5.1.7 AREA 29

Following the results of the metal detector survey in Area 31, it was decided that Area 29, located in close proximity and to the north of Area 31, may also have the potential for battlefield debris (Figures 2 and 25). The area has a north-south orientated stone wall and revealed intact soils in seven out of the nine TPs excavated during the previous intensive (locational) survey (Abell et al. 1998). TPs 7 and 9 exhibited grading and filling disturbance. Only modern trash was located from the metal detector survey.

5.1.8 SUMMARY OF THE RESULTS OF THE METAL DETECTOR SURVEY

When walking into the woods from the signage noting the location of Parker's Revenge along Battle Road, the terminus of a northwesterly-southeasterly oriented stonewall is encountered (Plate 15). The stonewall continues across the MIMA property, under the fence that separates MIMA from Hanscom AFB, across Area 31 before ending at a grassed landscaped area adjacent to the parking lot to the west of Building 1103 (Figure 23). This suggests that Area 31, even though it is somewhat removed from Battle Road, may have been associated with Parker's Revenge, a specific event that has been documented in the battle between the British and colonial forces on April 19, 1775. Documentary research has revealed that over 100 Lexington Minute Men under the command of Captain John Parker waited approximately four hours to ambush the British when they returned from Concord. It seems only reasonable that Parker's men would have been doing something while they were waiting, such as eating or making ammunition. If they were surprised at this location by the British flankers or were being pushed back by Pitcairn's troops, it is conceivable that they would have dropped or lost items. As militia companies were known to have brought supply wagons with them to provide support items in the field, the recovery of the oxen shoe by Locus 1 may provide further detail to support the hypothesis that former activity areas exist within Area 31.

5.2 MAGNETOMETER SURVEY – OCTOBER 2004

In an effort to determine if the three loci identified in the metal detector survey were associated with activity areas, Dr. Lewis Somers of Geoscan Research and Archeophysics, with support from Timelines, Inc. (now JMA) conducted a magnetometer survey in Area 31 in November of 2004. Prior to Dr. Somers arrival, a 20-m grid was established across the parcel, the baseline of which ran somewhat parallel to the chain link fence that separates Hanscom AFB from MIMA (Figure 26). After giving the Timelines team instruction on the use of a magnetometer and survey procedures, Dr. Somers began the survey at the southwest corner of the established grid. As a team member tautly held the fiberglass tape that is marked in meter intervals at each end of the

20-m grid, Dr. Somers walked beside the tape from south to north (Plates 16 and 17). The cadence of the surveyor is critical as the magnetometer beeps when collecting data; the beep should occur when passing over the meter interval that is marked on the fiberglass tape. Any movement of the instrument up or down or side to side will skew the data. After reaching the end of the 20-m traverse, the surveyor walks back along the other side of the tape to collect data from north to south. The fiberglass tape is then moved a meter to the east and the process continues across the 20-m block. If the magnetometer collects the data at the wrong place along the tape, due to the surveyor avoiding fallen branches, large rocks, etc., the data can be erased so that the line can be traversed again. After collecting data from several blocks, it is then downloaded into a laptop computer and examined for quality and consistency.

In the year since the metal detector survey had been conducted a number of fallen trees and downed branches crossed the parcel. As the environmental policy of the base is to leave this type of debris in place within wooded areas, the logistics of the magnetometer survey were more complicated and time consuming than anticipated. In order to complete the survey in the time allotted it was decided to concentrate on surveying blocks that were located in close proximity to the three loci identified in the metal detector survey. This strategy had the advantage of surveying the eastern and western boundaries of the metal detector survey, Locus 1 and 2 respectively, within the main section of Area 31, while Locus 3 was located in a confined area between the parking lot and the unnamed stream. This strategy also allowed time for Dr. Somers to provide guidance in ground-truthing anomalies.

A total of nineteen 20-m blocks and three 10 x 20-m blocks were surveyed. Twelve 20-m and one 10 x 20-m blocks were surveyed by Locus 1, six 20-m and two 10 x 20-m blocks were surveyed by Locus 2, and one 20-m block was surveyed by Locus 3. Following the survey a set of maps was processed for all magnetic features and artifacts within each of the three areas. Within the southwest area (Locus 1), Dr. Somers identified 29 areas of interest (A-P and Q-U) for ground truthing (Figure 27). After measuring in to the anomaly, the magnetometer was used much like the metal detector to pinpoint the anomaly in the location to be investigated (Plate 18). Small anomalies were tested with a 50 x 50 cm shovel test pit and larger anomalies were tested with a 2 x 2 m unit (Plate 19).

Magnetic clutter associated with the chain link fence was visible along the baseline from 0 to 50 m and beyond 50 m the fence veered away from the baseline. Anomalies B, C, D, J and K proved to be associated with the fence construction and F was a can. Rocks associated with a stonewall that crossed the area were responsible for T, U, and V. As their magnetic signature was different that the other rocks within the wall, which for the most part were filtered out of the map, it is conjectured that these rocks may have been brought in from another area. Of the other anomalies N, P, Q, R, and X were rocks, S and W were the lead tip of a .22 caliber bullet, and O was assorted trash. Most items were recovered from within 20 cm of the surface. Soils were consistent with a 4-6 cm level of duff (A0) over a medium to dark brown fine sandy silt (A1 varying in depth from 6-16 cm bs). When reached, B soils consisted of reddish brown fine sandy silt (B1). Following the above testing a second set of anomalies were tested. Those anomalies are labeled AA-GG in Figure 27. With the exception of FF, all anomalies proved to be rocks. A heavily corroded ferrous shank/shaft was recovered from FF. As FF was located in close proximity to the brass ring that was recovered in the metal detector survey, it was sent to conservation to determine its function.

Following the above procedure two things became obvious; first, the data had to be further refined due to the preponderance of geologic clutter; second, Dr. Somers realized that rather than using the magnetometer to pinpoint the location of the anomalies, a metal detector should be used as it would not recognize the magnetic field associated with the area's geology. A metal detector was then used on selected anomalies within Locus 2. As no response was indicated from anomalies AAA to HHH after being scanned with the metal detector, they were eliminated from testing. Of the anomalies tested, III proved to be an iron strip, JJJ were cut nails, and KKK were iron rods (Figure 28).

Locus 3, located adjacent to the unnamed stream, did not exhibit the same type of ground conditions as the other two loci. There were no surface rocks, no erratics, and the underlying bedrock was not as close to the surface. One 20 m grid was surveyed. The data for this area was processed in two maps, one for large iron/steel objects and strong magnetic rocks and one for small/iron steel objects and small magnetic rocks (Figure 29). Both maps depicted significant clutter across the northern boundary of the block that proved to be associated with a buried cable. Thirteen anomalies were investigated from the small/weak magnetic signal map and five anomalies were investigated from the large/strong magnetic signal map. The metal detector, rather than the magnetometer, was used to pinpoint anomalies to investigate. Tables 3 and 4 show the result of the ground truthing and Table 5 shows the artifacts that were sent to conservation. Following conservation, only the fascine knife was considered to be from the time period under study (Plates 20, 21, and 22).

Table 3. Artifacts recovered from Small/Weak Magnetic Signal Map.

N	E	Finds	N	E	Finds
17.5	8	Cable	6	9.5	Can (same as above)
12	7	No signal	4	14.2	Wire nail
12.5	7	No signal	3.5	14.2	Knife
11.5	5,5	No signal	8	14.2	Scissors
5	9	Can	8.5	14.2	Scissors (same as above)
5	9.5	Can (same as above)	1	18	Drainage pipe
.6	10.6	Tool/utensil	.8	8	Iron ring

Table 4. Artifacts recovered from Large/Strong Magnetic Signal Map.

N	E	Finds
12	6	Toy rake
3	4	Fascine knife
.5	8	Spoked wheel
5	17	Agricultural tool
13	20	Washers

Table 5. Artifacts Conserved from the 2004 Magnetometer Survey (Appendix A).

Artifact	Dimensions	Pre-conservation Comments	Post-conservation Comments
Iron Fascine	34 x 12 cm	Iron bill hook, 18 th	Appropriate corrosion to

Knife/Bill Hook		century	the period under study
Iron Rake	10.4 x 6.5 x 3.8 cm	Head of small iron rake, camp tool? 18 th C?	
Iron Knife	13 x 2 cm	With long tang, missing tip of blade	Not a knife, hand wrought, but use unknown
Iron Scissors	16 x 8.7 cm	Near intact, missing piece of loop	18 th – 19 th C
Ferrous Metal Fragment	4.6 x 2.5 cm	Iron tool or utensil fragment	Artifact is a late 19-early 20 C. fork
Ferrous Shank. Shaft (Anomaly FF)	13 x 7 mm	Tool part?	A tool part

5.2.1 SUMMARY OF THE RESULTS OF THE 2004 MAGNETOMETER SURVEY

Even though the location of activity areas was not identified during the magnetometer survey, the locations of both small and large iron artifacts were mapped and then verified through ground-truthing within Locus 3. This result would be difficult to accomplish from the systematic excavation of shovel test pits across the area. The signature of the anomaly associated with the finds in Locus 3 can provide baseline data for similar testing in Locus 1 and 2. A set of Strong-Large and Small-Weak anomaly maps for Loci 1 and 2 are included in Dr. Somers' report (Appendix B). Lessons learned from this survey have provided several protocols for using a magnetometer to identify small weak magnetic anomalies, prehistoric or historic, in New England's glacial soils.

5.3 FENCE SURVEY

The proposed fence crossed both wooded and landscaped terrain. Prior to the field investigation the construction impact zone was clear cut by base personnel, the line of the fence was marked with string, and the locations of the fence posts were marked with a painted cross on the ground (Plate 23). At the time of the permit addendum 121 fence posts, placed at 10 ft. (3 m) intervals, were planned. Since that time the proposed fence was slightly realigned resulting in a total of 159 fence posts. The field investigation therefore resulted in the excavation of 134 shovel test pits (STP) and 24 cores (C) with one fence post location (#155) not tested as it was on a glacial boulder (the fence post will be drilled into the boulder) (Figure 30).

A total of 1,063 historic and modern period artifacts was recovered. Of the recovered material 856 (81%) were from A Horizon soils, 197 (18%) were from fill/redeposited soils, and 10 (1%) were from B Horizon soils. Diagnostic historic materials included creamware (1762-1820), pearlware (1779-1830), whiteware (1820+), ironstone (1840+), yellowware (1830-1900), Albany slip stoneware (1840-1920), cut nails (1795+), wire nails (1850+), and machine-made glass (1903+) (Appendix A). None of the artifacts was sent to conservation.

Table 6. Categories of Recovered Material.

Type	Number	Percentage of Total
Domestic debris	456	43%
Assorted metal objects	267	25%
Food refuse	143	13%

Architectural debris	103	10%
Other – modern	18	2%
Personal items	5	<1%

The following description of the results of the field investigation begins where the proposed fence will join the existing fence at the western end of the project area by Airport Road.

From the existing fence to the wetland area (Fence Posts 1- 9, Figure 30). This section of the project area had been previously cleared and is currently a grass-covered field. Soils consisted of a 10 cm level of duff, over a 20 to 34 cm plow zone, which in turn overlay B and then C soils (STPs 1-9) (Figure 31). A total of 297 (28% of the total) artifacts were recovered from this area, the vast majority of which were recovered from the plow zone (Apz). Artifacts were generally small fragmentary pieces. In several instances diagnostic historic materials were found either in association with modern materials (such as whiteware [1820+] with aluminum foil in the Apz of STP2 at 20-30 cmbs) or in a level overlaying one that contained modern debris (such as pearlware [1779-1830] in the A0, 0-10 cmbs, with aluminum foil in the Apz, 20-30 cmbs, in STP3).

In the wetland area to the west and east of the unnamed stream (Fence Posts 10-18, Figure 30). The wetland area was lightly forested. Soils consisted of either hydric A Horizon soils over C soils (STPs 10-13) or contained multiple levels within the A Horizon, resulting from flooding deposits from the stream, over either B or C horizon soils (STPs 14, 17 and 18). Both STP 15 and STP 16 reached the water table at 5 cmbs and 19 cmbs, respectively, as they were located adjacent to the streambed (Figure 31). No artifacts were recovered.

Adjacent to the parking lot (Fence Posts 19-63, Figure 30). A total of 735 artifacts (69% of the total) was recovered from this area. While the western section was lightly vegetated, the area adjacent to the parking lot was landscaped. Soils in the western section consisted of an A Horizon (varying in depth from 24 to 41 cmbs) over B Horizon soils (STPs 19-33, and 37) (Figure 31). While this section of the fence line yielded the largest number of recovered artifacts, they were fragmentary in nature, likely associated with field trash. The vast majority of datable ceramics consisted of fragments of whiteware (1820+), at times recovered in association with modern materials (such as machine-made glass [1903+] in STPs 27 and 32 and aluminum foil in STPs 28 and 31). Also recovered were minimal amounts of creamware (1762-1820) and pearlware (1779-1830) (both were recovered in association with machine-made glass [1903+] in STP33).

Disturbed soils, associated with landscape activity and/or construction of the parking lot, consisted of either fill (STP 35 and C36), fill over A Horizon soils (STPs 34, 38-40) or fill over B Horizon soils (STPs 41, 42 and 45, Cs 43, 44, and 46). Artifacts recovered from the Buried A Horizon included a mix of historic and modern materials (such as creamware [1762-1820] in association with aluminum foil in STP34 and whiteware [1820+] in association with aluminum foil in STP38).

The proposed fence line then continued within a tree line in a lightly wooded area. Soils appeared natural with the A Horizon (varying in depth from 20 to 27 cmbs) overlaying B soils (STPs 47-51). Only three artifacts (two fragments of whiteware [820+] and a fragment of glass) were recovered from the upper 22 cm of STP47.

The fence line then traversed the location of a former observatory that has been razed; the area is now covered with grass. Disturbed soils, consisting of fill over glacial till, were revealed in six

STPs (52-56 and 63) and six cores (57-62). Recovered artifacts consisted of five fragments of an earthenware drainage pipe, three pieces of asphalt roofing shingles, and one piece of light orange pressed table glass recovered from the fill in STPs 52, 53, 55, and 55. The fact that these types of materials were not recovered elsewhere in the project area suggests that the fill in this location was brought in from elsewhere and is not redeposited indigenous soil.

Approaching the stone wall (Fence Posts 64-72, Figure 30). The soils within STPs 64-67, 69, and 72 consisted of an A Horizon varying in depth from 12 to 26 cmbs over natural B Horizon soils (Figure 32). STPs 68, 70, and 71 exhibited disturbed fill soils associated with a subsurface wire cable. Only eight artifacts were recovered from the fill/redeposited soils of STP70. The presence of machine-made glass (1903+) dates that deposit to the early twentieth century.

East of the stone wall to the existing fence (Fence Posts 73-105, Figure 30). This section of the fence line traverses a lightly wooded area, in close proximity to previously recovered battlefield debris. Soils within each of the test pits (STPs 73-105) appeared natural with a thin A Horizon (varying in depth from 9 to 23 cmbs) over B Horizon soils (Figure 32). Glacial erratics and boulders were predominant in 13 of the test pits. Recovered artifacts consisted of 23 fragments of a curved ferrous plate from STP91.

East along the existing fence line (Fence Posts 106-159, Figure 30). Soils along this final section of the proposed fence traverse a lightly wooded area parallel to an existing fence that will be taken down when the proposed fence is constructed. While the majority of the STPs (108-112, 121-125, 131-143, 146-154, and 156-159) exhibited natural soils (Figure 32), a variety of disturbance was noted, including that associated with a heavy-duty vehicle (STPs 113-120 and 126-130), with tree removals (STPs 144 and 145), and with construction of the existing fence (STPs 106 and 107). The location of fence post 155 was not tested as it was on a glacial boulder. No artifacts were recovered.

5.3.1 METAL DETECTION SURVEY WITHIN THE CONSTRUCTION IMPACT ZONE OF THE PROPOSED FENCE

The metal detector survey began at the easternmost end of the proposed fence line by STP 159 and proceeded easterly to STP1 (Figure 30). Only a handful of hits were noted and investigated from STP 159 to STP 73, the lightly wooded section of the project area between Locus 1 and Locus 2. Recovered items consisted of barbed wire, buried pieces of the existing chain link fence, a dog collar with metal decoration, and two brass gun shells. The remainder of hits to STP5 consisted of aluminum foil fragments and a twentieth century silver plated spoon. No further artifacts associated with the period under study were located.

5.3.2 SUMMARY OF THE RESULTS OF THE FENCE SURVEY

Testing along the proposed fence line noted areas of disturbance and areas of natural soils. No prehistoric artifacts were recovered. Only a handful of early historic artifacts were recovered and those for the most part were found in association with modern materials. Most of the artifacts were typical of field trash; no primary deposits or features were identified. With the exception of the former location of the observatory, fill levels appeared to reflect redeposited indigenous soils. Metal detecting within the construction impact zone of the proposed fence line did not locate any artifacts that appeared to be related to the Battle of April 19, 1775 or that time period.

5.4 METAL DETECTOR AND MAGNETOMETER SURVEY WESTERN SECTION OF AREA 31– NOVEMBER 2005

A survey comparable to the ones conducted in 2003 and 2004 in Area 31 was designed for the western section of Area 31 prior to its transfer to MIMA. Representatives from Hanscom’s Environmental Department (Don Morris and Greg Cravedi) and the NPS (Steven Pendery) felt that the previous research design and the results of the 2004 magnetometer survey “had enormous value from a land management and cultural resource perspective” (E-mail Greg Cravedi, Hanscom AFB, to Steven Pendery, National Park Service, November 12, 2004).

The survey for the western section of Area 31 was conducted by JMA (formerly Timelines) in November of 2005. Environmental conditions for this section of Area 31 were somewhat different than those of the previous survey, as the wooded areas contained a considerable amount of thick brush and there were several landscaped areas. Areas with thick brush were clear-cut by JMA personnel to facilitate movement. Aside from an east-west oriented stone wall that crossed the southern section of the parcel, there were no large boulders or erratics present. The parcel was irregularly shaped and bisected by a pool of water. It was bounded on the east by the unnamed stream and the proposed fence line, on the north by the proposed fence line, on the west by an existing chain link fence adjacent to Airport Road, and on the south by an existing chain link fence separating Hanscom AFB from MIMA. A grid consisting of fourteen 20 m and five 10 x 20 m blocks was established within the survey area (Figure 33).

5.4.1 METAL DETECTOR SURVEY

Martin Dudek and Brian Lever conducted the metal detector survey, both having considerable experience with metal detectors. Mr. Dudek had also worked closely with Mr. Lynn in 2003. The survey concentrated on the lightly wooded areas as the landscaped areas soon proved to contain late nineteenth to early twentieth century trash within plowed/deep A soils. The artifacts of interest that were recovered in the previous metal detector survey were found within natural undisturbed soils relatively close to the surface. Only two artifacts, a pad lock and a cuprous-hinged case, were sent to the conservation laboratory (Plate 24). Following conservation it was determined that neither artifact was associated with the time period under study.

Table 7. Artifacts Conserved from the 2005 Metal Detector Survey (Appendix A).

Artifact	Dimensions	Pre-conservation Comments	Post-conservation Comments
Pad lock	9.6 x 5.5 cm	Cuprous and ferrous pad lock, age unknown	Marked with “H W CLIMAX NEWARK NJ US, reverse side “214”, late 19 th -early 20 th C
Cuprous hinged case	5 cm diameter	Cuprous case with soldered hinge	X-Rays indicate modern hinge and interior construction, decorative borders stamped into metal; halves separated exposing interior with mirror on one side and tabs for securing insert, possible cosmetic case

5.4.2 MAGNETOMETER SURVEY

Dr. Somers returned to conduct the magnetometer survey with support from JMA archeologists. As a considerable amount of brush had been clear cut, all of the grids were surveyed. Following the survey two types of maps were generated: the first identified all magnetic anomalies while the second identified the weak magnetic data (Figures 34 and 35). While the first map shows all the iron anomalies that are typically associated with the strongest magnetic field gradients, the second shows disturbed soil anomalies, such as activity areas that are typically associated with the weakest magnetic field gradients. On the second map the strongest magnetic anomalies have been computationally removed. Only select locations were tested (Plate 25). Prior to any ground truthing the location of the anomaly was checked with a metal detector to discriminate the metal objects from rocks. Areas with a considerable amount of surface rocks were also eliminated for testing at this time.

Field testing associated with the fence line by STPs 1-9 and the metal detecting for this phase of the survey revealed that the grassed field by Airport Road had been plowed and contained a mix of historic and modern materials. Consequently, testing was conducted mainly in the area closest to the stream (Figure 36, see Figure 34).

Table 8. Testing Results Associated with Figure 36.

Location	Finds
A	Steel cable
B	Iron strip
C	Iron fragment
D	Large iron fragment and cuprous piece

Testing was also conducted within the grid located to the west of the parking lot for Building 1103. The fascine knife and gun part were recovered to the north of this block (Figure 37 [the bright yellow anomaly is a surface rock], see Figure 34).

Table 9. Testing Results Associated with Figure 37.

Location	Finds
A	Rocks and wire
B	Metal strap, can, bolt
C	Rocks

Testing conducted within the northwest section of the parcel, to the north of the east-west oriented stonewall, revealed a variety of small architectural items (Figure 38, see Figure 34). All artifacts were recovered within 25 cm of the ground surface.

Table 10. Testing Results Associated with Figure 38.

Location	Finds	Location	Finds
A	2 cut nails	F	Iron Fragment
B	1 iron clamp	G	Unknown
C	Creamware, redware fragments, hard rubber object	H	Iron spike
D	1 cut nail, a medium size unidentified iron object	I	2 nail fragments
E	Small nail fragment		

Following the investigations of anomalies in the western section of Area 31, some of the anomalies in the strong-large and small-weak magnetic maps for Loci 1 and 2 from the 2004 survey were ground truthed. This process proved time-consuming as the grid had to be re-established in order to measure into the location of the anomaly to be tested. A metal detector was used to scan the location of the anomaly. While geology continued to dominate the anomalies that were tested on the strong-large magnetic map for Locus 1, a ferrous shank/shaft was recovered in close proximity to the brass ring that was recovered from the 2003 metal detector survey and some ferrous bars were identified. The small weak magnetic map for Locus 1 clearly identified the northeast-southwest trending geology that crossed the area. A curved ferrous item that was heavily corroded was recovered in the 10 x 20-m block that had been extended towards the stream (Figure 39). Both of the items that were recovered from Area 31 were sent to conservation (Table 11) and may be associated with the period under study (Plate 26).

5.4.3 SUMMARY OF THE RESULTS OF THE 2005 MAGNETOMETER SURVEY

The 2005 magnetometer survey continued to supply baseline data for Area 31. Just as Rome was not built in a day, neither will a definitive magnetic gradient survey map of Area 31, with its surficial and subsurface geology, be completed in two one-week field sessions. Throughout this process the continued refinement of the data with GeoPlot has proved helpful. This should be an ongoing process. The use of a metal detector to scan the location of an anomaly in order to discern a rock from a metal object has eliminated unnecessary ground disturbance. While the survey has not located activity areas associated with the battle, it has located an area of architectural artifacts and rectangular features that may still prove to be associated with the parcel's historic development.

Table 11. Artifacts Conserved from the 2005 Magnetometer Survey.

Artifact	Dimensions	Pre-conservation Comments	Post-conservation Comments
Curved ferrous item, heavily corroded	14 x 3 cm	Tool part or horseshoe fragment	Heavily corroded, ½ ferrous oxen shoe
Ferrous shank/shaft	3.9 x 2.3 cm	Located in the same block as the brass ring in Locus 1	Hand wrought iron hoop with flattened ends, severely corroded, use unknown

5.5 FIELD INVESTIGATION IN THE WESTERN SECTION OF AREA 31

Prior to the conveyance of the western section of Area 31 to MIMA an intensive (locational) survey was conducted to determine if archeological cultural resources were present. As

determined in a previous survey (King et al. 1992) the area has high sensitivity for both prehistoric and historic archeological resources. As a result of the survey, six STPs were excavated. Environmental characteristics, surface features, and the results of the magnetometer survey determined the placement of the STPs. Thirty-eight artifacts were recovered, all from the A Horizon. No prehistoric materials were recovered.

5.5.1 HISTORIC CONTEXT

Historic archeological potential was given to the southwest section of the project area as it is in close proximity to the suspected location of the Thomas Nelson Sr. Farm Site (19-MD-347/HA6). The following historic narrative is taken from Towle and MacMahon (1986c). Thomas Sr. had purchased 30 acres with a house and barn along Concord Road (also Battle Road, later Nelson Road) in 1724/25 from Samuel Ames. The house and barn appear to have been on the property as early as 1716 when Philip Goodwin conveyed the 30-acre parcel to John Edwards. After Thomas Sr. died in 1770, part of his property, which included the house and barn, went to his daughter Tabitha. After Tabitha died in 1778 her brother, Thomas Nelson Jr., sold her house to Samuel Hastings. At that time the deed implied that Tabitha's house had been moved and was attached to Thomas, Jr.'s house. Documentary research also suggested that there may have been more than one house on Thomas Sr.'s property, although that was never verified.

Various archeological surveys were conducted within the Nelson Road Area in the 1960s. In 1966, MIMA archeologist Leland Abel identified the ruins of Tabitha's house "on a low mound at a bend in the road" (Towle and MacMahon 1986a). That survey identified Tabitha Nelson's house (rather than Thomas Sr.) as she lived there in 1775. David Snow, then a graduate student at Brandeis University, conducted an archeological survey at the suspected location of Tabitha's house site in 1968. While Snow attempted to search for evidence of the house, barn, and other outbuildings/cultural features, he uncovered a section of a stone cellar and a stone culvert. The recovered artifacts suggested both eighteenth- and twentieth-century activity. Snow concluded that features associated with Tabitha's house had been partially destroyed by the construction of Airport Road in 1946 (Figures 40 and 41). In an attempt to locate the Nelson barn, Snow excavated a 60 ft (20 m) trench along a stonewall (Figure 40, Trench 3) purported to be along a boundary that ran westerly through the barn, dividing Tabitha's property in 1779 (Figure 42). Snow felt that the barn would be located south of the stone wall. No structural evidence of the barn was revealed and only twentieth century trash was recovered.

Unfortunately Snow's report provided an incomplete record of the excavations; it lacked a discussion of site stratigraphy, the types of materials collected, methods of artifact recovery, and horizontal excavation control. In fact no one knows exactly where the former excavations took place. During the 2004 magnetometer survey Dr. Somers and the Principal Investigator accompanied Steven Pendery of the NPS on a walkover of the suspected location of the Tabitha Nelson house site to discuss the potential for conducting a magnetometer survey to determine the location of the former residence.

5.5.2 RESULTS OF THE FIELD TESTING

STPs 1 and 2 were placed on the western edge of a round landscaped area in the middle of a grassy field (Figure 43; Plate 27). The location was selected to investigate a magnetic anomaly that appeared to be associated with the rectangular features identified in the magnetometer survey. STP 1 was placed in the vicinity of the magnetic anomaly. Excavated to 49 cmbs, soils

within the STP revealed a 5 cm level of grass roots (A0) over a very dark brown sandy loam plowzone (APZ, 5 – 23 cmbs). B soils consisted of a strong brown sandy gravel (B1, 23 to 33 cmbs) over a yellow brown sandy gravel (B2, to 49 cmbs) (Figure 44). Four artifacts, two fragments of whiteware (1820+) and two base fragments of machine-made table glass (1903+) were recovered from the APZ (5-15 cmbs). STP 2 was placed adjacent to and slightly northeast of STP 1 (forming a 1 x .5 m trench) in order to further investigate the rectangular features. Excavated to 48 cmbs soils were consistent with STP 1. Four artifacts were recovered, one fragment of whiteware (1820+), one fragment of transfer printed porcelain (1760+), one fragment of a cut/wrought nail, and one piece of burnt coal. Evidence of the rectangular features was not discerned. While the rectangular features may be associated with residual agricultural activity, they may also be associated with the area's geology, as suggested in Dr. Somers's report (Appendix C).

STPs 3 and 4 were placed to the south of an east-west oriented stonewall that traverses the southern section of the parcel (Figure 43; Plate 28). This location featured a 4 m long, north-south oriented stonewall that may have been a foundation wall for the unnamed structure previously suggested to be Tabitha Nelson's barn. A depression was visible on the west side of the wall. STP 3 was placed 4 m from the southern end of the suspected foundation wall and STP 4 was placed inside the depression (Figure 45, Plate 29). Both STPs exhibited a similar A Horizon with a 3 to 5 cm level of duff (A0) overlying a 32 to 37 cm thick level of a very dark brown sandy loam. STP 3, excavated to 45 cmbs, revealed a strong brown sandy gravel (B1) which overlay a large boulder and root that covered the floor of the STP stopping further excavation. Eighteen pieces of bottle glass, five pieces of which were machine-made (1903+), and one ferrous belt buckle were recovered from the A1 soils. STP 4, excavated to 50 cmbs revealed olive brown silty sand (B1) which overlay either a large boulder or bedrock (Figure 44). Two pieces of green transfer-printed whiteware (1828+) were recovered from the A1 soils of STP 4. While it is unclear if the STPs were underlain by natural occurring rocks/bedrock or rocks associated with the foundation of a former a structure, the B soils of STP 4 were not typical of the gravelly B soils in the area suggesting that the A soils in STP 4 may be underlain by fill.

STP5 was placed on high ground adjacent to the unnamed stream to the northwest of STPs 3 and 4 (Figure 43). Soils consisted of A Horizon soils to 36 cmbs over B Horizon soils that appeared to be glacial till. The STP was aborted at 60 cmbs due to the presence of a large boulder. Of the 17 recovered artifacts, there were 11 fragments of mammal bone (some with butcher marks), three fragments of whiteware (1820+), one fragment of creamware (1762-1820), one fragment of mold blown/machine made bottle glass, and one intact oyster shell; all were recovered from A1 soils.

STP6 was placed on high ground to the east of the unnamed stream that crossed the project area (Figure 43; Plate 30). Soils consisted of a level of duff (A0) over a 9-cm level of a dark brown sandy loam (A1), which in turn overlay a 6- to 14-cm level of dark yellow brown silty sand (B1). The test pit was aborted at 30 cmbs as it reached bedrock (Figure 44). Eight artifacts were recovered from the A0, including seven small fragments of mammal bone and one piece of whiteware (1820+).

5.5.3 SUMMARY OF FIELD TESTING RESULTS

It does not appear that the boundaries of the Thomas Nelson Sr. Farm Site (19-MD-347/HA6) (later the Tabitha Nelson farm) have ever been determined. Figure 42 is of particular interest as the east-west oriented stonewall in the project area is likely that depicted on the plan in Figure 42.

The north-south oriented 4 m long stonewall identified during this survey may hold an association with Tabitha's barn or other undocumented outbuilding noted in Figure 42. Taking this premise a step further, the intersecting stonewalls in Figure 42 may be the same intersecting stonewalls that are presently located in Area 31. If that is the case, then the musket balls, the two oxen shoes, and the brass ring were recovered from an area that formerly belonged to Tabitha Nelson. Therefore, portions of the Thomas Nelson Sr. Farm Site (19-MD-347/HA6) that belonged to Tabitha Nelson in 1775 are likely located within the project area and not within the "immediate vicinity" of Hanscom AFB as previously reported (Abell et al. 1998).

STPs 1, 2, 3, and 4 were excavated to locate features associated with the Nelson farmstead. While STPs 1 and 2 were utilized to investigate the rectangular features identified in the magnetometer survey, the few artifacts that were recovered are likely associated with field trash. Nothing definitive was revealed with regard to the rectangular features. A 4-m long stonewall and a depression, possibly associated with a former foundation, were visually identified and then investigated with STPs 3 and 4. Each test pit was aborted due to the presence of a large boulder/bedrock or possible foundation rocks. The soils that lay over the boulders in STP 4 may be fill as they were unlike other soils in the area. Artifacts recovered from the STPs also appear to be associated with a mix of nineteenth and twentieth century field trash.

STPs 5 and 6 were excavated in areas considered to have potential for prehistoric cultural resources. Soils in STP 5 revealed field trash that may hold an association with the Nelson family given the recovery of creamware (1762-1820) and its proximity to the suspected location of the Tabitha Nelson house site (Figure 43). STP 6 revealed minimal amounts of mammal bone in association with historic whiteware (1820+). No prehistoric artifacts or features were revealed.

6.0 CONCLUDING SUMMARY AND RECOMMENDATIONS

The project area falls under the definition of a rural historic landscape, as it possesses historic landscape characteristics that are associated with the Battle of April 19, 1775. As defined in the *Guidelines for Evaluating and Documenting Rural Historic Landscapes* (McClelland et al. 1990): “Battlefields, encampments, and other areas where short-term historic events took place may possess important landscape characteristics. Although the significance of these properties does not directly relate to land use, their historic integrity depends upon landscape characteristics such as natural features, land uses, vegetation, and associated buildings and structures. Furthermore, their location may have been determined by natural features, proximity to railroads, land uses, circulation networks, and cultural traditions. When these properties have been preserved for many years, they may have additional significance for patterns of land use and division that have elsewhere disappeared.”

The project area or a significant section of it may also hold an association with the Thomas Nelson Sr. (then Tabitha Nelson) Farm Site (19-MD-347/HA6). The historic stonewalls that cross Area 31 and the ditches noted in the 1960s excavation of the Tabitha Nelson house site (Figure 40) are vestiges of historic land use practices and divisions that are also associated with the first battle of the Revolution. These landscape characteristics may be significant as they appear to retain “surface or subsurface features that can provide information important to an understanding of historic or prehistoric activities” (McClelland et al. 1990).

6.1 THE BATTLE OF APRIL 19, 1775 AND THE UNCERTAINTY OF THE DAY’S EVENTS

Reliance on primary sources can result in conflicting and inaccurate details. Such discrepancies can be a reflection of the bias of the writer. Interpreting a soldier’s diary can be troublesome as landscape features from even a hundred years ago may not be evident today. In 1775 the Great Road to Concord was narrow and dropped at times into small ravines that ran next to high hillsides. There were also sharp bends along the road. Fields were often lined with straggling piles of rough granite rocks topped with heavy logs and split rails. Land along the road consisted of rock-studded pastures, open meadows, fields subdivided by drainage ditches, orchards, and wood lots. Forested tracks were comparatively open allowing long narrow views through the trees (French 1925).

There appears to be no secondary source that recounts the day of the battle in adequate detail. Even the exact time of the first alarm of April 19, 1775 is not recorded accurately in town histories. While some mention “around breakfast,” in the “early morning,” or “before noon,” the specific time of day is almost impossible to discern. Written evidence detailing the exact route taken by the various militia companies is also lacking. Even today’s militia companies, many of which have done considerable research on the subject, have little knowledge of the day’s activities (Historians of the Council of Minute Men 1977). As surmised by Sabin (1987), there is no objective account of the entire battle.

6.1.1 THE BRITISH FLANKERS AND LINCOLN MINUTE MAN WILLIAM THORNING

Sabin further notes that the British officers tried to keep their flankers well off the road in order to keep the colonial troops beyond the effective musket range of the troops marching in the road between Meriam's Corner and Charletown (Sabin 1985a). When marching through Lincoln most secondary sources recall the adventures of Lincoln Minute Man William Thorning who shot at British flanking troops from behind a large boulder, to the east of the Josiah Nelson residence. Though undocumented, Gavin (1967) relates a slightly different, more detailed account of the Thorning scenario. Gavin states that near the Josiah Nelson home, on the north side of the road, several Minute Men had been firing from irrigation ditches that crossed the fields at the British troops who were marching along the road. When the flankers arrived, the colonial forces ran from the ditches to "a pasture full of large boulders" from which they shot at the British forces. Gavin notes that Thorning was included in those activities and that when the flankers moved on, he continued to shoot at the passing British troops from the boulders. Gavin further notes that the flankers were still busy fighting by the boulders when Smith crossed Nelson's Bridge before being confronted by Parker's troops.

While the Thorning scenario is supposed to have been played out in Lincoln, there is still conjecture as to the validity of the story and the location of the famous boulder he hid behind. Research conducted on Thorning by Lincoln Minute Man Michael Ryan has shed some light on William Thorning (E-mail Michael Ryan to Barbara Donohue, June 20 and 21, 2006). William, born in 1758, was the son of John Thorning, an indigent laborer who may have worked for Josiah Nelson. Both John and William served as Lincoln Minute Men. As related in the 1904 Town of Lincoln's 150th Anniversary book, it appears that the story of William Thorning had been handed down to George Nelson by his grandfather Josiah Nelson. This suggests that the Nelson family papers/genealogy may be the ultimate source for the story and may provide further information on Thorning's and the Lincoln Minute Men's running skirmish with the British flankers.

6.1.2 PARKER'S REVENGE

According to Sabin's synopsis of accounts of the day, tradition supports the fact that Parker and his men ambushed the British by the Lincoln-Lexington line. The "growth covered ridge" has been cited in various renditions and it appears to be a logical place for an ambush as it is on high ground overlooking the road, is within musket range of the road, and its wild growth would have provided some cover for the Minute Men (Sabin 1985b). There is considerable disagreement, however, about the exact location of the Lexington ambush. Coburn (1912) notes that Parker's men fought in Lincoln "not far from Nelson and Hastings homes," French (1925) states that the ambush was further east "within the bounds of Lexington," Phinney (1825) noted that Parker and his men gave the British a "galling and deadly fire" from a field in Lincoln. Hudson (1913) also states that Parker's men were in Lincoln "taking a position in the fields," and Ripley (1832) placed Parker's men in the woods within Lexington to the south of the road. The scenario may be best summed up by one of Parker's militia, Nathan Munroe, who remembered "We met the enemy within the bounds of Lincoln, but fought them in Lexington" (Coburn 1912). It is conceivable that Parker's men fought in both towns as well as from both sides of the road.

6.1.3 THE ARCHEOLOGICAL EVIDENCE

Prior to the current survey, the only archeological evidence recovered in the vicinity of Parker's Revenge, is attributed to local farmer John Lannon. In 1895, Lannon uncovered a British sword (from approximately four feet underground when removing a boulder) and a flat leaded musket ball. These items are said to have been recovered on the high ground north of the road in the vicinity of Parker's ambush (Coburn 1912).

Battle-related Artifacts

The Musket Balls (Plate 10)

The two fired musket balls reveal that at least one person was fired at within Area 31. It appears more likely that the musket balls were fired into the area by the British rather than fired out from the area by the Americans. The unfired musket ball was probably lost by an American. Secure cartridge boxes were used by the British. Early American cartridge boxes were simple blocks of wood with vertical holes to hold the cartridges; they were covered by a leather flap (Neumann and Kravic (1975). More often though, especially during this unplanned battle when the militia was literally called into action at a moment's notice, Americans often carried their musket balls in handkerchiefs, in pockets, or in their hats. Rather than taking musket balls from a cartridge case when firing, Captain Weston of the Reading militia is said to have taken his musket balls from his hat that was on the ground in front of him when firing at a flanker (Chase 1967). The unfired musket ball still has the sprue attached. The sprue was a small knob-like piece created from the hole through which metal was poured into a mold; it was cut off prior to use making the musket ball round (Wilbur 1993). As the British were issued their musket balls before they left Boston, their ammunition would not have had a sprue.

The caliber of the fired musket balls could not be determined. While one of the fired musket balls was quite splattered, suggesting it hit a rock or boulder, the other was not as flat and appeared to have an imprint of bark, suggesting that it had hit a tree (Plate 10). The unfired musket ball was .70 caliber, further suggesting that it belonged to an American as the British Brown Bess muskets were a .75 caliber while an American Fowler varied between .50 and .80 caliber.

The Musket Ball Bullet Mold (Plate 12)

Many men, particularly those in the militia, brought their own bullet molds with them. Individual bullet molds have been found in several excavated sites. Again this item probably belonged to an American as the British were issued their ammunition in Boston. When X-rayed, the chamber of the bullet mold proved to be for a .50 caliber musket ball. While a musket ball from this bullet mold could have been used in a fowler, it also would have been the right size for a pistol. Generally only British officers carried pistols while the Americans, especially in this battle, were known to bring any weapon they could find to answer the alarm. In an article from an 1875 edition of Harper's Magazine Frederic Hudson, when describing the events of April 19, 1775, stated that "On the first tidings of danger he [Lt. Colonel Robinson] hastened to Concord, armed with a brace of pistols" (Historians of the Council of Minute Men 1977:302). Given its proximity to the colonial shoe buckle, the musket ball bullet mold was probably lost by a Minute Man from Lexington making a hasty retreat up the hill to get away from Pitcairn's troops or the flankers.

Gun fitting (Plate 13)

When first recovered this artifact appeared to be merely a split, bent strip. Its curvature though did suggest an association with a gun so it was sent to conservation. It was then determined that the split was not intentional but was at the bottom of a worked rounded channel, possibly a fitting

used under the front barrel of a gun that would be associated with a ram rod. When comparing Figure 46 to Plate 31, the location of the fitting is evident even though it is not visible when looking at the gun. The gun fitting's association with the ram rod means that it could have been associated with a musket used by either side.

Colonial shoe buckle (Plate 12)

The colonial shoe buckle has a design element on the outside. While the design may be attributed to a certain maker or style, no information was found to identify its source. As the shoe buckle was recovered up the hill in close proximity to the musket ball bullet mold it likely came off the shoe of a Lexington Minute Man as he was retreating from Pitcairn's troops or the flankers.

Eighteenth Century-related Artifacts

Fascine knife (Plate 20)

The fascine knife, also known as a bill hook, is a finely made hand-wrought artifact that dates to the time period under study. Imported from Britain the fascine knife/bill hook was primarily used as an agricultural tool. Figure 47, from a British advertisement for drawknives, adzes, and bill hooks, depicts a socketed bill hook quite similar to the one recovered from the magnetometer survey. These tools were often imported and purchased by many farmers of the colonial period. At the time of the battle the men in Lexington were mostly farmers. While some muskets had been acquired by the town during the winter of 1774/1775, many may only have had older weapons. Even though the fascine knife was associated with agricultural activities, it may also have been used by a local farmer as a weapon during this battle. A letter from a gentleman in New England states that: "The reason why the Militia were never a large body equal to that of the Regulars was, that the alarm being sudden, they ran in small parties with such weapons as they could first pick up, in their hurry, to different parts of the road" (Willard 1925:91).

The term "fascine" is defined as a defensive construction made of brush, therefore that term is used rather than bill hook with reference to a military use. What makes this artifact different than others that have been found at Revolutionary War sites is the socket handle. Found on many Revolutionary camp sites, the fascine knife is believed to have been a common camp implement that was used to clear brush and light growth (Neumann and Kravic 1975). It appears that a large number of tools used by the American forces during the Revolution were domestic imports (Personal Communication Chris Fox, Fort Ticonderoga).

Bill hooks or fascine knives were also used by the British soldiers at this time period for similar purposes. In a list entitled "Return of the Stores Wanted for the Service of His Majesty's Works in the Engineering Department of Boston, 7th August, Enclosed to the Honourable Board of Ordinance, 19 August, 1775" items enumerated under "Intrenching Tools" included 1,000 hand bills (www.nwta.com/couriers/6-96/tools.html). Fascine knives were most often used to constructing gun platforms on soggy ground, to help fill ditches to permit troops or artillery to pass, and to build temporary fortifications (<http://footguards.tripod.com>). While the British troops who gathered for the journey to Concord only brought enough provisions for a one day march, some Light Infantry carried fascine knives as part of their equipment (<http://footguards.tripod.com>). This was probably due to their function as flanking troops who had the need to carry an implement that could cut through areas of thick brush.

When recovered, the tip of the fascine knife was slightly pressed down into the soil suggesting that the handle was still attached when it had been left there. As it was orientated south-north

(blade-handle) the person who left it there was most likely facing Area 31. It is curious that a farmer would have left this item in his field. Given its proximity to the gun fitting and its orientation towards Area 31, it may hold an association with the battle either as a weapon used by a colonist or a piece of equipment lost by a member of the Light Infantry.

