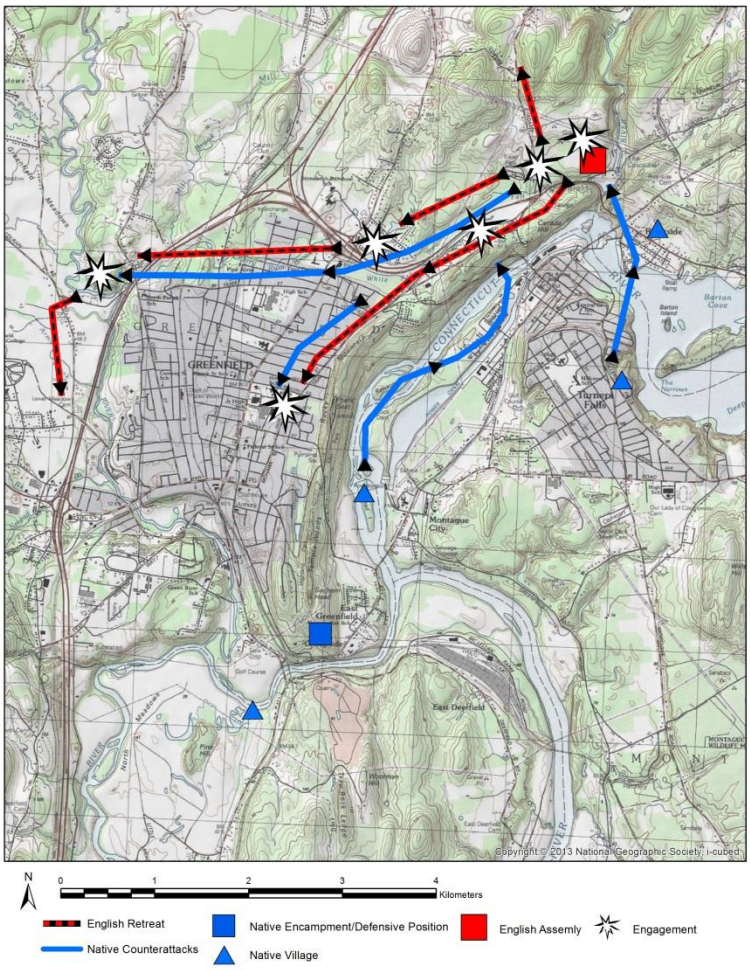
Research Design

The Battle of Great Falls / Wissantinnewag-Peskeompskut Site Identification and Evaluation Project

National Park Service
American Battlefield Protection Program
GA-2287-16-0056



Submitted by
Kevin McBride, Ph.D.
Mashantucket Pequot Museum and Research Center

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Introduction

In recognition of the historical and cultural significance of the Battle of Great Falls / Wissatinnewag-Peskeompskut, the Town of Montague received a Site Identification and Documentation grant (GA-2287-16-006) from the National Park Service American Battlefield Protection Program (NPS ABPP) to conduct archeological fieldwork at the Battle of Great Falls (Wissantinnewag-Peskeompskut) fought on May 19, 1676 in northwestern Massachusetts during King Phillips War (June 1675 – August 1676).[1] The Town of Montague worked in conjunction with the Battlefield Advisory Board which consisted of Historical Commissioners and representatives from the Towns of Deerfield, Gill, Greenfield, Montague and Northfield and cultural specialists from the Narragansett, Nipmuc, Stockbridge-Munsee Mohican, and Wampanoag Tribe of Gay Head (Aquinnah) tribes.

The primary objective of the project is to conduct archaeological fieldwork to locate, sequence, and document battlefield actions within the four Battlefield Core Areas (defined as areas of direct combat) identified within the Battlefield Boundary (delineated as the tactical context and visual setting of the battlefield) as defined in the final technical report of the Battle of Great Falls (Wissatinnewag-Peskeompskut) Pre-Inventory and Documentation Plan, and to assess the eligibility of the battlefield for nomination to the National Register of Historic Places.[2] Although four potential Core Areas were identified (Village of Wissatinnewag-Peskeompskut, English Assembly Point, White Ash Swamp, Green River Ford) based on previous historic and archaeological research it is anticipated that additional combat actions and ancillary sites will be identified during the course of the project.

The Town of Montague previously received a Pre-Inventory Research and Documentation grant from the NPS ABPP (GA-2287-14-012) to: 1) document the May 19, 1676 English assault on the Native village of Wissatinnewag and the subsequent Native allied attacks on English forces shortly after the attack was over; 2) consult with the Native American communities associated with the Battle of Great Falls/Wissatinnewag-Peskeompskut; 3) examine

[1] The NPS ABPP promotes the preservation of significant historic battlefields associated with wars on American soil. The purpose of the program is to assist citizens, public and private institutions, and governments at all levels in planning, interpreting, and protecting sites where historic battles were fought on American soil during the armed conflicts that shaped the growth and development of the United States, in order that present and future generations may learn and gain inspiration from the ground where Americans made their ultimate sacrifice. The goals of the program are: 1) to protect battlefields and sites associated with armed conflicts that influenced the course of American history, 2) to encourage and assist all Americans in planning for the preservation, management, and interpretation of these sites, and 3) to raise awareness of the importance of preserving battlefields and related sites for future generations.

[2] Kevin McBride, David Naumec, Ashley Bissonnette & Noah Fellman, *Final Technical Report Battle of Great Falls (Wissatinnewag-Peskeompskut) Pre-Inventory and Documentation Plan* (GA-2287-14-012), report submitted to the Town of Montague, 2016.

and analyze the documentary record and archeological collections associated with the battle; 4) collect Tribal and non-Tribal (Yankee) oral histories; 5) conduct military terrain analysis (KOCOA) to identify and assess the battlefield terrain including avenues of approach and withdrawal, key terrain features, battlefield sites and actions, ancillary sites, and battlefield Study and Core Areas; 6) engage local officials, landowners, and the interested public in efforts to locate and protect the battlefield(s) and associated sites.

Project Abstract / Scope of Work

The tasks identified by the Town of Montague's RFP for the Site Identification and Evaluation Project for the Battle of Great Falls (Wissatinnewag-Peskeompskut) include:

Task 1: Develop an archeological research design to standards acceptable by the ABPP and in accordance with Massachusetts Historic Commission permitting and standards. Research design should address NAGPRA and protocol for discovery of human remains. Review Pre-Inventory Research and Documentation Report (Phase I Report).