Oxen shoe (Plates 11 and 26)

Twenty-nine (59%) of the listed historic sites within two miles of Hanscom AFB are eighteenth century domestic/agrarian sites. At that time period oxen, rather than horses, were used by the farmers for hauling heavy items. Prior to April 19, 1775 the people in New England met regularly to practice mobilization and marksmanship in anticipation of problems with the British. As part of that mobilization effort, people in the town collected supplies to load on wagons that would follow the militia as they marched into the field (Fischer 1994). This practice followed procedure mandated from the First Provincial Congress (1774) that the militia should be “supplied with provisions sufficient for their support” (Historians of the Council of Minute Men 1977). This type of effort is reflected by Lt. Colonel John Robinson of Westford who left orders with his hired men to follow with provisions when he prepared to go to Concord on the night of April 18, 1775 (Historians of the Council of Minute Men 1977). As Parker’s men were waiting four hours for the British to return from Concord they probably had a supply wagon with them that had been taken to the location by oxen, accounting for the recovery of the oxen shoes in the area of Locus 1. Alternately, these artifacts could simply be related to former agricultural activity.

Cuprous Ring (Plate 11)

This artifact has proved the most enigmatic. The ring is one piece of metal hand rolled around some blue silk material, which is barely visible. Recovered from Locus 1, in close proximity to the oxen shoe and musket balls, it was thought that the ring may have been associated with a grommet used to attach a flag to a pole. The Bedford Flag, conjectured to have been carried to North Bridge was made of pure silk damask (a firm lustrous reversible figured fabric made of various fibers) (Andrews, Jr. 2002). If Locus 1 was associated with an activity area where people had been waiting for hours for the British to return, a flag associated with the Lexington Minute Man Company could have been present. Unfortunately that premise does not appear possible as metal grommets, conceived by Eldridge Penfield at Wilcox, Crittenden & Co., were first used in 1847 to replace rope grommets in sails (www.mysticseaport.org/library). It appears more likely that at the time of the Revolution, flags were attached to poles by eyelets or holes that were strengthened with stitching (Personal Communication Donald Hafner, Lincoln Minute Man). While the ring may be associated with an item of clothing, it is not likely that it would have been associated with a soldier. Until such time as the use and date of this artifact can be determined, it is still considered as being associated with the time period under study.

6.1.4 SYNTHESIS OF THE DOCUMENTARY RESEARCH AND FIELD RESULTS

There appear to be two scenarios that may have occurred simultaneously accounting for the findings in Area 31. While most sources agree that Pitcairn’s troops drove Parker’s men up the hill where they retreated and fled from the British, Sabin (1985b) rightly notes that Parker’s men may also have been forced to withdraw due to pressure applied by the flankers. According to Galvin (1967), when Smith got to the location of the ambush, the flankers on the north side of Battle Road were still busy fighting the colonists in the field of boulders over a little rise behind Nelson’s farmyard. On the south side of Battle Road the right flank were splashing through the creek and climbing over a stone wall into Jacob Whittemore’s field (Galvin 1967). If the flankers were involved in fighting with Parker’s men, it may be because they were still engaged with the

Lincoln Minute Men in the Area 31 “field of boulders” (Plate 32) when Pitcairn drove Parker’s troops from the area of the ambush to the north of Battle Road up the hill (Plate 6).

Figure 48 provides a look at the location of the Nelson family residences (Josiah, Thomas Jr., and Tabitha) along Battle Road (also known as Nelson Road) on a 2002 U.S.G.S. Quadrangle (DeLorme). The locations of the Nelson homes are based on the map of the archeological sites in the Nelson Road area (Figure 7). The numbers (with associated “x”) mark the location of the battle-related and eighteenth century related artifacts recovered from the metal detector survey. Eighteenth century related artifacts from the magnetometer survey include the fascine knife and the oxen shoe recovered in close proximity to and west of metal detector artifact numbers 12 and 1, respectively. The red circles, centered on artifact numbers 1 and 9, show the furthest distance (100 yards/100m) from which the musket ball could have been fired. Assuming that the two fired musket balls were shot by the British, both scenarios appear to be plausible.

Table 12. Artifacts Recovered from the Metal Detector Survey on the USGS Quad.

Artifact No.	Artifact		Artifact No	Artifact
1	Fired musket ball		11	Oxen shoe
2	Unfired musket ball		12	Gun fitting
8 (between 2 & 9)	Brass ring		6	Colonial shoe buckle
9	Fired musket ball		7	Musket ball bullet mold

A 1902 sketch of the Nelson Road area by George Nelson provides his interpretation of the 1775 landscape as passed down through the Nelson family (Figure 49). While most sources state that the Thorning scenario occurred to the east of Josiah Nelson’s house, George Nelson depicts it to be to the west of Josiah’s house using the name “Thornton” instead of “Thorning.” The boulder that Thorning is supposed to have fired from is located adjacent to Battle Road (labeled “old road” in the sketch). After analyzing all the information on this episode, Sabin (1985c) does not feel that the location of the exact boulder has been definitively identified. Indeed given the changes in the landscape to the north of Josiah Nelson’s house site with the construction of Hanscom AFB, one does not know if there was a field of boulders there in 1775. If there was a field of boulders behind Josiah’s house, its landscape characteristics were probably similar to those in the Area 31 field of boulders. The Nelson sketch further underscores the uncertainties associated with the battle.

6.2 THE NELSON FARMSTEAD

While the Thomas Nelson Sr. Farm Site (19-MD-347/HA6) was not considered to be located within Hanscom AFB (Abell et al. 1998; King et al. 1992), research into the archeological excavations conducted along the Nelson Road area (Towle and MacMahon 1986c) strongly suggests that some of the original 30-acre property is included within Area 31. Even after the western section of Area 31 is transferred to MIMA, some of the Nelson farmstead may still remain within the base.

Unfortunately, the archeological survey conducted in 1968 only focused on Tabitha’s Nelson house and barn. The results of the field investigation concluded that the construction of Airport Road and utility installation had destroyed most of the house site and was written off. This in

effect determined the fate of the Thomas Nelson Sr. Farm Site (19-MD-347/HA6) as the information on the MHC historic archeological site form only considers the results of the 1968 investigation when determining the site's integrity. Salient features of the former farm that may remain as either landscape characteristics or archeological deposits have been overlooked as the boundaries of the 30-acre parcel have yet to be determined.

6.3 RECOMMENDATIONS

The specialized intensive (locational) survey has identified artifacts associated with the Battle of April 19, 1775 and artifacts associated with that time period within Area 31 of Hanscom AFB. The transfer of the western section of Area 31 to MIMA has the effect of not only bisecting the parcel, but also the site that is located within the parcel. MIMA will have the property associated with Locus 1 and Hanscom AFB will have property associated with Loci 2 and 3. The results of the survey have shown that the Battle of April 19, 1775 extended beyond the confines of MIMA's boundaries, this may also be the case along other sections of Battle Road. The results also underscore the fact that there is a high potential for battlefield debris in the adjacent MIMA property.

Presently the boundaries associated with the battlefield debris in Area 31 are the lightly wooded and grassy areas broadly defined by the fence separating Hanscom AFB and MIMA to the south (the western section of which will be removed with the transfer of the property to MIMA), the buildings and infrastructure associated with Hanscom AFB to the north, the swath of man-made land to the east, and Airport Road to the west. While the property transferred to MIMA will be protected in the future, the property in Hanscom AFB should also be protected against any future development. JMA recommends that the boundaries of the battlefield site that remains in Hanscom AFB should be defined and included within the overall site boundaries associated with the Battle of April 19, 1775. Given the proximity of the buildings and infrastructure associated with Hanscom AFB, the above-mentioned boundaries should prove sufficient to define the remains of the battlefield site within the base (Figure 49).

The results of the specialized intensive (locational) survey have provided information on a specific moment in the Battle of April 19, 1775. Historic research suggests that the battle-related artifacts recovered from Area 31 could be associated with British flanking troops firing at the Lincoln and/or Lexington Minute Men, Pitcairn's troops firing at Parker's Minute Men, or both scenarios occurring simultaneously. While considerable research was conducted into soldiers' diaries at the Massachusetts Historical Society, it was not possible to investigate all of them. More insight on the activities of the British flankers may be gained if the primary source for the William Thorning story could be located. Therefore, JMA recommends that additional historic research be conducted to locate the origin of the William Thorning story, as information contained in that source may clarify interpretation of the field results and facilitate interpretive efforts at MIMA.

Research connected with the Thomas Nelson Sr. Farm Site (19-MD-347/HA6) has revealed that features associated with the farm site, especially those containing landscape characteristics that may be associated with the Battle of April 19, 1775, such as the ditches depicted in Figure 40, the field of boulders, and the intersecting stonewalls in Area 31, may be present. The fascine knife, the rectangular features, and the concentration of architectural artifacts revealed in the magnetometer survey, the suspected location of the barn, a concentration of large stones to the east of the barn location (Plate 33), and a depression further to the east (Plate 34) suggest that

archeological deposits associated with the Nelson Farm site may also be present in Area 31. George Nelson's sketch suggests that a stonewall provided the eastern boundary to Thomas Sr.'s property (Figure 50). If so, the stonewall that extends from Battle Road (the "old road") in the sketch may be the same stonewall that extends from the location of the interpretive sign for Parker's Revenge along Battle Road into Area 31 today (Plate 15). JMA recommends that further documentary research be conducted to try and determine the extent of the 30-acre parcel that Thomas Nelson Sr. purchased in 1770 in order to clarify its present-day boundaries.

In summary, JMA's recommendations include:

- The boundaries of the battlefield site in Hanscom AFB should be defined and included within the overall site boundaries associated with the Battle of April 19, 1775.
- The boundaries of the battlefield site in Hanscom AFB should be included on the present base map of archeological sensitivity within the base for future protection of the site.
- Additional historic research is conducted to locate the origin of the William Thorning story, as information contained in that source may clarify interpretation of the field results and facilitate interpretive efforts at Minute Man National Historical Park.
- Additional documentary research is conducted to try and determine the extent of the 30-acre parcel that Thomas Nelson, Sr. purchased in 1770 in order to clarify its present-day boundaries.

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Figures

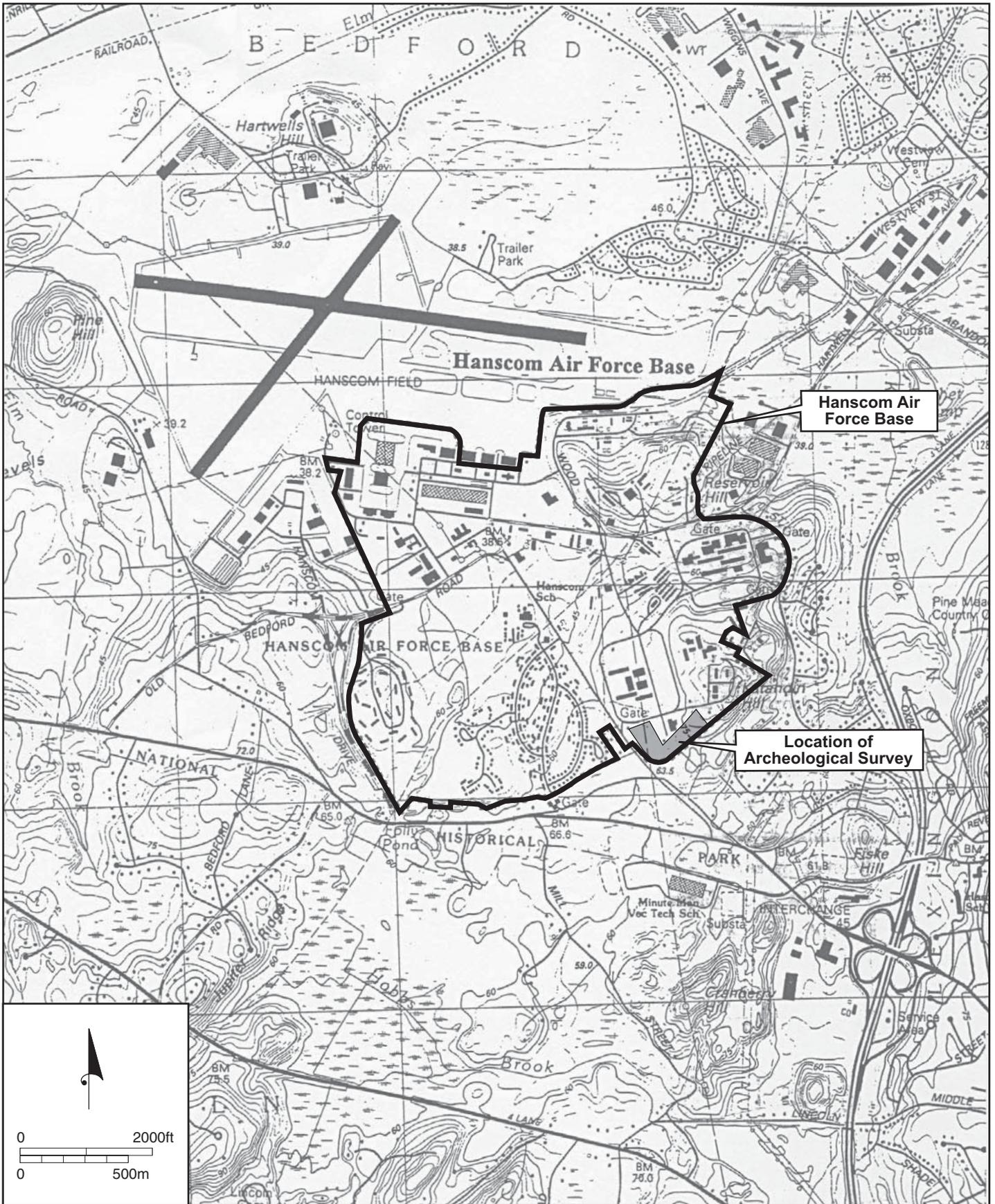


Figure 1. Location of Hanscom Air Force Base on *Maynard, Massachusetts U.S.G.S. Quadrangle 1987.*

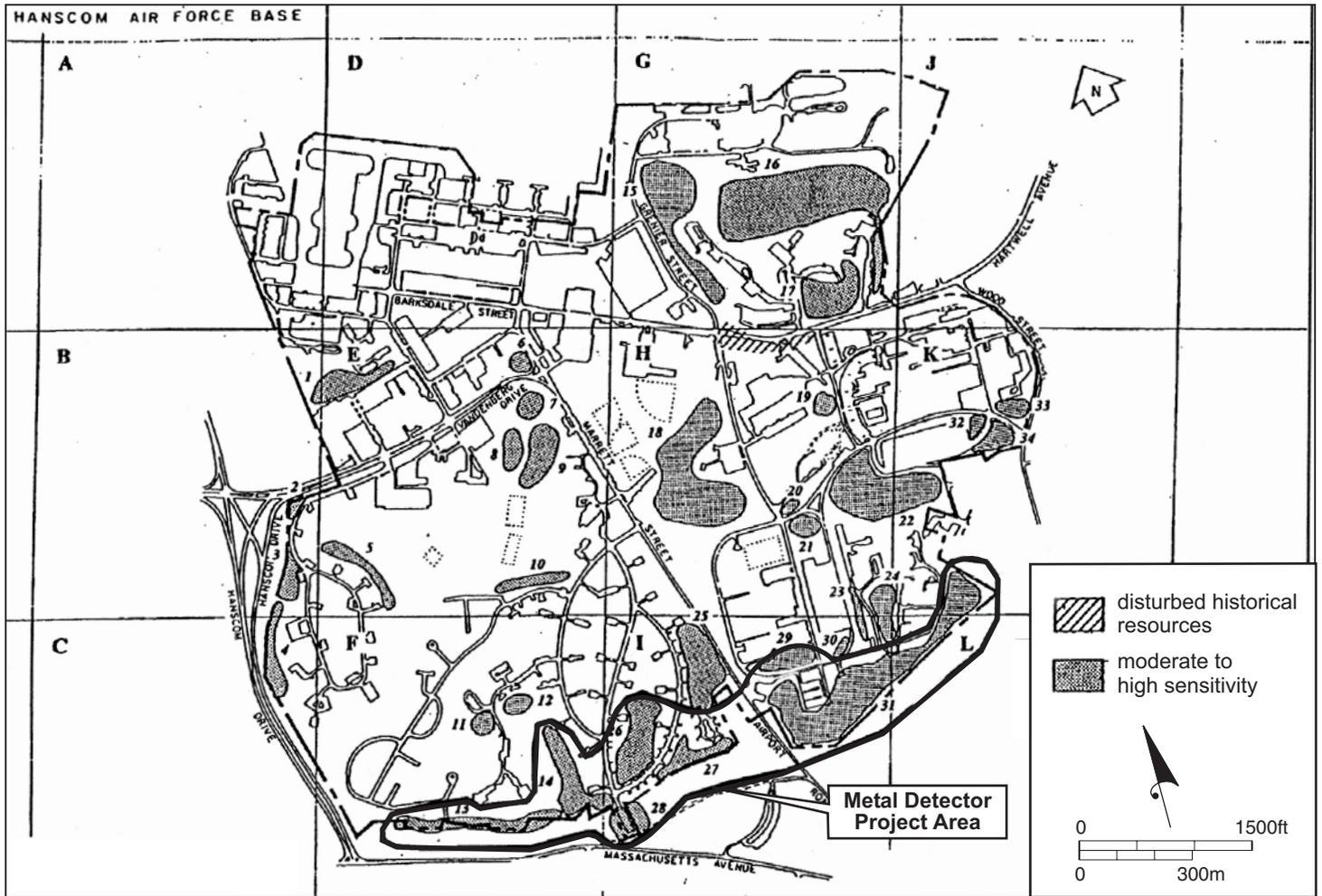


Figure 2. Location of the 34 acres of archeological potential within Hanscom AFB metal detector project area circled (King et al. 1992).

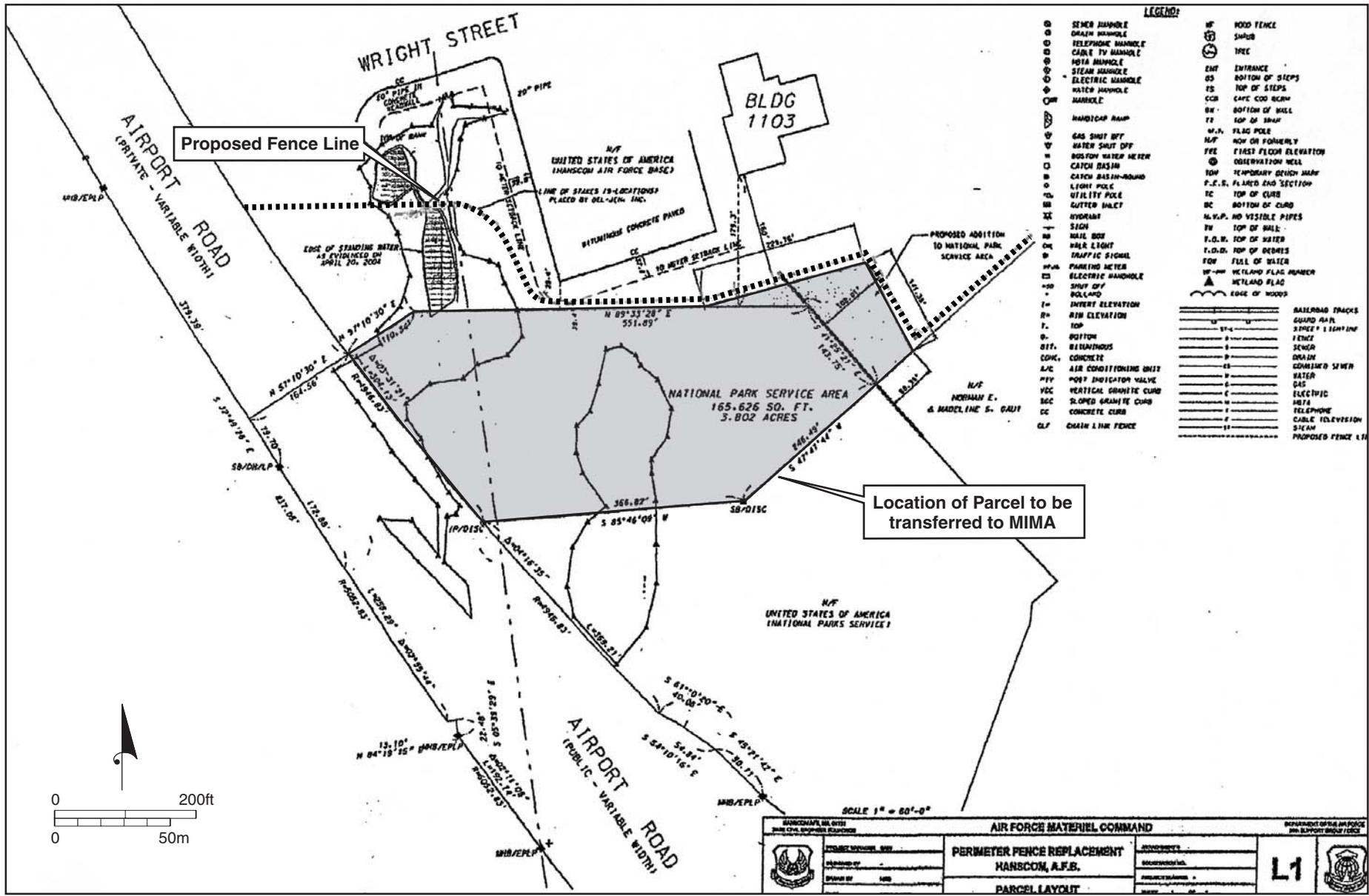


Figure 3. Plan of the parcel to be transferred to MIMA with location of the proposed fence line.

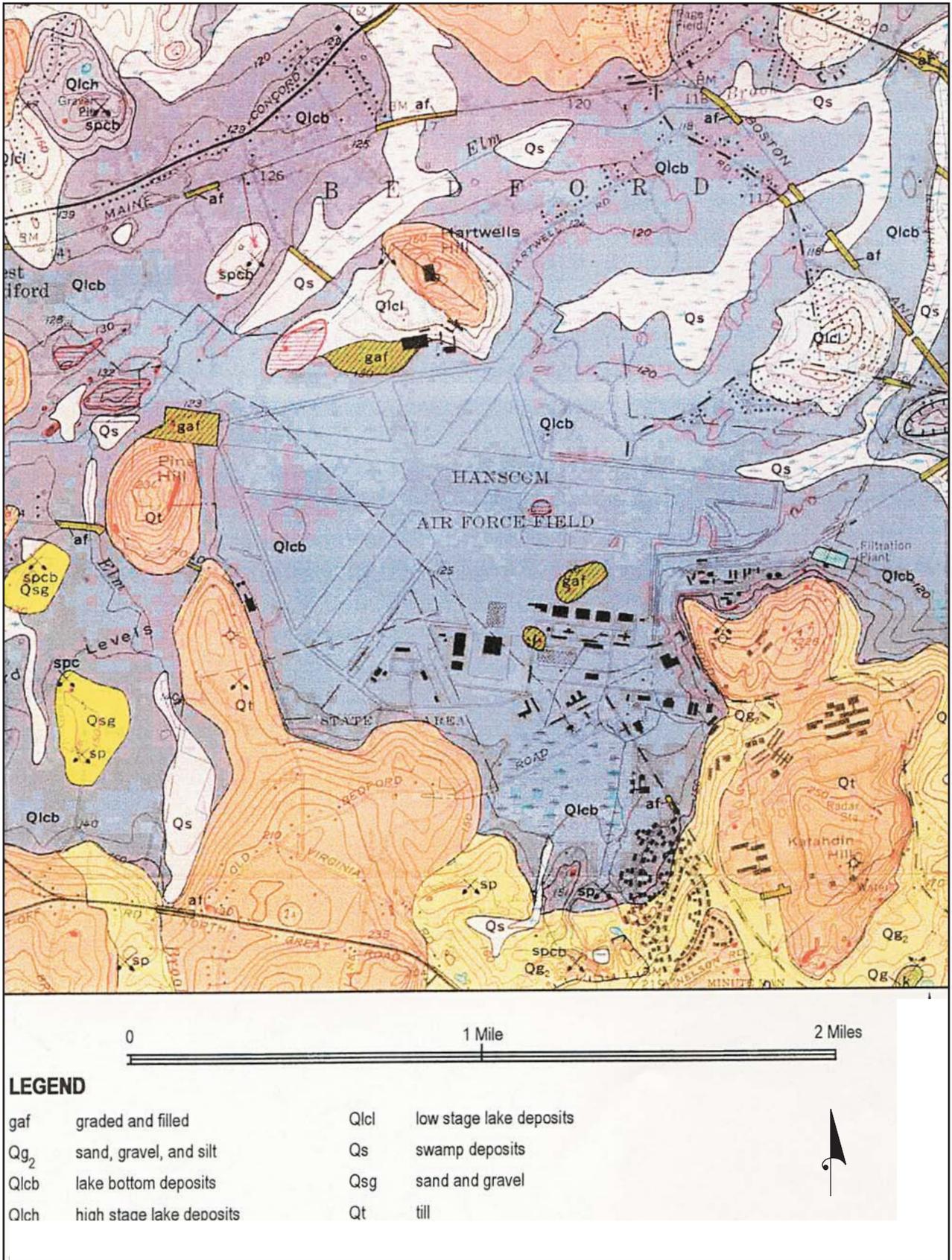


Figure 4. Location of former Glacial Lake Concord.



Figure 5. Soil map of Hanscom AFB with metal detector project area circled (Abell et al. 1998).

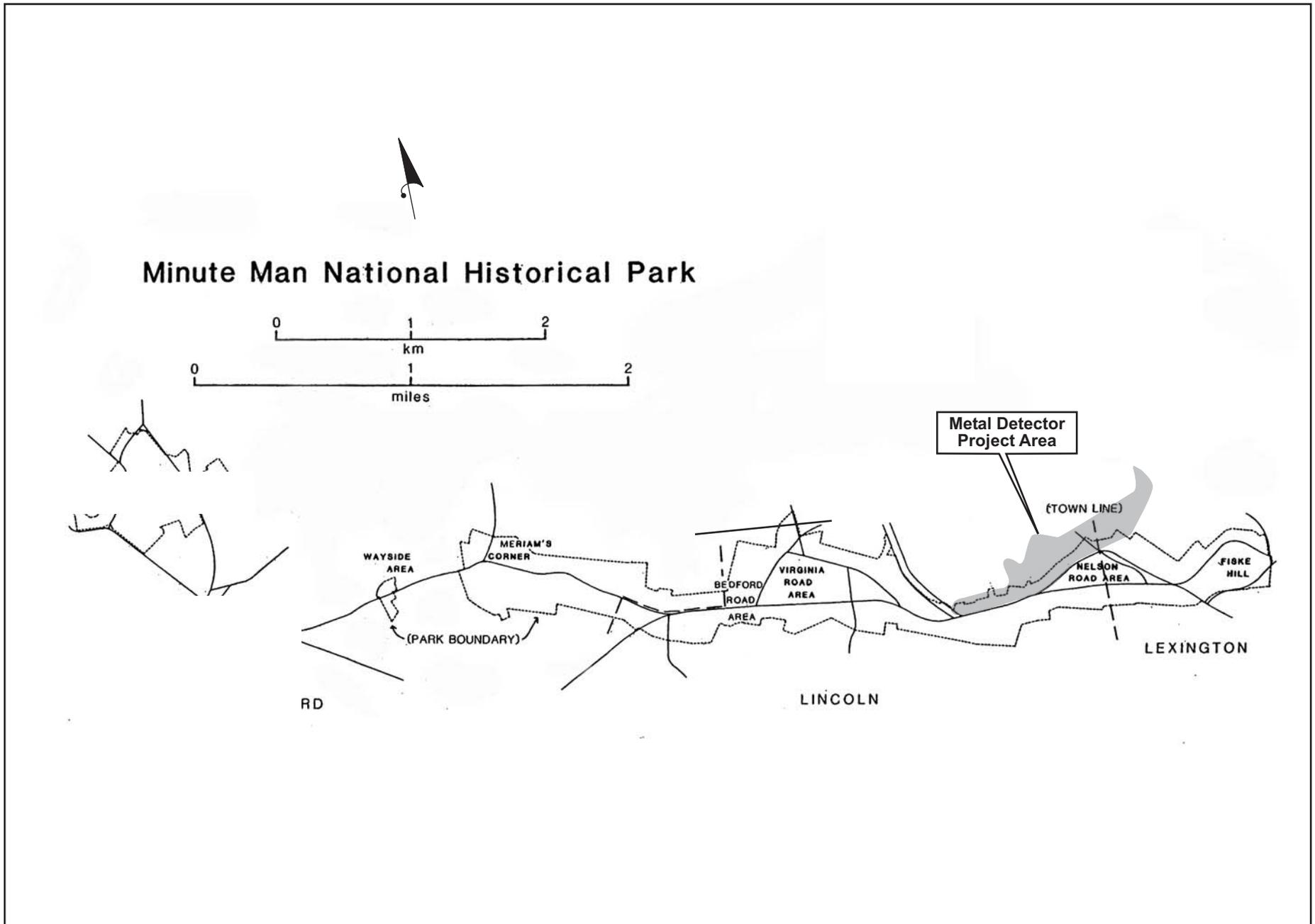


Figure 6. Map of Minute Man National Historical Park (Towle and MacMahon 1987).

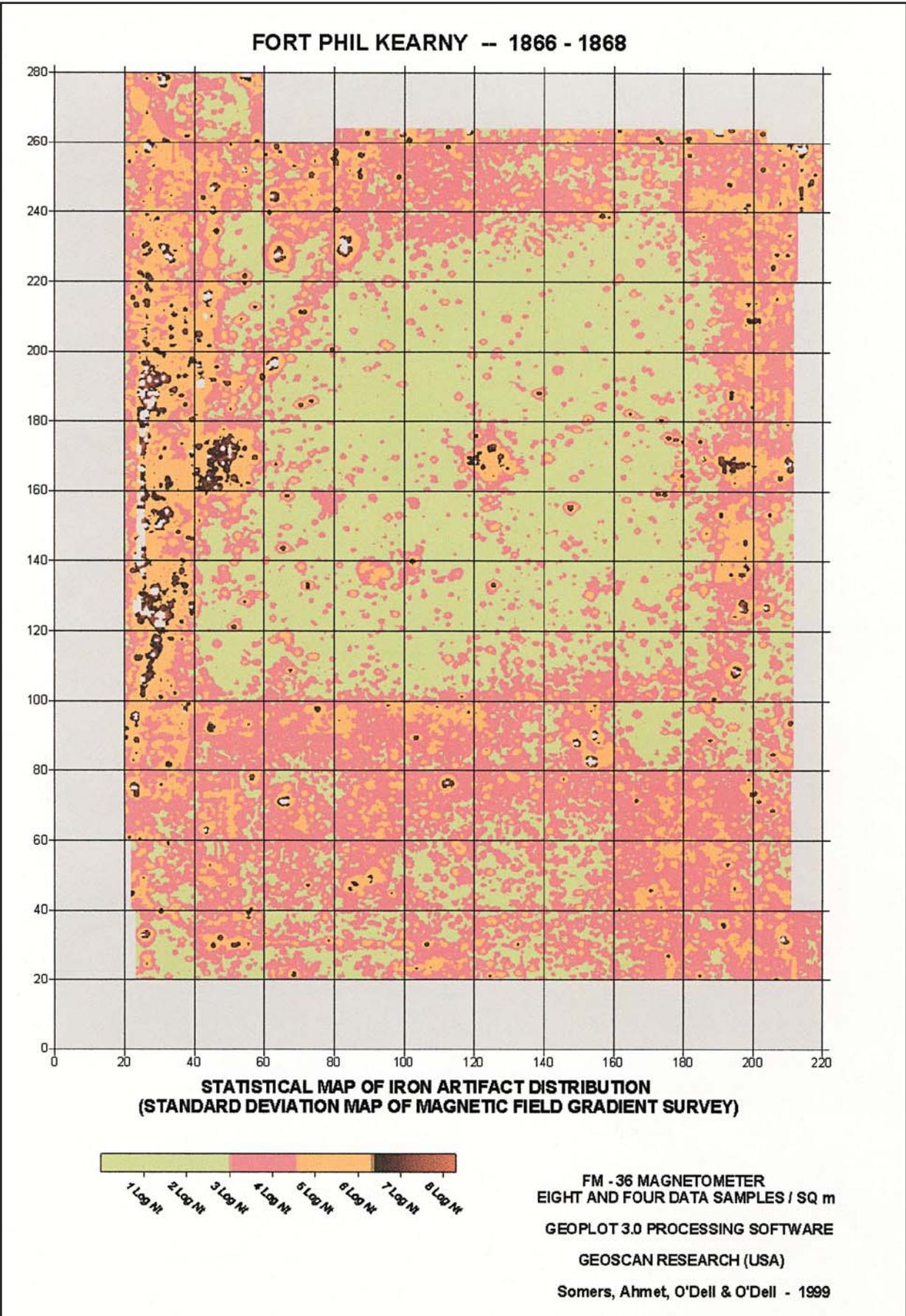


Figure 8. Statistical map of iron artifact distribution at Fort Phil Kearny (Somers and Haargrave 2003).

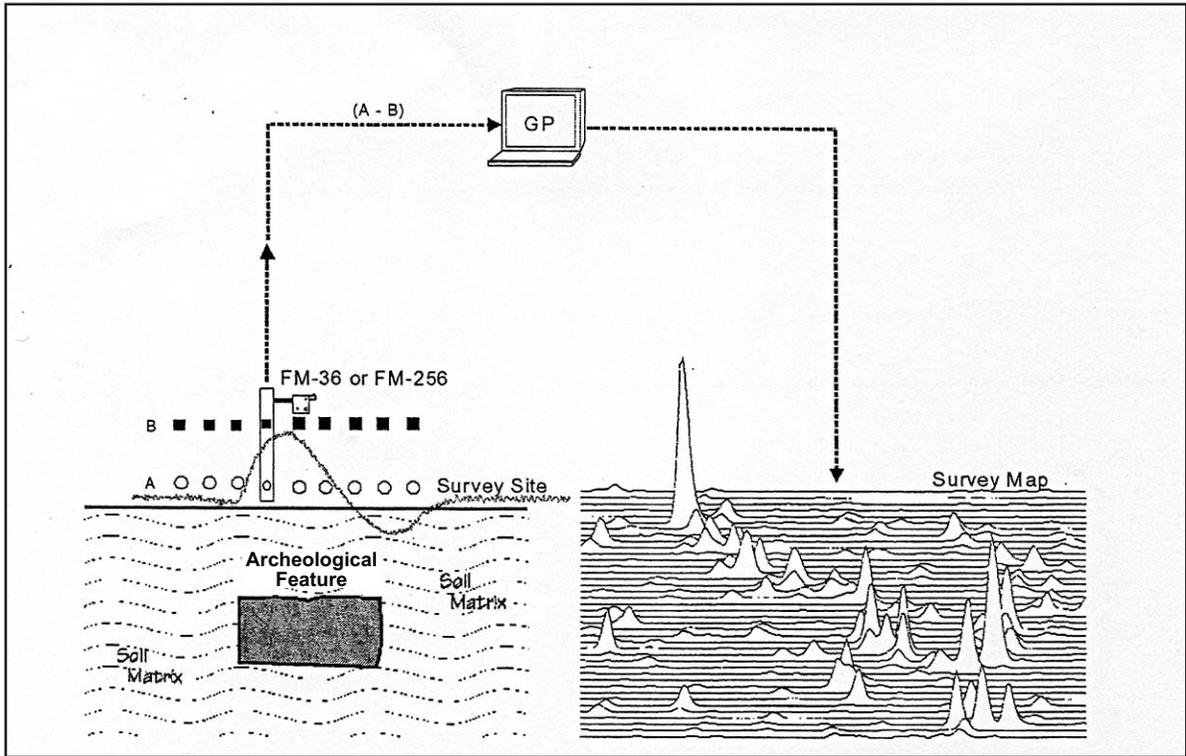


Figure 9. Diagram depicting major components of a magnetic field gradient survey (Somers and Hargrave 2003).

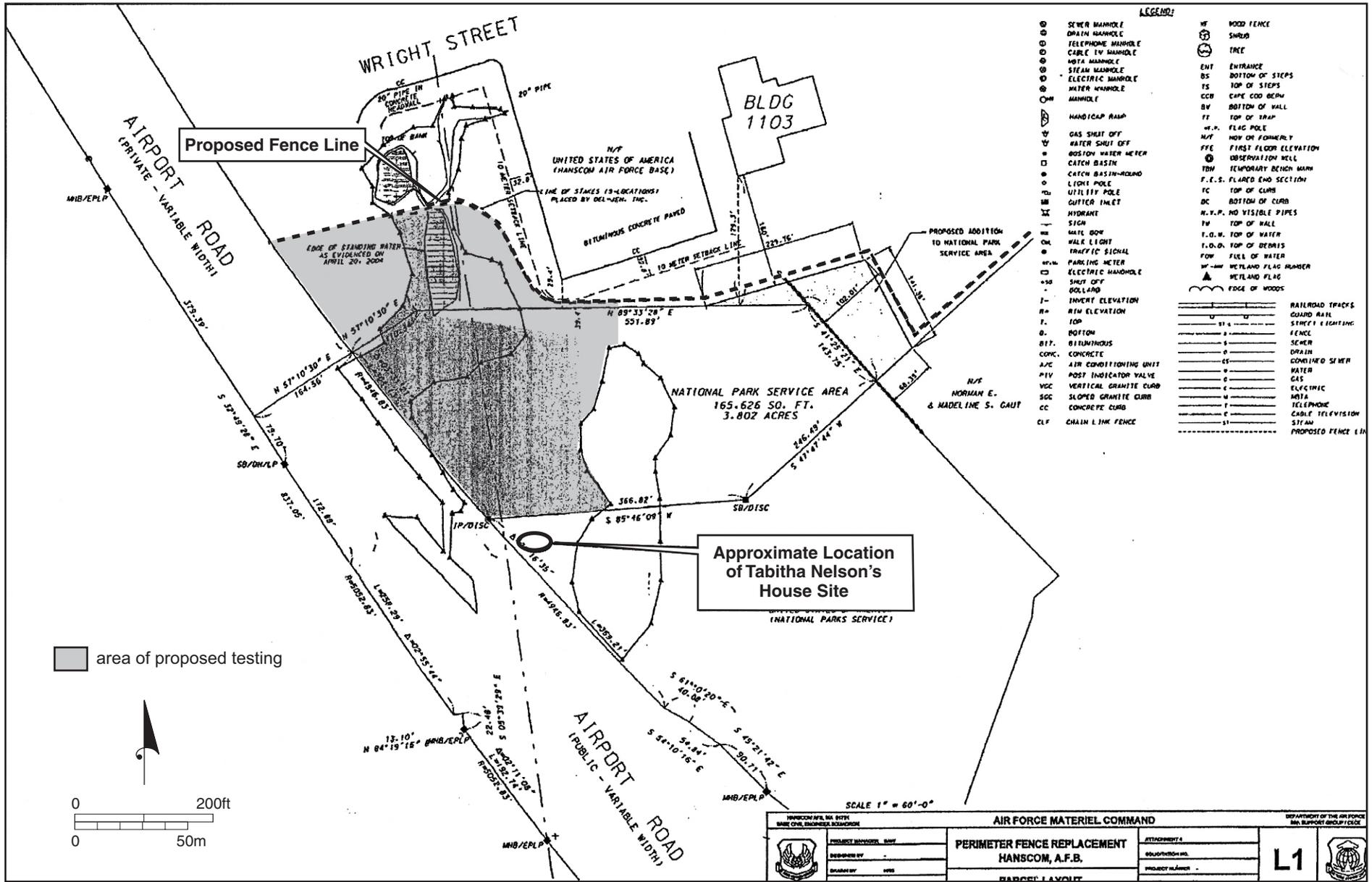


Figure 10. Location of proposed field investigation for the Western Section of Area 31.

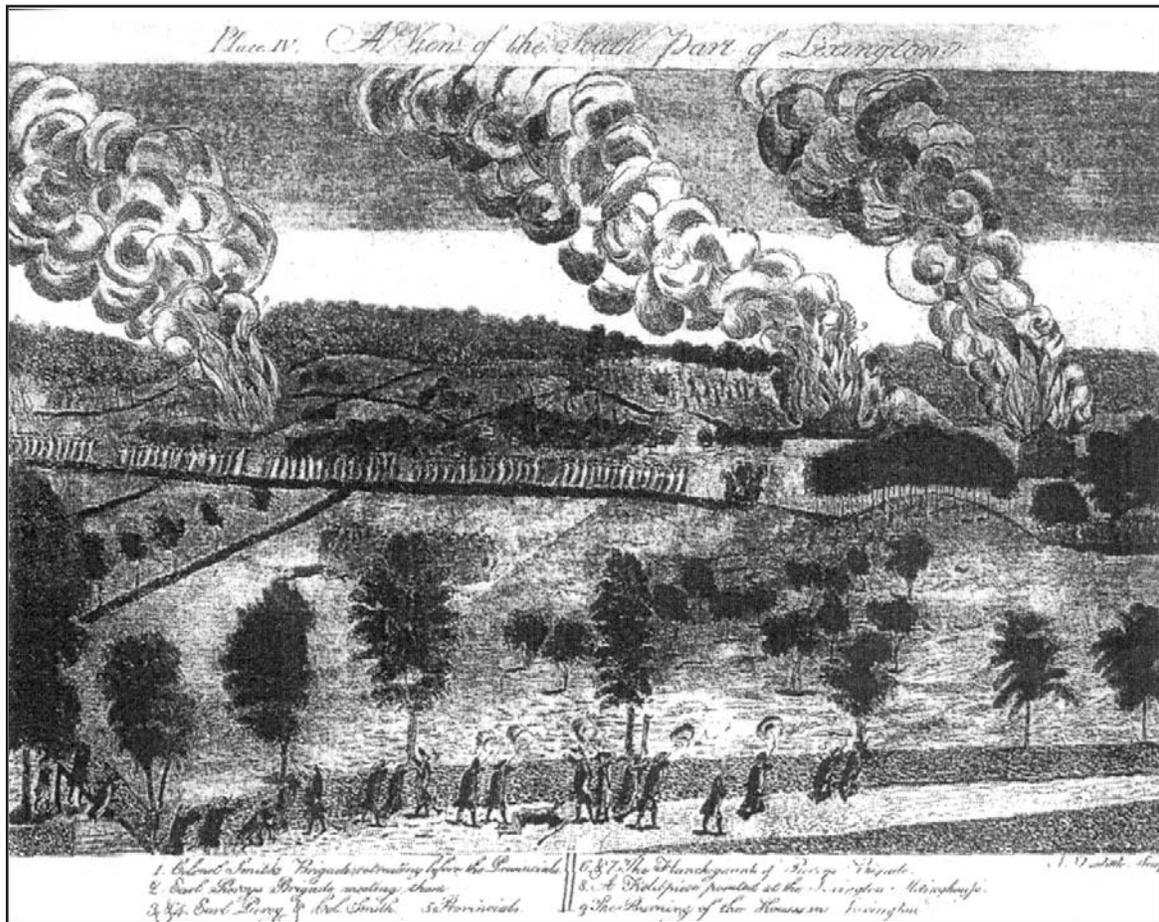


Figure 11. Print of the British retreat from Concord (Coburn 1912).

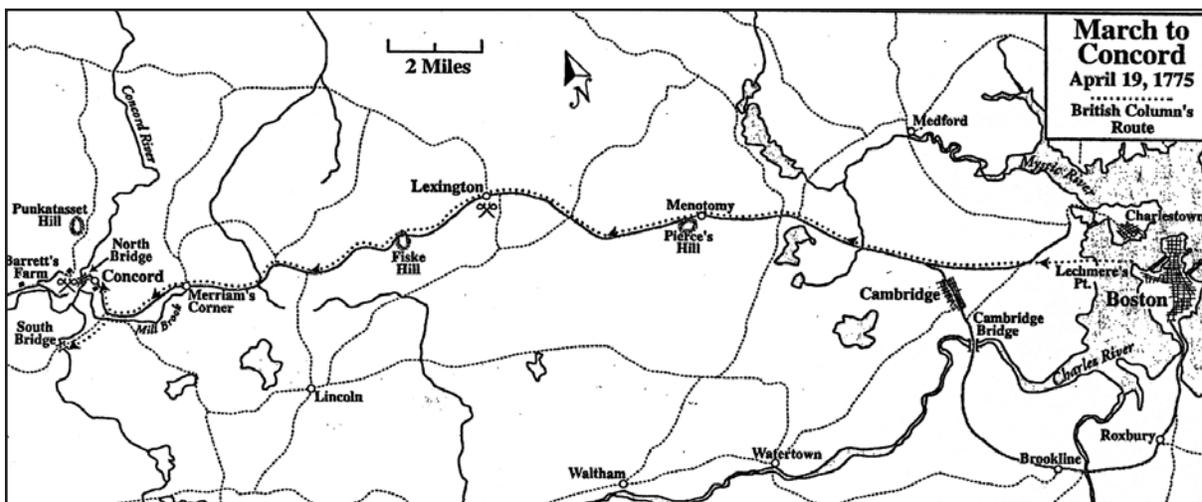
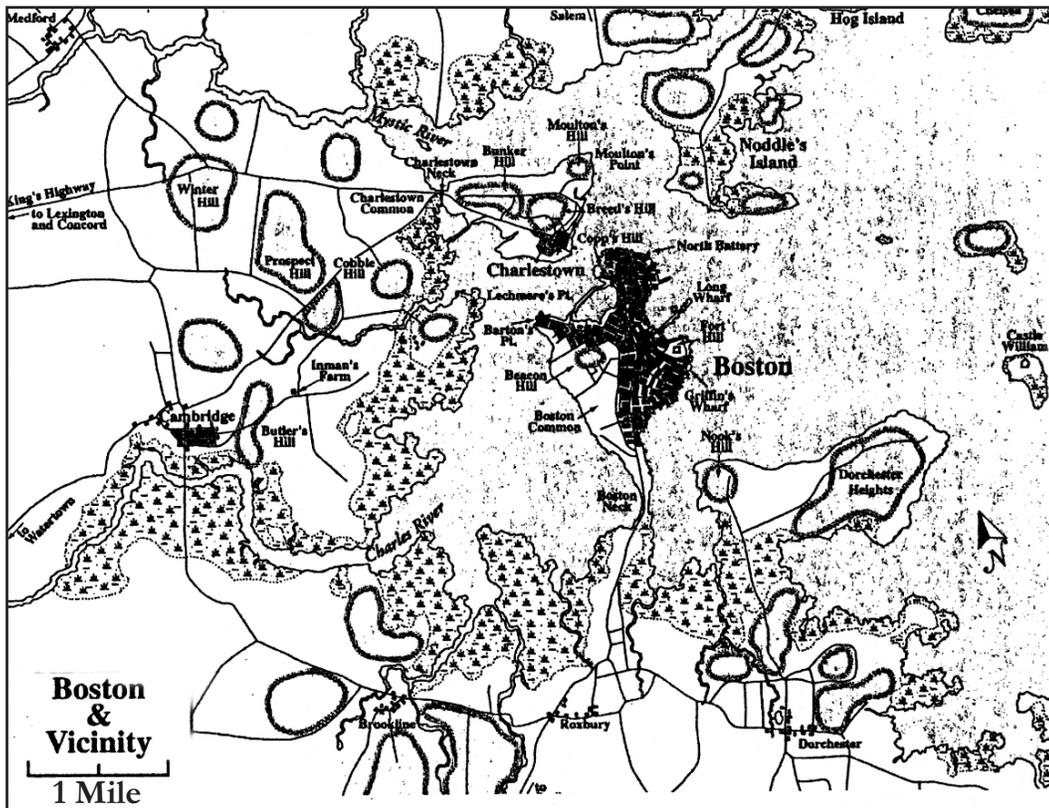


Figure 12. Overview of Boston (top) and route of the British march from Boston to Concord (bottom) (Brooks 1999).

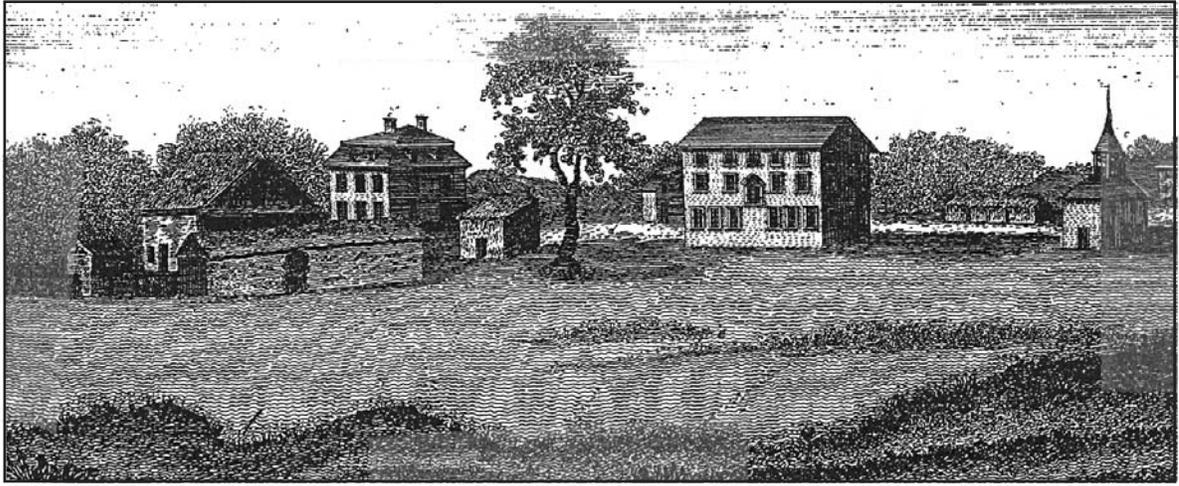
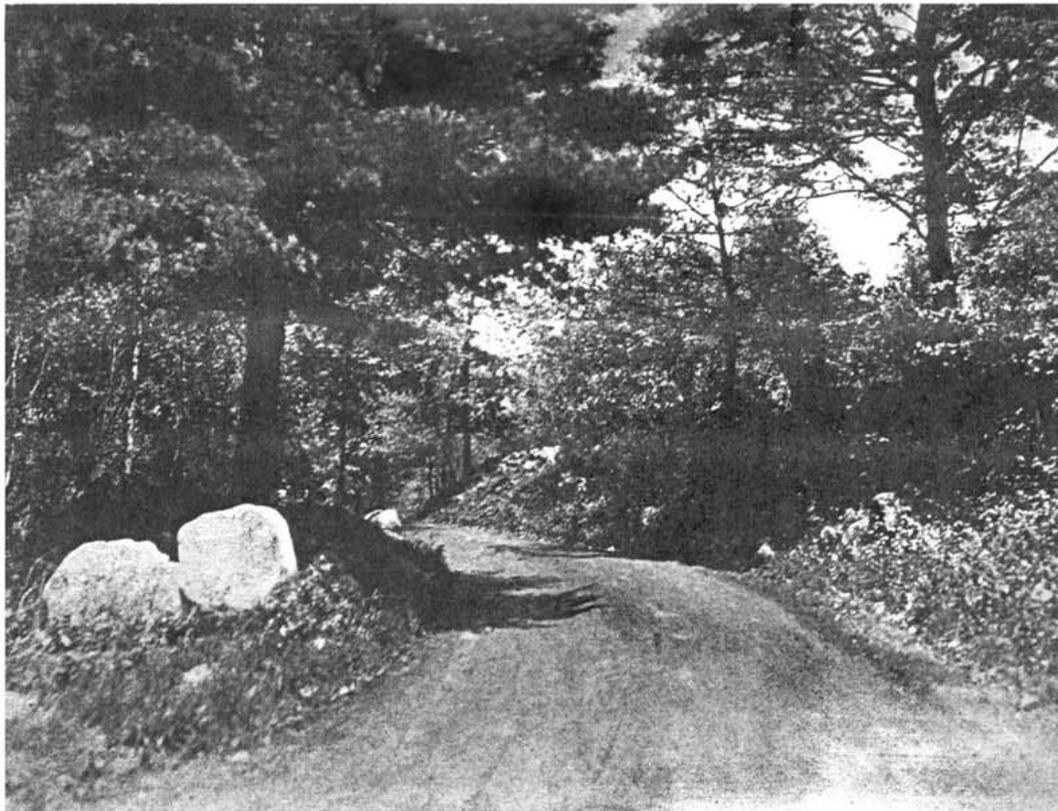


Figure 13. View of Lexington Green from 1794 (Morrissey 2004) (top) and drawing of the Lexington Green on the morning of April 19, 1775 (Coburn 1912) (bottom).



Meriam's Corner, where the "running skirmish" began. (Concord Free Public Library)



THE BLOODY ANGLE

So called because eight British soldiers were killed near this spot.

Figure 14. Historic views of Meriam's Corner (Andrews, Jr. 2002) (top) and Bloody Angle (Hersey 1930) (bottom).

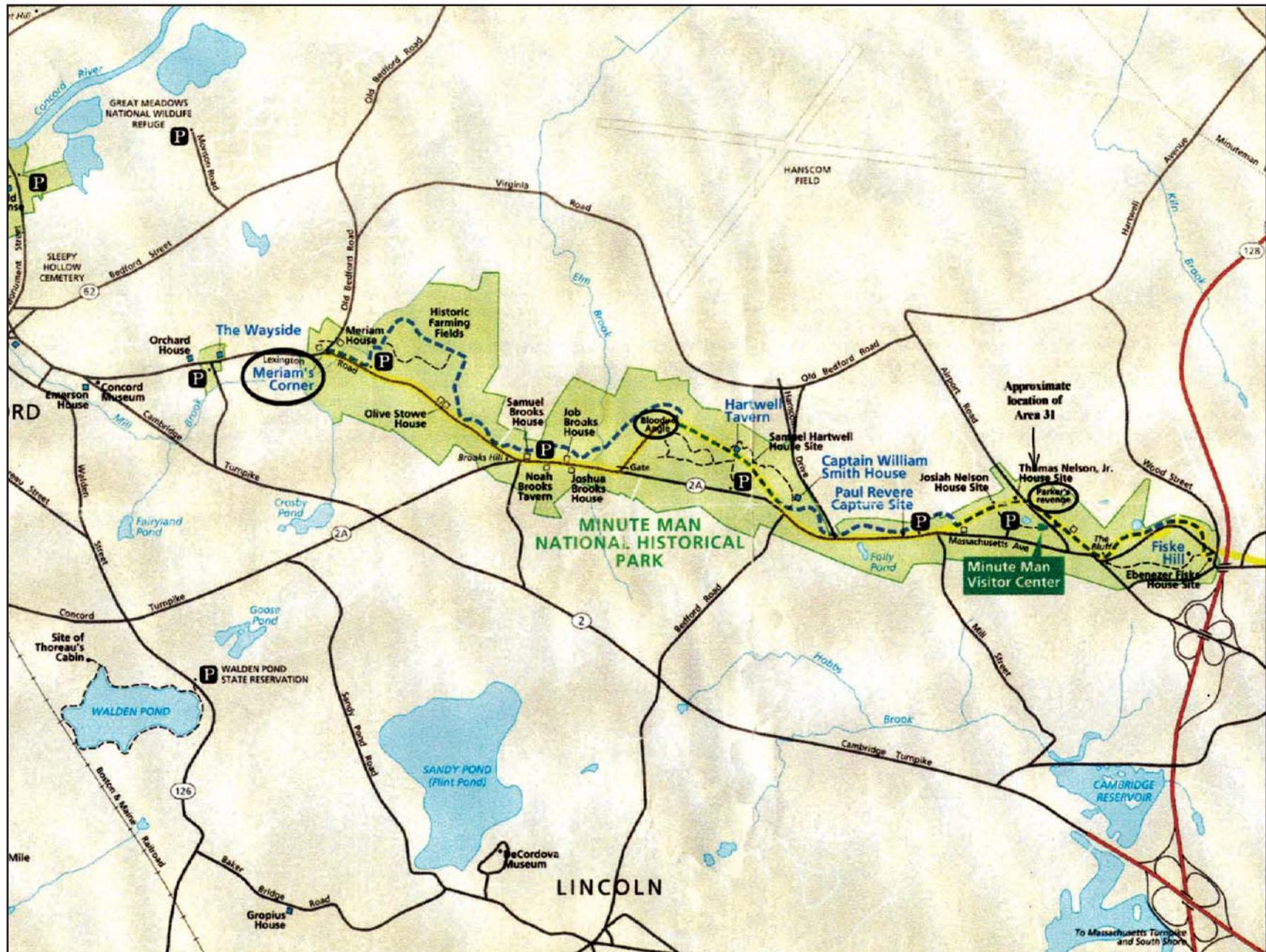
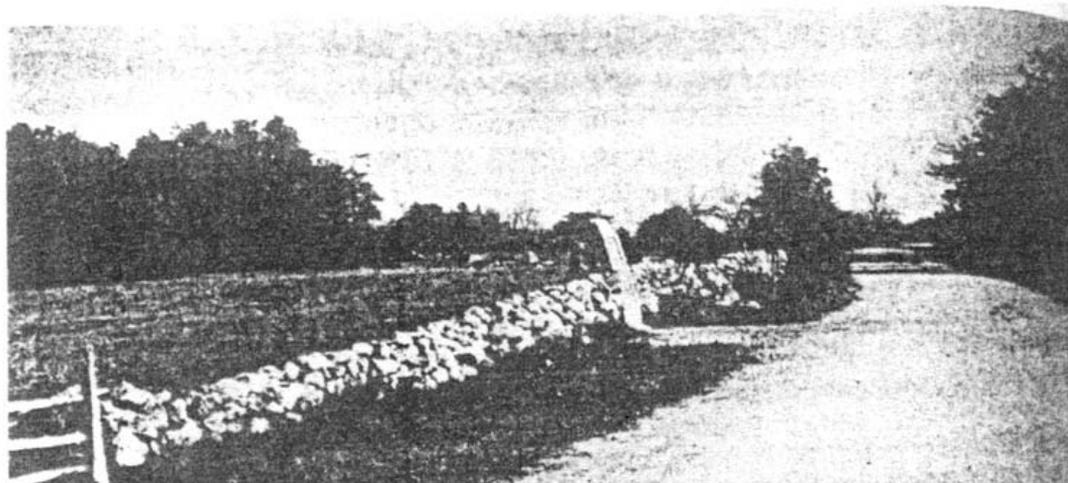


Figure 15. Location of major skirmishes along Battle Road from Meriam's Corner to Fiske Hill.



In the 1890s, when the area still resembled its open appearance of 1775, a monument was erected by the Town of Lincoln to mark the approximate site where Paul Revere was captured.



Nineteenth-century photo of the Battle Road in Lincoln. (Concord Free Public Library)

Figure 16. Two historic views of Battle Road in Lincoln (Hudson 1913, top; Andrews, Jr. 2002, bottom).

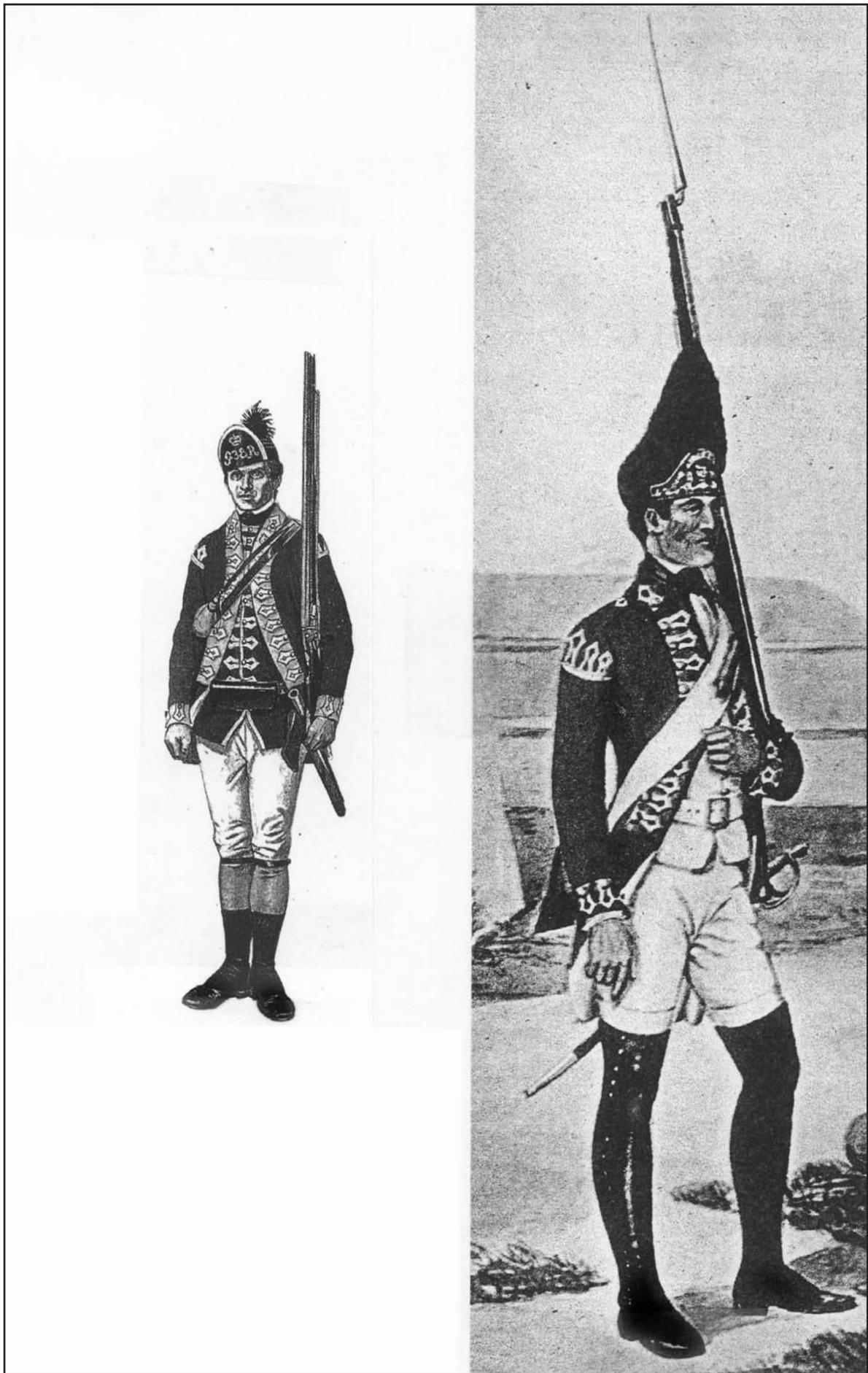


Figure 17. British Light Infantry uniform (Morrisseau 2004) (left) and Grenadier uniform (Anonymous nd) (right).



Figure 18. Typical attire of colonial militia (Neumann and Kravic 1975).

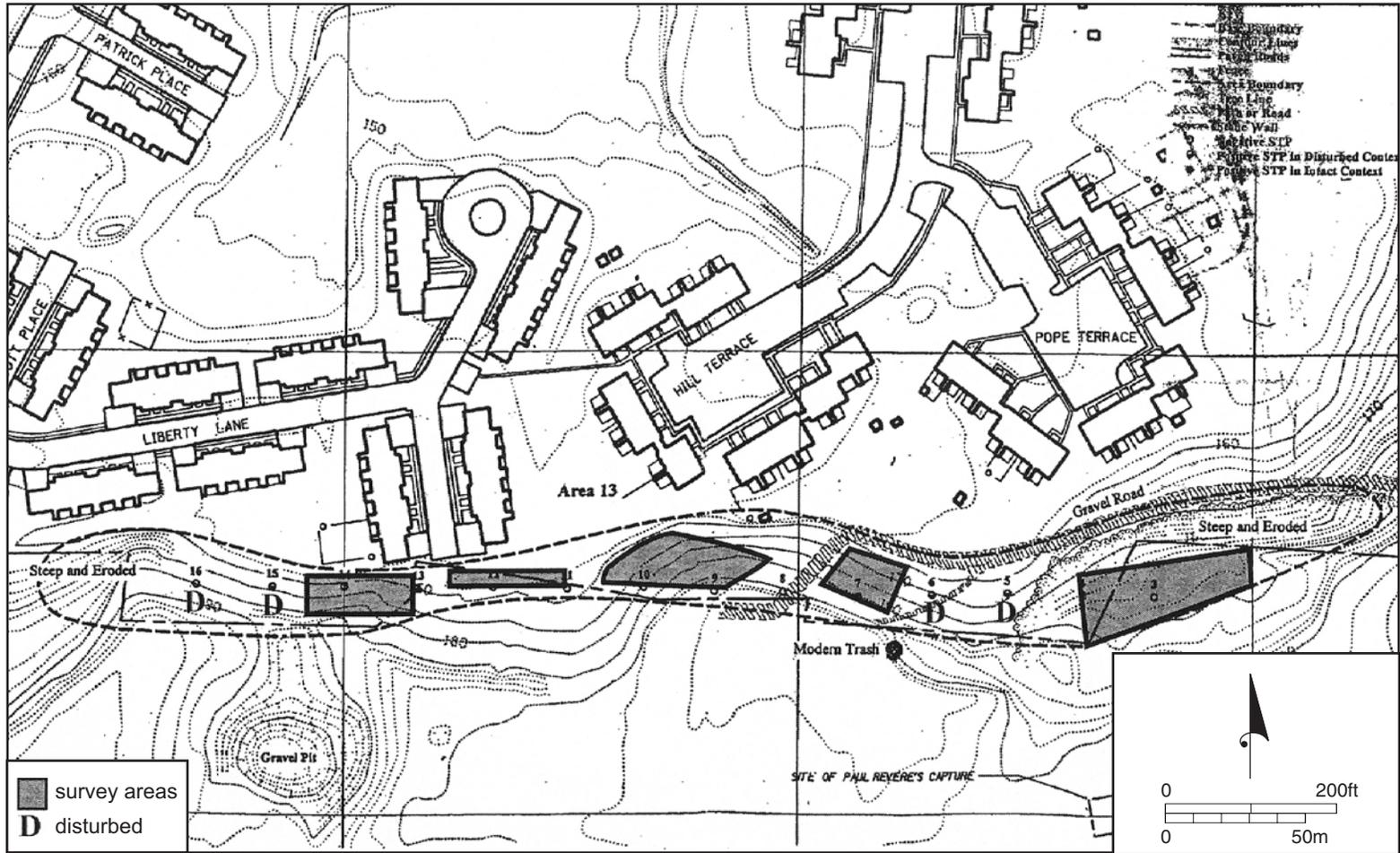


Figure 19. Location of metal detector survey Area 13.

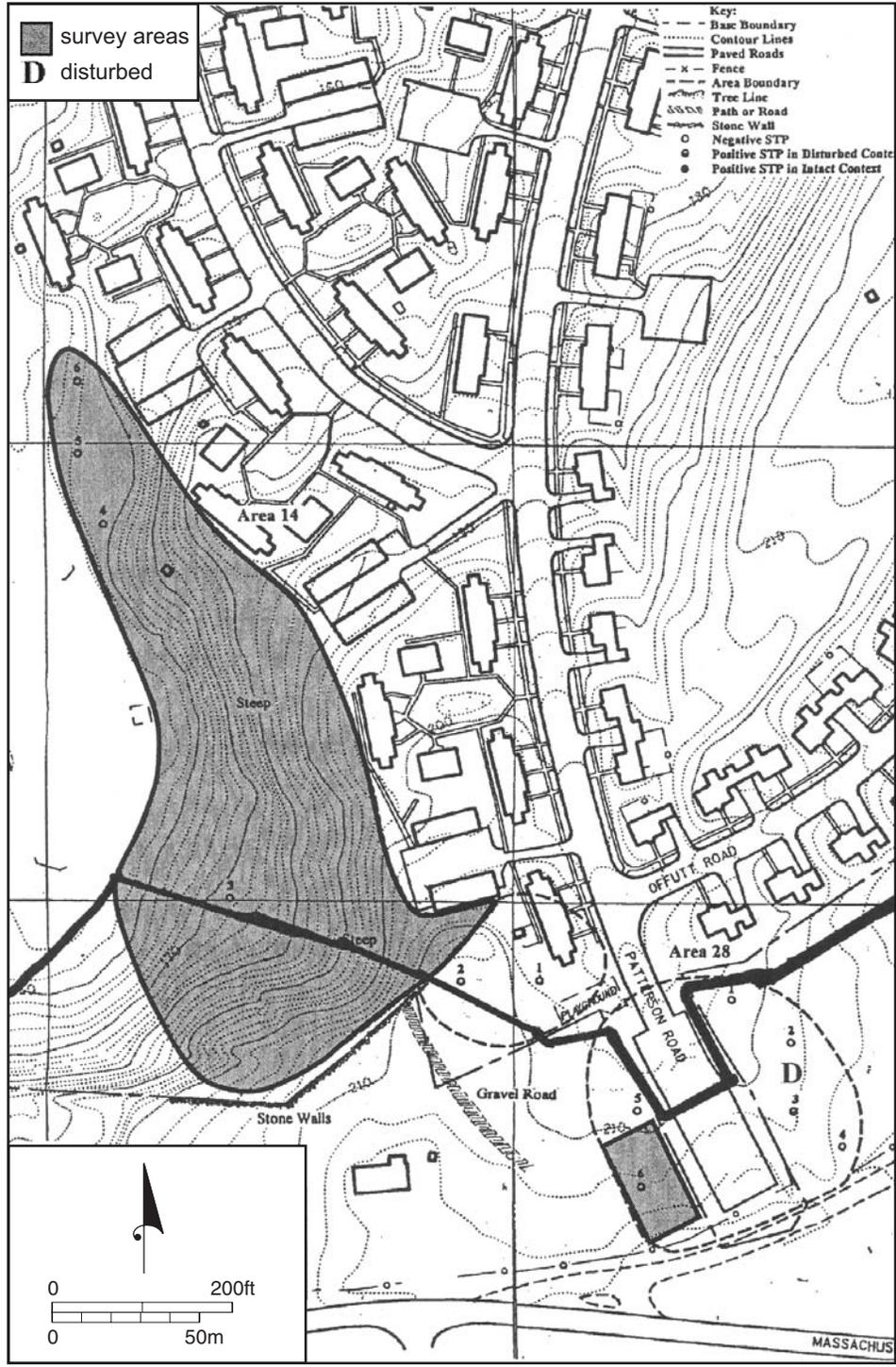


Figure 20. Location of metal detector survey Areas 14 and 28.

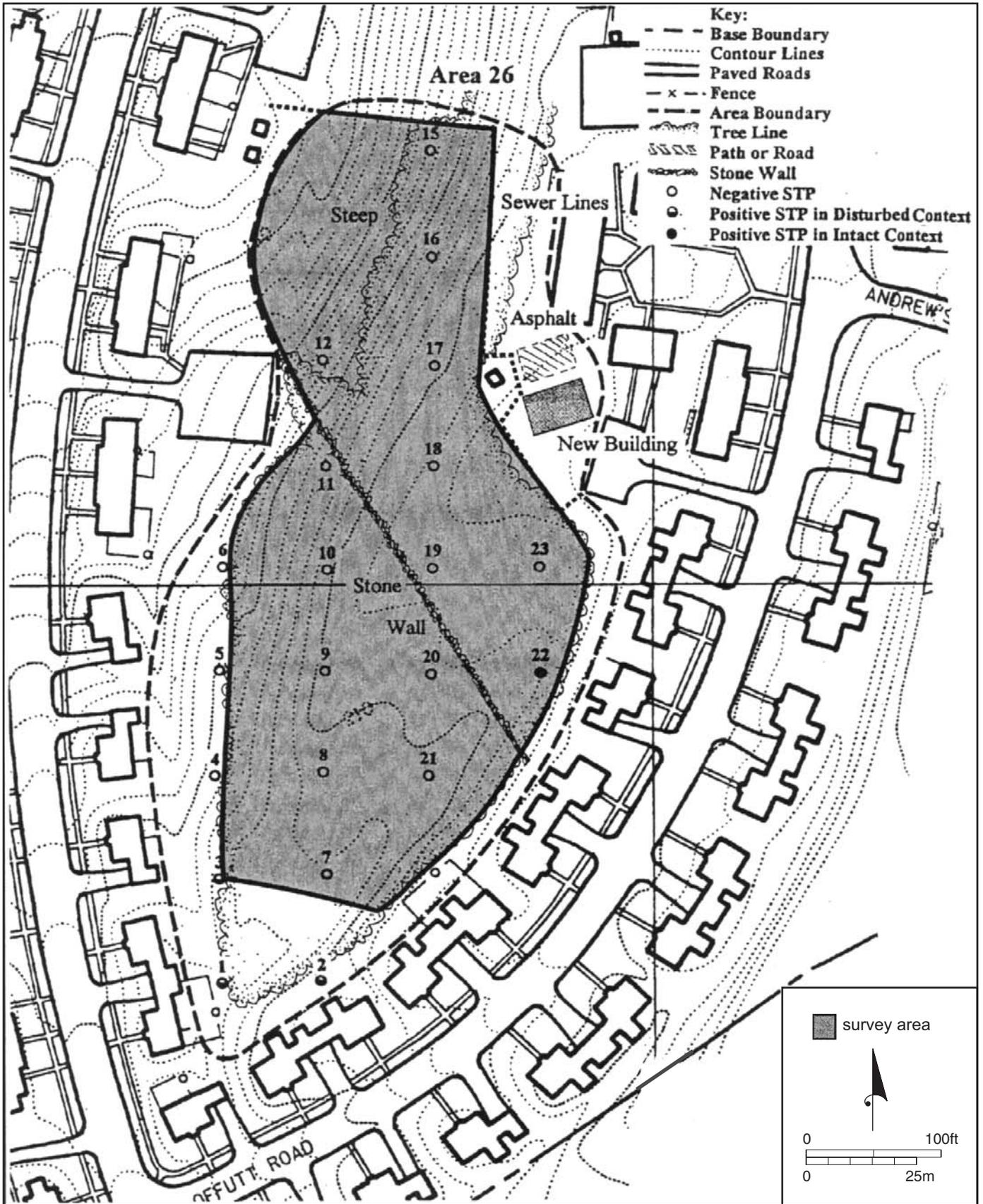


Figure 21. Location of metal detector survey Area 26.

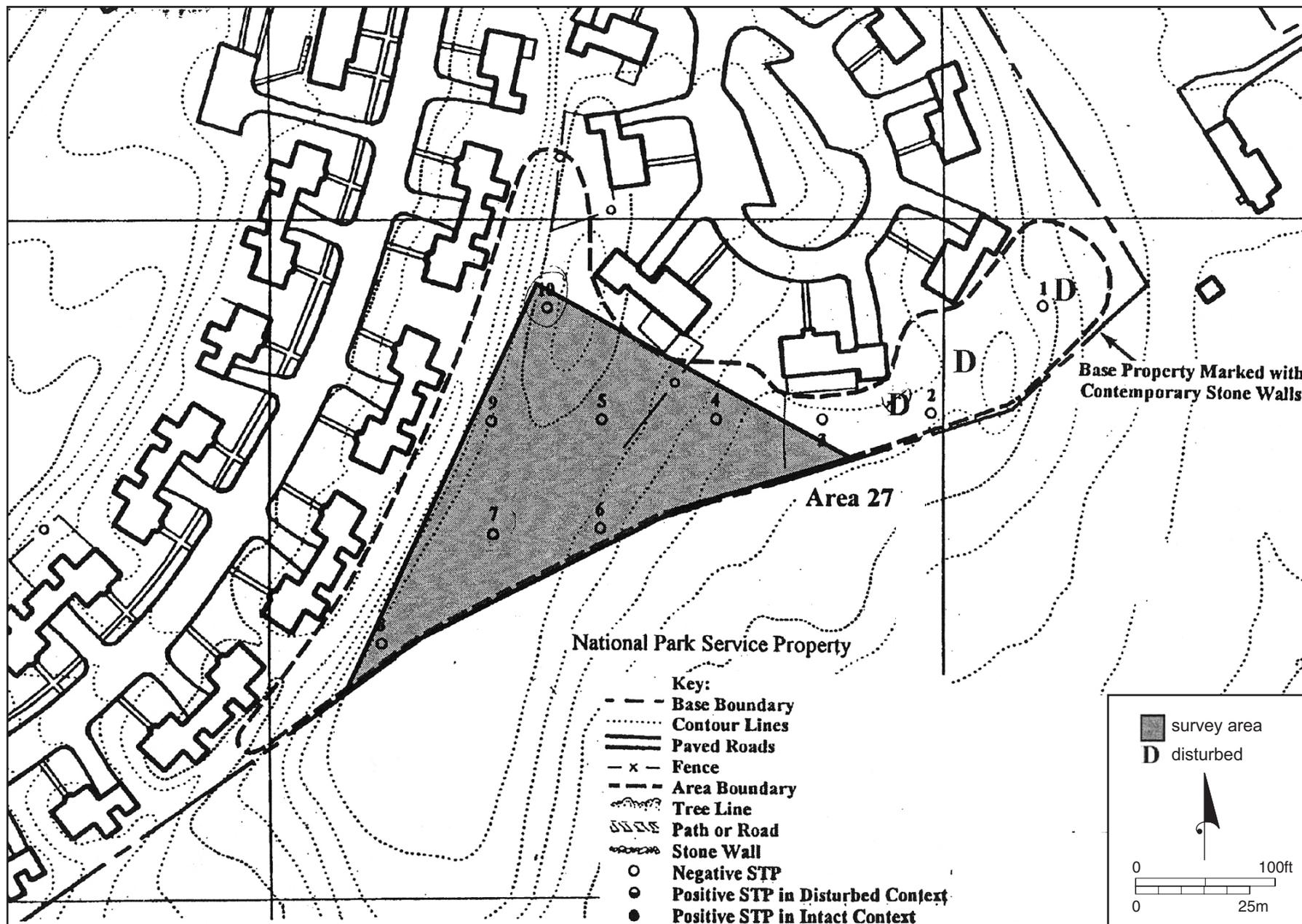


Figure 22. Location of metal detector survey Area 27.

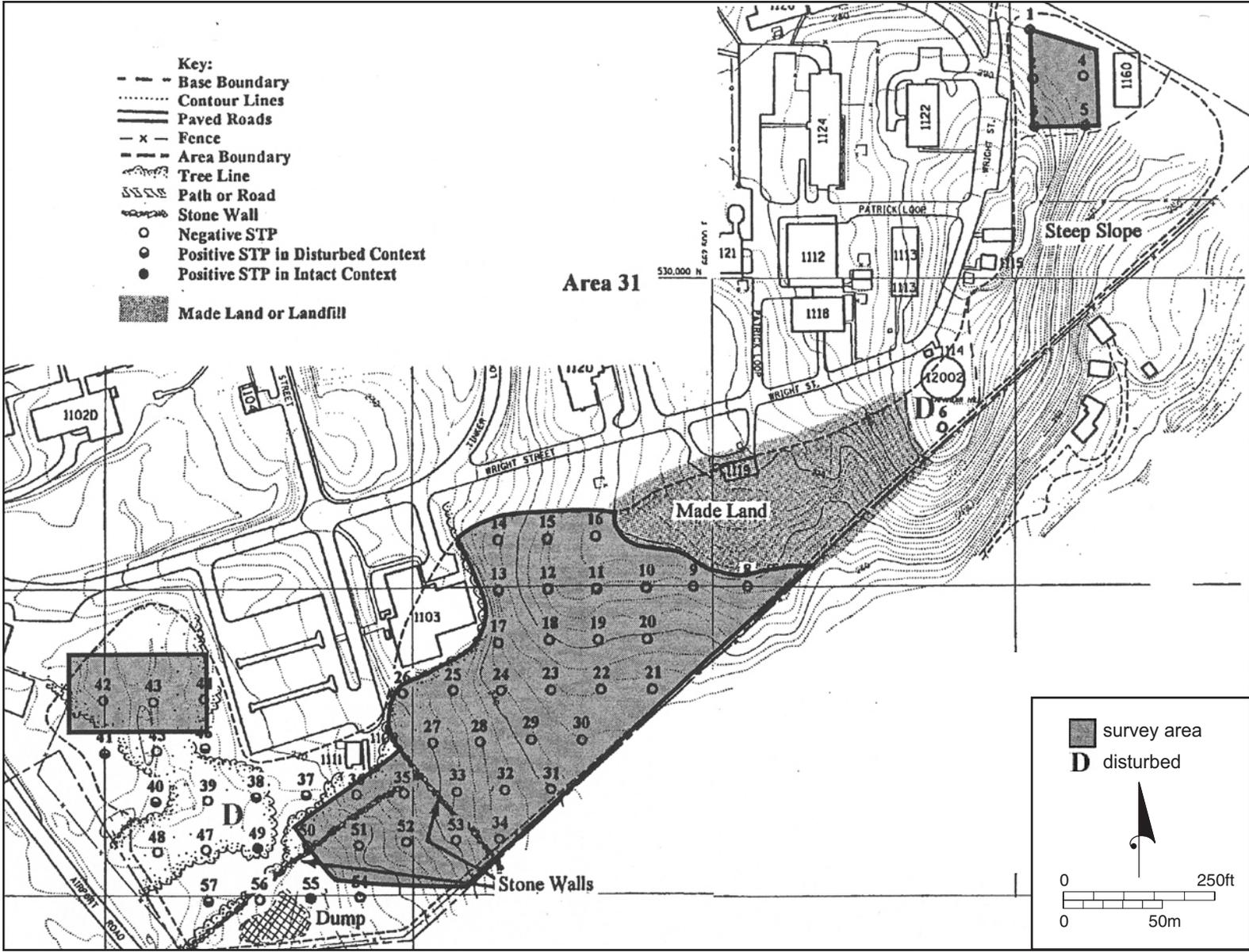


Figure 23. Location of metal detector survey Area 31.

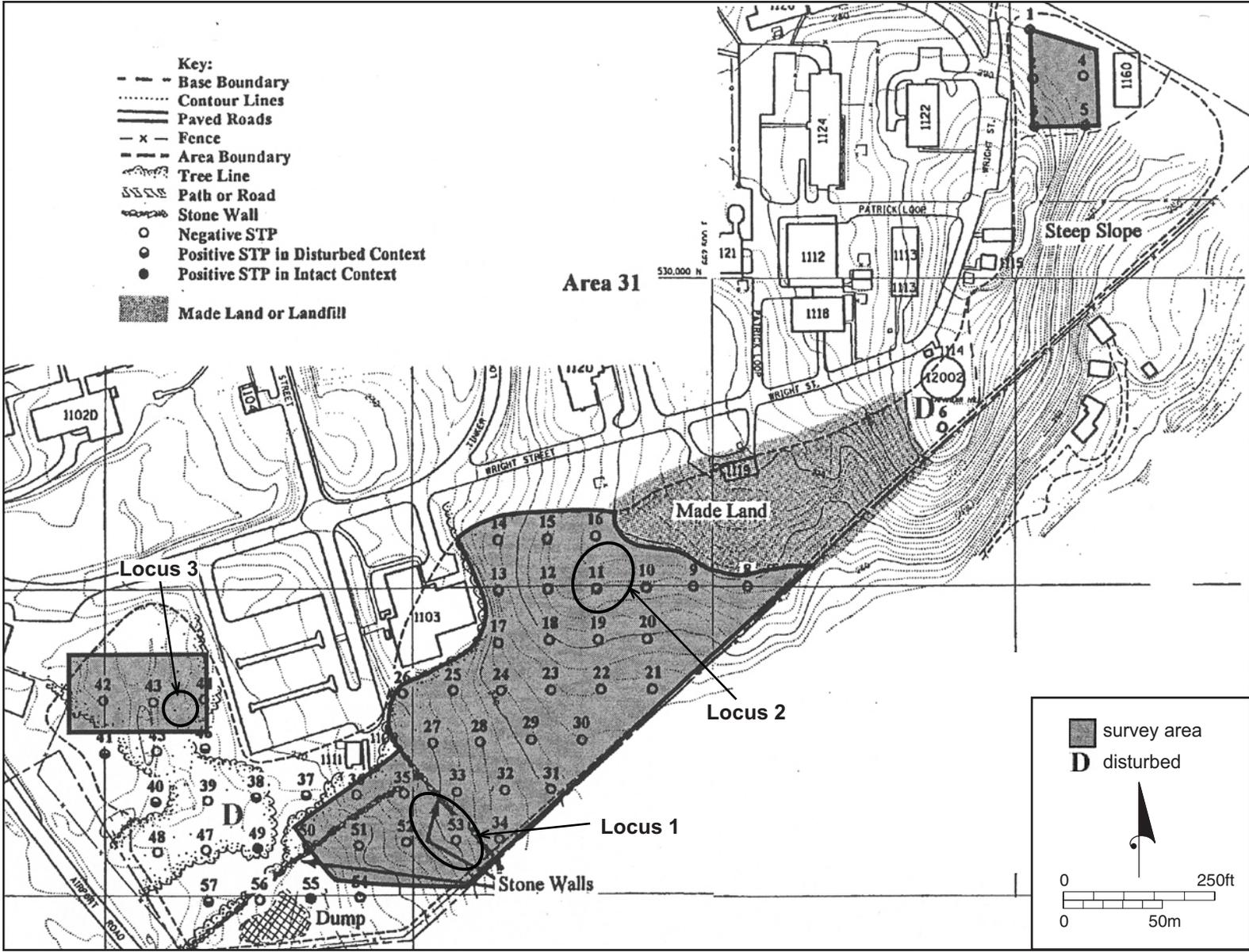


Figure 24. Metal detector grid with location of battle-related artifacts overlaid on archeological intensive (locational) survey base map (Abell et al. 1998).