The Research Design is outlined below

Task 2: Prepare and Submit Permit Application for archeological investigation to the Massachusetts Historic Commission. The Battlefield Grant will be responsible for obtaining landowner permission for excavation and artifact donation.

An archaeological permit application will be submitted to the Massachusetts Historical Commission within a few weeks after the if the Mashantucket Pequot Museum and Research Center is awarded the contract

Task 3: Conduct Field Survey in accordance with Secretary of Interior's Standards and Guidelines for Archeological Documentation

Specific Information on these tasks are discussed in the Research Design outlined below

3.1 Walkover Survey: A pedestrian survey will be conducted of the study areas to identify artifacts that may be visible on the surface. Much of the remaining land in the study areas is covered with vegetation or previously developed and probably will have no visible artifact concentrations. The Town will hire a THPO from Narragansett, Wampanoag of Gay Head (Aquinnah), and/or Nipmuc to be present during walkover.

3.2 Remote Sensing: The walkover will be followed with a metal detector survey of selected areas within each of the core areas. The survey will be conducted using a grid of points, established in proportion to the size of the area to be examined. "Hits" will be flagged,

mapped and evaluated with small excavation units. The grid location and depth of each artifact will be recorded on GPS for use in making a GIS map of artifact distribution. The Town will hire a THPO from Narragansett, Wampanoag of Gay Head –Aquinnah, and/or Nipmuc to be present during remote sensing.

3.3 Subsurface Testing: Subsurface testing may also be conducted in core areas and sites that are expected to contain significant numbers of non-metallic artifacts and features. Examples of these sites are White Ash Swamp and Village core areas. The Town will hire a THPO from Narragansett, Wampanoag of Gay Head -Aquinnah, and/or Nipmuc to be present during all subsurface testing.

3.4 Prepare GIS Map of Battlefield Area using NPS battlefield survey data dictionary

Task 4: Laboratory Analysis and Curation. The field methodology will be designed to document the battlefield boundaries with minimal artifact collection. Some artifacts will be recovered; however, so adequate laboratory facilities are required to handle the expected classes of recovered materials which may include small, corroded metallic objects, such as shell fragments, bullets, buckles and so forth. All artifacts will be cleaned, assessed for conservation needs, identified and catalogued and the location of each plotted on the battlefield base maps. The PI should make arrangements with a museum that meets National Park Service Standards (NPS Museum Handbook I and II) for permanent artifact conservation.

Specific Information on this task is discussed in the Research design discussed below

Task 5: Coordinate a public planning process which shall include three meetings. The first meeting should be to present the goals of the project. The second meeting will be to solicit public comment on the draft report. The third meeting will be a presentation of the final report.

Task 6: Prepare technical report as specified in the work plan, with a preference for a final product that seamlessly combines the Phase I and Phase II report.

Specific Information on this task is discussed in the Research design discussed below

Task 7: Provide monthly updates to the Battlefield Grant Advisory Board through a written report or participation in the monthly board meetings.

Task 8: Following approval of the final report document, the consultant shall provide the Town with ten (10) acid-free paper copies of the Technical Report and GIS map. One copy should be ARPA redacted. One (1) digital copy on CD shall be delivered at that time.

The Mashantucket Pequot Museum and Research Center (MPMRC) proposes to conduct the battlefield archeology survey for the Battle of Great Falls/Wissantinnewag-Peskeompskut. The MPMRC's battlefield archaeology personnel who will be used for the project include the Director of Research, Laboratory Director, Head Conservator, Military Historian, Senior Researcher,

and Battlefield Archaeologists. The MPMRC staff have extensive experience conducting battlefield surveys and in the identification and analysis of Colonial Period domestic and military material culture. To date the MPMRC has received seven NPS ABPP battlefield grants associated with the Pequot War, and has contracted with the Rhode Island Historical and Preservation and Heritage Commission to conduct a battlefield survey of the "Second Battle of Nipsachuck" fought in King Philip's War (July 2-3, 1676).

A significant part of the research and analysis associated with the identification and documentation of any colonial era archaeological site is the ability of battlefield archaeologists to identify relevant domestic and military battle-related objects from earlier and later colonial (and modern) material culture. The Battlefield Landscape within the vicinity of Great Falls has been used and occupied continuously for the last 350 years for a variety of domestic, light industrial, and agricultural purposes with resulting deposition of associated material culture. Any historic landscape contains hundreds if not thousands of objects reflecting centuries of land use – most of them metallic. As a result, battlefield surveys recover hundreds of objects that must be quickly identified to determine if they are related to the battlefield sites and actions under investigation. Real time information on the nature and distribution of battle-related objects is essential to make appropriate decisions regarding the priorities, direction, and focus of field investigations. Over the last decade MPMRC battlefield archaeologists have acquired a great deal of knowledge and experience in the identification and analysis of a wide range of Colonial Period domestic and military material culture including domestic artifacts, arms, ammunition, and articles of personal and military clothing (e.g., buttons, buckles, aglets). Although the MPMRC battlefield archaeologists have developed a solid comparative knowledge of Colonial and post-Colonial Native and Euro-American domestic and military objects, additional research will be necessary to compile a comprehensive database of arms, equipment, clothing, and personal objects associated with seventeenth century battlefields and domestic sites at Great Falls.

A very important aspect of the battlefield survey will be the presence of Native cultural specialists, local historians, and other knowledgeable individuals in the field on a regular basis to provide perspectives on in-field battlefield interpretations. Experience from other battlefield surveys has demonstrated the importance of daily and weekly discussions among all parties to help understand and interpret the nature and evolution of the battlefield as the battlefield survey progresses.

The MPMRC can also provide experienced archeological field, laboratory, and technical personnel, facilities, and services including walkover reconnaissance, metal detecting, remote sensing (e.g., ground penetrating radar, electrical resistivity, magnetometry), archaeological testing and excavation, artifact cataloguing, identification and analysis, conservation, radiography, and microscopy. The MPMRC also has extensive experience in the application of KOCOA to study battlefield sites (see section under Research Design). The MPMRC will integrate findings from archaeological and historical research to complete a final report integrating results from the Phase I (Pre-Inventory Evaluation and Documentation Phase) and Phase II (Site Evaluation and Evaluation Phase) and synthesizing all findings, and draw relevant inferences and conclusions of the various battle events. All work will be done in accordance with the Secretary of the Interior's Standards for Preservation Planning and the methods outlined in the National Park Service American Battlefield Protection Program Battlefield Survey Manuel (2016).