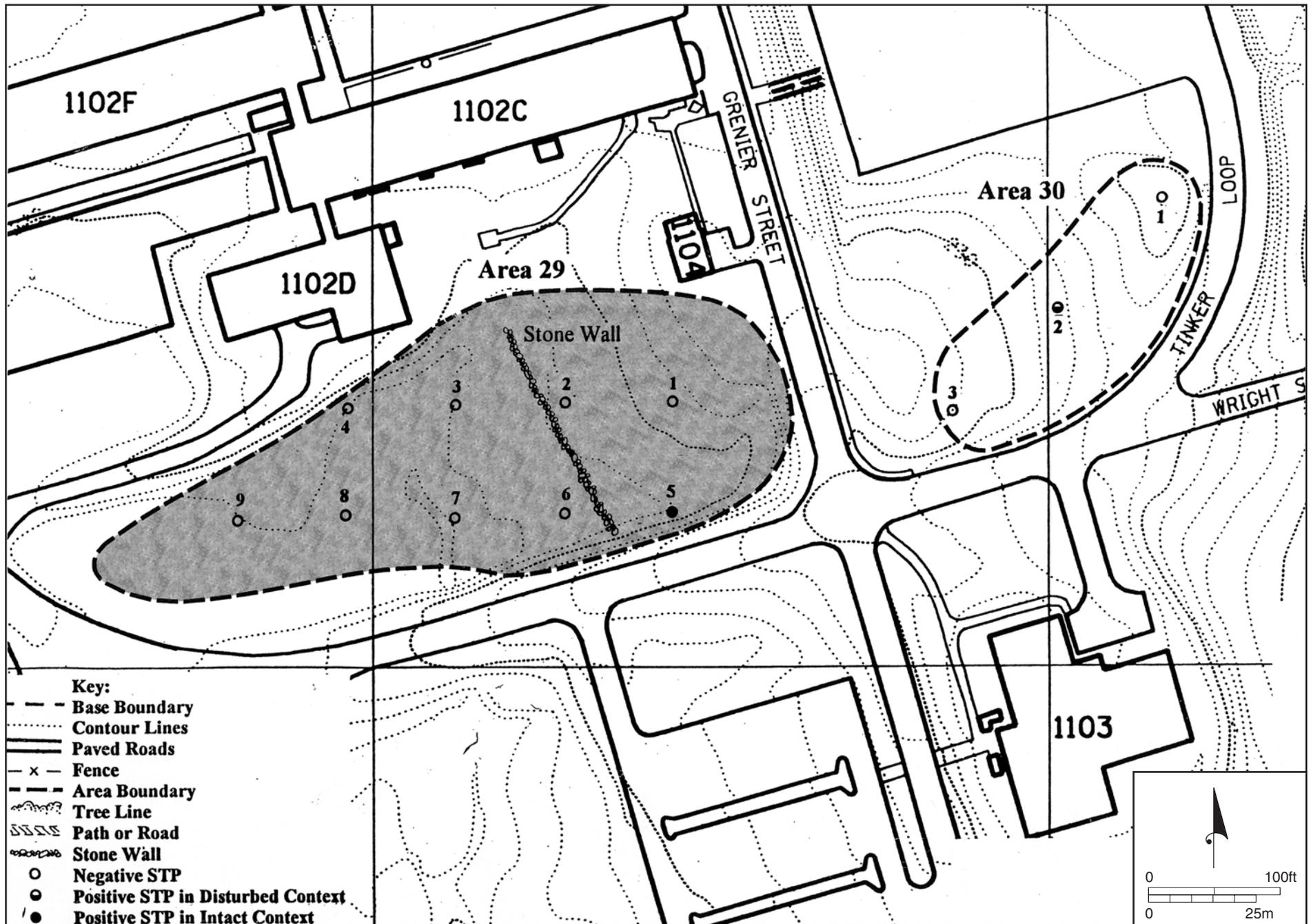


Figure 25. Location of metal detector survey Area 29.

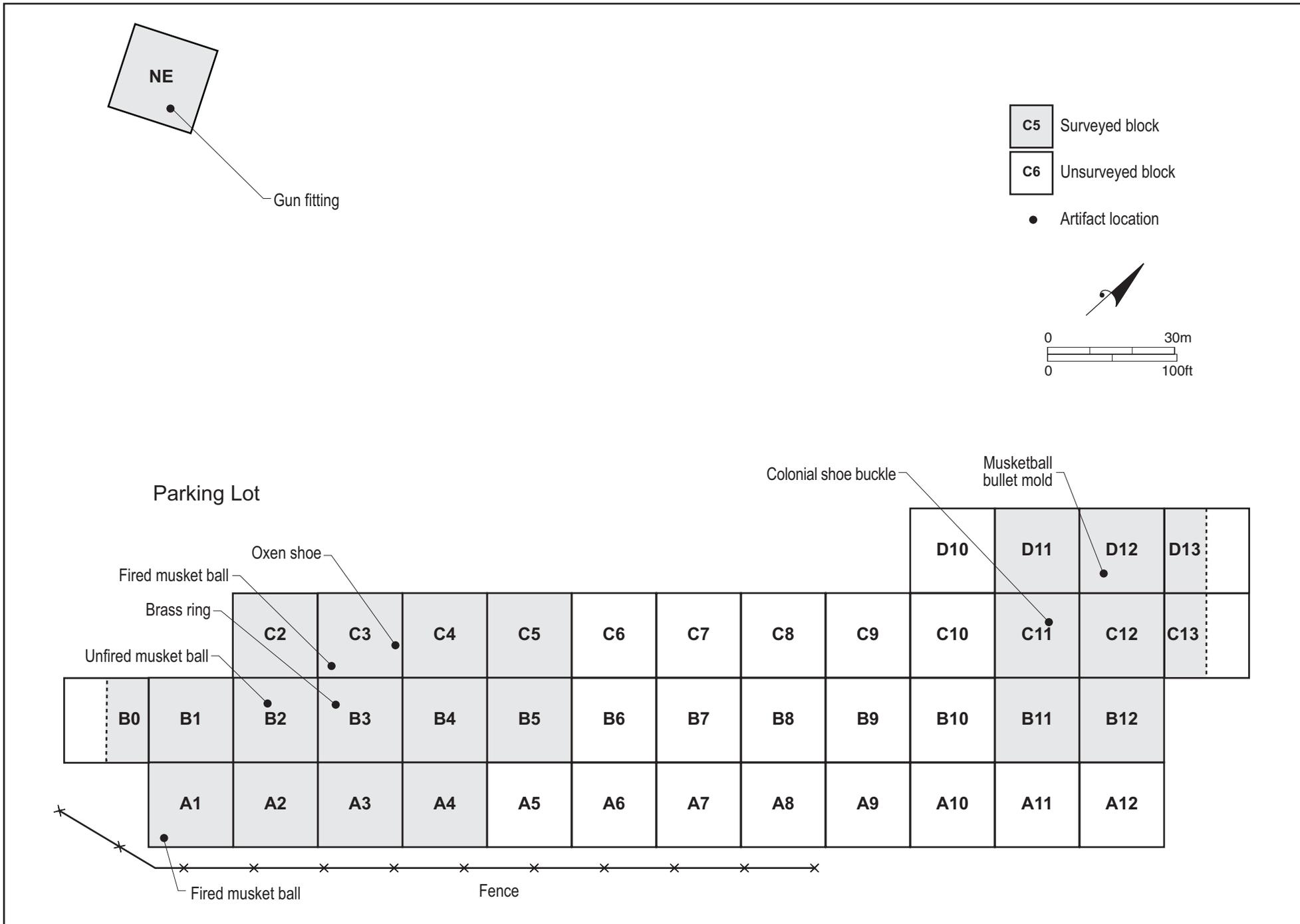


Figure 26. Base map for magnetometer survey conducted in October of 2004.

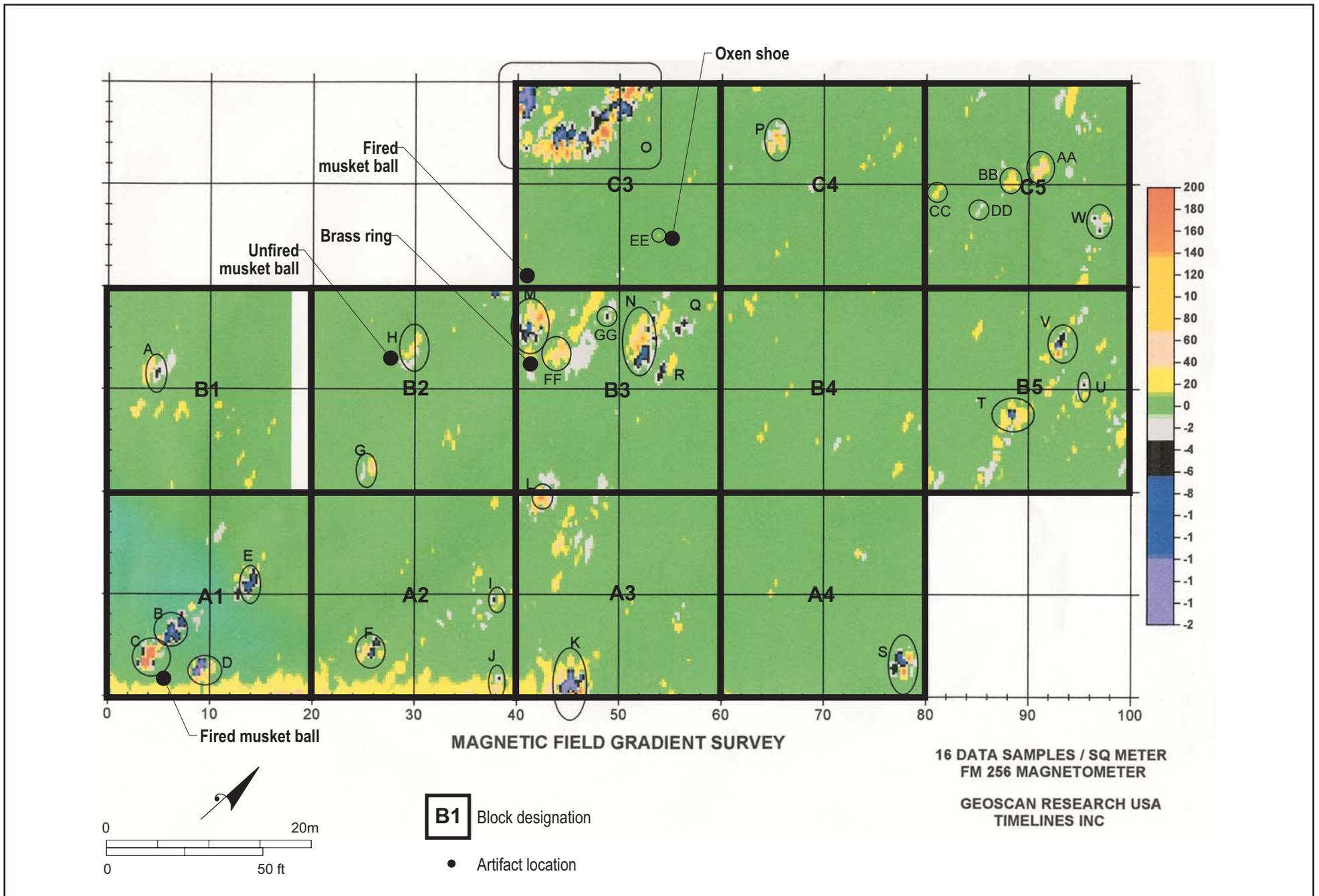


Figure 27. Magnetic field gradient survey map by Locus 1.

BATTLE ROAD SURVEY EAST SECTION

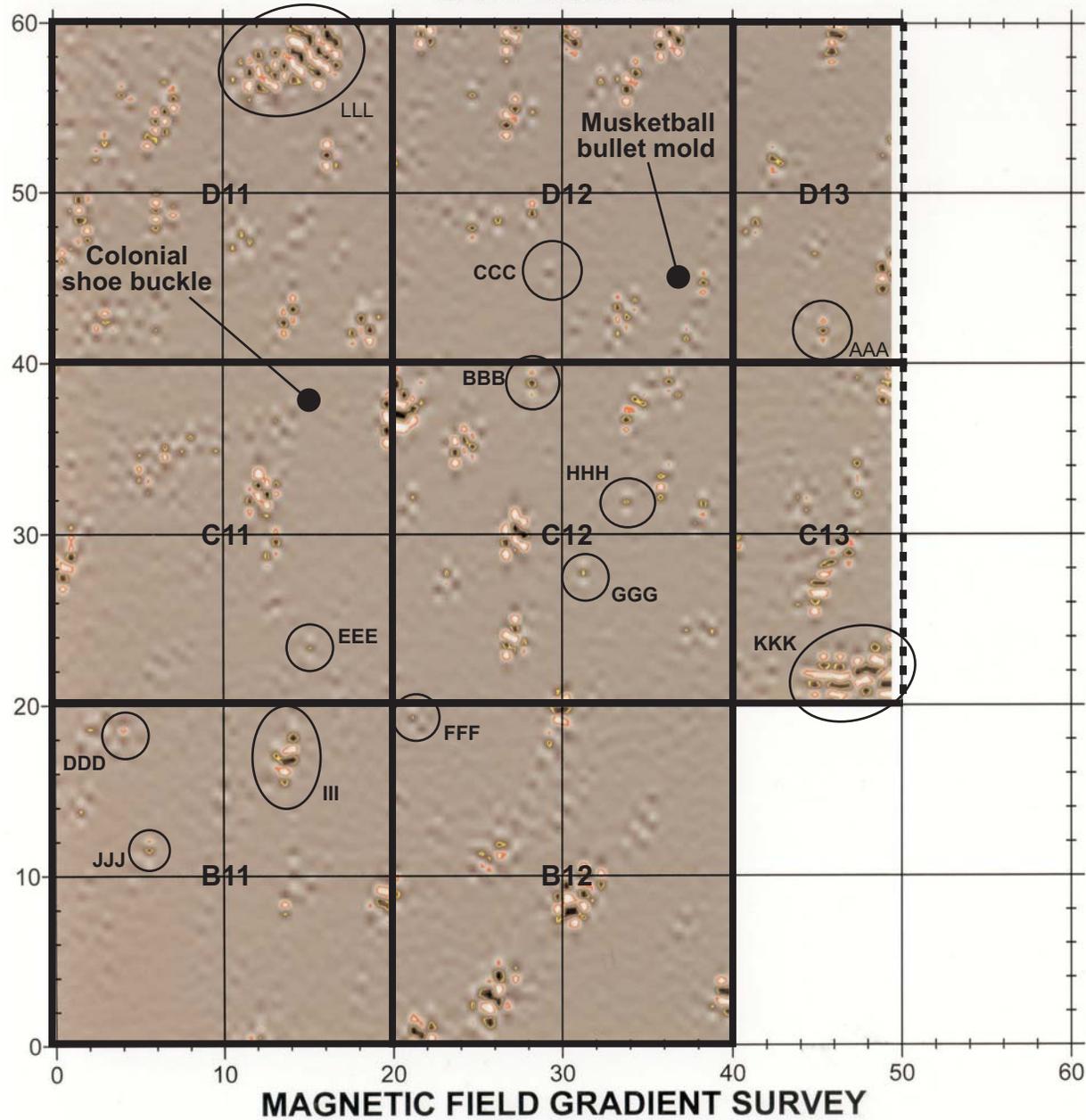
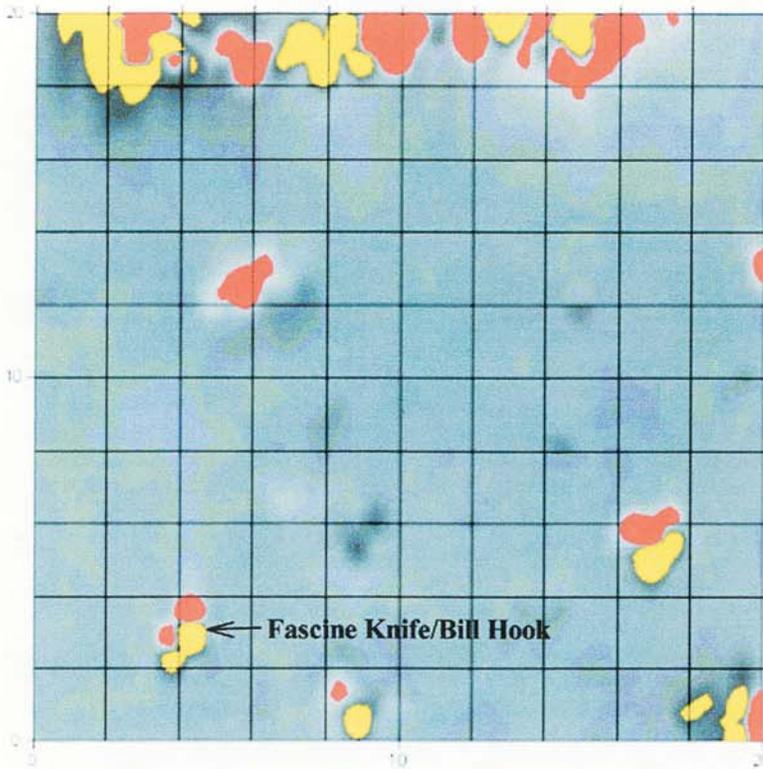


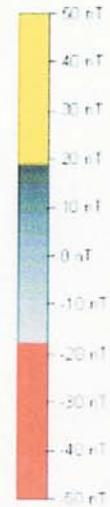
Figure 28. Magnetic field gradient survey map by Locus 2.

**BATTLE ROAD - NORTH-WEST SECTION
MAGNETIC FIELD GRADIENT SURVEY**



LARGE IRON / STEEL OBJECTS AND STRONG MAGNETIC ROCKS

RED AND YELLOW AREAS ARE STRONG MAGNETIC ANOMALIES

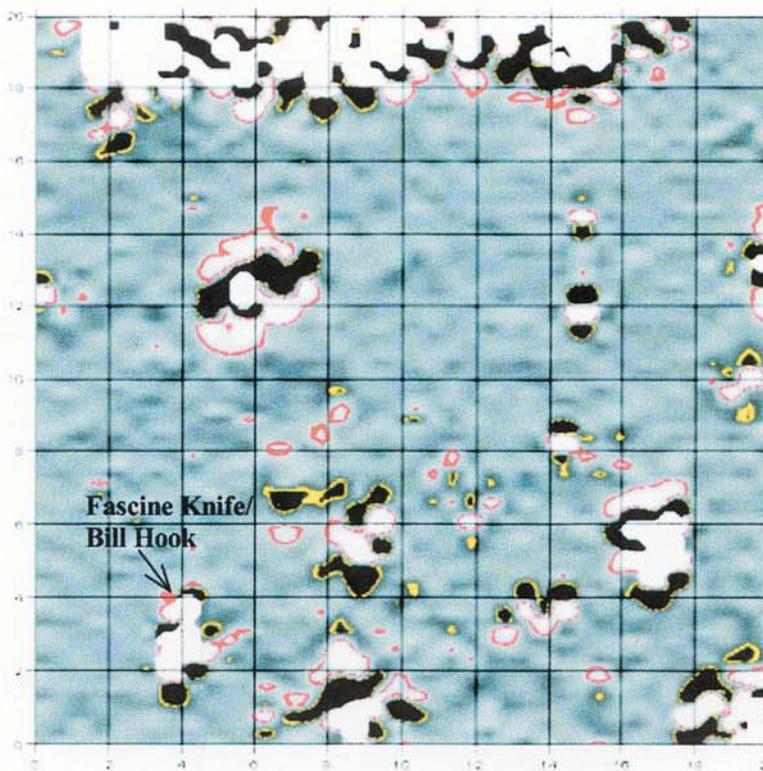


SURVEY PARAMETERS

32 DATA SAMPLES / 50 METER
FM 256 MAGNETOMETER
GEO PLOT 3.1 PROCESSING SW

GEOSCAN RESEARCH USA
TIMELINE S INC.

**BATTLE ROAD - NORTH-WEST SECTION
MAGNETIC FIELD GRADIENT SURVEY**



SMALL IRON / STEEL OBJECTS AND SMALL MAGNETIC ROCKS



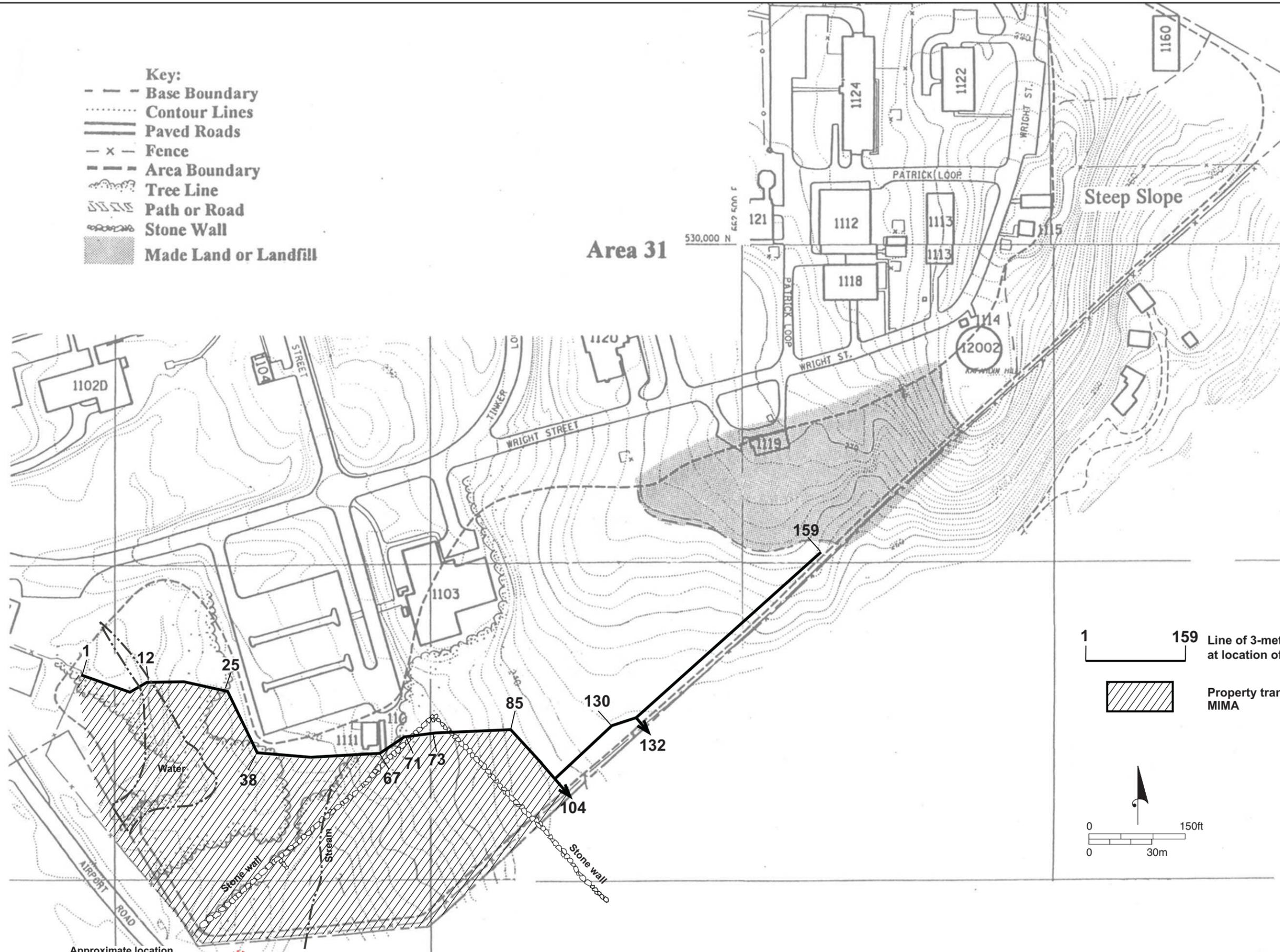
SURVEY PARAMETERS

32 DATA SAMPLES / 50 METER
FM 256 MAGNETOMETER
GEO PLOT 3.1 PROCESSING SW

GEOSCAN RESEARCH USA
TIMELINE S INC.

Figure 29. Strong/large and small/weak magnetic objects maps for Locus 3.

- Key:**
- - - Base Boundary
 - Contour Lines
 - ==== Paved Roads
 - x - Fence
 - - - Area Boundary
 - ~~~~~ Tree Line
 - ~~~~~ Path or Road
 - ~~~~~ Stone Wall
 - ▨ Made Land or Landfill



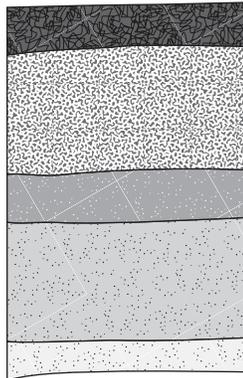
1 159 Line of 3-meter testing at location of fence posts

▨ Property transferred to MIMA

0 150ft
0 30m

Figure 30. Archeological base map of fence survey.

**STP 2
North Wall**



A₀ horizon; duff; very dark brown fine sandy loam

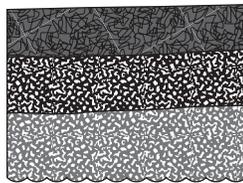
A_{Pz} horizon; very dark brown fine sandy loam

B₁ horizon; dark yellowish brown fine sand

B₂ horizon; yellowish brown fine sand

C₁ horizon; 10YR 6/4 light yellowish brown fine sand

**STP 12
North Wall**

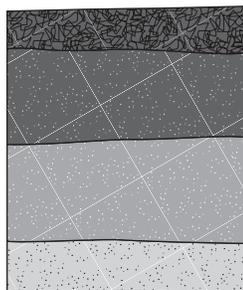


A₀ horizon; duff/root mat; 7.5YR 2.5/2 very dark brown humus

A₁ horizon; 10YR 2/1 black clayey silt; very wet muck

C horizon; 10YR 3/1 very dark gray clayey silt; hydric

**STP 20
North Wall**



A₀ horizon; duff; very dark brown humus with 3 cobbles

A₁ horizon; very dark brown fine sand

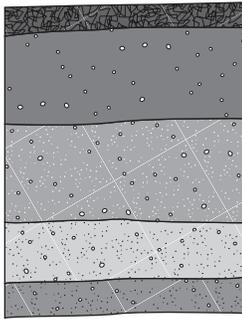
B₁ horizon; dark yellowish brown fine sand

B₂ horizon; yellowish brown fine sand



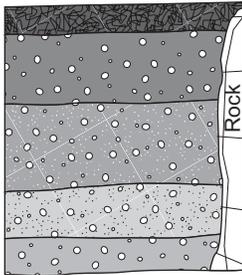
Figure 31. Soil profiles of STPs 2, 12, and 20.

**STP 66
West Wall**



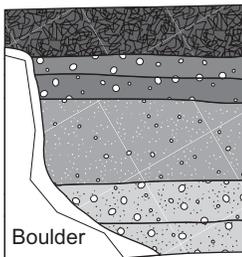
- AO horizon; duff/leaf mold/root mat; very dark brown silt loam
- A1 horizon; very dark brown silt loam with pebbles
- B1 horizon; dark yellowish brown fine sand with pebbles
- B2 horizon; yellowish brown fine sand with pebbles
- C1 horizon; strong brown sand with pebbles

**STP 83
West Wall**



- AO horizon; rotting log/root mat; very dark brown silt loam
- A1 horizon; very dark grayish brown silt loam with pebbles, cobbles, and boulders
- B1 horizon; dark yellowish brown fine sandy gravel with pebbles, cobbles, and boulders
- B2 horizon; yellowish brown fine sandy gravel with pebbles, cobbles, and boulders
- C horizon; yellowish brown clayey fine sandy gravel with pebbles and cobbles

**STP 111
South Wall**



- AO horizon; root mat; very dark brown silt loam
- A1 horizon; very dark grayish brown silt loam with pebbles, cobbles, and boulders
- A2 horizon; very dark brown silt loam with pebbles and cobbles
- B1 horizon; dark yellowish brown fine sand with pebbles
- B2 horizon; yellowish brown fine sand with pebbles, cobbles, boulders, and iron concretions
- C horizon; yellowish brown fine sand with pebbles, cobbles, boulders, and iron concretions



Figure 32. Soil profiles of STPs 66, 83, and 111.

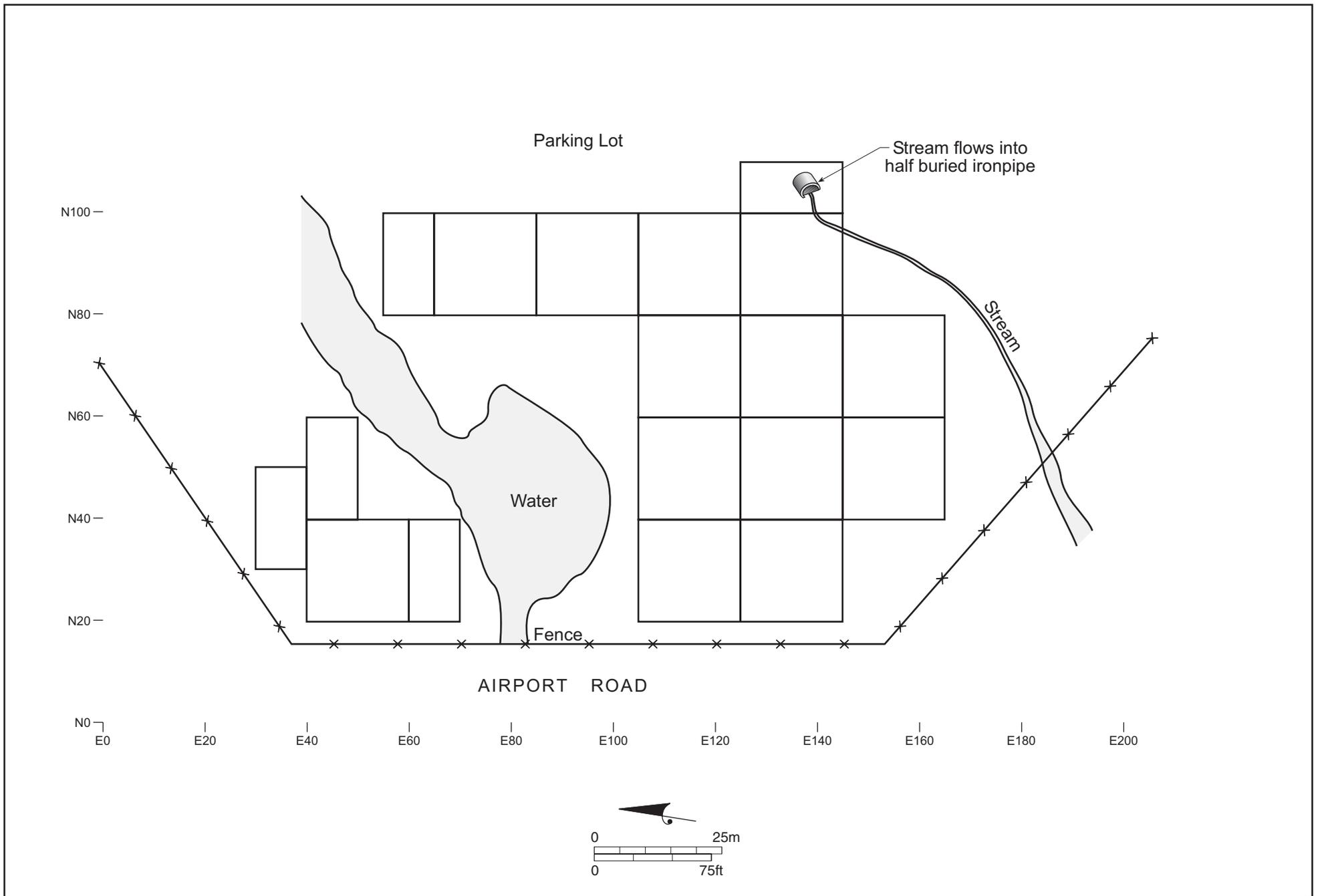


Figure 33. Plan of the magnetometer survey conducted in November of 2005.

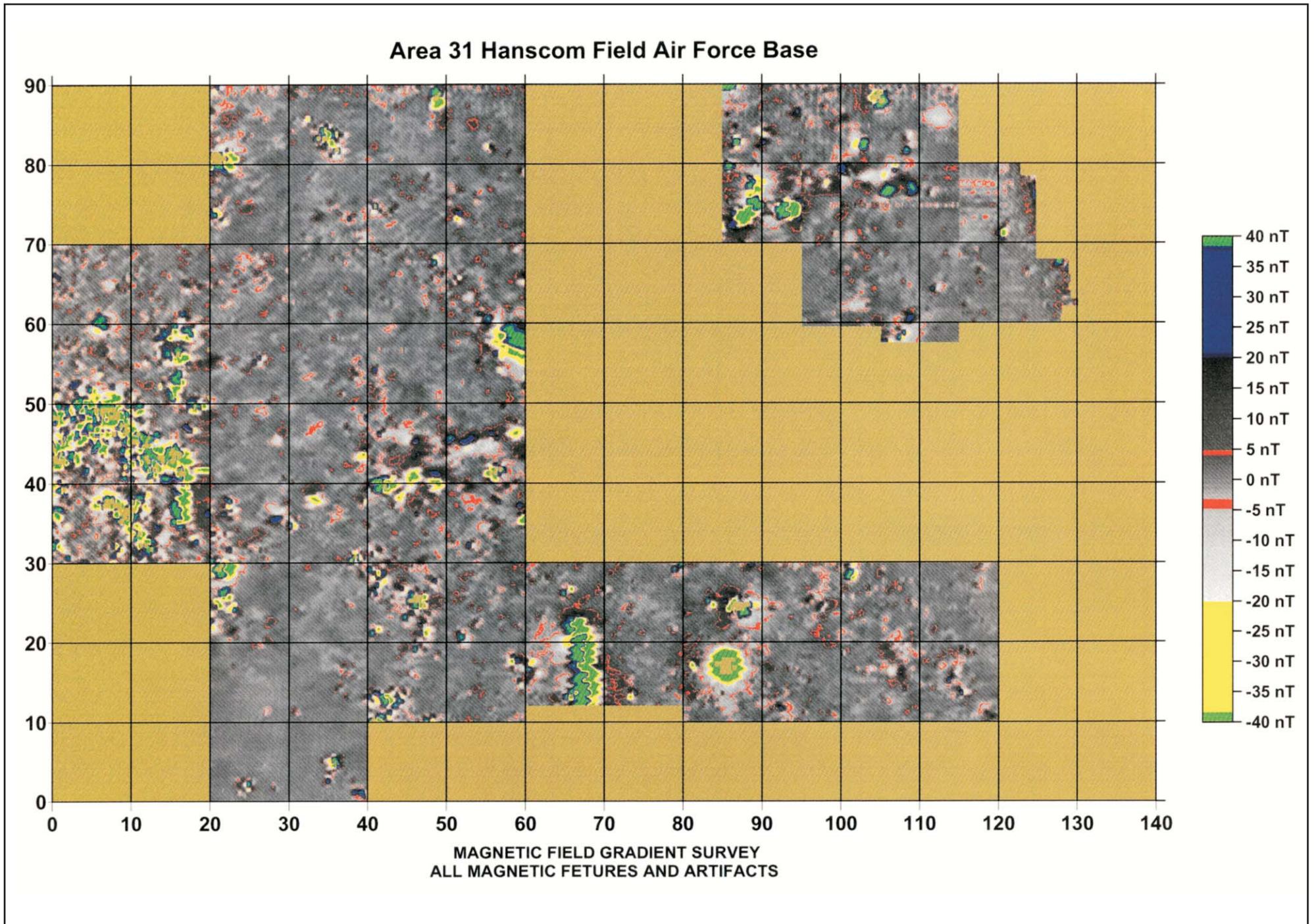


Figure 34. Map of all magnetic features and artifacts.

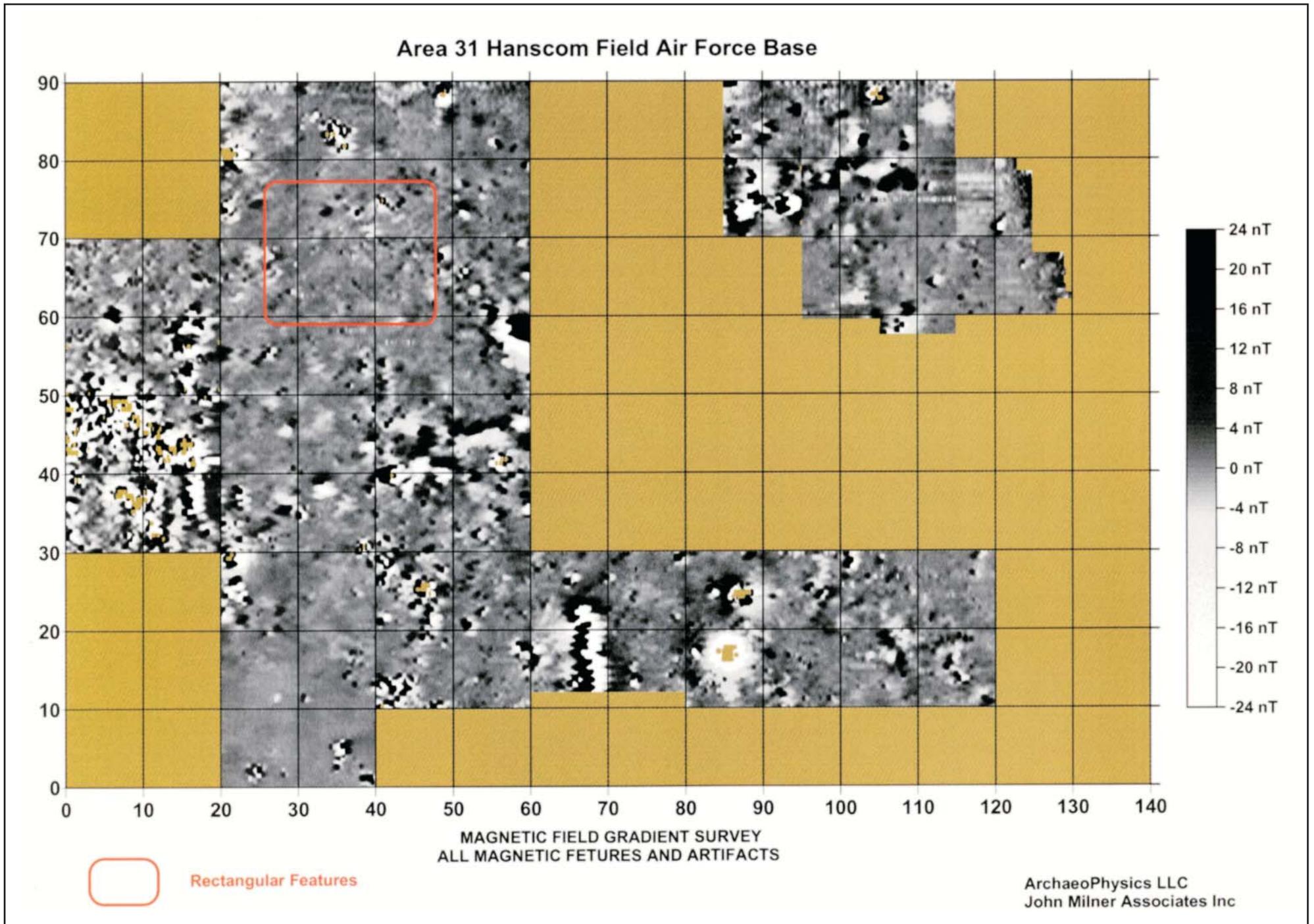


Figure 35. Map of weak magnetic features.

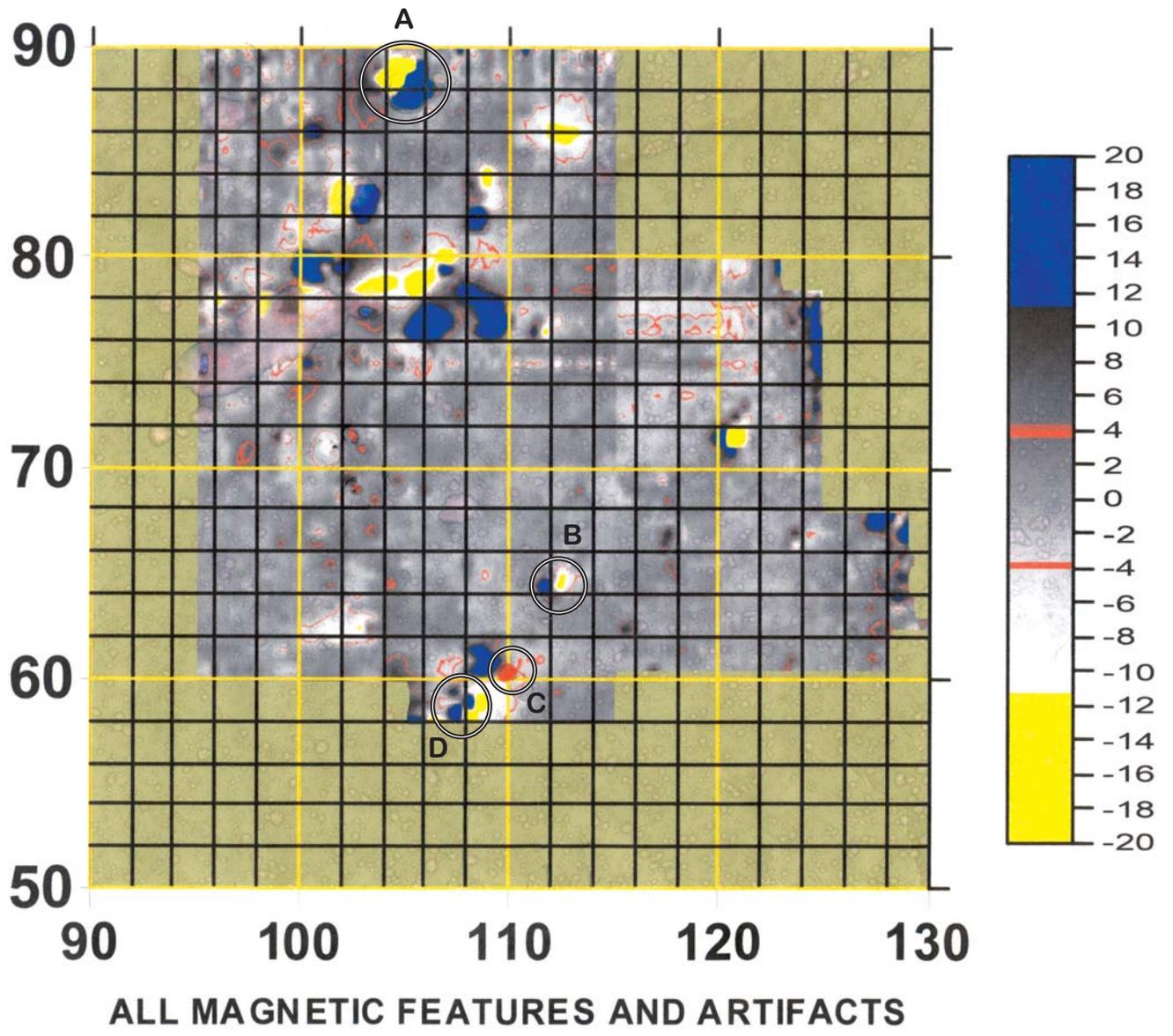


Figure 36. Map of all magnetic features and artifacts in grassy field by Airport Road.

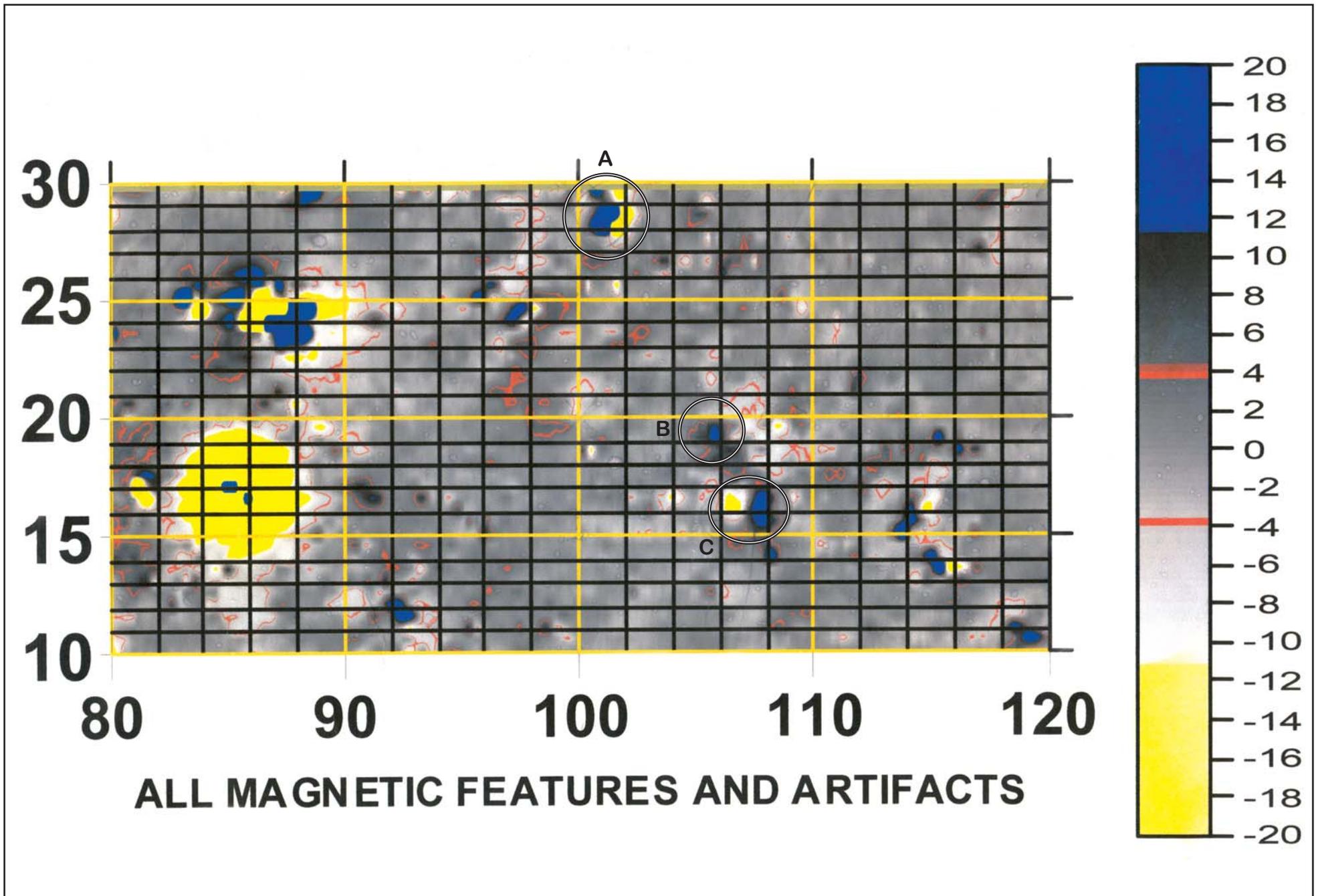


Figure 37. Map of all magnetic features and artifacts in area to the west of the parking lot.

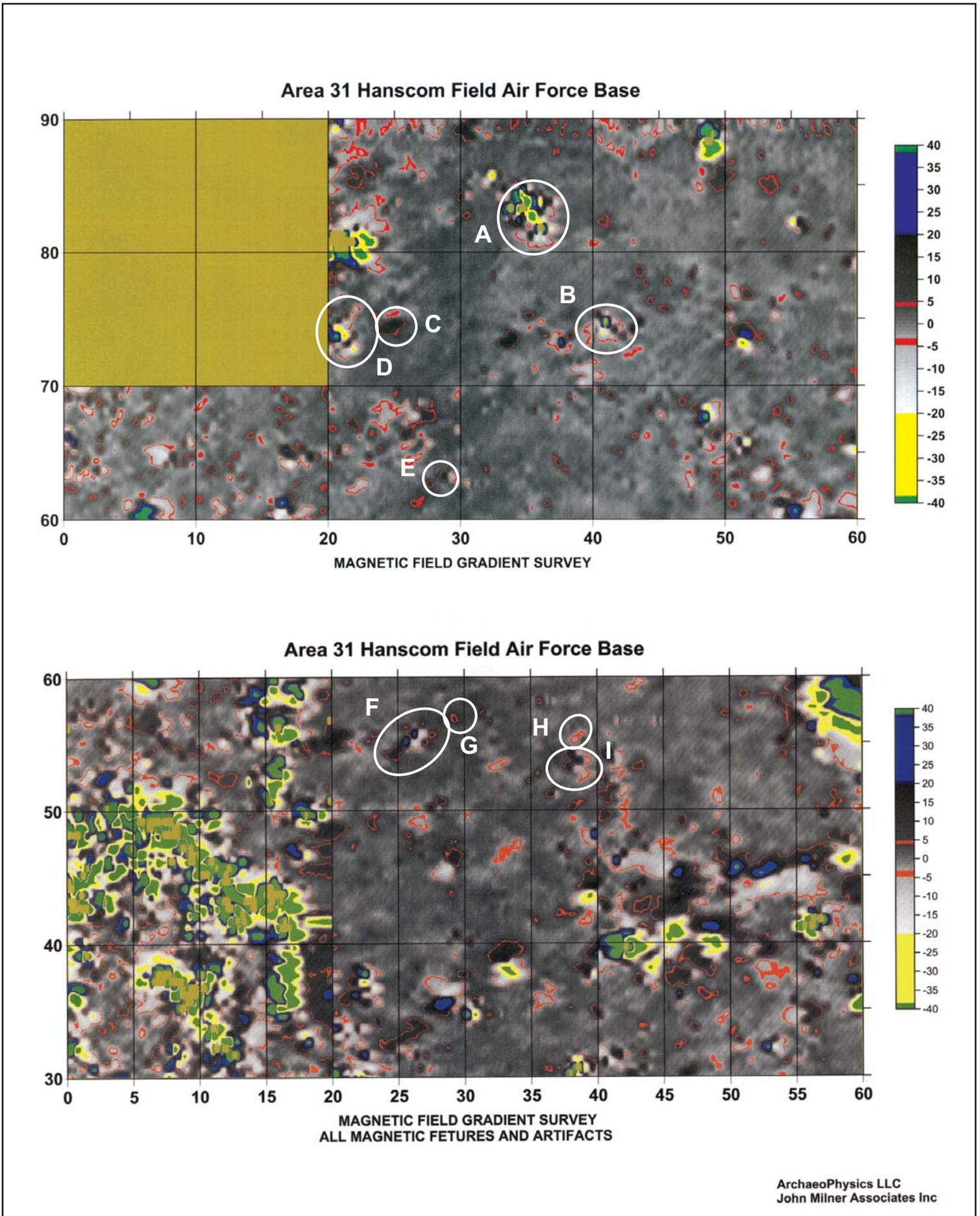
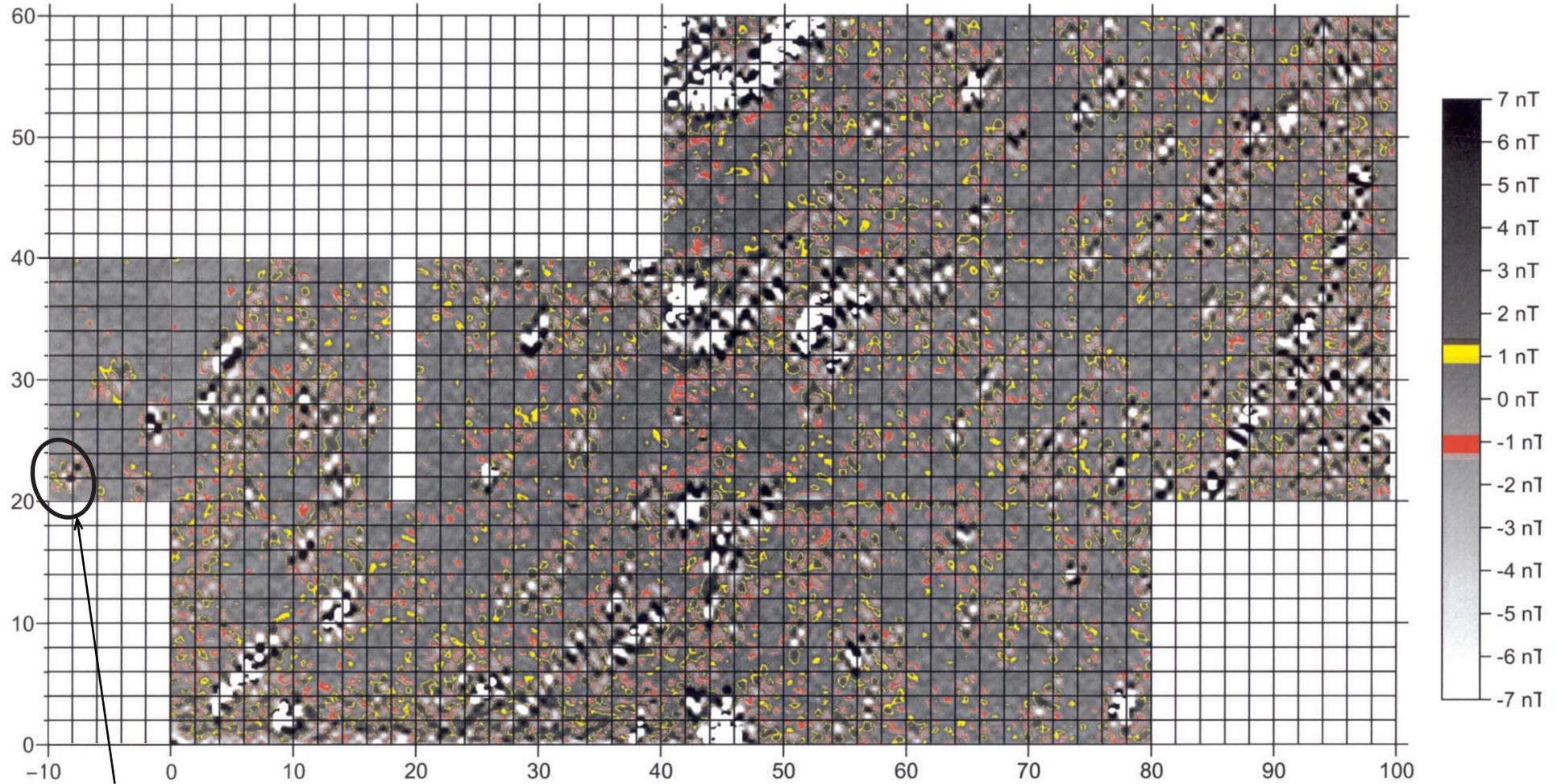


Figure 38. Map of all magnetic features and artifacts in the northwest section of the parcel.

BATTLE ROAD - SOUTH-WEST SECTION MAGNETIC FIELD GRADIENT SURVEY



Location of
recovered
artifact from
1/2 Block

SMALL IRON / STEEL OBJECTS AND SMALL MAGNETIC ROCKS

SURVEY PARAMETERS

16 DATA SAMPLES / SQ METER
FM 256 MAGNETOMETER
GEOPLOT 3.1 PROCESSING SW

Figure 39. Small Weak Magnetic map for Locus 1.

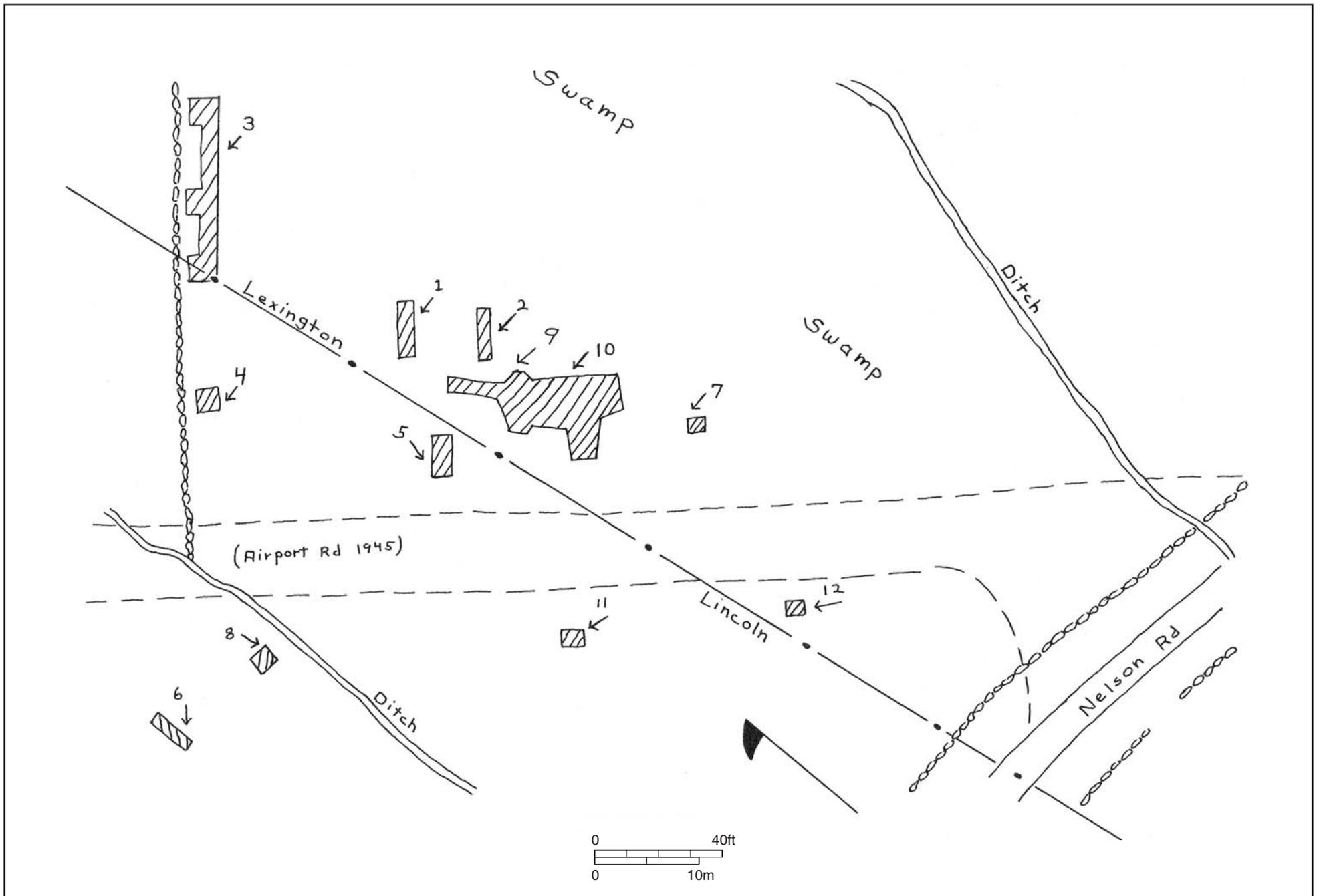


Figure 40. Archeological base map for 1968 survey at Tabitha Nelson's house site (Towle and MacMahon 1986c).

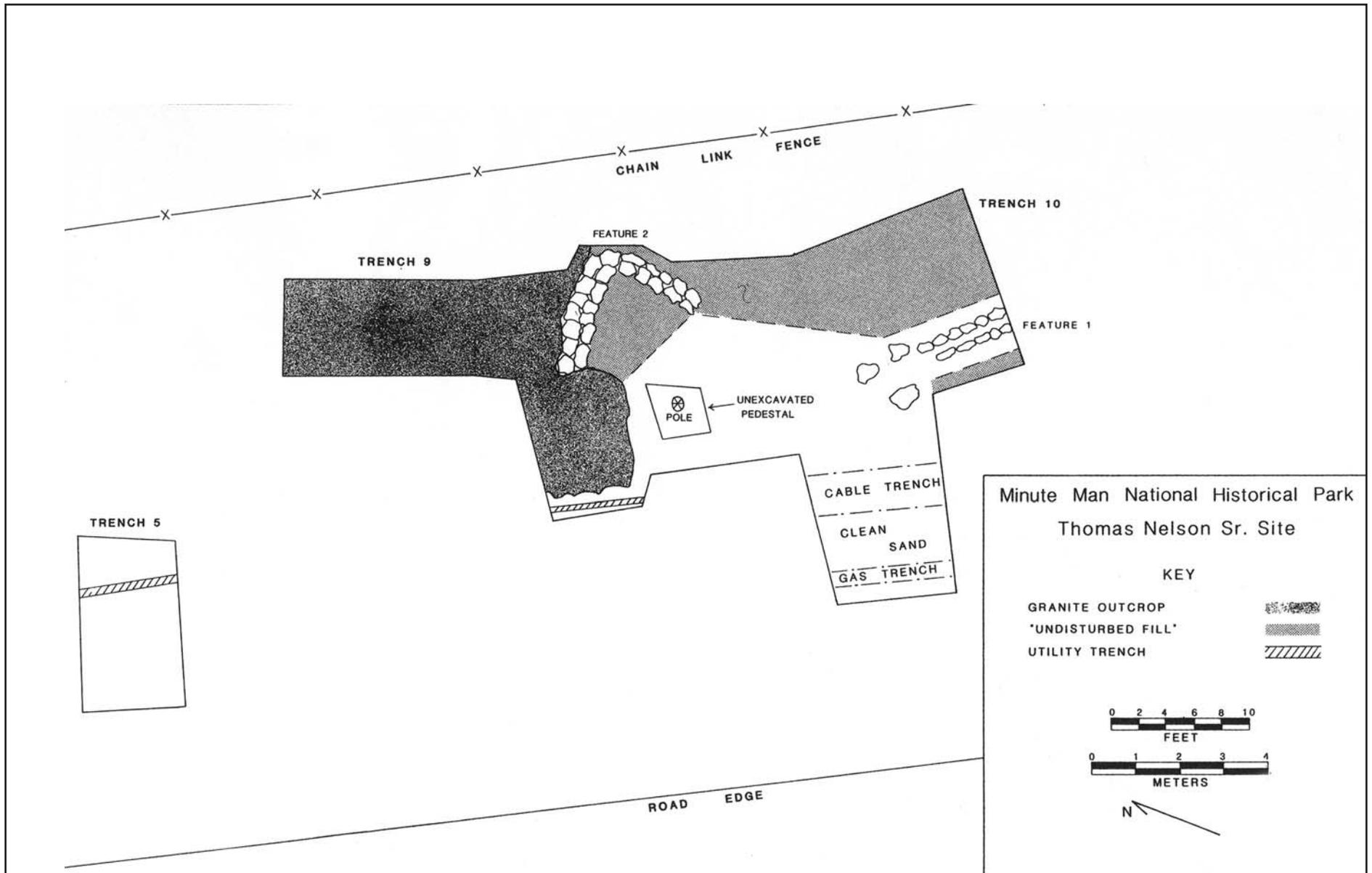


Figure 41. Plan of the Tabitha Nelson house site excavated by Snow (Towle and MacMahon 1986c).

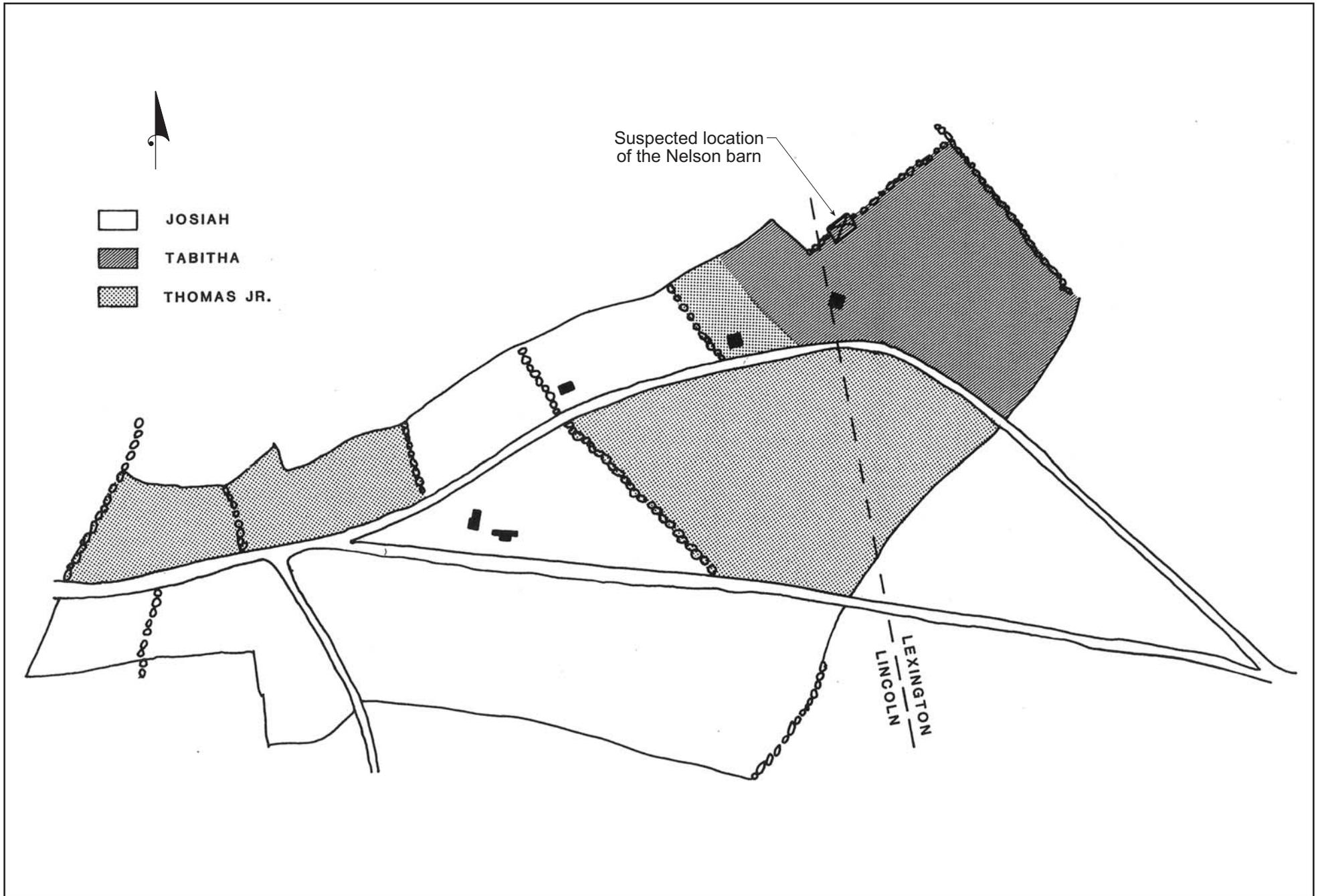
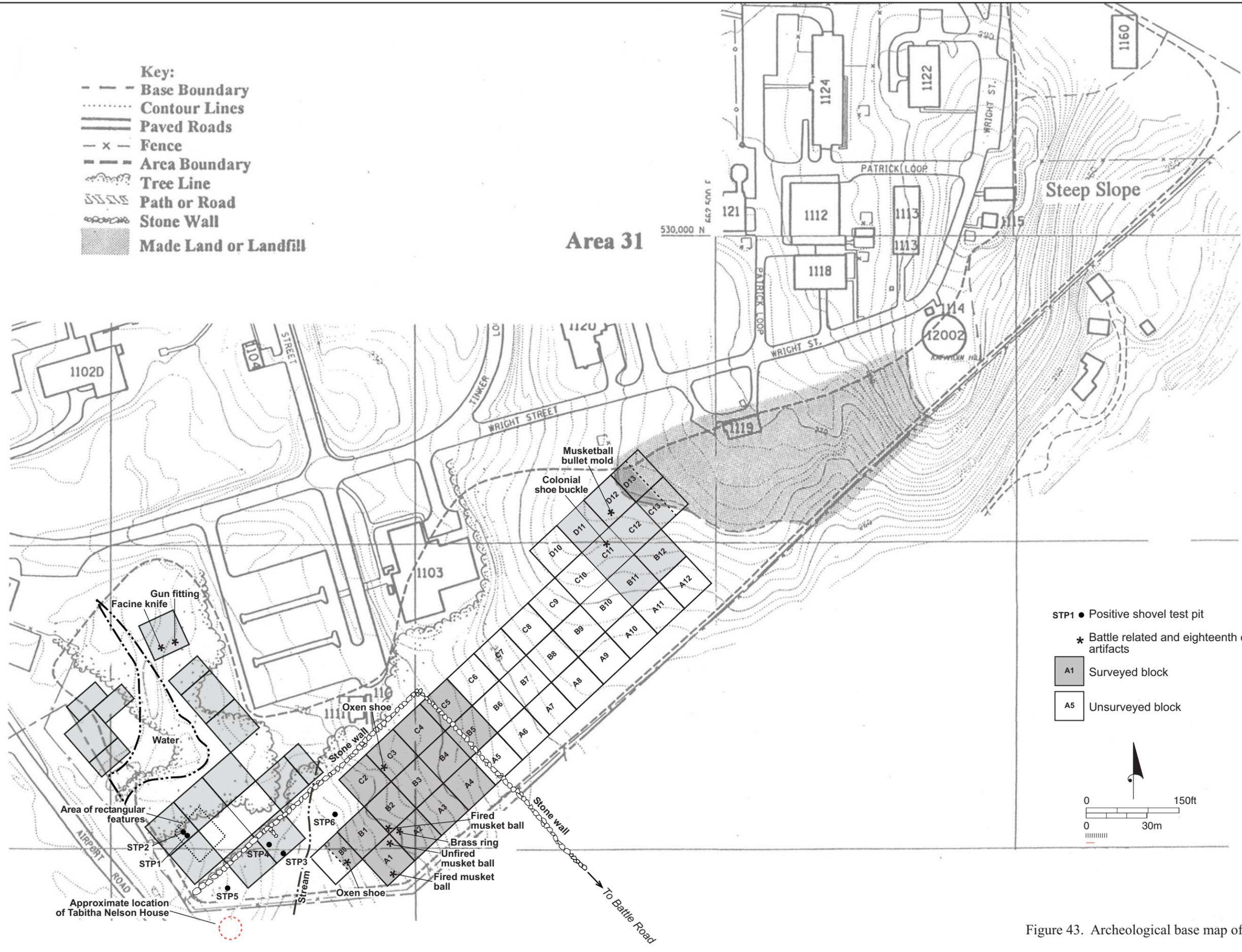


Figure 42. Plan of the Nelson's holdings along Nelson Road in Lincoln and Lexington (Towle and MacMahon 1986c).

- Key:**
- - - Base Boundary
 - Contour Lines
 - ==== Paved Roads
 - x - Fence
 - - - Area Boundary
 - ~~~~~ Tree Line
 - ~~~~~ Path or Road
 - ~~~~~ Stone Wall
 - ▨ Made Land or Landfill



- STP1 ● Positive shovel test pit
- * Battle related and eighteenth century artifacts
- A1 Surveyed block
- A5 Unsurveyed block

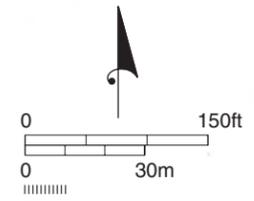
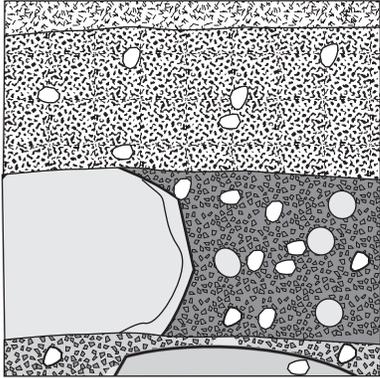


Figure 43. Archeological base map of Area 31.

STP 2

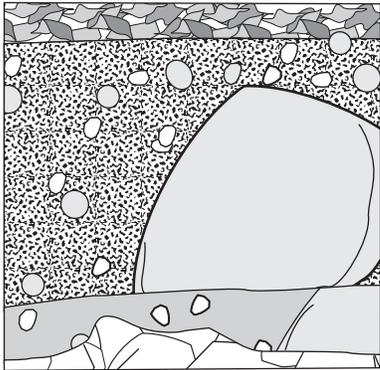


AO horizon; duff

Ap 2 horizon; very dark brown sandy loam with pebbles

B1 horizon; strong brown sandy gravel with pebbles, cobbles and boulders

STP 4

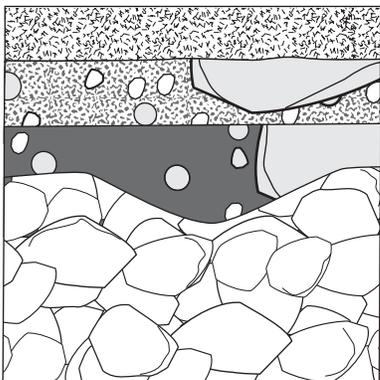


AO horizon; leaf litter

A1 horizon; very dark brown sandy loam with pebbles, cobbles and boulders

B1 horizon; olive brown silty sand with pebbles, cobbles and boulders

STP 6



AO horizon; duff

A1 horizon; dark brown sandy loam with pebbles, cobbles and boulders

B1 horizon; dark yellow brown silty sand with pebbles, cobbles and boulders

rock



Figure 44. Soil profiles of STPs 2, 4, and 6 in the western section of Area 31.

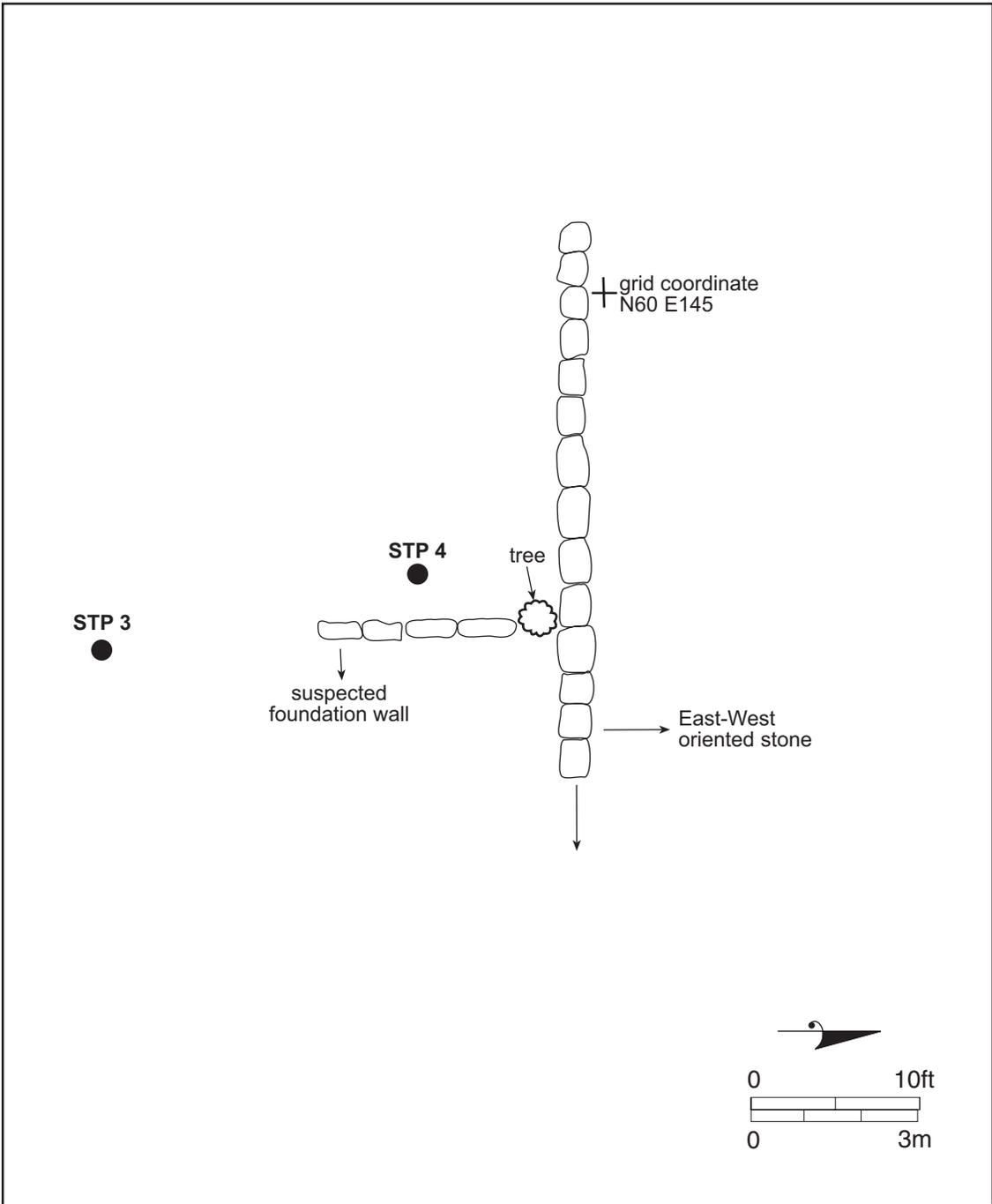


Figure 45. Plan of the location of STP's 3 and 4.

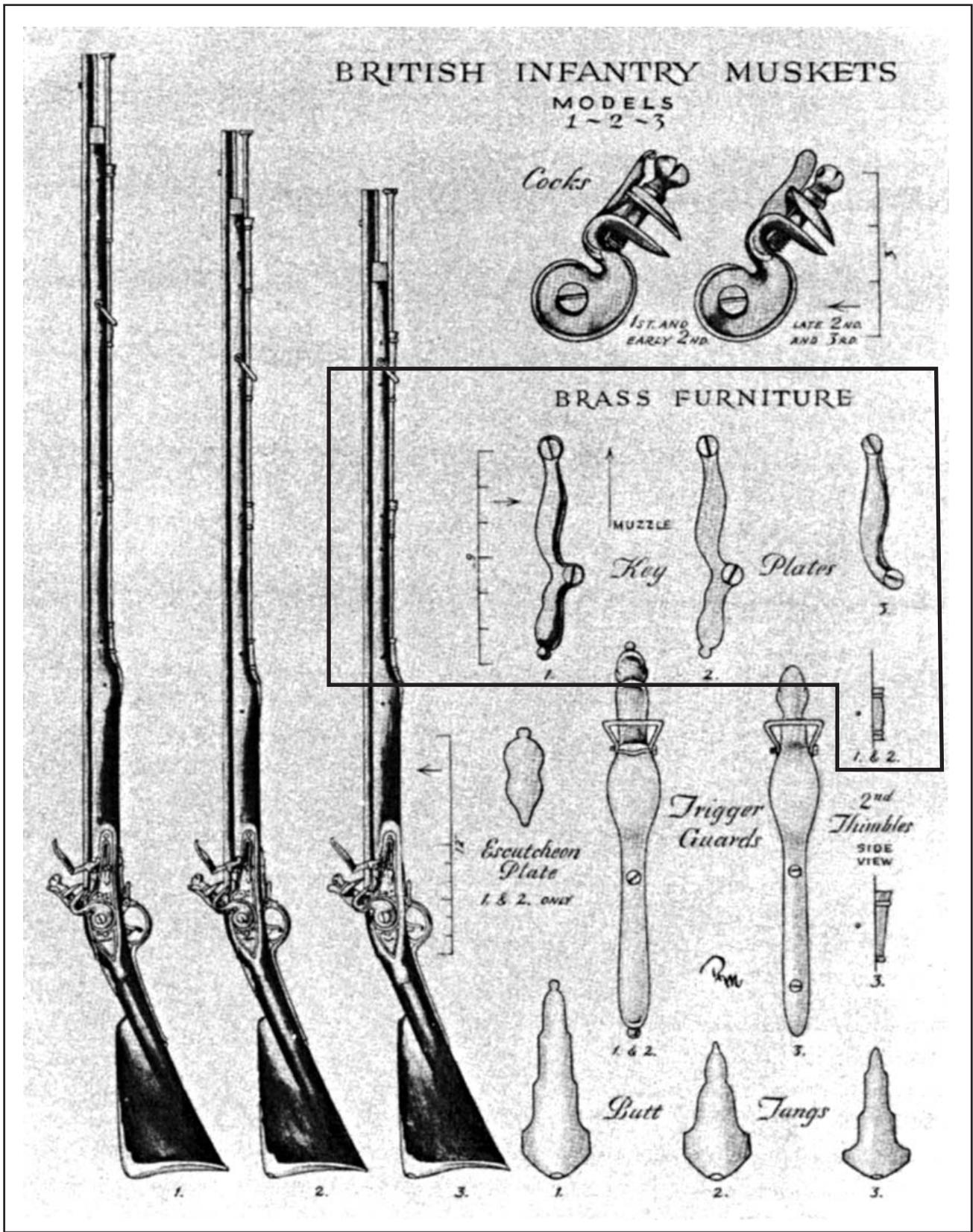


Figure 46. Suspected location where the recovered gun part was used on a musket (Peterson 1956).

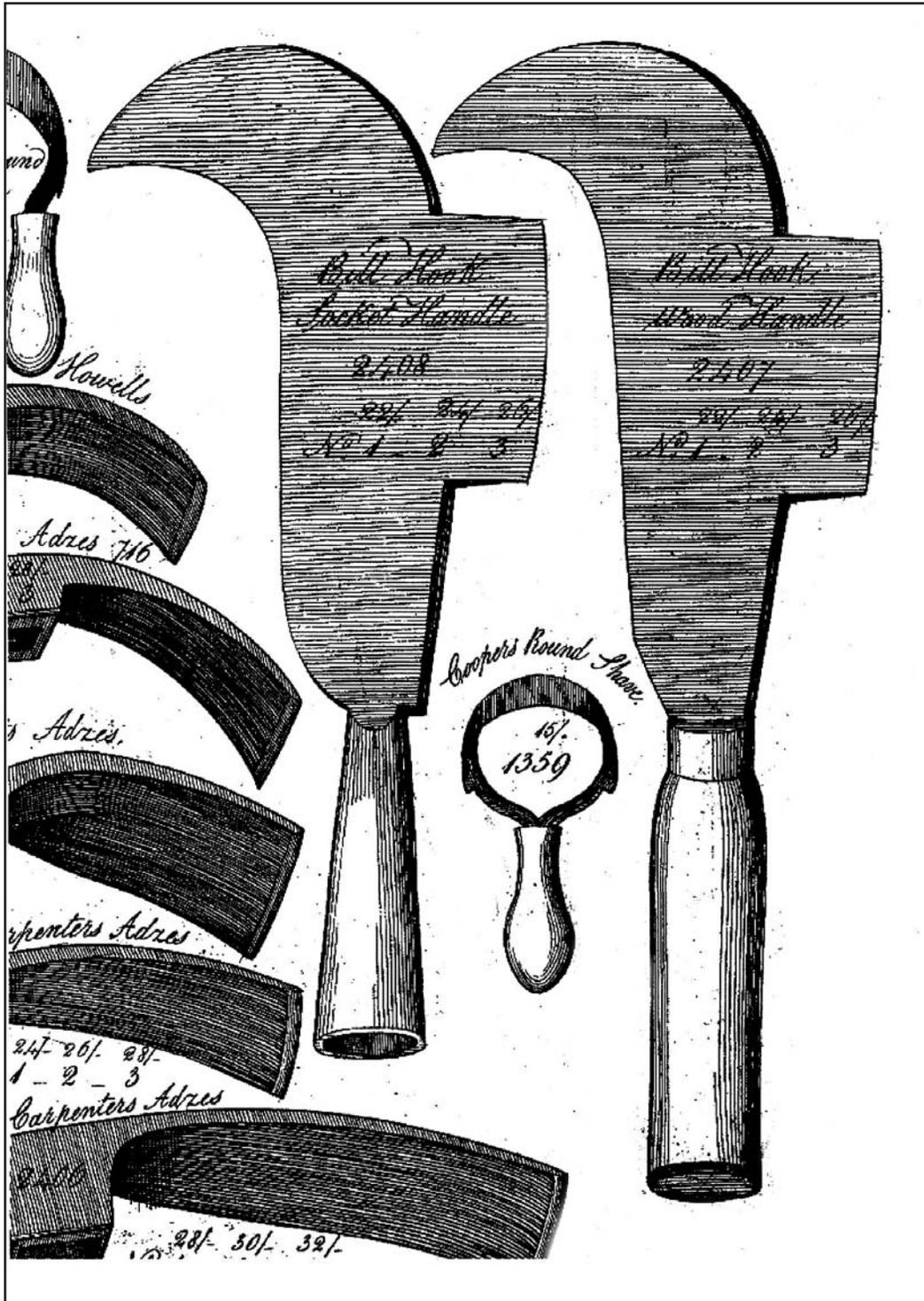


Figure 47. Advertisement for a British bill hook/ fascine knife (Roberts 1976).

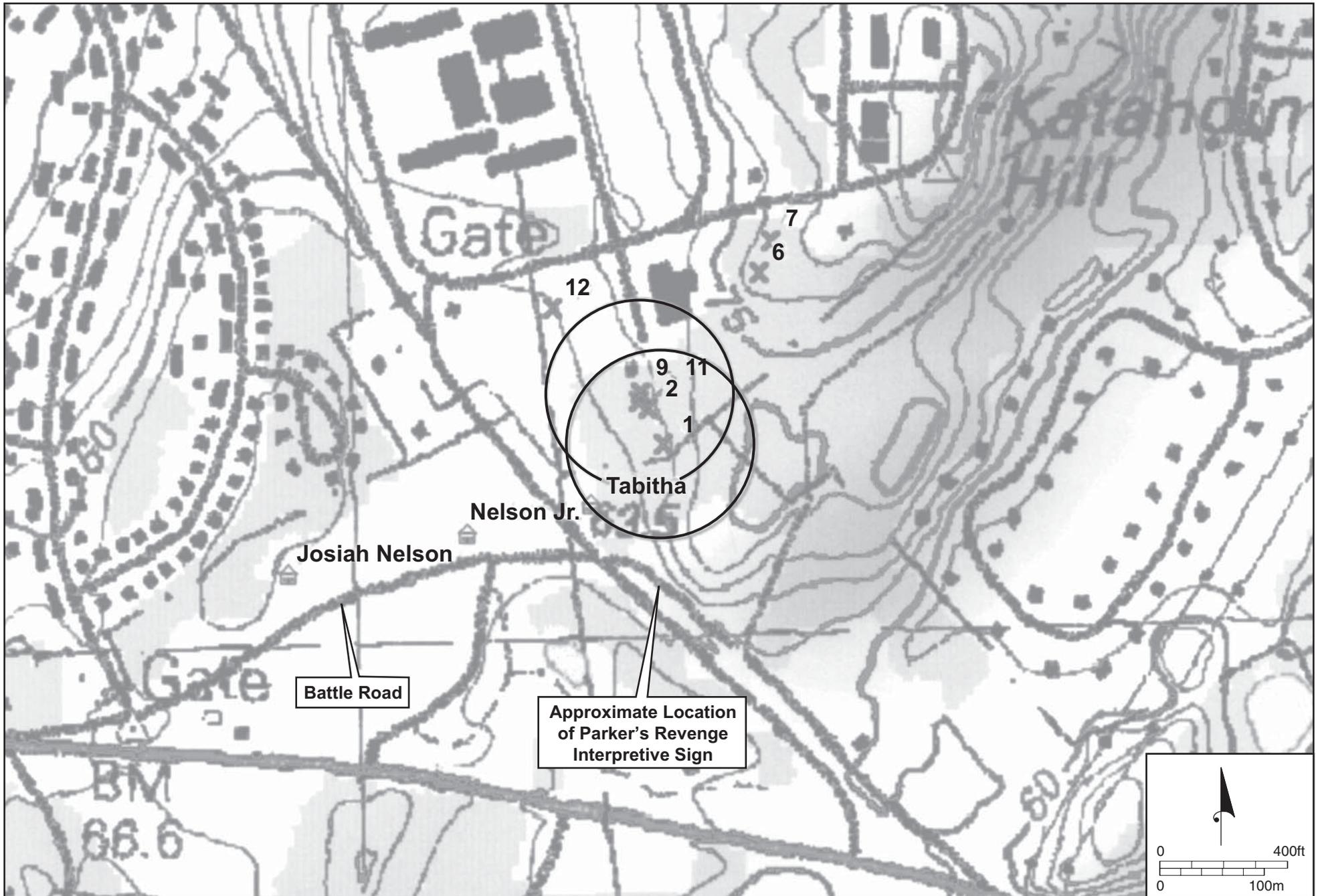
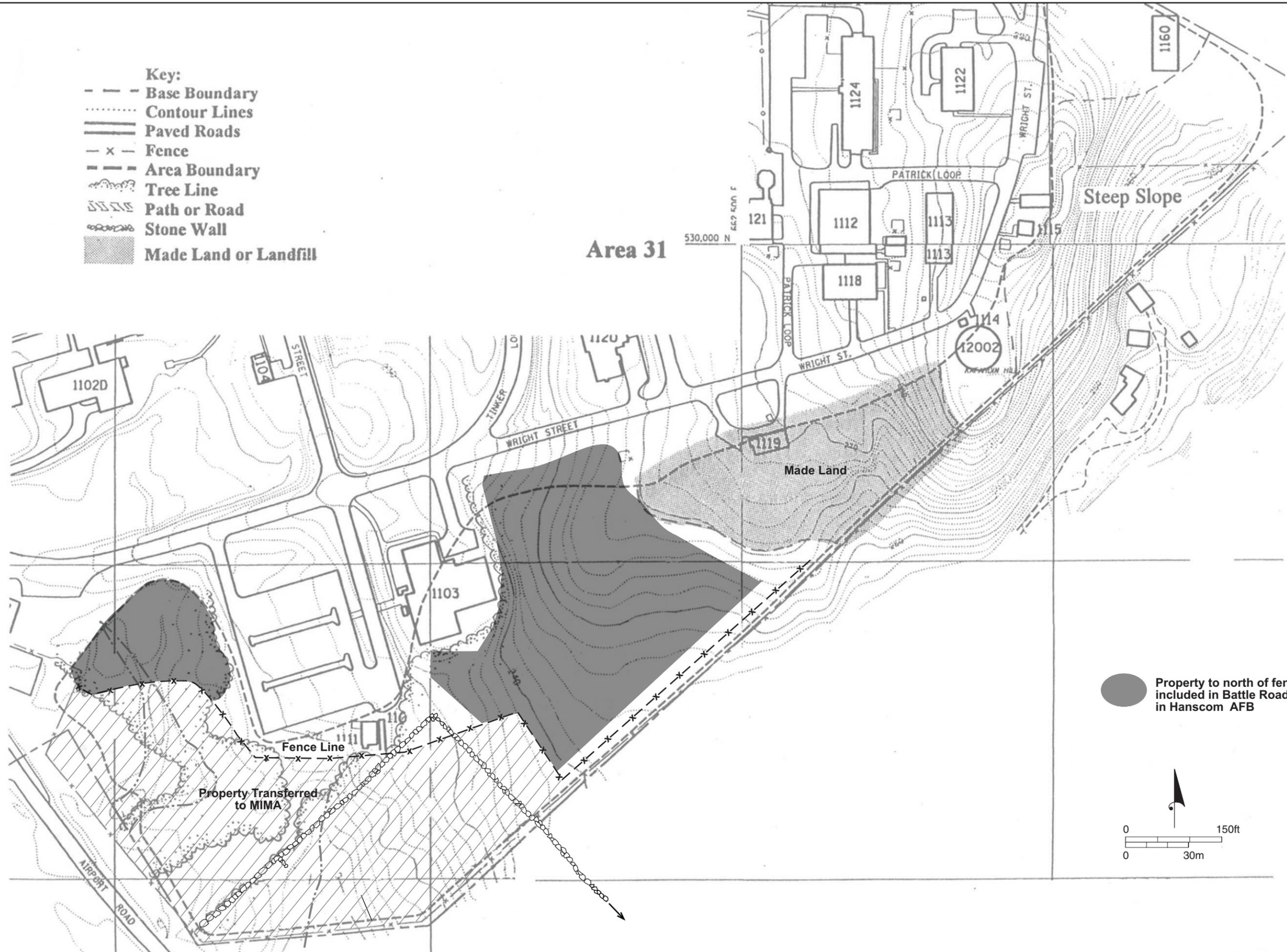


Figure 48. Location of the battle-related artifacts, the Nelson family houses, and Battle Road on a 2002 U. S. G. S. quad. (DeLorme).