Historic Context

King Philip's War (June 1675 – August 1676) was an armed conflict between dozens of Native American tribes and bands who inhabited (and still do) present-day southern New England fighting against the United Colonies of Connecticut, Massachusetts Bay, and Plimoth.[3] Dozens of frontier towns in central Massachusetts and the Connecticut Valley were attacked and burned during the war, as were settlements in Providence Plantations, Plimoth Colony and eastern Massachusetts [Figure 1]. Colonial authorities estimated that 600 English were killed and 1,200 houses burned during the conflict. A minimum of 3,000 Native men, women, and children were battle casualties, and thousands more died from battle, disease, starvation, and exposure, or were sold into slavery. The conflict is often referred to as the deadliest in American history based on English and Native civilian and military casualties relative to the population.[4]

[3] King Philip's War has also been referred to as the First Indian War, Metacom's War, or Metacom's Rebellion. Most recently, Major Jason Warren has referred to the conflict as the Great Narragansett War in his book *Connecticut Unscathed: Victory in the Great Narragansett War* (2014). The Nolumbeka Project, a 501©(3) non-profit organization dedicated to the preservation of the history of Native Americans/American Indians of New England based in Greenfield, Massachusetts. The Nolumbeka Project refers to the war as the "Second Puritan war of Conquest" (The first being the Pequot War) and believe that it "was not simply a clash of cultures" but "the results of the actions of and reactions to a very identifiable group of connected people who had a vision for themselves and their descendants in the Nee world that could not co-exist over time with the value sand life-ways of the First Peoples of North America." (Personal Communication).

[4] Douglas Leach, *Flintlock and tomahawk; New England in King Philip's War.* New York, NY: Macmillan, 1958.

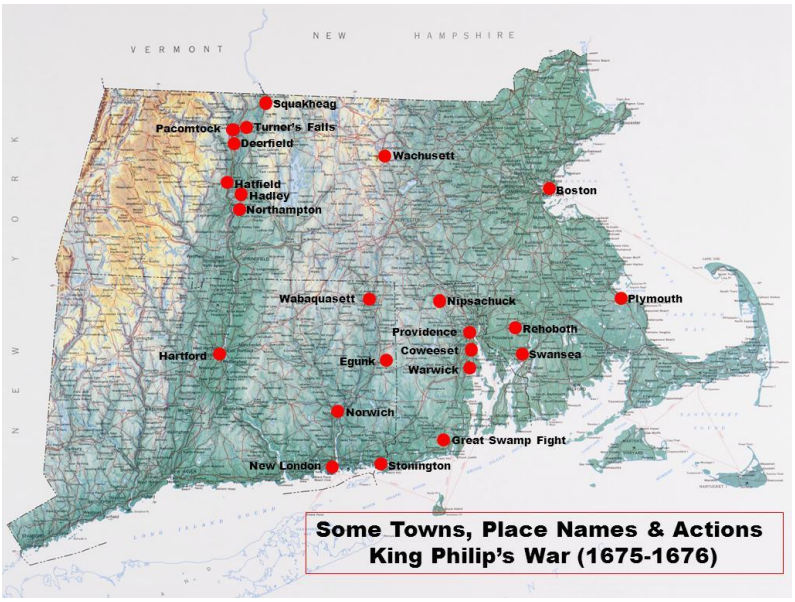


Figure 1 – English settlements attached during King Philip's War.

In April of 1676, Northampton, Hadley, and Hatfield were the northernmost English frontier towns on the upper Connecticut River. Settlements in Deerfield and Northfield had been destroyed and abandoned earlier in the war. The Great Falls had become a gathering spot for Native peoples at war with the English, and the settlements at Peskeompskut were steadily growing as Native people throughout the region gathered to rest, resupply and participate in ceremonies and rituals. English settlers in the upriver towns were gathering intelligence that alerted them to a growing Native presence to the north at the falls. While Connecticut and Massachusetts Bay authorities were involved in peace negotiations with various Native leaders, the townspeople of the English settlements at Northampton, Hadley and Hatfield were becoming increasingly concerned with the large body of Native forces massing to the north and the potential threats this represented.

Around May 13, 1676, Native soldiers from the Peskeompskut area raided Hatfield meadows and captured seventy cattle and horses which were driven north to the north Deerfield meadows for use by the Native communities gathered at Peskeompskut. This incident enraged English settlers at Hatfield and the other river towns, who had been urging Colonial officials to attack those upriver Native settlements for weeks. Many of the English in the Hatfield and Hadley communities were refugees from the destroyed Northfield and Deerfield settlements and harbored a great deal of resentment toward the tribes gathered at the falls. The deaths of more

than 100 English soldiers and settlers in the upper valley at the hands of the Indian enemy over the previous six months also contributed to a growing desire on the part of the settlers to attack the Native people gathered at Wissatinnewag-Peskeompskut.

Two days later two English "lads" taken captive during the earlier raid on Hatfield, and recently released, informed the settlers and garrison at Hadley about the whereabouts and disposition of the Natives at Wissatinnewag-Peskeompskut. One of the informants, Thomas Reed, related that the Natives had planted at the Deerfield meadows and had fenced in the stolen cattle. He also described the Native encampments at the falls and estimated that there were around 60-70 fighting men.[5] Armed with this new information, the militia committees of the upper river towns gathered garrison soldiers and settlers from Northampton, Hadley, Hatfield, Springfield and Westfield and prepared for an attack on the encampments at Peskeompskut. English forces were assembled from the various towns and gathered at Hatfield by May 18th. Captain William Turner was commander of the relatively inexperienced militia force, drawn from townspeople and garrison troops. Turner counted on the element of surprise and what he believed to be a larger force than the Natives could muster. Captain William Turner and 160 men, most of them mounted, left Hatfield at dark on the evening of May 18th, anticipating a dawn surprise attack on the Native encampment at Peskeompskut.[6]

The Native encampments at Peskeompskut were located in the vicinity of the Great Falls, with the two main villages located above the falls on the north and south banks of the river. The English battle plan was likely drawn from intelligence obtained from Thomas Reed who had recently escaped from the Native encampments and English scouts who reported there were Native soldiers encamped on an island in the Connecticut River (present-day Smead's and perhaps Rawson's Island) a little more than a mile south of the falls, and at Cheapside guarding the Deerfield River ford. The English began their march just as night fell on May 18th. Turner's force traveled north through Hatfield meadows on the road towards Deerfield staying on the west side of the Connecticut River and remaining east of the Deerfield River.[7]

Once Turner's company forded the Deerfield River they continued north through Greenfield Meadow along the west bank of the Green River. Turner's command crossed the

[5] Rev. John Russell and others at Hadley, May 15, 1676, Document 71b, Colonial War, Series I, Connecticut State Archives.