- Key:**
- - - Base Boundary
 - Contour Lines
 - ==== Paved Roads
 - x - Fence
 - - - Area Boundary
 - ~~~~~ Tree Line
 - ||||| Path or Road
 - ~~~~~ Stone Wall
 - Made Land or Landfill



● Property to north of fence line included in Battle Road Site in Hanscom AFB

Figure 49. Location of battlefield site within Hanscom AFB.

Plates



Plate 1. Alvin Lynn conducting the metal detector survey in Area 13, looking east.



Plate 2. Area 14, looking west.



Plate 3. Area 26 Looking north along stonewall.



Plate 4. Metal detector crew after finding the unfired musket ball in Area 31.



Plate 5. Area 31, location of unfired musket ball, looking east towards large boulders.



Plate 6. Area 31, location of the first fired musket ball, looking south, Minute Man National Historical Park in background behind the fence.



Plate 7. Area 31, location of second fired musket ball, looking south.



Plate 8. Area 31, location of colonial shoe buckle, looking south.



Plate 9. Area 31, location of musket ball bullet mold, looking north.



Plate 10. The three musket balls after conservation.



Plate 11. The Oxen shoe and cuprous ring after conservation.



Plate 12. The musket ball bullet mold and colonial shoe buckle after conservation.



Plate 13. The gun fitting after conservation.



Plate 14. The silver-plated spoon, flat ferrous chunk, cuprous disk, and eyeglasses and case after conservation.



Plate 15. Looking at the southern end of the stone wall from Battle Road at the location of the Parker's Revenge interpretive sign.

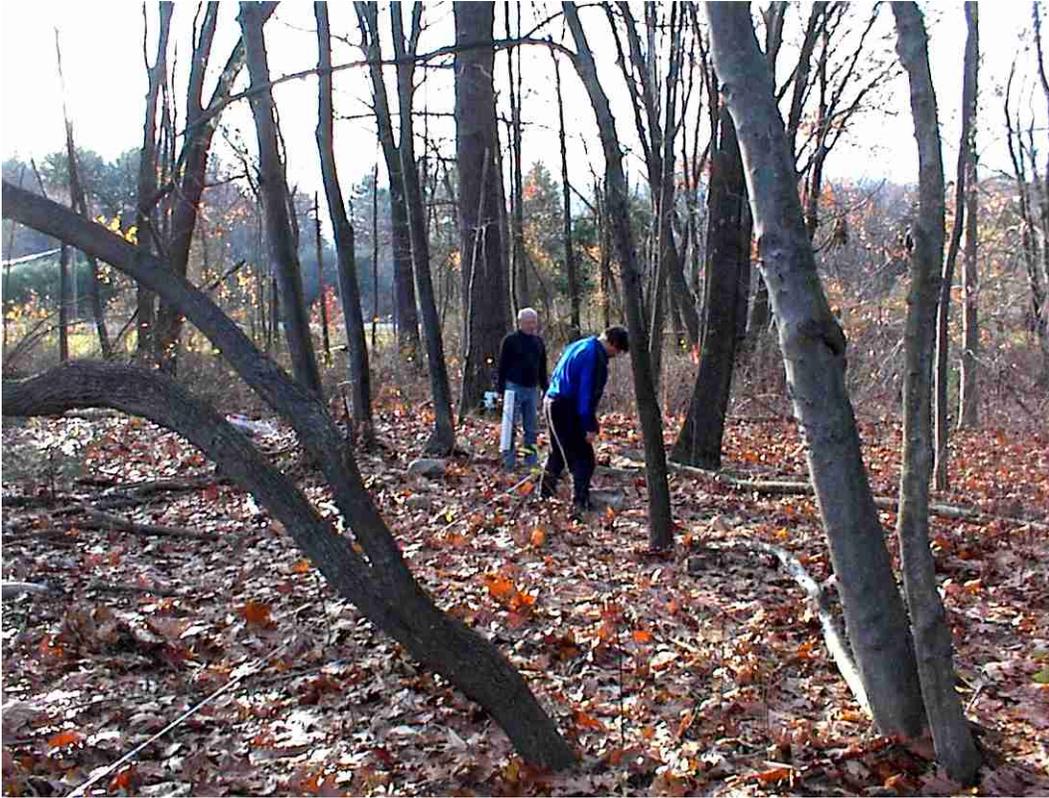


Plate 16. Looking across the grid in the northeast section at Locus 2, note the fiberglass tape along the ground and Dr. Somers in the background.



Plate 17. Dr. Somers traversing the grid with the magnetometer.



Plate 18. Pinpointing an anomaly with the magnetometer.

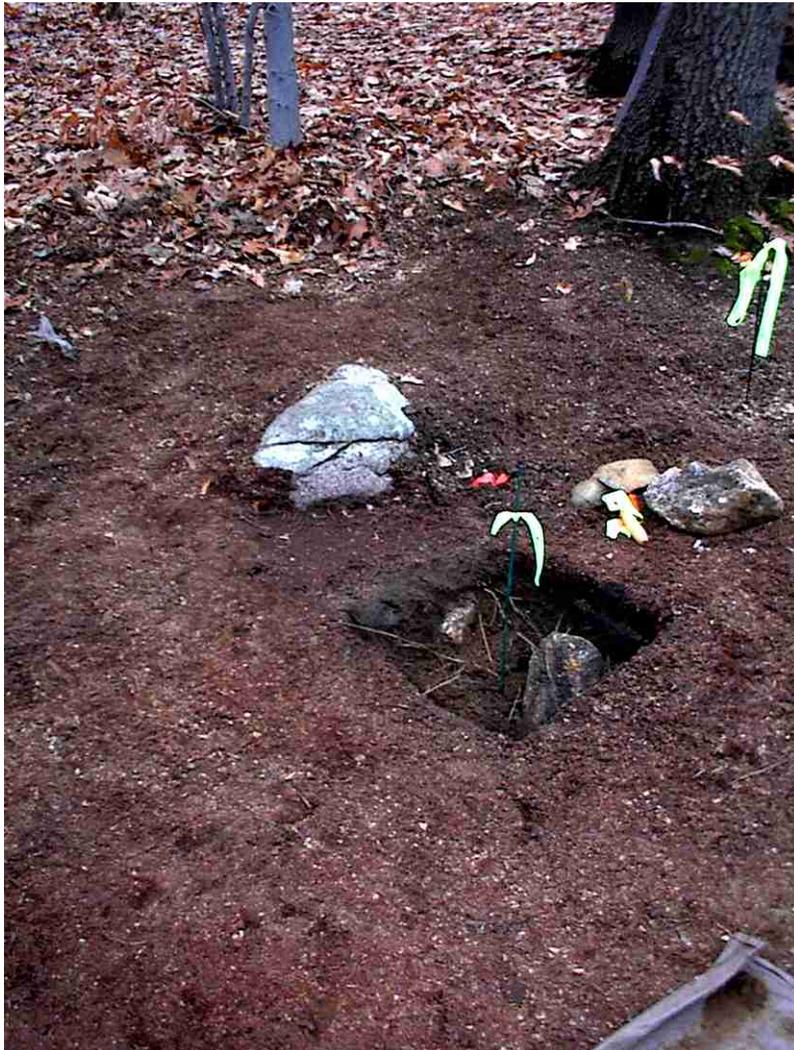


Plate 19. An excavated 50 x 50 cm shovel test pit revealing several rocks.



Plate 20. Fascine knife after it was uncovered.



Plate 21. Fascine knife after conservation.



Plate 22. Ferrous shank/shaft/utensil, ferrous fragment, scissors, iron rake, and iron knife after conservation.



Plate 23. Looking across the unnamed stream towards the grassy field, Airport Road in background, note the fence line crossing the stream.



Plate 24. Pad lock and hinged case after conservation.



Plate 25. Dr. Somers and JMA archeologist discussing the magnetic field gradient map.



Plate 26. Oxen shoe and hand wrought iron hoop after conservation.



Plate 27. Looking across grassy field towards Airport Road, location of STPs 1 and 2 to the left.



Plate 28. Looking south towards east-west stonewall that crosses the area.



Plate 29. Looking west, across possible foundation wall, to location of STP4.



Plate 30. Looking southwest towards Tabitha's house from STP6.



Plate 31. Photograph of the ram rod holder on the underside of a musket.



Plate 32. Looking east towards the field of boulders in Area 31.



Plate 33. Looking south towards the stone features to the north of the stonewall.



Plate 34. Looking west toward the depression from the location of the first fired musket ball (metal detector artifact no. 1).

Appendix A:

Artifact Catalogues

Metal Detector Survey 2003

Magnetometer Survey 2004

Metal Detector and Magnetometer Survey 2005

Fence Survey 2005

Western Section of Area 31 Intensive Survey 2005

Hanscom AFB Battle of April 19, 1775; Metal Detector Survey 2003 Catalogue

June 30, 2006
Page 1

Area	Block	Layer	Bag	Cat.#	Era	Class	Material	Description	Detail	Qty	Portion	Comments
31	Block 1	A1	1	1	Historic	Metal	Lead	Fired Musket Ball	28 x 23 x 9 mm	1	Intact	Battle related; fired ball, flattened when fired.
31	Block 1	A1	2	2	Historic	Metal	Lead	Unfired Musket Ball	18 mm diameter	1	Intact	Battle related; .70 caliber unfired ball retains pouring sprue from mold casting.
31	Block 4	A1	3	3	Historic	Metal	Ferrous Metal	Hardware	6.0 x 3.8 x 0.8 cm	1	Fragment	Machine-made flat iron piece with mechanical shape; possible tractor or plow part; probably late 19th or early 20th century; level of corrosion not consistent with the time period under study.
31	Block 4	A1	4	4	Historic	Metal	Silver-Plated Cuprous	Spoon	Rogers & Bro. Mark	1	Intact	6"/15.3 cm teaspoon; post-1858; mark on back of handle of 5-pt. star and "ROGERS & BRO.A1"; mark on front of handle end: "EATON/133 COURT ST".
31	Block 8	A1	5	5	Historic	Metal/Glass	Glass/Metal/Textile	Eye Glasses & Case	4-cm diameter lens	2	Intact/Fragment	Round rimmed ferrous and cuprous glasses with bent frame and broken glass in one lens; ferrous and textile case fragments heavily corroded; style and manufacture indicates late 19th/early 20th century date.
31	Block 11	A1	6	6	Historic	Metal	Cuprous Metal	Colonial Shoe Buckle	Ornate Cast Frame	1	Intact	Likely battle related; 6.0 cm. x 5.1 cm; found near musket ball mold.
31	Block 12	A1	7	7	Historic	Metal	Ferrous Metal	Musket Ball Mold	13 cm. x 3.6 cm.	1	Intact	Battle related; casting chamber for .50 caliber ball; probably for a pistol.
31	Block 1	A1	8	8	Historic	Metal	Cuprous Metal	Cuprous Ring	2.9 cm. diameter	1	Intact	Possibly battle related; ring was formed from sheet metal rolled to enclose blue silk and cotton textile; there is a colored coating on the ring that appears to be paint-like.
31	Block 1	A1	9	9	Historic	Metal	Lead	Fired Musket Ball	28 x 24 x 10 mm	1	Intact	Battle related; fired ball retains the impression of the surface it hit (possibly bark).
31	NE Section	A1	10	10	Historic	Metal	Cuprous Metal	Stamped Disk	5.1 cm diameter	1	Intact	Manufacturing details indicate that the disk was produced with modern steel stamping technology and probably dates to the 20th century.
31	Block 4	A1	11	11	Historic	Metal	Ferrous Metal	Oxen Shoe	10.5 cm long	1	Half Shoe	Possibly battle related; Oxen shoe with two wrought short nails attached, consistent with eighteenth-century date.
31	SW Section	A1	12	12	Historic	Metal	Cuprous Metal	Cuprous Fitting	Bent Strip	1	Fragment	Fitting with rounded end and hole for screw, possibly for the bottom of a gun stock under the front barrel associated with the ram rod.

Hanscom AFB Battle of April 19, 1775; Magnetometer Survey 2004 Catalogue

June 30, 2006

Page 1

Area	Block	Layer	Bag	Cat.#	Era	Class	Material	Description	Detail	Qty	Portion	Comments
B3	FF-1	A1	13	13	Historic	Metal	Ferrous Metal	Shank/Shaft	13mm x 7mm x 4mm	1	Fragment	Rectangular shank end; tool part.
PW	N3 E4	A1	14	14	Historic	Metal	Ferrous Metal	Bill Hook	Socketed End	1	Intact	Revolutionary War period bill hook/fascine knife, with hooked blade and fluke blade off backside; socketed base for pole or handle; 32.5 cm length; 5 cm wide blade; 7 cm wide blade/axe; 3.8 cm wide socket; appropriate corrosion for period under study.
PW	N12 E6	A1	15	15	Historic	Metal	Ferrous Metal	Small Rake	19th cent.-20th cent.	1	Near Intact	Several broken tines; possible camp tool; 10.4 cm wide; 6.5 long shank; 3.8 cm tines.
PW	N3.5 E14.2	A1	16	16	Historic	Metal	Ferrous Metal	Hand Wrought Strip	13 x 2 cm	1	Fragment	Flat strip with 2 holes and tang-like end; use unknown, possible latch or hinge fragment; 19-20th century.
PW	N8 E14.2	A1	17	17	Historic	Metal	Ferrous Metal	Scissors	16 x 8.7 cm	1	Near Intact	Small piece of one loop missing; otherwise intact; 18th - 19th century.
PW	N0.6 E10.6	A1	18	18	Historic	Metal	Ferrous Metal	4-Tine Fork		1	Fragment	Fork end with broken tines and short shank of handle; 4.6 cm long x 2.5 cm wide; late 19th - early 20th century.

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Area	Block	Layer	Bag	Cat.#	Era	Class	Material	Description	Detail	Qty	Portion	Comments
B.O.5		A1	19	19	Historic	Metal	Ferrous Metal	Oxen Shoe	14 x 3 x 2 cm	1	Half Shoe	Heavily corroded.
B.O.5		A1	20	20	Historic	Metal	Ferrous Metal	Hand Wrought Loop	3.9 x 2.3 x 1.4 cm	1	Intact	Flattened ends; severely corroded.
Block 23 #11		A1	21	21	Historic	Metal	Cuprous/Ferrous	Pad Lock	9.6 x 5.5 x 1.2 cm	1	Intact	Marked loop with "H W CLIMAX NEWARK NJ US"; reverse side "214"; late 19th - early 20th century.
Block 23 #12		A1	22	22	Historic	Metal	Cuprous Metal	Cosmetic Case	5.3 cm diameter x 1.2 cm	1	Intact	Soldered hinge, mirror on one side of interior, tabs for securing insert; decorative stamped borders; x-rays indicate modern hinge and interior construction.

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 1	A0	0-10 cm.	1	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 1	Ap	10-20 cm.	2	Historic	Ceramic	Ball Clay		Pipe Stem	5/64" Bore	1	Stem Fragment	
TP 1	Ap	10-20 cm.	3	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 1	Ap	10-20 cm.	4	Historic	Ceramic	Earthenware		Redware	Unglazed	1	Rim Fragment	
TP 1	Ap	20-30 cm.	5	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 1	Ap	20-30 cm.	6	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Handle Fragment	
TP 1	Ap	20-30 cm.	7	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 1	Ap	20-30 cm.	8	Historic	Glass	Curved Glass	Clear/Tint	Bottle Glass	Machine-Made	1	Body Fragment	
TP 1	Ap	20-30 cm.	9	Historic	Shell/Coral	Shell		Shell Indeterminate		1	Fragment	
TP 1	Ap	30-40 cm.	10	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Base Fragment	
TP 1	Ap	30-40 cm.	11	Historic	Glass	Curved Glass	Lt Green Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Fragment	
TP 1	Ap	30-40 cm.	12	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 1	Ap	30-40 cm.	13	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Fragment	
TP 1	Ap	30-40 cm.	14	Historic	Glass	Curved Glass	Blue	Table Glass	Pressed Glass	1	Handle Fragment	
TP 1	Ap	30-40 cm.	15	Historic	Metal	Aluminum		Indeterminate		1	Fragment	
TP 1	Ap	40-50 cm.	16	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	
TP 1	Ap	40-50 cm.	17	Historic	Glass	Curved Glass	Clear/Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 1	Ap	40-50 cm.	18	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		2	Fragments	
TP 1	Ap	40-50 cm.	19	Historic	Metal	Ferrous Metal		Fence Wire		1	Fragment	
TP 19	A1	24-34 cm	153	Historic	Ceramic	Earthenware		Redware	1 Surface Unglazed	1	Body Fragment	Other surface missing.
TP 19	A0	0-10 cm.	154	Historic	Metal	Ferrous Metal		Sheet		31	Fragments	
TP 19	A0	0-10 cm.	155	Historic	Metal	Ferrous Metal		Possible Nail Heads	Indeterminate	2	Fragments	
TP 19	A0	0-10 cm.	156	Historic	Other Mineral	Mortar		Brick Mortar		1	Fragment	
TP 2	A0	0-10 cm.	20	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 2	A0	0-10 cm.	21	Historic	Glass	Curved Glass	Clear/Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 2	A0	0-10 cm.	22	Historic	Metal	Ferrous Metal		Indeterminate		2	Small Fragments	
TP 2	Ap	10-20 cm.	23	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 2	Ap	10-20 cm.	24	Historic	Ceramic	Earthenware	Dk Brown Glaze	Redware	Lead-Glazed	1	Rim Fragment	
TP 2	Ap	10-20 cm.	25	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 2	Ap	10-20 cm.	26	Historic	Metal	Ferrous Metal		Indeterminate	Nail Head?	1	Fragment	
TP 2	Ap	10-20 cm.	27	Historic	Metal	Ferrous Metal		Indeterminate		3	Small Fragments	
TP 2	Ap	20-30 cm.	28	Historic	Ceramic	Earthenware		Whiteware	Plain	4	Body Fragments	
TP 2	Ap	20-30 cm.	29	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 2	Ap	20-30 cm.	30	Historic	Ceramic	Earthenware		Brick		2	Fragments	
TP 2	Ap	20-30 cm.	31	Historic	Glass	Curved Glass	Amethyst Tint	Table Glass	Pressed Glass	1	Foot Fragment	
TP 2	Ap	20-30 cm.	32	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 2	Ap	20-30 cm.	33	Historic	Glass	Curved Glass	Clear	Fruit/Jam Jar	Pressed Glass	1	Rim Fragment	
TP 2	Ap	20-30 cm.	34	Historic	Glass	Curved Glass	Milk Glass	Indeterminate		1	Body Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 2	Ap	20-30 cm.	35	Historic	Metal	Aluminum		Aluminum Foil		1	Fragment	
TP 2	Ap	20-30 cm.	36	Historic	Metal	Ferrous Metal		"U" Clips		2	Near Intact	
TP 2	Ap	20-30 cm.	37	Historic	Metal	Ferrous Metal		Indeterminate		9	Fragments	
TP 2	Ap	30-35 cm.	38	Historic	Ceramic	Earthenware	Buff	Indeterminate	Plain	1	Body Fragment	
TP 2	Ap	30-35 cm.	39	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 2	Ap	30-35 cm.	40	Historic	Ceramic	Earthenware		Brick/Redware		1	Fragment	
TP 2	Ap	30-35 cm.	41	Historic	Glass	Curved Glass	Clear/Tint	Bottle Glass	Machine-Made	3	Fragments	
TP 2	Ap	30-35 cm.	42	Historic	Metal	Ferrous Metal		Indeterminate		1	Fragment	
TP 20	A0	0-10 cm.	157	Historic	Other Mineral	Mortar/Cement		Molded Slab	With Lettering	1	Fragment	
TP 21	A1	6-16 cm	158	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 21	A1	6-16 cm	159	Historic	Metal	Ferrous Metal		Circular, 1" Dia.	Possible Bottle Cap	1	Near Intact	
TP 21	A1	16-26 cm	160	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Body Fragment	
TP 21	A1	16-26 cm	161	Historic	Glass	Curved Glass	Yellow Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 21	A1	16-26 cm	162	Historic	Glass	Curved Glass	Lt Green Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 21	A1	16-26 cm	163	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 21	A1	16-26 cm	164	Historic	Metal	Ferrous Metal		Bottle Cap		3	Fragments	
TP 21	A1	16-26 cm	165	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 21	A1	26-36 cm	166	Historic	Ceramic	Earthenware		Brick		2	Fragments	
TP 21	A1	26-36 cm	167	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 21	A1	26-36 cm	168	Historic	Coal-Related	Coal Burned		Slag		1	Fragment	
TP 22	A0	0-5 cm.	169	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 22	A0	0-5 cm.	170	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	With embossed letter.
TP 22	A0	0-5 cm.	171	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 22	A0	0-5 cm.	172	Historic	Glass	Curved Glass	Lt Aqua Tint	Indeterminate		1	Fragment	
TP 22	A0	0-5 cm.	173	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 22	A1	5-15 cm	174	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Fragments	Pieces mend.
TP 22	A1	15-25 cm	175	Historic	Glass	Curved Glass	Clear	Indeterminate	Small	1	Fragment	
TP 23	A1	2-12 cm	176	Historic	Ceramic	Earthenware		Whiteware	Black Line Dec.	1	Rim Fragment	
TP 23	A1	2-12 cm	177	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Embossed "& sons".
TP 23	A1	2-12 cm	178	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 23	A1	2-12 cm	179	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	1	Body Fragment	
TP 23	A1	2-12 cm	180	Historic	Coal-Related	Coal Burned		Slag		2	Fragments	Pieces mend.
TP 23	A1	12-22 cm	181	Historic	Ceramic	Earthenware		Creamware	Plain	2	Body Fragments	
TP 23	A1	12-22 cm	182	Historic	Glass	Curved Glass	Clear	Bottle/Tableware Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 23	A1	12-22 cm	183	Historic	Coal-Related	Coal Burned		Slag		1	Fragment	
TP 24	A1	2-12 cm	184	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Rim Fragments	
TP 24	A1	2-12 cm	185	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Base Fragment	
TP 24	A1	2-12 cm	186	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 24	A1	2-12 cm	187	Historic	Glass	Curved Glass	Lt Green Tint	Tableware	Mold-Blown/Machine-Made	1	Rim Fragment	
TP 24	A1	2-12 cm	188	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 24	A1	2-12 cm	189	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		1	Fragment	
TP 24	A1	12-22 cm	190	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 24	A1	12-22 cm	191	Historic	Ceramic	Earthenware		Yellowware	Plain	1	Body Fragment	
TP 24	A1	12-22 cm	192	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 24	A1	12-22 cm	193	Historic	Ceramic	Earthenware		Redware	Unglazed	1	Body Fragment	
TP 24	A1	12-22 cm	194	Historic	Ceramic	Earthenware		Redware	Unglazed Exterior	1	Fragment	Interior surface missing.
TP 24	A1	12-22 cm	195	Historic	Glass	Curved Glass	Clear	Fruit/Jam Jar	Pressed Glass	1	Rim Fragment	
TP 24	A1	12-22 cm	196	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		2	Fragments	
TP 24	A1	12-22 cm	197	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 25	A1	4-14 cm	198	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 25	A1	4-14 cm	199	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Handle Fragment	
TP 25	A1	4-14 cm	200	Historic	Ceramic	Earthenware		Redware	Lead-Glazed,Interior	1	Fragment	Unglazed exterior.
TP 25	A1	4-14 cm	201	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	1	Fragment	
TP 25	A1	4-14 cm	202	Historic	Metal	Ferrous Metal		Bottle Cap		1	Fragment	
TP 25	A1	14-24 cm	203	Historic	Ceramic	Earthenware		Redware	Unglazed, Int. & Ext.	1	Body Fragment	
TP 25	A1	14-24 cm	204	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	2	Body Fragments	
TP 25	A1	14-24 cm	205	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 25	A1	14-24 cm	206	Historic	Metal	Ferrous Metal		Nail, Wire	2 3/4" Long	1	Near Intact	
TP 26	A1	3-13 cm	207	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 26	A1	3-13 cm	208	Historic	Glass	Curved Glass	Yellow Tint	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 26	A1	3-13 cm	209	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	2	Fragments	
TP 26	A1	3-13 cm	210	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 26	A1	3-13 cm	211	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 26	A1	3-13 cm	212	Historic	Glass	Curved Glass	Clear	Indeterminate	Small	1	Fragment	
TP 26	A1	3-13 cm	213	Historic	Metal	Ferrous Metal		Nail, Cut		1	Fragment	
TP 26	A1	13-23 cm	214	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Base Fragments	Pieces mend.
TP 26	A1	13-23 cm	215	Historic	Ceramic	Earthenware		Creamware	Plain	1	Body Fragment	
TP 26	A1	13-23 cm	216	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 26	A1	13-23 cm	217	Historic	Ceramic	Porcelain	White	Small Saucer	Child's Toy Set	1	Fragment	
TP 26	A1	13-23 cm	218	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 26	A1	13-23 cm	219	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 26	A1	13-23 cm	220	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Fragment	
TP 26	A1	13-23 cm	221	Historic	Glass	Flat Glass	Yellow Tint	Window Glass		1	Fragment	
TP 26	A1	13-23 cm	222	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		7	Fragments	
TP 26	A1	13-23 cm	223	Historic	Metal	Lead		Cut Strip	Thin	1	Fragment	
TP 26	A1	13-23 cm	224	Historic	Synthetic	Rubber	Red	Canning Jar Seal		3	Fragments	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 26	A1	23-30 cm	225	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 26	A1	23-30 cm	226	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 26	A1	23-30 cm	227	Historic	Glass	Curved Glass	Clear	Table Glass	Mold-Blown/Machine-Made	1	Rim/Body Frag.	
TP 26	A1	23-30 cm	228	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		1	Fragment	
TP 26	A1	30-40 cm.	229	Historic	Glass	Curved Glass	Clear	Fruit/Jam Jar	Pressed Glass	1	Rim Fragment	
TP 27	A0	0-5 cm.	230	Historic	Synthetic	Plastic	Buff	Molded	Thin, With Letters "SC"	1	Fragment	
TP 27	A1	5-15 cm.	231	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 27	A1	5-15 cm	232	Historic	Glass	Curved Glass	Lt Amethyst Tint	Lamp Glass	Free-Blown	1	Body Fragment	
TP 27	A1	5-15 cm	233	Historic	Glass	Curved Glass	Yellow Tint	Table Glass	Pressed Glass	1	Base Fragment	Shot glass.
TP 27	A1	5-15 cm	234	Historic	Glass	Curved Glass	Yellow Tint	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 27	A1	5-15 cm	235	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 27	A1	5-15 cm	236	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought	2 3/4" Long	1	Near Intact	
TP 27	A1	15-25 cm	237	Historic	Ceramic	Earthenware		Whiteware	Transfer-Printed, Floral	1	Body Fragment	
TP 27	A1	15-25 cm	238	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Base Fragment	
TP 27	A1	15-25 cm	239	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 27	A1	15-25 cm	240	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 27	A1	15-25 cm	241	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 27	A1	15-25 cm	242	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 27	A1	15-25 cm	243	Historic	Glass	Curved Glass	Lt Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 27	A1	15-25 cm	244	Historic	Metal	Ferrous Metal		Small	Possible Nail	1	Fragment	
TP 27	A1	15-25 cm	245	Historic	Metal	Cuprous Metal		Grommet		1	Near Intact	
TP 27	A1	15-25 cm	246	Historic	Bone/Teeth	Bone		Mammal	Unburned	1	Fragment	
TP 27	A1	15-25 cm	247	Historic	Bone/Teeth	Tooth		Mammal, Medium	Artiodactyl	2	Near Intact	Pieces mend.
TP 27	A1	15-25 cm	248	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		2	Fragments	
TP 27	A1	15-25 cm	249	Historic	Synthetic	Rubber	Red	Small		2	Fragments	
TP 27	A1	25-35 cm.	250	Historic	Glass	Curved Glass	Clear	Table Glass	Machine-Made	1	Rim Fragment	
TP 27	A1	25-35 cm	251	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Body Fragment	
TP 27	A1	25-35 cm	252	Historic	Metal	Ferrous Metal		Nail, Wire	2" Long	1	Near Intact	
TP 27	A1	25-35 cm	253	Historic	Metal	Ferrous Metal		Indeterminate		3	Fragments	
TP 27	A1	25-35 cm	254	Historic	Bone/Teeth	Bone		Mammal	Unburned	4	Fragments	
TP 27	A1	25-35 cm	255	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		3	Fragments	
TP 27	A1	25-35 cm	256	Historic	Synthetic	Rubber	Red	Canning Jar Seal		6	Fragments	
TP 28	A1	4-14 cm	257	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Body Fragment	
TP 28	A1	4-14 cm	258	Historic	Glass	Curved Glass	Clear	Table Glass	Machine-Made	1	Rim Fragment	
TP 28	A1	4-14 cm	259	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 28	A1	4-14 cm	260	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Body Fragment	
TP 28	A1	4-14 cm	261	Historic	Ceramic	Earthenware		Whiteware	Plain	3	Body Fragments	
TP 28	A1	4-14 cm	262	Historic	Metal	Ferrous Metal		Nail, Cut		1	Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 28	A1	4-14 cm	263	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 28	A1	14-24 cm	264	Historic	Ceramic	Earthenware	Blue Transfer	Whiteware	Transfer-Printed	1	Rim Fragment	
TP 28	A1	14-24 cm	265	Historic	Ceramic	Earthenware		Redware	Unglazed Exterior	3	Rim Fragment	Interior missing, pieces mend.
TP 28	A1	4-14 cm	266	Historic	Glass	Curved Glass	Lt Green Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 28	A1	4-14 cm	267	Historic	Glass	Curved Glass	Lt Green Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Embossed with letters.
TP 28	A1	4-14 cm	268	Historic	Glass	Curved Glass	Rose Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 28	A1	4-14 cm	269	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Embossed "CA".
TP 28	A1	4-14 cm	270	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 28	A1	4-145 cm	271	Historic	Glass	Curved Glass	Clear	Table Glass	Mold-Blown/Machine-Made	1	Rim Fragment	
TP 28	A1	4-14 cm	272	Historic	Glass	Curved Glass	Lt Green Tint	Indeterminate		1	Fragment	
TP 28	A1	4-14 cm	273	Historic	Glass	Curved Glass	Clear	Indeterminate		1	Fragment	
TP 28	A1	4-14 cm	274	Historic	Glass	Flat Glass	Clear	Window Glass		1	Fragment	
TP 28	A1	4-14 cm	275	Historic	Metal	Aluminum		Molded		1	Fragment	
TP 28	A1	4-14 cm	276	Historic	Metal	Ferrous Metal		Bottle Cap		2	Fragment	
TP 28	A1	14-24 cm	277	Historic	Metal	Ferrous Metal		Indeterminate		2	Fragments	
TP 28	A1	4-14 cm	278	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		4	Fragments	
TP 28	A1	14-24 cm	279	Historic	Synthetic	Rubber	Red	Canning Jar Seal		1	Fragment	
TP 28	A1	14-24 cm	280	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 28	A1	24-32 cm	281	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 28	A1	24-32 cm	282	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Base Fragment	Embossed "K".
TP 28	A1	24-32 cm	283	Historic	Glass	Curved Glass	Lt Green Tint	Bottle/Table Glass	Mold-Blown/Machine-Made	2	Fragment	
TP 28	A1	24-32 cm	284	Historic	Glass	Curved Glass	Lt Green Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Embossed with letters.
TP 28	A1	24-32 cm	285	Historic	Glass	Curved Glass	Lt Green Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 28	A1	24-32 cm	286	Historic	Metal	Aluminum		Aluminum Foil		1	Fragment	
TP 28	A1	24-32 cm	287	Historic	Metal	Ferrous Metal		Sheet		6	Fragments	
TP 28	A1	24-32 cm	288	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 29	A1	5-15 cm	289	Historic	Ceramic	Porcelain	Tan Interior	Porcelain, Hard-Paste	Plain	1	Fragment	
TP 29	A1	5-15 cm	290	Historic	Glass	Curved Glass	Lt Yellow Tint	Table Glass	Mold-Blown/Machine-Made	1	Rim Fragment	
TP 29	A1	5-15 cm	291	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Fragment	
TP 29	A1	5-15 cm	292	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Fragment	
TP 29	A1	5-15 cm	293	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 29	A1	5-15 cm	294	Historic	Glass	Curved Glass	Lt Green Tint	Bottle/Table Glass	Indeterminate	1	Fragment	
TP 29	A1	5-15 cm	295	Historic	Metal	Aluminum		Sheet	Molded	1	Fragment	
TP 29	A1	5-15 cm	296	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		1	Fragment	
TP 29	A1	5-15 cm	297	Historic	Coal-Related	Coal Burned		Clinker		1	Body Fragment	
TP 29	A1	5-15 cm	298	Historic	Metal	Ferrous Metal		Battery	C Size	1	Intact	
TP 29	A1	15-25 cm	299	Historic	Ceramic	Porcelain	Polychrome	Porcelain, Hard-Paste		1	Fragment	
TP 29	A1	15-25 cm	300	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 29	A1	15-25 cm	301	Historic	Ceramic	Earthenware		Redware	Lead-Glazed Exterior	1	Fragment	Missing interior surface.
TP 29	A1	15-25 cm	302	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 29	A1	15-25 cm	303	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		1	Near Intact	
TP 29	A1	15-25 cm	304	Historic	Metal	Ferrous Metal		Sheet	Small	3	Fragments	
TP 29	A1	15-25 cm	305	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 29	A1	15-25 cm	306	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	2	Fragments	
TP 29	A1	25-35 cm	307	Historic	Ceramic	Earthenware	Gold Stripe	Whiteware	Gilt	1	Rim Fragment	
TP 29	A1	25-35 cm	308	Historic	Ceramic	Earthenware		Whiteware	Plain	3	Body Fragments	
TP 29	A1	25-35 cm	309	Historic	Ceramic	Earthenware		Whiteware	Lettering "Made In"	1	Base Fragment	
TP 29	A1	25-35 cm	310	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Fragment	
TP 29	A1	25-35 cm	311	Historic	Metal	Ferrous Metal		Safety Pin		2	Fragments	Pieces mend.
TP 29	A1	25-35 cm	312	Historic	Metal	Ferrous Metal		Sheet		7	Fragments	
TP 29	A1	25-35 cm	313	Historic	Metal	Cuprous Metal		Sheet	Circle W/ Rhombus	1	Intact	
TP 29	A1	25-35 cm	314	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 3	A0	0-10 cm.	43	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 3	A0	0-10 cm.	44	Historic	Ceramic	Earthenware		Pearlware	Plain	1	Body Fragment	
TP 3	A0	0-10 cm.	45	Historic	Ceramic	Earthenware	Buff	Clay Marble	Plain	1	Intact	
TP 3	A0	0-10 cm.	46	Historic	Glass	Curved Glass	Clear	Lamp Glass		1	Fragment	
TP 3	A0	0-10 cm.	47	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Body Fragment	
TP 3	A0	0-10 cm.	48	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 3	Ap	10-20 cm.	49	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 3	Ap	10-20 cm.	50	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Body Fragment	Polygon pattern.
TP 3	Ap	10-20 cm.	51	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Body Fragment	
TP 3	Ap	10-20 cm.	52	Historic	Metal	Ferrous Metal		Indeterminate		11	Fragments	
TP 3	Ap	10-20 cm.	53	Historic	Bone/Teeth	Bone		Mammal		6	Fragments	
TP 3	Ap	10-20 cm.	54	Historic	Shell/Coral	Shell		Oyster		1	Near Intact	
TP 3	Ap	10-20 cm.	55	Historic	Shell/Coral	Shell		Shell Indeterminate		1	Fragment	
TP 3	Ap	10-20 cm.	56	Historic	Coal-Related	Coal Burned		Cinder		3	Fragments	
TP 3	Ap	20-30 cm.	57	Historic	Ceramic	Earthenware	Green Glaze	Whiteware	Molded Pattern	1	Rim Fragment	
TP 3	Ap	20-30 cm.	58	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 3	Ap	20-30 cm.	59	Historic	Ceramic	Ironstone		Ironstone	Plain	1	Body Fragment	
TP 3	Ap	20-30 cm.	60	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	8	Body Fragments	
TP 3	Ap	20-30 cm.	61	Historic	Metal	Aluminum		Aluminum Foil		1	Fragment	
TP 3	Ap	20-30 cm.	62	Historic	Metal	Ferrous Metal		Indeterminate		12	Fragments	
TP 3	Ap	30-34 cm.	63	Historic	Ceramic	Earthenware		Brick		3	Fragments	
TP 3	Ap	30-34 cm.	64	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 3	Ap	30-34 cm.	65	Historic	Glass	Glass	Clear/Tint	Indeterminate		2	Small Fragments	
TP 3	Ap	30-34 cm.	66	Historic	Glass	Curved Glass	Milk Glass	Indeterminate		1	Body Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 3	Ap	30-34 cm.	67	Historic	Metal	Ferrous Metal		Indeterminate		3	Fragments	
TP 3	Ap	30-34 cm.	68	Historic	Bone/Teeth	Bone		Mammal		6	Fragments	
TP 3	Ap	30-34 cm.	69	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 3	B1	34-41 cm.	70	Historic	Metal	Ferrous Metal		Indeterminate		2	Fragments	
TP 3	B1	34-41 cm.	71	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 3	B1	41-51 cm.	72	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 3	B1	41-51 cm.	73	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 30	A0	0-5 cm.	315	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 30	A0	0-5 cm.	316	Historic	Ceramic	Earthenware	Blue Transfer	Whiteware	Transfer-Printed	1	Body Fragment	
TP 30	A0	0-5 cm.	317	Historic	Ceramic	Earthenware		Pearlware	Plain	1	Rim Fragment	
TP 30	A0	0-5 cm.	318	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 30	A0	0-5 cm.	319	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Base Fragment	
TP 30	A1	5-15 cm	320	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 30	A1	5-15 cm	321	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 30	A1	5-15 cm	322	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Lip/Neck	
TP 30	A1	5-15 cm	323	Historic	Glass	Flat Glass	Clear	Window Glass		1	Fragment	
TP 30	A1	5-15 cm	324	Historic	Metal	Ferrous Metal		Curved	Possible Can Rim	1	Fragment	
TP 30	A1	5-15 cm	325	Historic	Shell/Coral	Oyster				18	Fragments	
TP 30	A1	5-15 cm	326	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 30	A0	0-5 cm.	327	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 31	A1	5-15 cm	328	Historic	Ceramic	Earthenware		Whiteware	Plain	3	Body Fragment	
TP 31	A1	5-15 cm	329	Historic	Ceramic	Porcelain	Brown Design	Overglaze	Exterior Line Design	1	Body Fragment	
TP 31	A1	5-15 cm	330	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Indeterminate	1	Fragment	
TP 31	A1	5-15 cm	331	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Lip/Neck	
TP 31	A1	5-15 cm	332	Historic	Metal	Ferrous Metal		Sheet		1	Fragment	
TP 31	A1	5-15 cm	333	Historic	Bone/Teeth	Bone		Mammal, Small	Unburned	2	Fragments	
TP 31	A1	5-15 cm	334	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 31	A1	15-25 cm	335	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Handle Fragment	
TP 31	A1	15-25 cm	336	Historic	Ceramic	Earthenware		Yellowware	Glazed One Surface	1	Fragment	Other surface missing.
TP 31	A1	15-25 cm	337	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	
TP 31	A1	15-25 cm	338	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 31	A1	15-25 cm	339	Historic	Ceramic	Earthenware		Redware	Unglazed	1	Fragment	Interior unglazed, exterior missing.
TP 31	A1	15-25 cm	340	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 31	A1	15-25 cm	341	Historic	Metal	Aluminum		Aluminum Foil		1	Fragment	
TP 31	A1	15-25 cm	342	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		2	Fragments	
TP 31	A1	15-25 cm	343	Historic	Coal-Related	Coal Burned		Slag		1	Fragment	
TP 31	A1	15-25 cm	344	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		3	Fragments	
TP 31	A1	15-25 cm	345	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 31	A1	25-29 cm	346	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Lip/Neck Frag.	
TP 31	A1	25-29 cm	347	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 32	A1	4-14 cm	348	Historic	Glass	Curved Glass	Clear	Fruit/Jam Jar	Pressed Glass	1	Rim Fragment	
TP 32	A1	4-14 cm	349	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Spall	1	Fragment	
TP 32	A1	4-14 cm	350	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 32	A1	4-14 cm	351	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		4	Fragments	
TP 32	A1	4-14 cm	352	Historic	Metal	Ferrous Metal		Wire	One Hook Shaped	3	Fragments	
TP 32	A1	14-24 cm	353	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Rim Fragment	
TP 32	A1	14-24 cm	354	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Body Fragment	
TP 32	A1	14-24 cm	355	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 32	A1	14-24 cm	356	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Machine-Made	2	Fragments	Blue & white decoration.
TP 32	A1	14-24 cm	357	Historic	Glass	Curved Glass	Lt Yellow Tint	Bottle Glass	Machine-Made	1	Lip/Neck Frag.	Mends to artifact #373.
TP 32	A1	14-24 cm	358	Historic	Glass	Curved Glass	Lt Yellow Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 32	A1	14-24 cm	359	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 32	A1	14-24 cm	360	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 32	A1	14-24 cm	361	Historic	Glass	Curved Glass	Clear	Table Glass	Pressed Glass	1	Rim Fragment	
TP 32	A1	14-24 cm	362	Historic	Metal	Ferrous Metal		Nail, Indeterminate		3	Fragments	
TP 32	A1	14-24 cm	363	Historic	Metal	Ferrous Metal		Wire		2	Fragments	
TP 32	A1	14-24 cm	364	Historic	Metal	Ferrous Metal		Sheet		3	Fragments	
TP 32	A1	14-24 cm	365	Historic	Coal-Related	Coal Burned		Clinker		2	Fragments	
TP 32	A1	14-24 cm	366	Historic	Synthetic	Rubber	Red	Seal, Canning Jar		1	Fragment	
TP 32	A1	24-31cm	367	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	2	Body Fragments	Pieces mend.
TP 32	A1	24-31 cm	368	Historic	Ceramic	Porcelain	Brown Design	Overglaze	Exterior Line Design	1	Body Fragment	
TP 32	A1	24-31 cm	369	Historic	Ceramic	Earthenware	Blue Edge	Whiteware	Shell Edge	1	Rim Fragment	
TP 32	A1	24-31 cm	370	Historic	Ceramic	Earthenware	Blue Transfer	Whiteware	Transfer-Printed	1	Body Fragment	
TP 32	A1	24-31 cm	371	Historic	Ceramic	Earthenware	White	Whiteware	Plain	1	Fragment	
TP 32	A1	24-31 cm	372	Historic	Glass	Curved Glass	Lt Amethyst Tint	Table Glass	Pressed Glass	2	Fragments	Pieces mend.
TP 32	A1	24-31 cm	373	Historic	Glass	Curved Glass	Lt Yellow Tint	Bottle Glass	Machine-Made	1	Lip/Neck Frag.	Mends with artifact #357.
TP 32	A1	24-31 cm	374	Historic	Glass	Curved Glass	Lt Yellow Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 32	A1	24-31 cm	375	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Body Fragment	
TP 32	A1	24-31 cm	376	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 32	A1	24-31 cm	377	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		1	Fragment	
TP 32	A1	24-31 cm	378	Historic	Metal	Ferrous Metal		Sheet	Small	2	Fragments	
TP 32	A1	24-31 cm	379	Historic	Shell/Coral	Shell				2	Fragments	
TP 32	A1	24-31 cm	380	Historic	Synthetic	Rubber	Red	Seal, Canning Jar		3	Fragments	
TP 33	A1	3-13 cm	381	Historic	Ceramic	Porcelain	Blue Dec.	Blue Underglaze	Interior Decoration	1	Base Fragment	
TP 33	A1	3-13 cm	382	Historic	Ceramic	Porcelain	Tan Interior	Porcelain, Hard-Paste	Plain	1	Body Fragment	
TP 33	A1	3-13 cm	383	Historic	Ceramic	Earthenware	Gilt Dec.	Whiteware	Interior Gilt	1	Rim Fragment	Metallic finish worn off.

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 33	A1	3-13 cm	384	Historic	Ceramic	Earthenware		Gilt Dec.	Whiteware	1	Base Fragment	Metallic finish worn off.
TP 33	A1	3-13 cm	385	Historic	Ceramic	Earthenware		Green Transfer	Whiteware	1	Base Fragment	
TP 33	A1	3-13 cm	386	Historic	Glass	Curved Glass		Lt Amethyst Tint	Lamp Glass	1	Fragment	
TP 33	A1	3-13 cm	387	Historic	Glass	Curved Glass		Lt Amethyst Tint	Bottle Glass	1	Body Fragment	
TP 33	A1	3-13 cm	388	Historic	Glass	Curved Glass		Lt Green Tint	Bottle Glass	1	Body Fragment	
TP 33	A1	3-13 cm	389	Historic	Glass	Curved Glass		Lt Amethyst Tint	Bottle Glass	1	Side Panel Frag	Lettering "BUR".
TP 33	A1	3-13 cm	390	Historic	Glass	Curved Glass		Clear	Table Glass	1	Body Fragment	Etched design.
TP 33	A1	3-13 cm	391	Historic	Metal	Cuprous Metal			Eye Hook	1	Intact	
TP 33	A1	3-13 cm	392	Historic	Metal	Ferrous Metal			Nail, Indeterminate	1	Head Fragment	
TP 33	A1	3-13 cm	393	Historic	Metal	Ferrous Metal			"U" Clip	1	Near Intact	
TP 33	A1	13-23 cm	394	Historic	Ceramic	Earthenware	Polychrome		Pearlware	1	Rim Fragment	Hand-Painted
TP 33	A1	13-23 cm	395	Historic	Ceramic	Earthenware			Creamware	1	Body Fragment	Plain
TP 33	A1	13-23 cm	396	Historic	Ceramic	Earthenware			Whiteware	2	Base Fragments	Pieces mend.
TP 33	A1	13-23 cm	397	Historic	Ceramic	Earthenware			Whiteware	2	Body Fragments	
TP 33	A1	13-23 cm	398	Historic	Ceramic	Earthenware	Blue Transfer		Pearlware	1	Rim Fragment	Transfer-Printed
TP 33	A1	13-23 cm	399	Historic	Ceramic	Earthenware			Redware	1	Fragment	Missing Surfaces
TP 33	A1	13-23 cm	400	Historic	Ceramic	Earthenware			Brick/Redware	1	Fragment	Missing Surfaces
TP 33	A1	13-23 cm	401	Historic	Glass	Curved Glass	Lt Yellow Tint		Table Glass	1	Rim Fragment	Molded Design
TP 33	A1	13-23 cm	402	Historic	Glass	Flat Glass	Lt Green Tint		Window Glass	1	Fragment	
TP 33	A1	13-23 cm	403	Historic	Glass	Curved Glass	Lt Aqua Tint		Bottle/Table Glass	1	Body Fragment	Mold-Blown/Machine-Made
TP 33	A1	13-23 cm	404	Historic	Glass	Curved Glass	Clear		Bottle/Table Glass	1	Body Fragment	Machine-Made
TP 33	A1	13-23 cm	405	Historic	Glass	Curved Glass	Clear		Bottle Glass	1	Body Fragment	Mold-Blown/Machine-Made
TP 33	A1	13-23 cm	406	Historic	Metal	Ferrous Metal			Sheet	9	Fragments	Small
TP 33	A1	13-23 cm	407	Historic	Metal	Ferrous Metal			Nail, Cut/Wrought	4	Fragments	
TP 33	A1	13-23 cm	408	Historic	Metal	Cuprous Metal			Sheet	1	Fragment	Bell Shaped
TP 33	A1	13-23 cm	409	Historic	Shell/Coral	Shell			Indeterminate	1	Fragment	
TP 33	A1	13-23 cm	410	Historic	Coal-Related	Coal Burned			Slag	1	Fragment	
TP 33	A1	13-23 cm	411	Historic	Coal-Related	Coal Unmodified			Coal, Raw Material	2	Fragments	
TP 33	A1	23-32 cm	412	Historic	Ceramic	Earthenware			Whiteware	1	Body Fragment	Plain
TP 33	A1	23-32 cm	413	Historic	Ceramic	Earthenware			Brick	1	Fragment	
TP 33	A1	23-32 cm	414	Historic	Glass	Curved Glass	Lt Aqua Tint		Bottle Glass	1	Body Fragment	Mold-Blown/Machine-Made
TP 33	A1	23-32 cm	415	Historic	Metal	Ferrous Metal			Sheet	28	Small Fragments	Possible Can
TP 33	A1	23-32 cm	416	Historic	Ceramic	Porcelain	White		Porcelain, Hard-Paste	1	Fragment	90 Degree Bend
TP 34	A1	5-15 cm	417	Historic	Ceramic	Ironstone			Ironstone	1	Rim & Body Frag	Plain
TP 34	A1	5-15 cm	418	Historic	Glass	Curved Glass		Lt Amethyst Tint	Bottle Glass	1	Base Fragment	Mold-Blown/Machine-Made
TP 34	A1	5-15 cm	419	Historic	Glass	Curved Glass	Buff & Red		Bottle Glass	1	Body Fragment	Mold-Blown/Machine-Made
TP 34	A1	5-15 cm	420	Historic	Glass	Curved Glass	Clear		Small Glass Rod	1	Fragment	Embossed ink bottle, "Carter's made in U.S.A." Stenciled & painted.
TP 34	A1	5-15 cm	421	Historic	Coal-Related	Coal Unmodified			Coal, Raw Material	1	Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 34	A1	5-15 cm	422	Historic	Metal	Ferrous Metal		Key/Small Tool		1	Near Intact	X-ray made by conservator; probably 20th
TP 34	A1	5-15 cm	423	Historic	Metal	Ferrous Metal		Sheet		5	Fragments	
TP 34	A1	5-15 cm	424	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Indeterminate	2	Fragments	
TP 34	A1	15-25 cm	425	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 34	A1	15-25 cm	426	Historic	Ceramic	Earthenware		Body Paste	Missing Surfaces	1	Fragment	
TP 34	A1	15-25 cm	427	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 34	A1	15-25 cm	428	Historic	Metal	Aluminum		Aluminum Tag	W/ Numbers	1	Crumpled Frag.	
TP 34	A1	15-25 cm	429	Historic	Metal	Ferrous Metal		Nail, Wire		1	Fragment	
TP 34	A1	15-25 cm	430	Historic	Metal	Ferrous Metal		Possible Bottle Caps		3	Fragments	
TP 34	A1	15-25 cm	431	Historic	Glass	Curved Glass	Clear	Table Glass	Mold-Blown/Machine-Made	1	Rim Fragment	
TP 34	A1	15-25 cm	432	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 34	A1	15-25 cm	433	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 34	A1	25-35 cm	434	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 34	A1	25-35 cm	435	Historic	Ceramic	Earthenware		Creamware	Plain	1	Rim Fragment	
TP 34	A1	25-35 cm	436	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 34	A1	25-35 cm	437	Historic	Ceramic	Earthenware		Redware	Unglazed Surfaces	1	Body Fragment	Flower pot.
TP 34	A1	25-35 cm	438	Historic	Ceramic	Ironstone		Green Exterior	White Interior	1	Rim Fragment	
TP 34	A1	25-35 cm	439	Historic	Ceramic	Porcelain	White Int.	Blue Underglaze	Blue Wavy Pattern	1	Body Fragment	Blue ext.
TP 34	A1	25-35 cm	440	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	3	Fragments	
TP 34	A1	25-35 cm	441	Historic	Glass	Curved Glass	Lt Yellow Tint	Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 34	A1	25-35 cm	442	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 34	A1	25-35 cm	443	Historic	Metal	Aluminum		Aluminum Foil		1	Fragment	
TP 34	A1	25-35 cm	444	Historic	Bone/Teeth	Bone		Mammal, Small	Calcined	1	Fragment	
TP 34	A1	25-35 cm	445	Historic	Bone/Teeth	Bone		Mammal, Large	Unburned	1	Fragment	Butchered.
TP 34	A1	25-35 cm	446	Historic	Bone/Teeth	Bone		Mammal, Small	Unburned	4	Fragments	
TP 34	A1	25-35 cm	447	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 34	A1	25-35 cm	448	Historic	Coal-Related	Coal Burned		Slag		1	Fragment	
TP 35	F1	6-16 cm	449	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Body Fragment	
TP 35	F1	6-16 cm	450	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 35	F1	6-16 cm	451	Historic	Ceramic	Earthenware	Blue Transfer	Whiteware	Transfer-Printed	1	Body Fragment	
TP 35	F1	6-16 cm	452	Historic	Glass	Curved Glass	Olive Green	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 35	F1	6-16 cm	453	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 35	F2	30-40 cm.	454	Historic	Coal-Related	Coal Burned		Slag		1	Fragment	
TP 37	A1	5-15 cm	455	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Fragment	
TP 37	A1	15-25 cm	456	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Base Fragment	
TP 37	A1	15-25 cm	457	Historic	Ceramic	Porcelain	White/Gold Flecks	Porcelain, Hard-Paste	Gilt	1	Rim Fragment	
TP 37	A1	15-25 cm	458	Historic	Ceramic	Stoneware	Gray	Salt Glazed Ext.	Albany Slip Int.	1	Base Fragment	
TP 37	A1	15-25 cm	459	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Rim Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 37	A1	15-25 cm	460	Historic	Glass	Curved Glass	Lt Yellow Tint	Table Glass	Mold-Blown/Machine-Made	1	Rim Fragment	
TP 37	A1	15-25 cm	461	Historic	Glass	Curved Glass	Lt Yellow Tint	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 37	A1	15-25 cm	462	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 37	A1	15-25 cm	463	Historic	Metal	Cuprous Metal		Thin Sheet	Crumpled	2	Fragments	
TP 37	A1	15-25 cm	464	Historic	Metal	Cuprous Metal		Bent Spoon		1	Intact	Embossed "EXTRA COIN PLATE".
TP 37	A1	15-25 cm	465	Historic	Metal	Ferrous Metal		Possible Nail	Slightly Curved	1	Fragment	
TP 38	F1	10-20 cm.	466	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Body Fragment	
TP 38	F1	10-20 cm.	467	Historic	Ceramic	Stoneware	Brown	Exterior Missing	Albany Slip Int.	1	Body Fragment	
TP 38	F1	10-20 cm.	468	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Rim Fragments	
TP 38	F1	10-20 cm.	469	Historic	Ceramic	Earthenware	Green & Red	Whiteware	Transfer-Printed	1	Rim Fragment	
TP 38	F1	10-20 cm.	470	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 38	F1	10-20 cm.	471	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		3	Fragments	
TP 38	F1	10-20 cm.	472	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 38	F1	10-20 cm.	473	Historic	Bone/Teeth	Bone		Mammal	Unburned	1	Fragment	
TP 38	F1	10-20 cm.	474	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 38	F1	10-20 cm.	475	Historic	Synthetic	Plastic	Green	Thin Strip		1	Fragment	
TP 38	F1	20-30 cm.	476	Historic	Ceramic	Earthenware	Clear	Whiteware	Plain	2	Body Fragments	
TP 38	F1	20-30 cm.	477	Historic	Ceramic	Earthenware		Creamware	Plain	1	Body Fragment	
TP 38	F1	20-30 cm.	478	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 38	F1	20-30 cm.	479	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 38	Buried A1	50-60 cm	480	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Base Fragment	
TP 38	Buried A1	50-60 cm.	481	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 38	Buried A1	50-60 cm.	482	Historic	Glass	Curved Glass	Lt Yellow Tint	Jar	Machine-Made	1	Lip/Neck Frag.	
TP 38	Buried A1	50-60 cm.	483	Historic	Glass	Curved Glass	Clear	Canning Jar	Machine-Made	1	Neck/Body Frag.	
TP 38	Buried A1	50-60 cm.	484	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 38	Buried A1	50-60 cm.	485	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Indeterminate	1	Small Fragment	
TP 38	Buried A1	50-60 cm.	486	Historic	Shell/Coral	Shell				1	Fragment	
TP 38	Buried A1	50-60 cm.	487	Historic	Metal	Aluminum		Aluminum Foil		3	Fragments	
TP 38	Buried A1	50-60 cm.	488	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 38	Buried A1	50-60 cm.	489	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		2	Fragments	
TP 38	Buried A1	60-64 cm	490	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 38	Buried A1	60-64 cm	491	Historic	Ceramic	Earthenware		Whiteware		1	Handle Fragment	
TP 38	Buried A1	60-64 cm	492	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 38	Buried A1	60-64 cm	493	Historic	Glass	Curved Glass	Lt Yellow Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Base Fragment	Elliptical with triangular makers mark.
TP 38	Buried A1	60-64 cm	494	Historic	Glass	Curved Glass	Lt Yellow Tint	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 38	Buried A1	60-64 cm	495	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 38	Buried A1	60-64 cm	496	Historic	Metal	Ferrous Metal		Sheet	Small	7	Fragments	
TP 38	Buried A1	60-64 cm	497	Historic	Metal	Ferrous Metal		Possible Nails		4	Fragments	

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TP 39	F1	7-17 cm	498	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 39	F1	17-27 cm	499	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Base Fragment	
TP 39	F1	17-27 cm	500	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Machine-Made	1	Body Fragment	
TP 39	F1	17-27 cm	501	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 39	A1	57-64 cm	502	Historic	Metal	Ferrous Metal		Strip	1/4"W X 1"L	1	Fragment	
TP 39	A1	57-64 cm	503	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	2	Fragments	
TP 4	A0	0-10 cm.	74	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 4	A0	0-10 cm.	75	Historic	Glass	Curved Glass	Clear	Fruit/Jam Jar	Pressed Glass	1	Rim Fragment	
TP 4	A0	0-10 cm.	76	Historic	Synthetic	Cigarette		Filters		2	Intact	
TP 4	Ap	10-20 cm.	77	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 4	Ap	10-20 cm.	78	Historic	Ceramic	Earthenware	Brown Glaze	Redware	Lead-Glazed	1	Body Fragment	
TP 4	Ap	10-20 cm.	79	Historic	Ceramic	Porcelain		Porcelain, Hard-Paste	Plain	1	Rim Fragment	
TP 4	Ap	10-20 cm.	80	Historic	Metal	Aluminum		Aluminum Foil		1	Fragments	
TP 4	Ap	10-20 cm.	81	Historic	Metal	Ferrous Metal		Indeterminate		6	Fragments	
TP 4	Ap	10-20 cm.	82	Historic	Bone/Teeth	Bone		Mammal, Large	Butchered	1	Fragment	
TP 4	Ap	10-20 cm.	83	Historic	Bone/Teeth	Bone		Mammal		5	Fragments	
TP 4	Ap	10-20 cm.	84	Historic	Shell/Coral	Shell		Oyster		6	Fragments	
TP 4	Ap	10-20 cm.	85	Historic	Hide/Hair	Leather		Indeterminate		1	Fragment	
TP 4	Ap	20-30 cm.	86	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	Scalloped.
TP 4	Ap	20-30 cm.	87	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Rim Fragment	
TP 4	Ap	20-30 cm.	88	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		2	Fragments	
TP 4	Ap	20-30 cm.	89	Historic	Glass	Curved Glass	Amber	Bottle Glass	Mold-Blown/Machine-Made	1	Base Fragment	
TP 4	Ap	20-30 cm.	90	Historic	Glass	Curved Glass	Clear	Fruit/Jam Jar	Pressed Glass	1	Rim Fragment	
TP 4	Ap	20-30 cm.	91	Historic	Glass	Curved Glass	Clear	Indeterminate	Small	1	Fragment	
TP 4	Ap	20-30 cm.	92	Historic	Metal	Ferrous Metal		Indeterminate	Corroded	4	Fragments	
TP 4	Ap	20-30 cm.	93	Historic	Bone/Teeth	Bone		Mammal, Large	Unburned	1	Fragment	Butchered.
TP 4	Ap	20-30 cm.	94	Historic	Bone/Teeth	Bone		Mammal	Unburned	4	Fragments	
TP 4	Ap	20-30 cm.	95	Historic	Shell/Coral	Shell		Oyster		2	Fragments	
TP 4	Ap	20-30 cm.	96	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		2	Fragments	
TP 4	Ap	20-30 cm.	97	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 4	Ap	20-30 cm.	98	Historic	Coal-Related	Coal Burned		Slag		1	Fragment	
TP 4	Ap	30-36 cm.	99	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	
TP 4	Ap	30-36 cm.	100	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Fragment	
TP 4	Ap	30-36 cm.	101	Historic	Metal	Ferrous Metal		Small		1	Fragment	
TP 4	B1	36-44 cm.	102	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass		1	Fragment	
TP 40	F0	0-9 cm	504	Historic	Glass	Curved Glass	Green	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 40	F1	9-19 cm	505	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Rim Fragment	
TP 40	F1	9-19 cm	506	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	

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TP 40	F1	9-19 cm	507	Historic	Glass	Curved Glass	Clear	Fruit/Jam Jar	Pressed Glass	1	Rim Fragment	
TP 40	F1	9-19 cm	508	Historic	Glass	Curved Glass	Lt Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 40	F1	9-19 cm	509	Historic	Glass	Curved Glass	Lt Aqua Tint	Bottle/Table Glass		1	Fragment	
TP 40	F1	9-19 cm	510	Historic	Shell/Coral	Shell				1	Fragment	
TP 40	F1	19-29 cm	511	Historic	Glass	Curved Glass	Lt Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Base Fragment	
TP 40	F1	19-29 cm	512	Historic	Metal	Ferrous Metal		Corrugated, Small	Possible Bottle Cap	1	Fragment	
TP 40	F1	19-29 cm	513	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 40	A1	29-39 cm	514	Historic	Ceramic	Earthenware		Whiteware	Plain	3	Base Fragments	
TP 40	A1	29-3 cm	515	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 40	A1	29-39 cm	516	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 40	A1	29-39 cm	517	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 40	A1	29-39 cm	518	Historic	Metal	Ferrous Metal		Sheet		2	Fragments	
TP 40	A1	29-39 cm	519	Historic	Metal	Ferrous Metal		Sheet	Bent	2	Fragments	
TP 40	A1	39-47 cm	520	Historic	Ceramic	Porcelain	White	Semi Porcelain	Plain	1	Body Fragment	
TP 40	A1	39-47 cm	521	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 40	A1	39-47 cm	522	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 40	A1	39-47 cm	523	Historic	Glass	Curved Glass	Frosted	Bottle Glass	Machine-Made	1	Body Fragment	
TP 40	A1	39-47 cm	524	Historic	Glass	Curved Glass	Clear	Table Glass	Pressed Glass	1	Lid,Cover Frag.	
TP 40	A1	39-47 cm	525	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Machine-Made	1	Body Fragment	
TP 40	A1	39-47 cm	526	Historic	Metal	Ferrous Metal		Bottle Cap		1	Fragment	
TP 40	A1	39-47 cm	527	Historic	Metal	Ferrous Metal		Crimped		1	Fragment	
TP 40	A1	39-47 cm	528	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		1	Near Intact	
TP 40	A1	39-47 cm	529	Historic	Shell/Coral	Shell				1	Fragment	
TP 41	F1	10-20 cm.	530	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 41	F1	10-20 cm.	531	Historic	Ceramic	Earthenware	Brown Glaze Int.	Redware	Lead-Glazed	1	Body Fragment	Exterior surface missing.
TP 41	F1	10-20 cm.	532	Historic	Ceramic	Earthenware		Pearlware	Plain	1	Fragment	
TP 41	F1	10-20 cm.	533	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 41	F1	20-30 cm.	534	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Rim Fragment	
TP 41	F1	20-30 cm.	535	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Rim Fragments	
TP 41	F1	20-30 cm.	536	Historic	Ceramic	Earthenware	Blue Transfer	Whiteware	Transfer-Printed	1	Body Fragment	
TP 41	F1	20-30 cm.	537	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 41	F1	30-40 cm.	538	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Rim Fragments	
TP 41	F1	30-40 cm.	539	Historic	Ceramic	Earthenware		Creamware	Plain	1	Body Fragment	
TP 41	F1	30-40 cm.	540	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 41	F1	30-40 cm.	541	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	
TP 41	F1	30-40 cm.	542	Historic	Glass	Curved Glass	Clear	Jar	Machine-Made	1	Intact	Small jar; embossed Owens mark "3" "O" "6" on base; "12" & "2789" on side; screw top.
TP 41	F1	30-40 cm.	543	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	3	Body Fragments	

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TP 41	F1	30-40 cm.	544	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		2	Fragments	
TP 41	F1	30-40 cm.	545	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		4	Fragments	
TP 41	F1	30-40 cm.	546	Historic	Metal	Ferrous Metal		Sheet	Small	3	Fragments	
TP 41	F1	30-40 cm.	547	Historic	Bone/Teeth	Bone		Mammal, Large	Butchered	1	Fragment	Unburned.
TP 41	F1	30-40 cm.	548	Historic	Bone/Teeth	Bone		Mammal, Medium		2	Fragments	Unburned.
TP 41	F1	30-40 cm.	549	Historic	Shell/Coral	Shell				2	Fragments	
TP 41	F1	30-40 cm.	550	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 41	F1	30-40 cm.	551	Historic	Synthetic	Rubber	Red	Seal, Canning Jar		1	Fragment	
TP 41	F1	40-50 cm.	552	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 41	F1	40-50 cm.	553	Historic	Metal	Ferrous Metal		Strip	3/4" Wide	1	Intact	Rounded ends.
TP 41	F1	40-50 cm.	554	Historic	Metal	Ferrous Metal		Corrugated	Small	1	Fragment	
TP 41	F1	40-50 cm.	555	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	3	Fragments	
TP 41	F1	40-50 cm.	556	Historic	Bone/Teeth	Bone		Mammal, Large	Unburned	1	Fragment	
TP 41	F1	40-50 cm.	557	Historic	Coal-Related	Coal Burned		Slag		1	Fragment	
TP 41	F1	40-50 cm.	558	Historic	Synthetic	Rubber	Red	Seal, Canning Jar		1	Fragment	
TP 42	F1	11-21 cm	559	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Body Fragment	
TP 42	F1	11-21 cm	560	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 42	F1	11-21 cm	561	Historic	Ceramic	Earthenware		Whiteware		1	Handle Fragment	
TP 42	F1	11-21 cm	562	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Body Fragment	
TP 42	F1	11-21 cm	563	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 42	F1	11-21 cm	564	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	
TP 42	F1	11-21 cm	565	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 42	F1	11-21 cm	566	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 42	F1	11-21 cm	567	Historic	Metal	Ferrous Metal		Sheet	Bent	1	Fragment	
TP 42	F1	11-21 cm	568	Historic	Metal	Ferrous Metal		Sheet		1	Fragment	
TP 42	F1	11-21 cm	569	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 42	F1	21-31 cm	570	Historic	Ceramic	Porcelain		Semi Porcelain	Molded	1	Body Fragment	
TP 42	F1	21-31 cm	571	Historic	Ceramic	Porcelain	White	Semi Porcelain	Plain	1	Body Fragment	
TP 42	F1	21-31 cm	572	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Body Fragment	
TP 42	F1	21-31 cm	573	Historic	Ceramic	Earthenware		Creamware	Plain	1	Body Fragment	
TP 42	F1	21-31 cm	574	Historic	Ceramic	Earthenware	Gold Line	Whiteware	Gilt	1	Rim Fragment	
TP 42	F1	21-31 cm	575	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 42	F1	21-31 cm	576	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Handle Fragment	
TP 42	F1	21-31 cm	577	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 42	F1	21-31 cm	578	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 42	F1	21-31 cm	579	Historic	Metal	Ferrous Metal		Sheet		2	Fragments	
TP 42	F1	21-31 cm	580	Historic	Bone/Teeth	Bone		Mammal, Large	Unburned	2	Fragments	Butchered.
TP 42	F1	21-31 cm	581	Historic	Bone/Teeth	Bone		Mammal, Large	Unburned	2	Fragments	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 42	F1	21-31 cm	582	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 42	F1	31-41 cm	583	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Base Fragment	
TP 42	F1	31-41 cm	584	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 42	F1	31-41 cm	585	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 42	F1	31-41 cm	586	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 42	F1	31-41 cm	587	Historic	Glass	Curved Glass	Lt Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 42	F1	31-41 cm	588	Historic	Metal	Ferrous/Cuprous		Sheet W/ Pin	1/8" Dia. Cuprous Pin	1	Frag/Intact Pin	Pin/stud fastener through sheet metal.
TP 42	F1	31-41 cm	589	Historic	Metal	Ferrous Metal		Sheet	Corner Piece	1	Fragment	
TP 42	F1	31-41 cm	590	Historic	Bone/Teeth	Bone		Mammal, Large	Unburned	2	Fragments	
TP 45	F0	0-3 cm	591	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 45	F1	3-13 cm	592	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Body Fragment	
TP 45	F1	3-13 cm	593	Historic	Glass	Flat Glass	Lt Yellow Tint	Window Glass		1	Fragment	
TP 45	F1	3-13 cm	594	Historic	Glass	Curved Glass	Lt Amethyst Tint	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	Pieces mend; embossed "CRE".
TP 45	F1	3-13 cm	595	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	1	Body Fragment	
TP 45	F1	3-13 cm	596	Historic	Metal	Cuprous Metal		Thin Twisted Wire	Circle On End	1	Fragment	
TP 45	F1	3-13 cm	597	Historic	Metal	Cuprous Metal		Insulated Wire		1	Fragment	
TP 45	F1	3-13 cm	598	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 45	F1	3-13 cm	599	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 45	F1	3-13 cm	600	Historic	Synthetic	Plastic	Black	Button, 2 Hole	1 1/4" Diameter	1	Intact	
TP 45	F1	3-13 cm	601	Historic	Metal	Ferrous Metal		Sheet		1	Fragment	
TP 45	F1	3-13 cm	602	Historic	Metal	Ferrous Metal		Sheet	Molded	1	Fragment	
TP 45	F1	13-23 cm	603	Historic	Ceramic	Earthenware	Brown Glaze Int.	Redware	Lead-Glazed	1	Body Fragment	Unglazed exterior.
TP 45	F1	13-23 cm	604	Historic	Ceramic	Earthenware	Buff		Missing Surfaces	1	Body Fragment	
TP 45	F1	13-23 cm	605	Historic	Glass	Curved Glass	Amber	Bottle Glass	Machine-Made	1	Body Fragment	
TP 45	F1	13-23 cm	606	Historic	Bone/Teeth	Bone		Mammal, Large	Unburned	2	Fragments	
TP 45	F1	13-23 cm	607	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 45	F1	23-33 cm	608	Historic	Ceramic	Porcelain			Plain	1	Body Fragment	
TP 45	F1	23-33 cm	609	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 45	F1	23-33 cm	610	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Body Fragment	
TP 45	F1	23-33 cm	611	Historic	Glass	Curved Glass	Lt Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 45	F1	23-33 cm	612	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 45	F1	23-33 cm	613	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Embossed "... TS".
TP 45	F1	23-33 cm	614	Historic	Metal	Cuprous Metal		Electrical Connector	W/ "U" Clip	1	Intact	
TP 45	F1	23-33 cm	615	Historic	Shell/Coral	Shell		Oyster		1	Fragment	
TP 45	F1	23-33 cm	616	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 45	F1	23-33 cm	617	Historic	Metal	Ferrous Metal		Nail, Indeterminate		1	Fragment	
TP 45	F1	33-43 cm	618	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Body Fragments	
TP 45	F1	33-43 cm	619	Historic	Ceramic	Earthenware		Brick		1	Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 45	F1	33-43 cm	620	Historic	Ceramic	Earthenware	Blue Transfer	Whiteware	Transfer-Printed	1	Rim Fragment	
TP 45	F1	33-43 cm	621	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	Etched design.
TP 45	F1	33-43 cm	622	Historic	Glass	Curved Glass	Clear	Bottle/Table Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 45	F1	33-43 cm	623	Historic	Metal	Cuprous Metal		Collar/Cap	Threaded	1	Fragment	
TP 45	F1	33-43 cm	624	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	3	Fragments	
TP 45	F1	33-43 cm	625	Historic	Shell/Coral	Shell				1	Fragment	
TP 45	F1	33-43 cm	626	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 45	F1	33-43 cm	627	Historic	Metal	Ferrous Metal		Nail, Indeterminate		1	Fragment	
TP 45	F1	33-43 cm	628	Historic	Metal	Ferrous Metal		Possible Bottle Cap		1	Fragment	
TP 47	A1	2-12 cm	629	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Rim Fragments	
TP 47	A1	12-23 cm	630	Historic	Glass	Curved Glass	Clear	Indeterminate	Spall	1	Fragment	
TP 5	A0	0-10 cm.	103	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 5	A0	0-10 cm.	104	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	3	Fragments	
TP 5	A0	0-10 cm.	105	Historic	Metal	Ferrous Metal		Possible Can		4	Fragments	
TP 5	A0	0-10 cm.	106	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 5	Ap	10-20 cm.	107	Historic	Ceramic	Earthenware		Whiteware	Hand-Painted, Blue Edging	1	Rim Fragment	
TP 5	Ap	10-20 cm.	108	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 5	Ap	10-20 cm.	109	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Base Fragment	
TP 5	Ap	10-20 cm.	110	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Bottle Neck/Lip	Flat or patent neck finish.
TP 5	Ap	10-20 cm.	111	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Intact Lip	
TP 5	Ap	10-20 cm.	112	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	5	Fragments	
TP 5	Ap	10-20 cm.	113	Historic	Glass	Curved Glass	Amber	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 5	Ap	10-20 cm.	114	Historic	Glass	Curved Glass	Clear	Lamp Glass	Free-Blown	1	Fragment	
TP 5	Ap	10-20 cm.	115	Historic	Glass	Curved Glass	Pink	Bead	With Hole	1	Intact	
TP 5	Ap	10-20 cm.	116	Historic	Metal	Ferrous Metal		Corroded	Small	13	Fragments	
TP 5	Ap	10-20 cm.	117	Historic	Metal	Ferrous Metal		Nail/Pin	Corroded	1	Near Intact	
TP 5	Ap	10-20 cm.	118	Historic	Metal	Aluminum		Sheet	Twisted	1	Fragment	
TP 5	Ap	10-20 cm.	119	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	1	Fragment	
TP 5	Ap	10-20 cm.	120	Historic	Shell/Coral	Shell		Oyster		3	Fragments	
TP 5	Ap	10-20 cm.	121	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 5	Ap	20-30 cm.	122	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	4	Body Fragments	
TP 5	Ap	20-30 cm.	123	Historic	Glass	Curved Glass	Olive Green	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 5	Ap	20-30 cm.	124	Historic	Glass	Curved Glass	Milk Glass	Indeterminate		1	Fragment	
TP 5	Ap	20-30 cm.	125	Historic	Metal	Ferrous Metal		Indeterminate	Small	4	Fragments	
TP 5	Ap	20-30 cm.	126	Historic	Bone/Teeth	Bone		Mammal	Unburned	1	Fragment	
TP 5	Ap	20-30 cm.	127	Historic	Shell/Coral	Shell		Oyster		1	Fragment	
TP 52	F0	0-5 cm	631	Historic	Ceramic	Earthenware	Brown Glaze	Drainage Pipe		3	Fragments	
TP 52	F1	5-15 cm	632	Historic	Ceramic	Earthenware	Brown Glaze	Drainage Pipe	3/4" Thick	1	Fragment	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 52	F1	15-22 cm	633	Historic	Ceramic	Earthenware	Brown Glaze	Drainage Pipe	3/4" Thick	1	Fragment	
TP 53	F1	5-15 cm	634	Historic	Ceramic	Earthenware	Brown Glaze	Drainage Pipe	3/4" Thick	1	Fragment	
TP 53	F1	5-15 cm	635	Historic	Composite	Asphalt		Roofing Shingle		1	Fragment	
TP 55	F1	2-12 cm	636	Historic	Glass	Curved Glass	Lt Orange Tint	Table Glass	Molded	1	Rim Fragment	
TP 55	F1	2-12 cm	637	Historic	Other Mineral	Asphalt	Black			1	Fragment	
TP 56	F1	0-10 cm.	638	Historic	Other Mineral	Asphalt		Roofing Shingle		1	Fragment	
TP 6	A1	5-15 cm	128	Historic	Ceramic	Earthenware		Redware	Missing Surfaces	1	Fragment	
TP 6	A1	5-15 cm	129	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Base Fragment	
TP 6	A1	5-15 cm	130	Historic	Ceramic	Porcelain	Multicolor	Semi Porcelain	Floral Decal	1	Rim Fragment	
TP 6	A1	5-15 cm	131	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 6	A1	5-15 cm	132	Historic	Metal	Lead		Sheet		2	Fragments	
TP 6	A1	5-15 cm	133	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	4	Fragments	
TP 6	A1	5-15 cm	134	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		2	Fragments	
TP 6	A0	0-5 cm.	135	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 6	A0	0-5 cm.	136	Historic	Metal	Ferrous Metal		Indeterminate	Probably Nail	1	Fragment	
TP 6	A0	0-5 cm.	137	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 6	A1	15-25 cm.	138	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 6	A1	15-25 cm.	139	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
TP 6	A1	15-25 cm.	140	Historic	Glass	Curved Glass	White	Button	2 Hole	1	Intact	
TP 6	A1	15-25 cm.	141	Historic	Metal	Aluminum		Sheet	Crumpled	1	Fragment	
TP 6	A1	15-25 cm.	142	Historic	Metal	Ferrous Metal		Indeterminate		1	Fragment	
TP 6	A1	15-25 cm.	143	Historic	Bone/Teeth	Bone		Mammal, Medium	Unburned	4	Fragments	
TP 6	A1	15-25 cm.	144	Historic	Coal-Related	Coal Unmodified		Coal, Raw Material		1	Fragment	
TP 7	A0	0-5 cm.	145	Historic	Metal	Ferrous Metal		Bottle Cap	Seal Inside	1	Intact	
TP 7	A1	5-15 cm.	146	Historic	Shell/Coral	Shell		Oyster		6	Fragments	
TP 7	A1	15-25 cm.	147	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Body Fragment	
TP 7	A1	15-25 cm.	148	Historic	Ceramic	Earthenware		Creamware	Plain	1	Body Fragment	
TP 7	A1	25-30 cm.	149	Historic	Glass	Curved Glass	Lt Green Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 7	A1	25-30 cm.	150	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 7	A1	25-30 cm.	151	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
TP 7	B1	30-40 cm.	152	Historic	Ceramic	Porcelain		English Soft Paste	Hand-Painted	1	Body Fragment	
TP 70	F0	0-5 cm	639	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Lip/Neck Frag.	Screw top.
TP 70	F0	0-5 cm	640	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Body Fragment	
TP 70	F1	5-15 cm	641	Historic	Ceramic	Porcelain	White	Porcelain, Hard-Paste	Plain	1	Rim Fragment	
TP 70	F1	5-15 cm	642	Historic	Ceramic	Earthenware		Brick		1	Fragment	
TP 70	F1	5-15 cm	643	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
TP 70	F1	5-15 cm	644	Historic	Glass	Flat Glass	Lt Green Tint	Window Glass		1	Fragment	
TP 70	F1	5-15 cm	645	Historic	Glass	Curved Glass	Aqua Tint	Canning Jar Lid	Machine-Made	1	Half Lid	

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Test Pit	Layer	Depth	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
TP 70	F1	15-25 cm	646	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
TP 91	A1	5-10 cm	647	Historic	Metal	Ferrous Metal		Curved Plate Spalls	Approx. 1/8" Thick	16	Fragments	
TP 91	B1	10-20 cm	648	Historic	Metal	Ferrous Metal		Curved Plate Spalls	Approx. 1/8" Thick	7	Fragments	

Hanscom AFB, Western Section of Area 31 Intensive Survey Catalogue

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Area	Test	Layer	Depth	Bag	Cat.#	Era	Class	Material	Color	Description	Detail	Qty	Portion	Comments
31	STP 1	Apz	05-15 cm	1	1	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Fragments	
31	STP 1	Apz	05-15 cm	1	2	Historic	Glass	Curved Glass	Clear	Table Glass	Machine-Made	2	Base Fragments	Pieces mend.
31	STP 2	Apz	15-25 cm	2	3	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	
31	STP 2	Apz	15-25 cm	2	4	Historic	Ceramic	Porcelain	Blue Transfer		Transfer-Printed	1	Base Fragment	
31	STP 2	Apz	15-25 cm	2	5	Historic	Metal	Ferrous Metal		Nail, Cut/Wrought		1	Fragment	
31	STP 2	Apz	15-25 cm	2	6	Historic	Coal-Related	Coal Burned		Clinker		1	Fragment	
31	STP 3	A1	03-13 cm	3	7	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	2	Base/Body Frag.	Pieces mend.
31	STP 3	A1	03-13 cm	3	8	Historic	Glass	Curved Glass	Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	2	Base Fragments	
31	STP 3	A1	03-13 cm	3	9	Historic	Glass	Curved Glass	Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
31	STP 3	A1	03-13 cm	3	10	Historic	Glass	Curved Glass	Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Embossed letter "U".
31	STP 3	A1	03-13 cm	3	11	Historic	Metal	Ferrous Metal		Belt Buckle	1"X 1.25"	1	Intact	
31	STP 3	A1	13-23 cm	4	12	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Neck/Lip Frag.	1" diam. screw top.
31	STP 3	A1	13-23 cm	4	13	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Neck/Lip Frag.	
31	STP 3	A1	13-23 cm	4	14	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	2	Base Fragments	
31	STP 3	A1	13-23 cm	4	15	Historic	Glass	Curved Glass	Clear	Bottle Glass	Machine-Made	1	Body Fragment	
31	STP 3	A1	13-23 cm	4	16	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Embossed/stippled exterior.
31	STP 3	A1	13-23 cm	4	17	Historic	Glass	Curved Glass	Clear	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Stippled exterior.
31	STP 3	A1	13-23 cm	4	18	Historic	Glass	Curved Glass	Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Base Fragment	
31	STP 3	A1	13-23 cm	4	19	Historic	Glass	Curved Glass	Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	2	Body Fragments	
31	STP 3	A1	13-23 cm	4	20	Historic	Glass	Curved Glass	Aqua Tint	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	Embossed letter "S".
31	STP 4	A1	15-25 cm	5	21	Historic	Ceramic	Earthenware	Green Transfer	Whiteware	Transfer-Printed	2	Body Fragment	
31	STP 4	A1	25-35 cm	6	22	Historic	Ceramic	Earthenware	Green Transfer	Whiteware	Transfer-Printed	1	Rim Fragment	
31	STP 5	A1	03-13 cm	7	28	Historic	Ceramic	Earthenware		Creamware	Plain	1	Body Fragment	
31	STP 5	A1	03-13 cm	7	29	Historic	Ceramic	Earthenware		Whiteware	Plain	2	Rim Fragments	Mending rim and spall, gold gilt edge.
31	STP 5	A1	03-13 cm	7	30	Historic	Bone/Teeth	Bone		Unburned,Cow Leg	Butchered/Sawn	1	Fragment	
31	STP 5	A1	03-13 cm	7	31	Historic	Bone/Teeth	Bone		Unburned	Butchered/Sawn	6	Fragments	Large mammal.
31	STP 5	A1	03-13 cm	7	32	Historic	Bone/Teeth	Bone		Unburned		1	Small Fragment	
31	STP 5	A1	03-13 cm	7	33	Historic	Shell/Coral	Shell		Oyster		1	Intact	
31	STP 5	A1	13-23 cm	8	23	Historic	Glass	Curved Glass	Blue	Bottle Glass	Mold-Blown/Machine-Made	1	Body Fragment	
31	STP 5	A1	13-23 cm	8	24	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Fragment	
31	STP 5	A1	13-23 cm	8	25	Historic	Bone/Teeth	Bone		Unburned	Butchered	1	Fragment	Large mammal.
31	STP 5	A1	13-23 cm	8	26	Historic	Bone/Teeth	Bone		Unburned	Large Mammal	1	Fragment	
31	STP 5	A1	13-23 cm	8	27	Historic	Bone/Teeth	Bone		Unburned		1	Small Fragment	
31	STP 6	A0	0-7 cm	9	34	Historic	Ceramic	Earthenware		Whiteware	Plain	1	Rim Fragment	
31	STP 6	A0	0-7 cm	9	35	Historic	Bone/Teeth	Bone		Unburned		5	Small Fragments	
31	STP 6	A0	0-7 cm	9	36	Historic	Bone/Teeth	Bone		Large Mammal	Unburned	2	Fragments	

Appendix B:

Magnetic Field Gradient Survey at Three Battle Road Sites
(*Figure 26, Figure 43*)
by Dr. Lewis Somers



Archaeo-Physics, LLC - Shallow Subsurface Geophysical Survey

**Magnetic Field Gradient Survey
At Three
Battle Road Sites
Hanscom Air Force Base
Lexington, MA
October 2004**

**Performed for:
Timelines, Inc.
Littleton MA**

Dr. Lewis Somers

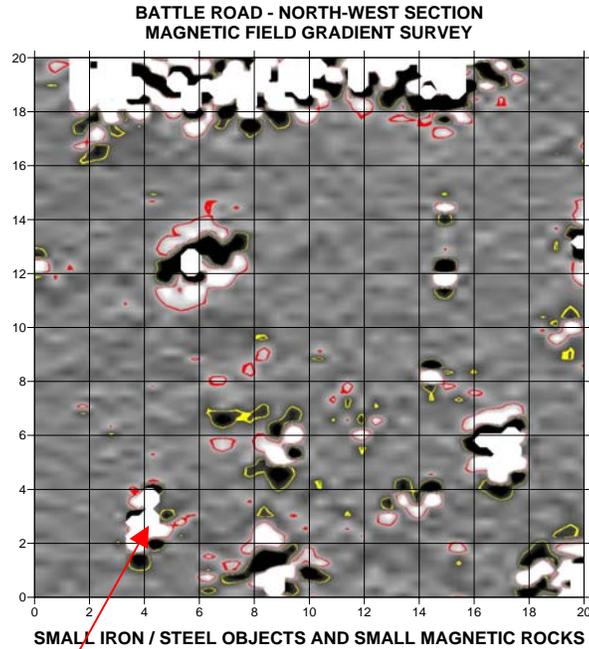
111 Timber Close, Box 102, Sea Ranch, CA 95497 (707) 785-3384

David Maki – Geoffrey Jones

1313 5th Street SE Minneapolis, MN 55414 voice/fax: (612) 379-0094

e-mail: info@archaeo-physics.com

MAGNETIC FIELD GRADIENT SURVEY AT THREE BATTLE ROAD SITES



Performed for Timelines Inc.
Littleton MA
Geoscan Research (USA)
The Sea Ranch
CA
Dr. Lewis Somers
somers@mcn.org

INTRODUCTION

A series of Magnetic Field Gradient surveys have been performed at three Battle Road sites on Hanscom Air Force Base, Lexington, MA. Our purpose has been to discover and map the location of iron artifacts associated with the Battle of April 19, 1775. Initial testing of survey results has found Colonial artifacts.