[6] *Estimates on troop strength include "One hundred and four score" in Mather, A Brief History. P. 49; "two or three hundred of them" in Hubbard. Troubles with the Indians. P. 86; "One hundred fifty rank and file" in Bodge. King Philip's War. P. 245; "About 150 or 160 mounted men" in Judd. History of Hadley. P. 171.*

[7] *Bodge. King Philip's War. P. 245.*

Green River at the Green River Ford In the midst of a thunderstorm, which served to hide their movements from the Native Sentries at Cheapside. Turner continued eastward paralleling the brook and swamp until they came to a high terrace overlooking the Fall River. The English troops dismounted, tied their horses to nearby trees and the company crossed the Fall River and ascended a steep slope to the summit of the broad, flat hill above.[8] The English gathered their forces on the upper slope of the hill which overlooked the village to their south along the north bank of the Connecticut River and launched their attack at daybreak.

By all accounts, English forces were able to advance within point-blank range of the village without being detected. On a given signal English forces opened fire and fell in on the unsuspecting inhabitants of the village and began to indiscriminately kill all Native peoples they encountered. As non-combatants (unarmed old men, women, and children) ran away from English soldiers towards the banks of the Connecticut River armed Native men tried to engage the English and slow the assault. English soldiers who took up positions along the shoreline opened fired on the swimmers and paddlers hitting some and causing others to be swept by the force of the river over the falls. The English suffered one man killed and two wounded during the assault.[9] Native casualty figures were uncertain at the time but according to the historian Increase Mather "Some of the Souldiers affirm, that they numbered above one hundred that lay dead upon the ground, and besides those, others told about an hundred and thirty, who were driven into the River, and there perished, being carried down the Falls."[10] Turner's men rescued an English captive who told them that Philip [Metacom] was nearby with a thousand men. The report was believed by the English and at the same moment it was received, or within a few minutes of the report, they were attacked by Native men from the village on the south side of the Connecticut River. The coincidence of the report and the attack spread panic and fear through the English ranks, and the retreat quickly turned into a rout with every man for himself.

The Indian soldiers encamped on the islands below the falls also responded to the attack on Peskeompskut by attacking the English on their flanks and setting ambushes in front of the retreating English along the White Ash Swamp. Native soldiers from the southern village, Cheapside, and survivors from the Peskeompskut attack began to converge on Turner's company. The English forces were attacked from all directions and their command and

[8] *Hubbard. Troubles with the Indians. P. 86.*
[9] Mather, *A Brief History.* P. 49.
[10] Mather, *A Brief History.* P. 49.

organization began to break down turning the retreat into an unorganized rout. Native soldiers struck the English from the cover of White Ash Swamp and from the rear, and overwhelmed smaller groups of men that separated from the larger group. Native forces continued to attack the English along their route to the Green River Ford. Native forces anticipated the English route of retreat and converged at the Green River Ford where they ambushed the English as they made their way through the narrow valley. It was at the Green River Ford that Captain Turner was struck by musket fire as he was crossing the river. Lieutenant Holyoke rallied and organized the remaining men for a disciplined fighting retreat, and is credited with preventing the complete destruction of the remaining English troops. Captain Turner's company had suffered a total of thirty-eight casualties (killed), including the commanding officer.[11] It is not clear how many Native soldiers and non-combatants lost their lives in the engagement as accounts vary considerably. Also, like the English casualty figures, there is no accounting for those who died of their wounds after the attack. Based on the accounts of two soldiers who appear to have carefully tallied the dead at Peskeompskut, Reverend Russell estimated that "we Cannot but judge that there were above 200 of them Slain."[12]

Archeological Identification of the Battle of Great Falls/Peskeompskut

While the primary sources associated with the Battle of Great Falls present a number of challenges with respect to identifying the prospective location(s) of the battle events, the sequence of events, and their spatial correlates that characterized the battle present several plausible options for the location(s) of battlefield actions by integrating information from primary accounts, local oral history, land records, historical maps, aerial photographs, a walkover reconnaissance of prospective battlefield sites, and KOCOA analysis (Figure 2). The Pre-Inventory Research and Documentation project conducted by the MPMRC[13] identified four Core Areas (areas of direct combat); Peskeompskut Village, English Assembly Point, White Ash

[11] English Casualty Figures as reported in primary accounts are as follows: "eight or nin[e] and thirty" (38-39) in CSL, Connecticut Archives, Colonial War, Series I. P. 74; "two and thirty" (32) in L'Estrange. *A True Account of the Most Considerable Occurrences.* P. 4; "about thirty-eight" (38) in Edward Douglas Leach, Ed., *A Rhode Islander Reports On King Philip's War, the Second William Harris Letter of August 1676* (Providence: Rhode Island Historical Society, 1963). P. 80; "thirty and eight" (38) in Mather, *A Brief History.* P. 50; "thirty eight" (38) in Hubbard. *Troubles with the Indians.* P. 85; "Los of 37 men and the Captin Turner" in Chapin. *Chapin Genealogy.* P. 4.

[12] Native Casualty Figures as reported in primary accounts are as follows: "abov[e] 200" (200+) in CSL, Connecticut Archives, Colonial War, Series I. P. 74; "several hundred" (200+) in L'Estrange, *A New and Further Narrative.* P. 12; "four hundred" (400) in L'Estrange. *A True Account of the Most Considerable Occurrences.* P. 4; "hundreds" (200+) in Leach. *Second William Harris Letter.* P. 80; "above one hundred that lay dead upon the ground…about an hundred and thirty, who were driven into the River" (230+) in" (38) in Mather, *A Brief History.* P. 50; "two or three hundred" (200-300) in Hubbard. *Troubles with the Indians.* P. 85.

[13] Kevin McBride, David Naumec, Ashley Bissonnette & Noah Fellman, *Final Technical Report Battle of Great Falls (Wissatinnewag-Peskeompskut) Pre-Inventory and Documentation Plan* (GA-2287-14-012), report submitted to the Town of Montague, 2016.

Swamp, Green River Ford within the battlefield landscape based on analysis of the historical record. It is considered highly likely that additional battle actions will be identified during the course of the fieldwork phase of the project.

A number of battle-related objects were recovered over the years within the battlefield landscape by local metal detector hobbyists and collectors which helped to define the Core Areas and Battlefield Boundary. The Great Falls battlefield landscape also contains thousands of objects dating to the eighteenth through the twentieth century reflecting centuries of land use after the Great Falls battle. Battlefield surveys of other seventeenth century battlefields associated with the Pequot War (1636-1637; Battle of Mistick Fort, Siege and Battle of Saybrook Fort, Battle of the English Withdrawal) and King Philip's War (Second Battle of Nipsachuck) recovered hundreds of metal objects associated with domestic sites (e.g., brass buttons and buckles, iron kettle fragment, iron tool fragments, and iron architectural hardware such as nails, hinges, etc.), and light industrial and agricultural activities (e.g., ox and horseshoes, barbed wire, fence and post nails; quarry feathers and plugs, iron chain links, wedges). These assemblages reflect a rich and complex land use history, but also complicate the identification of potential battle related objects.

Research Design

The Research Design outlined below incorporates the methods, procedures, and products identified in the Town of Montague's RFP for Tasks 1-8. The NPS ABPP has issued a revised *Battlefield Survey Manuel* (2016) that outlines standard methodologies to be employed in researching, documenting, and mapping battlefields. All NPS ABPP grantees are directed to use the manual. The manual is designed to focus the attention of battlefield archaeologists on a standard methodology to obtain reliable information that can be used by state historic preservation offices, local planners, and preservation advocates to protect and preserve battlefields. A standardized methodology also enables the NPS ABPP to compare information across all wars and sites. Although the manual was originally designed for documenting Civil War battlefields, it can be easily adapted to the challenges of conducting surveys on seventeenth century battlefields which are often characterized by incomplete and often contradictory historical information. The methods and procedures outlined in the NPS ABPP *Battlefield Survey Manuel* will be incorporated into the Research Design and the Scope of Work as identified by the Town of Montague.

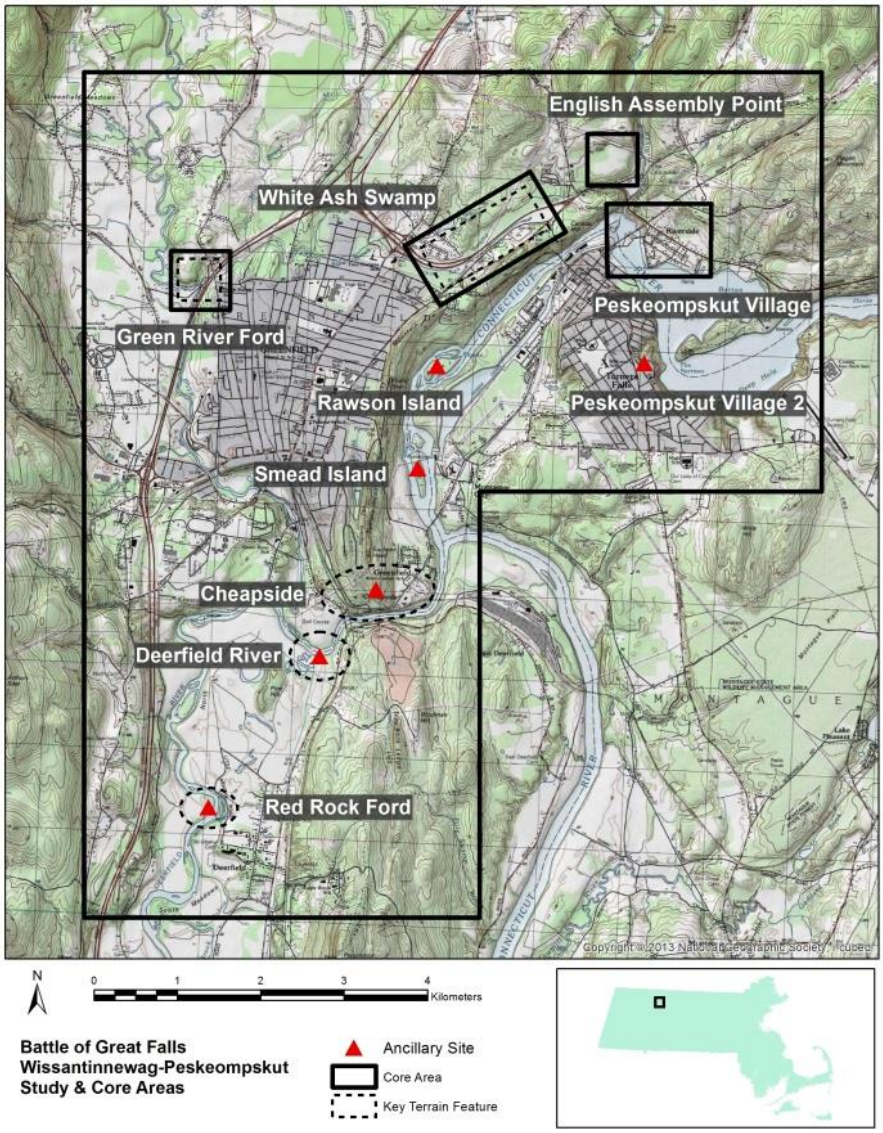


Figure 2 – Battle of Great Falls Battlefield Boundary and Core Areas.

The MPMRC proposes the following Research Design in order to complete the Site Identification and Evaluation of the Battle of Great Falls. Specific tasks include: research the history of the battlefield site (complete yet ongoing; see above section titled Historical Context); develop a detailed land use history (to be completed); conduct archaeological field work within the Battlefield Boundary and Core Areas to locate and document the Battlefield Landscape and battle related archeological sites; conduct artifact cataloguing and analysis of all objects

recovered from the Core Areas and battlefield landscape; map battle-related artifacts and positions of combatants and features on a USGS topographic map with GIS; integrate archeological evidence with historical research to delineate the boundaries of the Core Areas and Battlefield Boundary including; complete a final report of the battlefield survey to document findings complete with GIS mapping, object inventories and analyses, and battlefield reconstructions; and assess overall significance and site integrity and identify threats to battlefield sites with respect to the criteria for nomination to the National Register of Historic Places.