SURVEY DESIGN

Prior work, a metal detector survey for non ferrous objects (reference?), located a number of artifacts which appear to be Battle related. These findings encouraged a more detailed search for additional archaeological evidence. The specific targets of this survey are lost or abandoned Colonial and British iron objects which are expected to be few in number and widely scattered across the sites. A geophysical survey was suggested for its responsiveness and cost effectiveness.

There are four principal geophysical survey methods used in North American historic and prehistoric archaeology. These are magnetic, resistivity, conductivity and ground penetrating radar (GPR) survey. Given the soils, vegetation cover and the archaeological targets of interest a high data-sample density magnetic field gradient survey was selected. Experience teaches that both resistivity (probe resistivity) and conductivity (EM conductivity) methods do not respond well to small concentrated metal artifacts (Personal communication with Dr. R. B. Clay, D. Maki and personal experience). GPR in these soils is a plausible method for larger e.g. architectural targets but would not work well against small shallow metal targets at these sites. The glacial soils, vegetation cover and abundant tree root structure all rule out a successful GPR survey. In contrast, magnetic survey is applicable in the presence of site vegetation and responds well to ferrous metal artifacts including rust concentrations. The principal negative consideration with respect to magnetic survey at this site is the magnetic field associated with the granite erratics. These magnetic fields will be present in the survey data and can, in extreme cases, obscure the artifact features of interest.

Under these circumstances the principal survey design issues are 1.) a data-sample density great enough to ensure individual artifact detection and 2.) a combination of instrument selection and data processing capable of minimizing the artifact obscuring magnetic “clutter” associated with the granite eratics present on the site.

The survey design selected:

A short vertical gradient magnetometer; an FM 256 magnetometer manufactured by Geoscan Research

A data-sample density of 16 and 32 samples per square meter
The format was 2 x 8, and 2 x 16 samples per meter (N-S x E-W) respectively

Data processing with Geoplot 3.0 software to computationally remove the artifact obscuring magnetic “clutter” associated with the granite eratics

This data sample density brings the magnetometer close enough to small individual artifacts to ensure high probability of detection and simultaneously provides an adequate data base for filtering (removing) the principal effects of the magnetic geology in post survey data processing. The 50 cm sensor spacing in the FM 256 gradiometer will minimize the magnetic field contributions associated with the granite eratics and the Geoplot 3.0 software contains all the appropriate filters and data analysis tools required to isolate and display the magnetic artifact anomalies of interest.

Archaeological Testing

Magnetic survey over large areas in glacial soils will usually result in a large number of small weak magnetic anomalies in the survey results. These anomalies are associated with the relatively high density of small magnetic rocks. Also present in the survey results will be the magnetic anomalies associated with the iron artifacts of interest. This is the case in the present survey and it is necessary to test all the small weak anomalies to locate the artifacts of interest.

A metal detector has a modest response to iron objects and virtually zero response to magnetic rocks. Thus metal detector testing of the most

interesting magnetic anomalies in the survey results offers a cost effective means of identifying the iron artifacts for archaeological testing or excavation.

SURVEY RESULTS

Survey results are presented in six maps at the end of this report. Three sites were surveyed and there is a Strong Magnetic Object and a Small-Weak Magnetic Object map for each site. The strong magnetic fields are indicated by solid red-yellow (north-south magnetic pole) areas in the map and the source of the magnetic field will be found in the immediate vicinity of each red-yellow patch. The small-weak magnetic fields are indicated by red and yellow “circular” contour and the source of the magnetic field will be found in the immediate vicinity of the red-yellow circles.

Post survey magnetic examination (using the magnetometer to identify the specific magnetic object) of many strong anomalies clearly indicates they are associated with an erratic or modern ferrous trash/scrap. Post survey metal detector examination of small weak anomalies successfully identified Colonial artifacts as well as small modern iron objects. The metal detector did not respond to small magnetic rocks.

ACKNOWLEDGEMENTS

Geoscan Research USA and the author wish to acknowledge the excellent research and field support of Timelines staff Barbara Donohue, Martin Dudek, Alan Smith, and Brian Lever as well as the interest of Steven Pendery of the National Park Service, and Don Morris and Greg Cravedi of Hanscom Air Force Base.

Appendix C:

*A Magnetic Field Gradient Survey Area 31 Hanscom Air Force
Base Lexington, MA. November, 2005*

(Figure 33, Figure 43)

by Dr. Lewis Somers



Archaeo-Physics, LLC - Shallow Subsurface Geophysical Survey

FINAL DRAFT

**A Magnetic Field Gradient Survey
Area 31
Hanscom Air Force Base
Lexington, MA
November, 2005**

**Performed for:
John Milner Associates Inc.
Littleton MA**

Dr. Lewis Somers

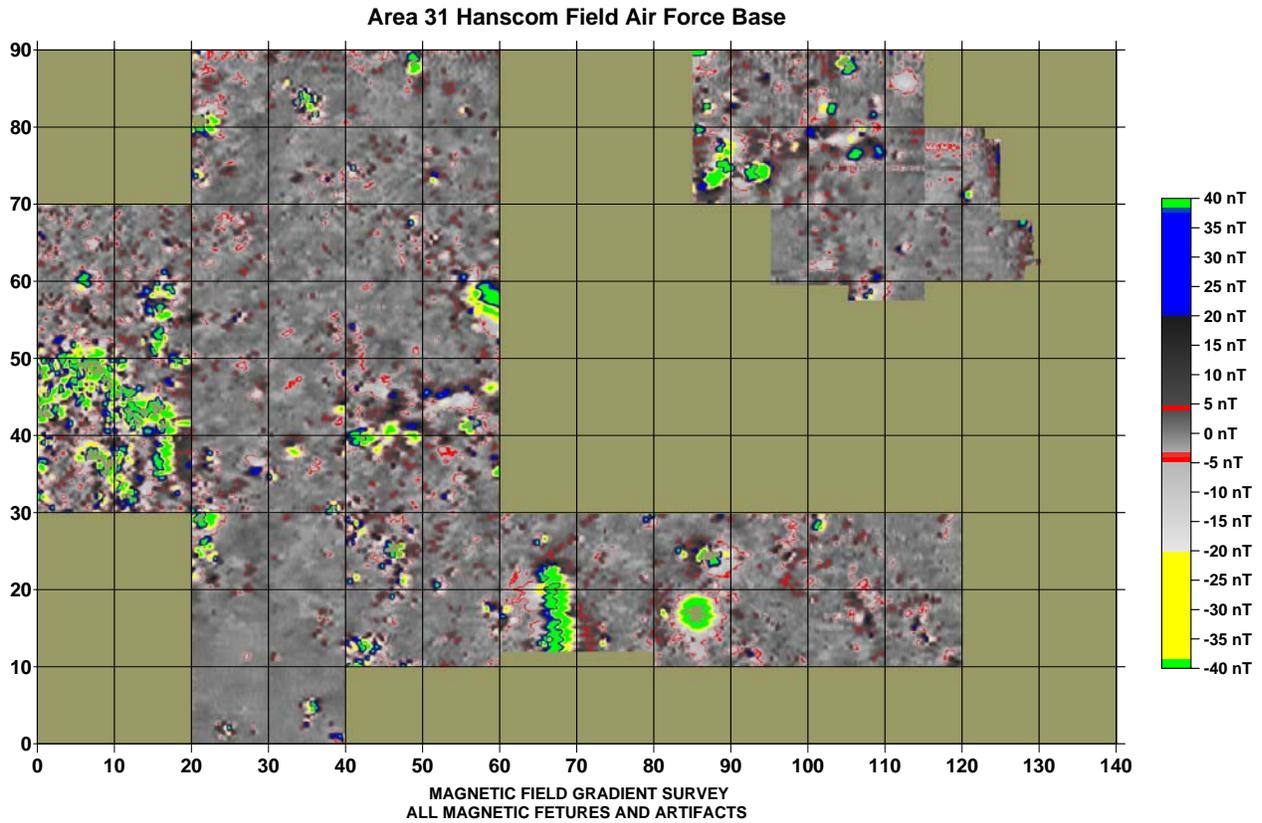
111 Timber Close, Box 102, Sea Ranch, CA 95497 (707) 785-3384

David Maki – Geoffrey Jones

1313 5th Street SE Minneapolis, MN 55414 voice/fax: (612) 379-0094

e-mail: info@archaeo-physics.com

**A Magnetic Field Gradient Survey
Area 31
Hanscom Air Force Base
Lexington, MA
November, 2005**



ArchaeoPhysics LLC
John Milner Associates Inc

**Performed for JMA Inc.
Littleton MA**

**ArchaeoPhysics LLC
Dr. Lewis Somers
somers@mcn.org**

Introduction

A Magnetic Field Gradient survey has been performed at Area 31 Hanscom Air Force Base, Lexington, MA. Our purpose was to discover and map the location of iron artifacts associated with The Battle of April 19, 1775. Historic occupation and activity areas, if present, were also to be mapped.

Area 31 is characterized by glacial soils (sands, large and small granite rocks/eratics) with a sparse random scatter of small ferrous and nonferrous metal objects. Both the granite rocks and the ferrous metal objects are slightly magnetic and will be detected and mapped in the survey. Some of these objects are modern and some are of archaeological interest. The purpose of this magnetic survey is to detect, locate and map the iron/ferrous object distribution with sufficient spatial accuracy to permit subsequent archaeological testing. The archaeological testing will include a metal detector phase to distinguish the magnetic metal objects from the magnetic rock.

Survey Design

There are four principal geophysical survey methods used in North American historic and prehistoric archaeology. These are magnetic, resistivity, conductivity and ground penetrating radar (GPR) survey. Given the soils, vegetation cover and the archaeological targets of interest a high data-sample density magnetic field gradient survey was selected. Experience teaches that both resistivity (probe resistivity) and conductivity (EM conductivity) methods do not respond well to small concentrated metal artifacts (Personal communication with Dr. R. B. Clay, D. Maki and personal experience). GPR in these soils is a plausible method for larger e.g. architectural targets but would not work well against small shallow metal targets at these sites. The glacial soils, vegetation cover and abundant tree root structure all rule out a successful GPR survey. In contrast, magnetic survey is applicable in the presence of site vegetation and responds well to ferrous metal artifacts including rust concentrations. The principal negative consideration with respect to magnetic survey at Area 31 is the magnetic “clutter” associated with the large and small granite eratics. Their magnetic fields will be present in the survey data and can, in extreme cases, obscure the artifact features of interest.

Under these circumstances the principal survey design issues are 1.) a data-sample density great enough to ensure individual artifact detection and 2.) a combination of instrument selection and data processing capable of minimizing the artifact obscuring magnetic “clutter” associated with the granite eratics present on the site.

The survey design selected:

- A short vertical gradient magnetometer

 - A Geoscan Research FM-256 magnetometer

- A data-sample density of 32 samples per square meter

 - The format was 2 x 16 samples per meter (N-S x E-W)

- Data processing with Geoplot 3.0 software

Computationally minimize the erratic magnetic clutter

This data sample density brings the magnetometer close enough to the small individual artifacts to ensure high probability of detection and simultaneously provides an adequate data base for filtering (removing) the principal effects of the magnetic geology in post survey data processing.

The 50 cm sensor spacing in the FM 256 gradiometer will minimize the magnetic field contributions associated with the large granite erratics and the Geoplot 3.0 software contains all the appropriate filters and data analysis tools required to isolate and display the magnetic artifact anomalies of interest.

Field Methods

A Geoscan Research FM 256 fluxgate gradiometer was used to perform the magnetic field gradient survey. Data were systematically collected in 20 x 20 meter survey squares (or grids). The corners of these grids were marked with a wooden stake which is considered a datum for each individual grid. The south edge of each grid is considered to be an E - W baseline. These datum and baselines have been preserved for subsequent feature location-archaeological testing.

The magnetic field gradient (data), data sample location, and grid addresses were recorded automatically in the FM-256 as the survey progressed. These were subsequently transferred to a portable computer for analysis. Data were collected in linear transects (20 meters long) spaced 50 cm apart. Sixteen data samples were recorded per linear meter, resulting in an overall data sample density of 32 samples per square meter. The survey was conducted at the 0.1 nT sensitivity level. Fiberglass surveyors tapes (metric tapes laying on the site surface) were used for spatial reference within each grid.

Magnetic Field Gradient Survey Results

The results of the magnetic field gradient survey are presented in the figures following the report. There are two different types of maps, the first presents all the data collected and is dominated by the strong magnetic data. The second presents only the weak magnetic data. The former is used to map the ferrous/iron anomalies because they are typically associated with the strongest magnetic field gradients. The latter is used to map the disturbed soils anomalies (occupation, activity areas etc.) because they are typically associated with the weakest magnetic field gradients. The strongest magnetic anomalies have been computationally removed from the weak magnetic field gradient maps.

Figures

The following pages contain two different sets of maps, the Strong Magnetic Features Maps and the Weak Magnetic Features Maps. The Strong Magnetic Features Maps have a Summary Map and five Enlarged Maps. The former presents the total survey and the five enlarged maps present locally enlarged sections of the survey for better viewing of

the individual magnetic anomalies. A 4 nT contour line enclosed all anomalies greater than 4 - 5 nT.

The weak Magnetic Features Maps present all the weak magnetic field gradient features in the survey. The area circled in red contains a number of similarly oriented “rectangular” features or enclosed areas.

Magnetic Field Gradient Survey Interpretation

The Strong Magnetic Field Gradient Maps all contain a red contour line which encircles all magnetic anomalies greater than 4 - 5 nT. This is the minimum signal level likely to be associated with any small near-surface ferrous object. The red contour quantitatively identifies these objects and makes it easy to locate them on the map as well as in the field. Red “circles” less than a meter in diameter are very likely to be associated with a small near-surface ferrous object and are worthy of testing with the metal detector (to eliminate a magnetic rock) and excavation. Encircled areas with a colored central core (other than black) are very likely to be metal and not rock. They are also likely to be intact as opposed to a concentration of rust or a cluster of nails etc..

The Weak Magnetic Field Gradient Maps have had the strong signal data computationally removed to facilitate visual understanding. The key to interpreting these maps is to think in terms of an aerial photograph and look for spatial patterns suggestive of anthropomorphic activity; linear, rectangular, circular - - - . Features and areas with these geometric characteristics are likely to be archaeologically interesting. There are a number of “rectangular” anomalies present within the red rectangle which could be cultural.

The weak magnetic signals are associated with disturbed soils, that is to say soils that have been disturbed by construction, plowing, stripping, intense fire, deposition of imported material, digging with backfill (stratigraphic inversion) etc.. It is in this sense that they may represent some type of activity area. They could be associated with transient building/construction but (based on our limited experience with in these soils) this is unlikely. Finally, there is a subtle “striation” running throughout the Area 31 survey, possibly due to bedrock, and the direction of this striation is parallel to one side of the “rectangular” anomalies of interest. Fate can be cruel. A bit of traditional archaeological testing must confirm their possible presence.

Recommendations

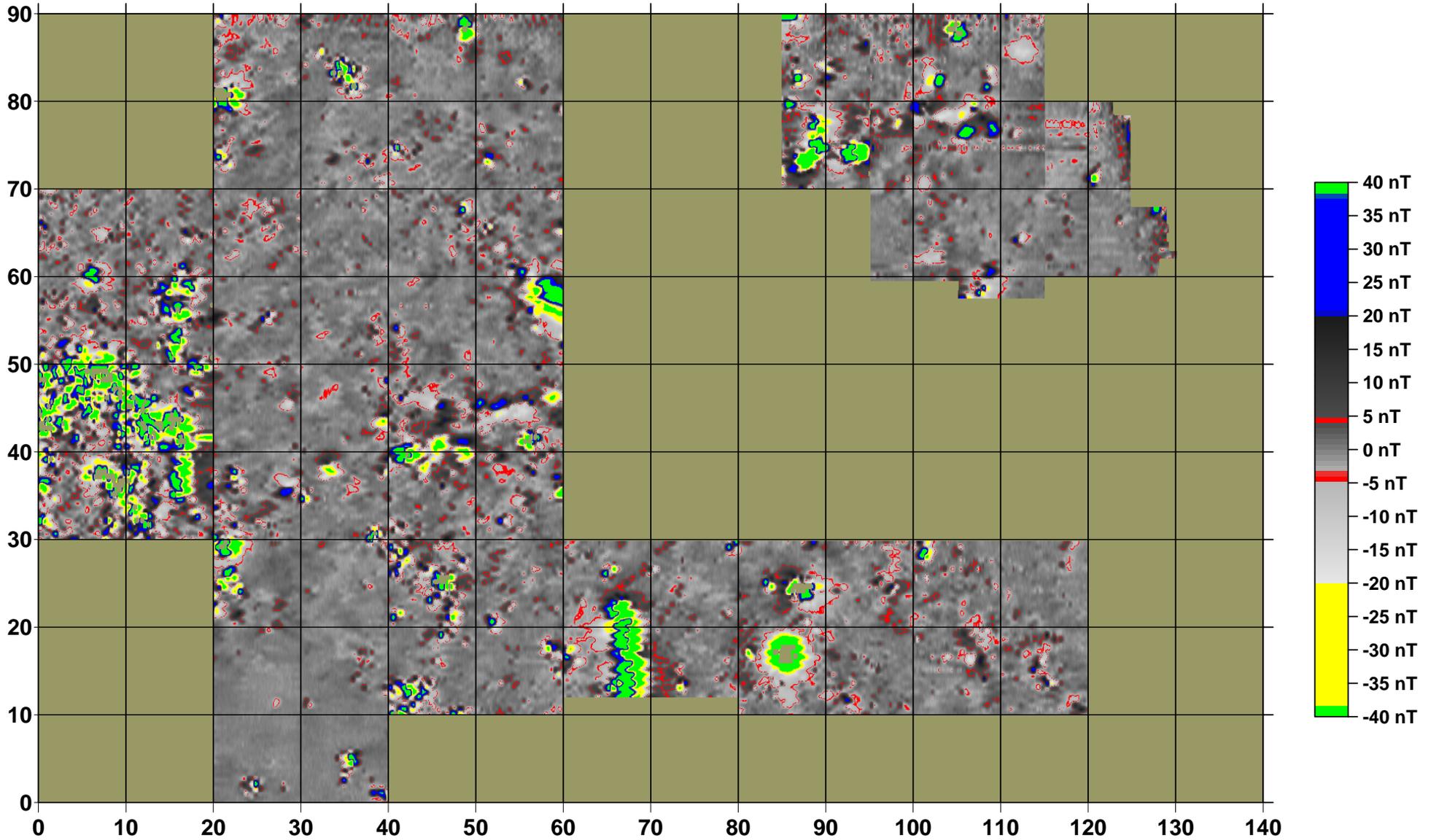
This magnetic field gradient survey is typical of North American archaeological investigation of battle fields and prehistoric sites. It is characterized by very high data sample density, meticulous field procedures in instrument operation as well as +/- 6 cm (RMS) data sample location logging. The magnetic survey provides an excellent magnetic object distribution map and the metal detector is used to discriminate the metal objects from the rock objects. It seems a useful method for archaeological work in highly magnetic glaciated soils.

ACKNOWLEDGEMENTS

Geoscan Research USA and the author wish to acknowledge the excellent research and field support of the JMA staff Barbara Donohue, Martin Dudek, Karen Michalec, Alan Smith, Brian Lever and Thomas Mailot; as well as the interest of Hanscom staff Don Morris and Greg Cravedi.

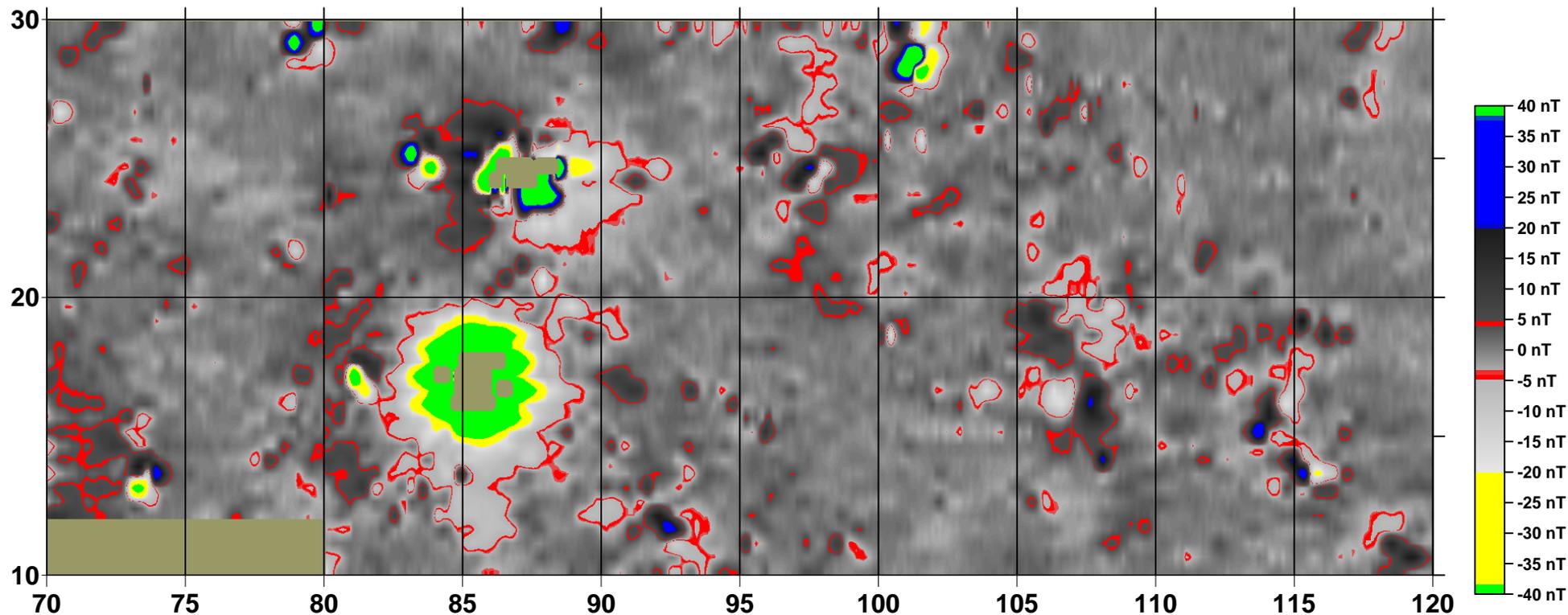
Strong Magnetic Features Maps

Area 31 Hanscom Field Air Force Base



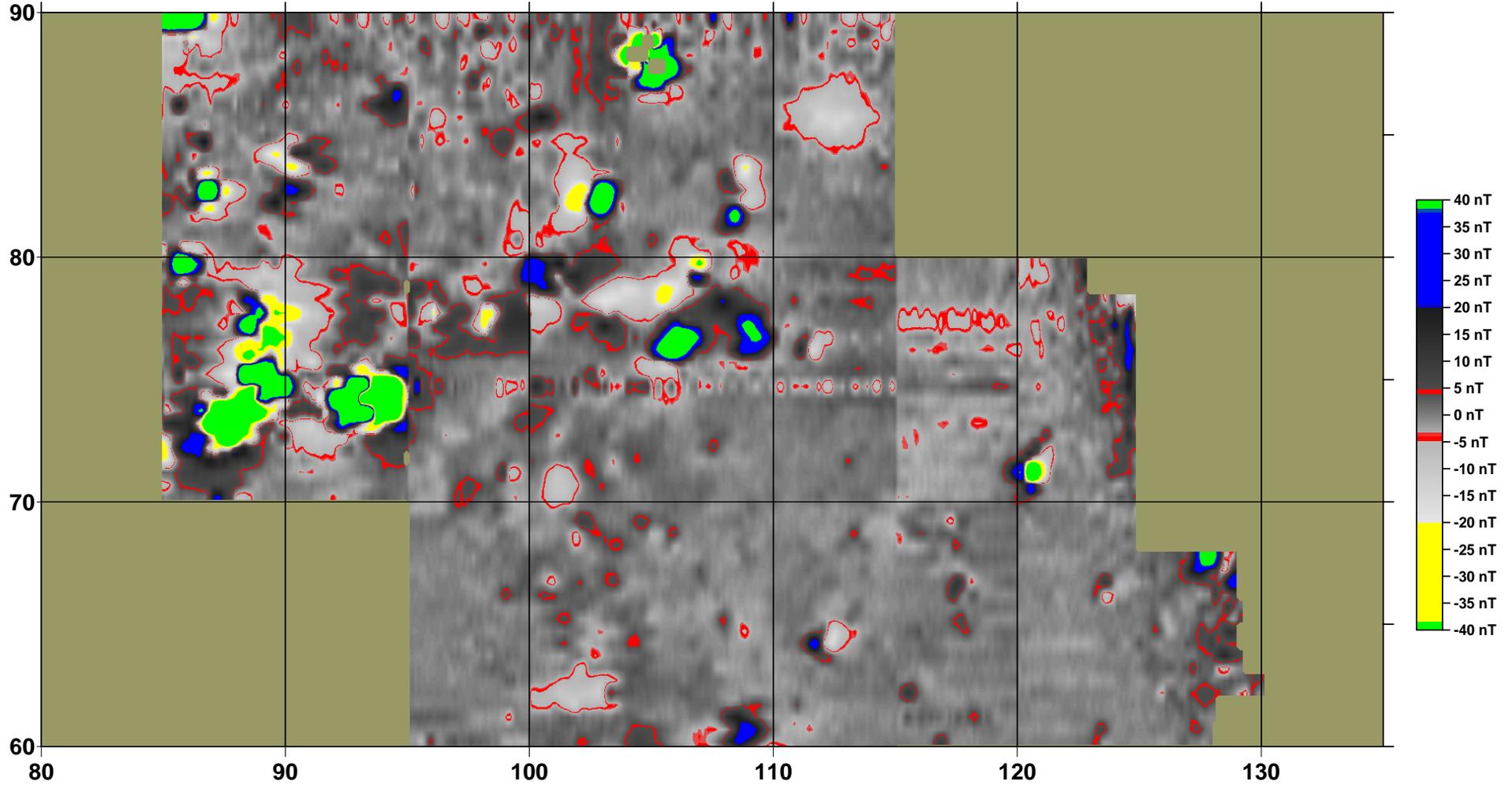
MAGNETIC FIELD GRADIENT SURVEY
ALL MAGNETIC FEATURES AND ARTIFACTS

Area 31 Hanscom Field Air Force Base



MAGNETIC FIELD GRADIENT SURVEY
ALL MAGNETIC FEATURES AND ARTIFACTS

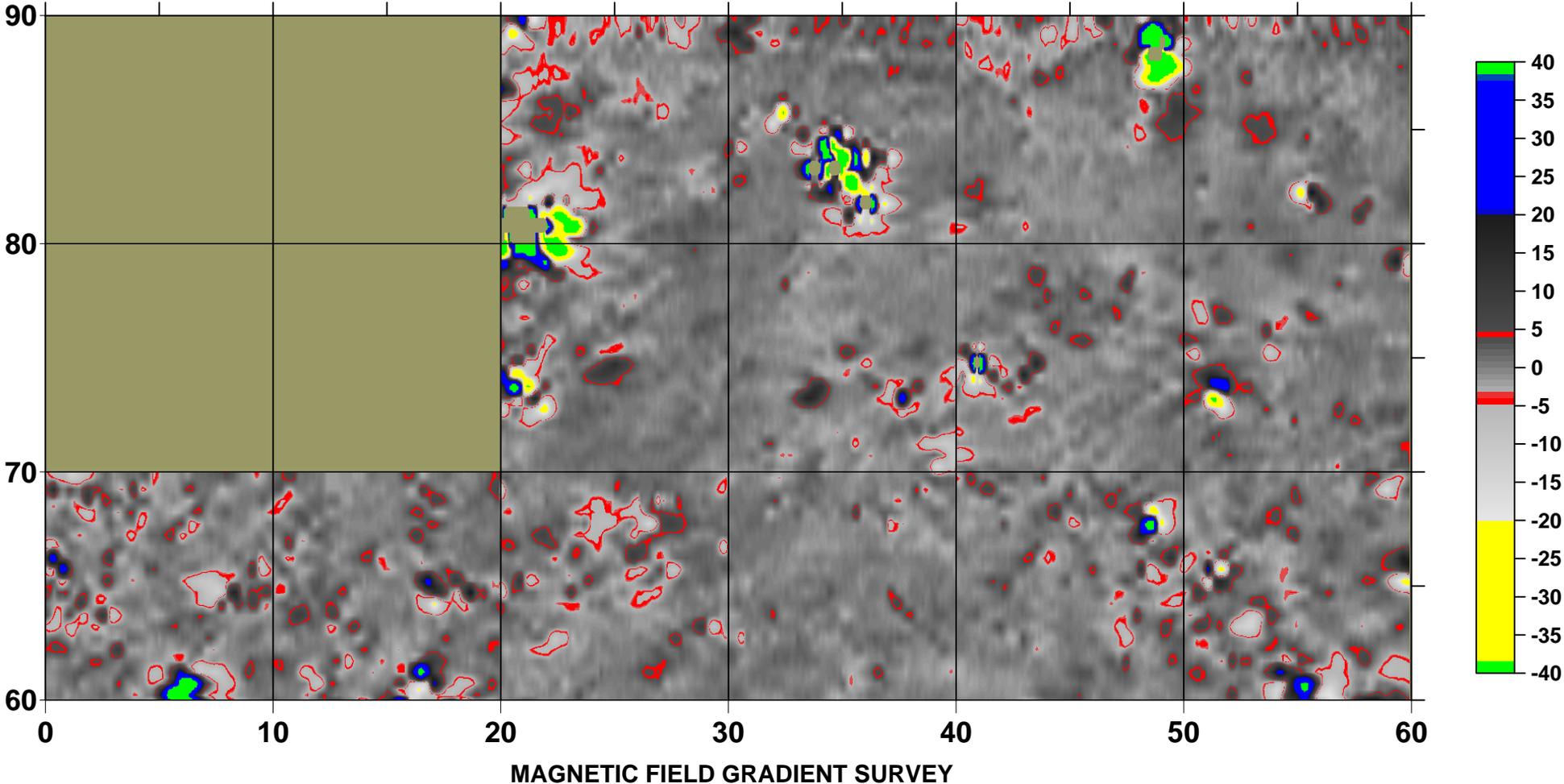
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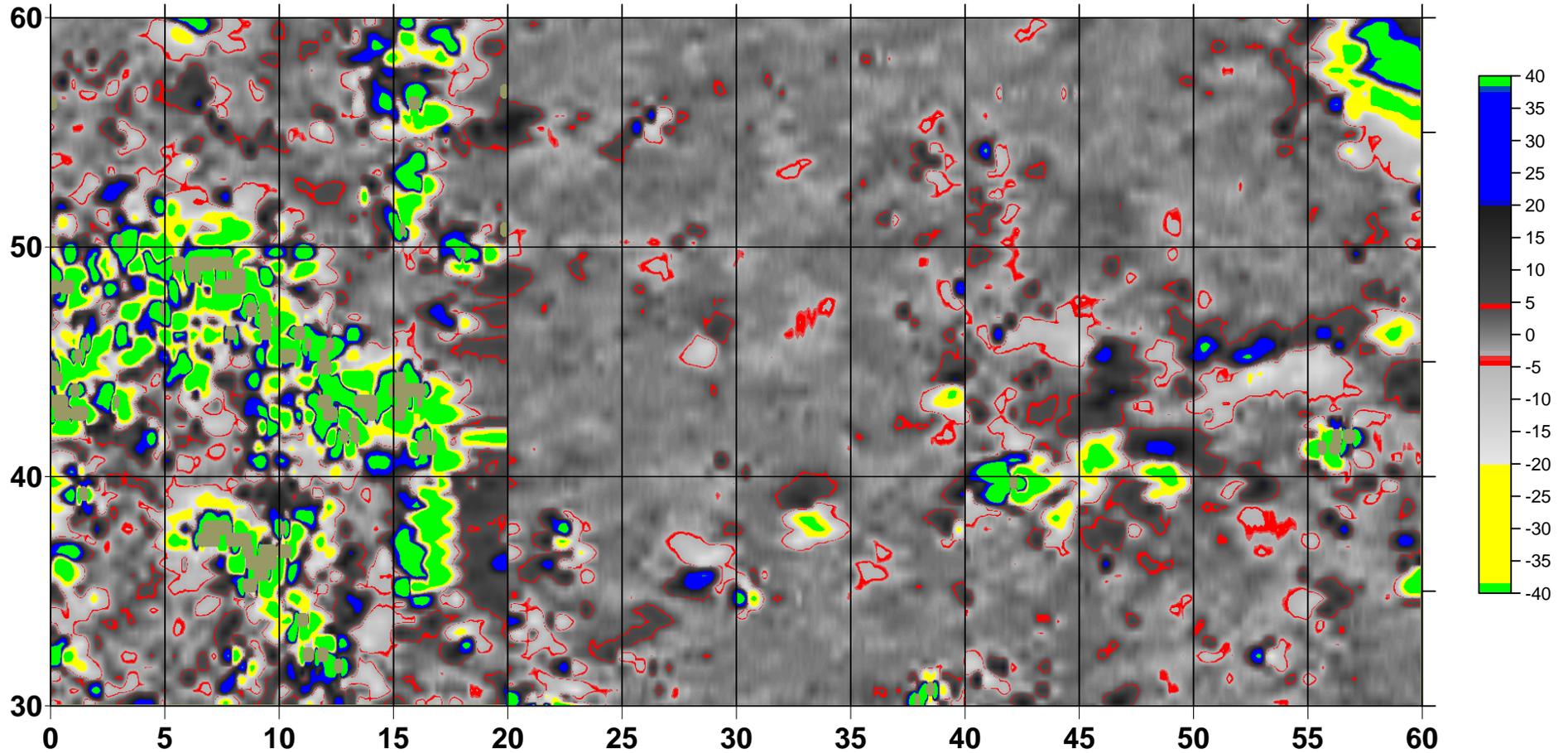
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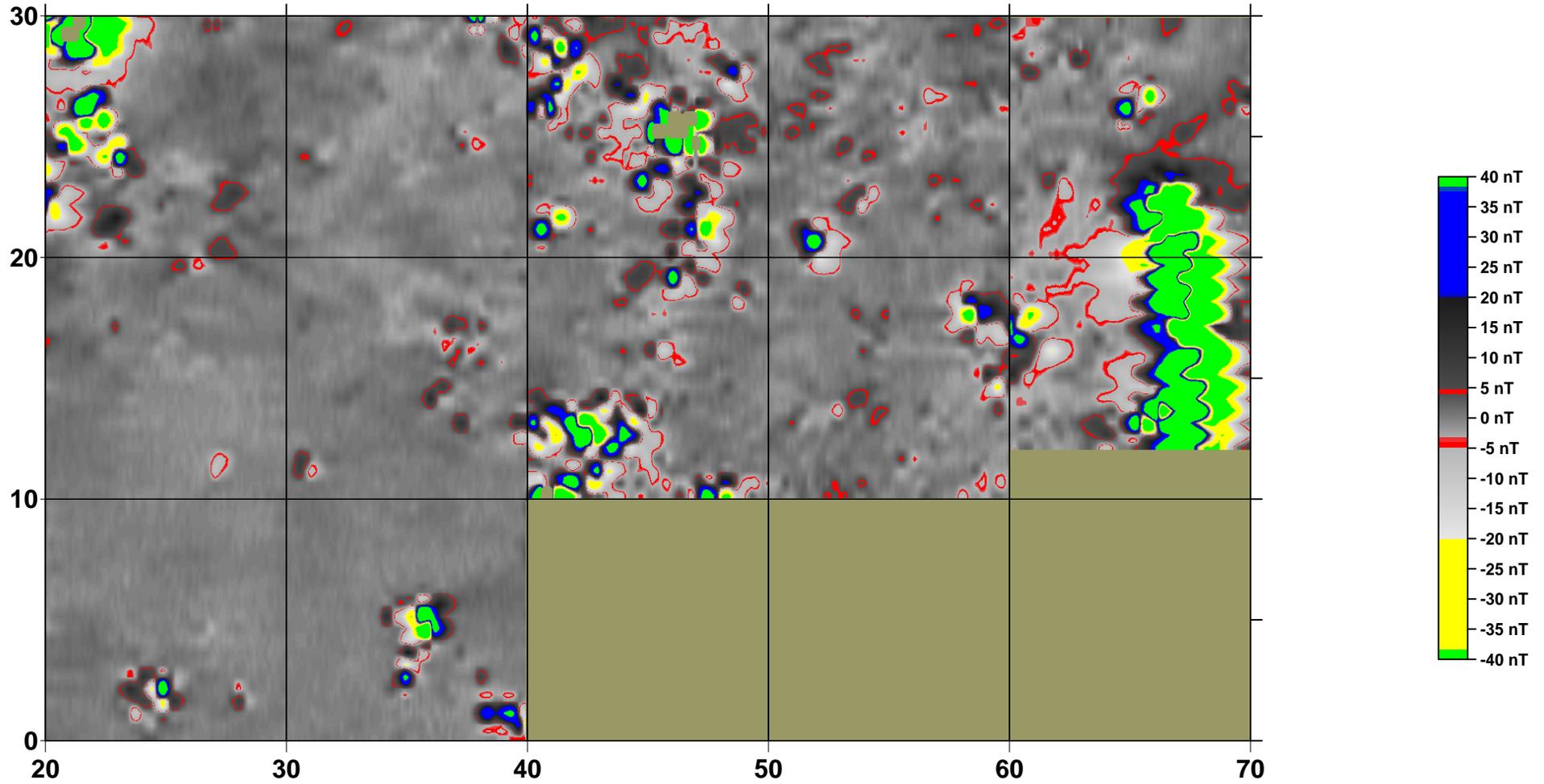
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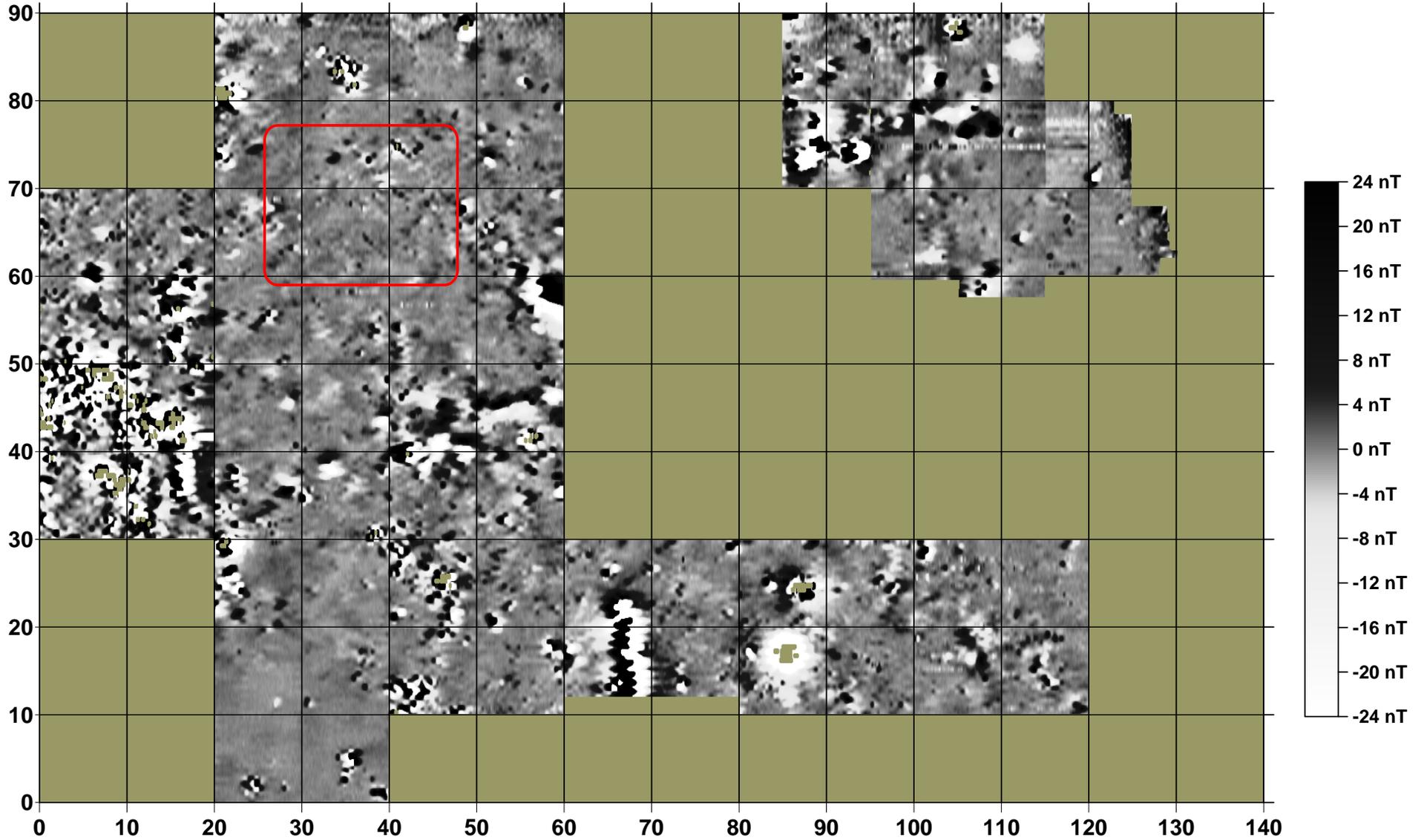
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MAGNETIC FIELD GRADIENT SURVEY
ALL MAGNETIC FEATURES AND ARTIFACTS

Weak Magnetic Features Maps

Area 31 Hanscom Field Air Force Base



MAGNETIC FIELD GRADIENT SURVEY
ALL MAGNETIC FEATURES AND ARTIFACTS



Rectangular Features