Communication

An important aspect of the project will be to effectively communicate ongoing results to the general public and particularly the Battlefield Advisory Group, using in part the MPMRC's website KPWar.org, list serves and regular updates via email addresses to consenting participants. At a minimum updates will be conveyed to the Battlefield Advisor Group at monthly meetings and through written summaries of results of the battlefield survey on a more frequent basis. A priority in the communication process will be to continue to reach out to prospective land owners for permissions either through regular public informational meetings or personal communications. The Battlefield Advisory Board and knowledgeable individuals and organizations such as the Nolumbeka Project will be a critical resource throughout the project as they have a knowledge and understanding of the Battle of Great Falls that will greatly enhance the overall interpretation and reconstruction of battle events. Input from Native cultural specialists in this context will be highly valued. Monthly meetings organized by the Battlefield Advisory Board will certainly be helpful but more so will be active field participation and ongoing discussions with board members on new findings and battlefield interpretations

Battlefield Archeology

The discipline of Battlefield Archeology is concerned primarily with the identification and study of sites where conflict took place, and the archeological signature of the event. This requires information gathered from historical records associated with a battlefield including troop dispositions, numbers, and the order of battle (command structure, strength, and disposition of personnel, equipment, and units of an armed force during field operations), as well as

undocumented evidence of an action or battle gathered from archeological investigations. The archeology of a battlefield allows battlefield archeologists to reconstruct the progress of a battle, assess the veracity of historical accounts of the battle, as well as fill in any gaps in the historical record. This is particularly important with respect to the Battle of Great Falls as the historical record is often incomplete, inconsistent, and biased. Battlefield archeology seeks to move beyond simple reconstruction of the battlefield event, and move toward a more dynamic interpretation of the battlefield.[14]

Battlefield Pattern Analysis

Traditional battlefield interpretations and reconstructions rely primarily on historical information (e.g., battle accounts, narratives, diaries, etc.), occasionally augmented by oral histories and random collections of battle-related objects. These reconstructions tend to focus only on the spatial distribution of battlefield events which result in a static reconstruction of the battlefield, referred to Gross-Pattern Analysis. Douglas Scott, Richard Fox, and others have advocated an approach to battlefield archeology that moves beyond the particularistic and synchronic approach characteristic of Gross-Pattern Analysis in battlefield reconstructions.[15] This approach, known as Dynamic-Pattern Analysis, interprets and reconstructs battlefields by integrating discrete battlefield events and their archeological signatures into a cohesive spatial and temporal sequence.

Using both Gross-Pattern and Dynamic-Pattern Battlefield Analyses, the spatial and temporal dimensions of a battle are better defined by integrating the historical and archeological record into a process of battlefield reconstruction that seeks archeological and historical correlates of individual and unit behaviors. The historical record associated with battlefield events can be used to inform and test hypotheses of individual and unit actions and movements which can then be tested against the archeological record.

If individual and unit actions can be identified in battlefield accounts and their archeological signatures identified and tracked across the battlefield, a temporal dimension (sequencing) can be added to the battlefield analysis. Sequencing battlefield behaviors and

[14] Richard Fox and Douglas Scott. "The Post-Civil War Battlefield Pattern: An Example from the Custer Battlefield." *Historical Archaeology*, Vol. 25, No. 2: 92-103. 1991.

[15] Douglas D Scott, *Archaeological perspective on the Battle of the Little Bighorn* (Norman, OK: University of Oklahoma Press, 1989); Fox and Scott, "Post-Civil War Battlefield Pattern."

actions requires constructing a detailed timeline of battlefield events and actions based on historical accounts. This timeline can then be used to develop hypotheses regarding the archeological correlates (signatures) of discrete battlefield events and behaviors. Once the beginning and end points of a behavior or action can be identified, individual and unit behaviors can be sequenced and the movement of individuals and units across the battlefield can be reconstructed. It is the ability to reconstruct battlefield events in both space and time that allows for a dynamic reconstruction of the battlefield. Individual actions and movements must be viewed in the aggregate, as unit actions and movements are aggregates of individual actions and movements. As such, individual actions are often subsumed in unit actions and movements, the basic unit of analysis of battlefield actions. While individual actions can sometimes be identified on the battlefield, it is generally the units and their actions which are integrated into a cohesive spatial and temporal sequence to reconstruct and interpret the battlefield.

Gross patterns are defined as the spatial aspects of unit behaviors. Dynamic patterns are defined as analytical techniques (primarily firearm signature analysis achieved through comparative analysis of distinguishing attributes of bullets and shell casings of modern firearms) which allow for the identification of individual firearms on the battlefield. Gross patterning relies on a synchronic approach to battlefield reconstruction – a spatial composite of battlefield events achieved by correlating the historical record with the archeological record, but without reference to time (i.e., movement). Battle events, as expressed by discrete artifact distributions are placed in space, but not ordered in time. Dynamic pattern analysis takes the composite of battle events expressed in the archeological record and orders them in time through an ongoing assessment of the congruence of the historical and archeological records and by tracking the movements of individuals and units across the battlefield through firearms identification. Douglas Scott and Richard Fox developed the Post-Civil War Battlefield Pattern Approach during their study of the 1876 Battle of Little Bighorn (in Montana), which sought to investigate the behavioral dynamics on the battlefield.[16] The foundation of the Post-Civil War Battlefield Pattern Approach is recognizing individual behavioral patterns, which is dependent on identifying singular positions and movements about the battlefield.

[16] *Archaeological perspective on the Battle of the Little Bighorn*; Fox and Scott, "Post-Civil War Battlefield Pattern."

The key to a dynamic battlefield analysis as defined by Scott and Fox is modern firearm analysis that "allows resolution of individual positions and movements across the battlefield."[17] In the case of the Battle of Little Bighorn this was largely achieved through forensic ballistic analysis of thousands of bullets and cartridge cases which allowed researchers to track individual firearms across the battlefield. This integrated model of Gross Pattern Analysis and Dynamic Pattern Analysis has been the paradigm for Civil War and post- Civil War battlefield archeology and analysis since 1985. A dynamic reconstruction of battlefield events requires an ongoing assessment of the congruence of historical and archeological data in an effort to identify discrete groups or individual actions and movements on the battlefield in order to place them in a temporal framework. An integral part of this process is to place the battlefield and related sites in a broader cultural and battlefield landscape to better understand, interpret and identify battlefield events and sites. A cultural landscape is defined as a geographic area, encompassing cultural and natural resources associated with the historic battlefield event.[18] The key aspect of this analysis is the reconstruction of the historic landscape and battlefield terrain associated with the battle to identify natural and cultural features present in the battlefield space and to determine how they were used by the combatants.[19]

Battlefield Landscapes

Battlefield Landscapes consist of those natural (e.g. hills, streams, valleys, etc.) and cultural (e.g. roads, gun emplacements, trenches, fortifications, etc.) features that defined the original battlefield landscape, but also include the nature and evolution of natural and cultural features over time and their impacts to the original landscape. In order to identify, document, survey, and map a battlefield, battlefield historians and archaeologists must research all available and relevant historical accounts and identify the historic landscape that defined the battlefield in the field through terrain analysis and identification of natural and cultural features associated with the battlefield.

[17] Scott, *Archaeological perspective on the Battle of the Little Bighorn* . P.148.
[18] Susan Loechl, S. Enscore, M. Tooker, & S. Batzli. *Guidelines for Identifying and Evaluating Military Landscapes*. Washington, DC: Legacy Resource Management Program, Army Corps of Engineers, Washing, D.C. 2009.
[19] John Carman & Patricia Carman. Mustering Landscapes: What Historic Battlefields Share in Common in Eds. Douglas Scott, Lawrence Babits, and Charles Haecker. *Fields of Conflict:Battlefield Archaeology from the Roman Empire to the Korean War.*Washington, D.C.: Potomac Books. 2009.

While battlefields are situated within the broader cultural landscape, battlefield reconstructions focus only on those cultural and natural features directly related to the battlefield. The United States military has developed a process for evaluating the military significance of the battlefield denoted by the acronym KOCOA (**K**ey and Decisive Terrain, **O**bstacles, **C**over and Concealment, **O**bservation and Fields of Fire, **A**venues of Approach and Retreat). Each component of KOCOA is as follows:

Key Terrain: Ground, typically high ground- that gives its possessor an advantage. Examples include the White Ash Swamp and Green River Ford.

Obstacles: Terrain features that prevented, restricted, channeled or delayed troop movements such as rough, impassable ground, a swamp, dense wood, or a river. Examples include the Deerfield and Connecticut River and the White Ash Swamp.

Cover and Concealment: Cover is protection from the enemy's fire, e.g., the brow of a hill or a ravine. Concealment is cover from observation by the enemy. A swamp or woodland may provide one's force from observation. Examples include the White Ash Swamp.

Observation and Fields of Fire: The ability to observe the movements of the enemy to prevent surprise is a major advantage in battle. This might require occupying high ground that was not necessarily key terrain. Open terrain in front of the battle lines provided fields of fire for weapons. An example of a terrain feature that provides an opportunity to observe the enemy's movement was the high elevation at Cheapside. The clear areas in front of the White Ash Swamp provided fields of fire against the retreating English.

Avenues of Approach and Retreat: Primarily defined by transportation networks. In the case of the Great Falls Battle these consisted primarily of paths, trails, or open ground that could be traversed by horses and individuals on foot. Avenues were used for mobility but also had to be defended. Avenues stretch backward to supply lines and forward to objectives. It was important to possess transportation crossroads or bottlenecks such as mountain gaps, fords and bridges. The Green River Ford is an example of a crossroads or bottleneck.

Battle of Great Falls (Wissatinnewag-Peskeomskut: Battlefield Patterns & Spatial Analysis

The Dynamic Battlefield Pattern Approach, with its focus on modern firearm analysis, would not appear to be applicable to the interpretation and reconstruction of a seventeenth century battlefield such as the Battle of Great Falls, where the combatants used mostly muskets and bows, projectile types which are not generally amenable to modern firearm analyses. Nonetheless, Fox and Scott's approach has great utility for all battlefield studies which seek to move beyond static historical reconstructions and attempts to identify and interpret the actions

and movements which influenced the progression and outcome of the battle.[20] The key to this analysis is the ability of battlefield archeologists to integrate the spatial dimensions of unit actions into a temporal framework. This does not necessarily require identification of individual behaviors through modern firearm analysis, such as was done for the Battle of Little Bighorn.

In the case of the Battle of Great Falls, this can be accomplished by identifying discrete unit, and sometimes individual actions and movements inferred from the historic record, KOCOA, and analysis of English and allied Native tactics during King Philip's War. This information will be used to develop a battlefield timeline and anticipated archeological signatures for these events and actions. The recovered archeological signatures based on the nature and distribution of recovered battle-related objects will then be tested against the battlefield timeline and anticipated archaeological signature. In this way, the recovered archeological signature can be placed in a temporal context and integrated into the sequence of battlefield actions and events. However, as is often the case with the nature of poorly or under-documented seventeenth century battlefields this process requires a number assessments and re-assessments to get the best possible 'fit' between the historical narrative and the archaeological signature. A critical component of this process is ongoing discourse in the field on a daily and weekly basis between the battlefield 'team.'

In this context the battlefield team consists of battlefield archaeologists and members of the Battlefield Advisory Board, particularly Native cultural specialists from the Wampanoag, Narragansett, Nipmuc, and Stockbridge-Munsee Mohican Tribes. Experience has shown that Native cultural specialists bring a unique and important perspective to the process of battlefield reconstruction with their combination of cultural and historical knowledge. This methodology was highly successful in reconstructing the Battle of Mistick Fort and the Second Battle of Nipsachuck.[21] However, given the nature of seventeenth century records associated with the Battle of Great Falls, this process will require an ongoing assessment of the best congruence or 'fit' between the archeological and historical data (and vice versa). Previous experience in reconstructing seventeenth century battlefields has shown that the archeological record informs the historical records as often as the historical record informs the archeological record. The level

[20] Richard Fox & Douglas Scott. The Post-Civil War Battlefield Pattern: An Example from the Custer Battlefield. *Historical Archaeology*, Vol. 25, No. 2: 92-103. 1991

[21] Kevin McBride, David Naumec, et. al. *The Battle of Mistick Fort: Documentation Plan* GA-2255-09-017 (Mashantucket, CT: Mashantucket Pequot Museum and Research Center, 2012); Kevin McBride, David Naumec, et. al. *The 1676 Battle of Nipsachuck: Identification and Evaluation* GA-2255-11-016 (Mashantucket, CT: Mashantucket Pequot Museum and Research Center, 2012).

of detail and refinement in identifying and sequencing seventeenth century battlefield events is not comparable to what can be achieved in Post-Civil War battlefields, but nonetheless can result in important insights into the nature and progress of a battle.

An analysis of the sequence of events, movements, and actions associated with the Battle of Great Falls resulted in a preliminary battlefield events timeline (Table 1). In theory, all of these events, movements, actions, and terrain features should have a unique archeological signature based on the nature and distribution of battle-related objects. The greatest challenge in constructing a more detailed battlefield timeline will be to identify, contextualize, and integrate the signatures from the movements and actions of the many small groups and individuals who splintered in many different directions after the initial Native counterattack.

Table 1 - *Battlefield Events Timeline*

Time-Date	***Action***	***Location***	***Signature***
10 March 1676	Solider-Indian captive Thomas Reede relates to those at Hadley that Natives are planting at Deerfield (judge 300 acres) and "dwell at the Falls on both sides of the river-are a considerable number, yet most are old men and women" and about 70 warriors.	Deerfield; Falls	High: Village Site, Domestic Objects, Military Objects.
14 May 1676	Natives drive four-score horses and cattle away to Deerfield Meadow.	Deerfield Meadow	Low: Dropped equipment/ personal items
Thursday May 18: 8 PM	150-160 men from Springfield, Westfield, Northampton, Hadley and Hatfield assemble at Hatfield and department ca. 8 PM.	Hatfield	Low: Dropped equipment/ personal items
Thursday-Friday May 18-19: 8 PM-4 AM	The English force march 20 miles crossing the Deerfield and Green Rivers, and halt a little west of the Fall River, about a half a mile from the Indian village at Peskeompskut at the head of the falls where they left their horses with a small guard	Deerfield River, Greenfield River, Fall River,	Dropped equipment/ personal items
Friday May 19: 4-5 AM	At dawn the English force crossed the Fall River climbing a steep hill moving eastward to the slope of the hill overlooking the Native village to the south camp.	Fall River, steep hill to east, stretching to the east	Dropped Equipment/ personal items
Friday May 19: 5-8 AM	English approach and fire into wigwams. Some Native defenders engage the English and others run and swim across river. Some canoe away and others seek shelter under the banks of the river and killed. The English burn wigwams, destroy Native ammunition and provisions and war materials, and loot the village	Riverside area and along banks of river	Impacted musket balls, concentrations of small diameter shot, dropped and broken equipment, Native domestic objects

Friday May 19: 8 AM	As English return to assembly area to recover horses and rumor spreads that Philip and 1,000 men coming against the English. Panic spreads among the English panic.	Horse tie down area	Dropped equipment/ personal items
Friday May 19: 8-9 AM	As English mount horses they are attacked from Native forces from the village on the south side of the Connecticut River. As they retreated they were attacked from the rear and flanks between horse tie down area and White Ash Swamp	Horse tie down area to White Ash Swamp	Impacted and dropped musket balls, dropped equipment and personal items
Friday May 19: 9AM -12PM	English panic and split into 4-6 groups in their effort to escape and continue to be attacked along route of retreat. Native firing from ambushes to the front of the English set along the White Ash Swamp and attack the flanks and rear of the English column.	Trail/path to ford at confluence of Green River and Cherry Run Brook, south and north of White Ash Swamp	Impacted and dropped musket balls, dropped equipment and personal items
Friday May 19: 12PM – 6PM	English forces under the command of Captain Turner follow Cherry Rum Brook towards the Green River. While crossing the ford, Captain Turner is shot by Native soldiers. Lieutenant Holyoke takes command, draws the men into close order, and retreats towards Hadley where they arrive that evening.	Green River Ford	Impacted and dropped musket balls, dropped equipment and personal items
Saturday afternoon 20 May 1676	One English soldier arrives to Hadley. Other soldiers not wounded were reported to be wandering the West Mountains.	West mountains	Low / None
Saturday Night 20 May 1676	One English soldier arrives at Hadley.	Hadley	Low / None
Morning Sunday 21 May 1676	Well reaches Muddy Brook, left the brook and entered into a plain and reaches Hatfield.	Hatfield	Low / None
Sunday 21 May 1676	Two English soldiers arrive to Hadley.	Hadley	Low / None
Morning Monday 22 May 1676	One English soldier arrives to Hadley.	Hadley	Low / None
Afternoon Monday 22 May 1676	Noon, Mr. Atherton arrives to Hadley. Following the course of the river Atherton reaches Hatfield.	Hadley / Hatfield	Low / None
Night Monday 22 May 1676	Scouts find that “the enemy abide still in the places where they were on both sides of the river and in the Islands, and fires in the same place where our men had burnt the wigwams.” Also reported that their fort is close to Deerfield River.	Deerfield River	Low / None

30 May 1676	700 Natives attack Hatfield and burn 12 houses and barns, drove away many cattle and kill five English men.	Hatfield	Impacted and dropped musket balls, dropped equipment and personal items

Critical Defining Features and KOCOA Analysis

The overall goal of the archeological survey of the second Battle of Great Falls is to locate the historic and geographic extent of the battlefield(s), actions and sites on modern maps using GIS. Battlefield survey methods rely heavily on identification and analysis of a wide range of physical and cultural features using readily available resources such as USGS 7.5" series Topographic Maps, aerial photographs, historic maps, and walkover or "windshield surveys" – all of which are used to identify important terrain features and locations obtained from primary narratives or accounts of battlefields. There are three steps in this process: 1) identify battlefield landscapes; 2) conduct battlefield terrain analysis with KOCOA (Key terrain, Observation, Cover and concealment, Obstacles, Avenues of approach); and 3) battlefield survey (research, documentation, analysis, field visits, archeological survey, definition of battlefield Study and Core Areas, assessment of integrity and threats to battlefields, and map preparation). As a result of this process, thirteen critical defining features have been identified at present (Table 2) and it is anticipated that others will be identified as the battlefield survey progresses.

Table 2 - *Critical Defining Features. Battle of Great Falls*

Name	**Location**	**Relevance to Battle**	**Field Comment**	**KOCOA Analysis**	**Integrity Assessment**	**Remarks**
Terrain and Topographical Features						
Connecticut River	The Connecticut River runs south from Fourth Connecticut Lake in New Hampshire to Long Island Sound at Old Saybrook, Connecticut.	The Great Falls on the Connecticut River attracted Native settlements at Peskeompskut to take advantage of the Spring fishing season and to plant crops. Native encampments were situated on both sides of the Connecticut River.	Wooded, Open Space, Land Conservation, Moderate Residential Development. , Significant Industrial Development	Key Terrain, Observation, Cover & Concealment, Key Terrain Feature	Location, Setting, Feeling, Association	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Key Terrain
Rocky Mountain	The Rocky Mountain ridge runs north from the confluence of the Deerfield and	On the southern end of the ridge overlooking the Deerfield River is a rocky promontory known locally as	Wooded, Open Space, Land Conservation, Moderate	Key Terrain, Observation, Cover & Concealment, Obstacles,	Location, Setting, Feeling, Association, Material	Battle of Great Falls/Wissatinnewag-Peskeompskut

	Connecticut River to Fall River just below the Great Falls. To the west of the mountain was Greenfield Meadows at the time of the battle.	"Cheapside." There Native soldiers had an observation post and possible fortification overlooking the plains and two fords to the south. The English sought to avoid this location.	Residential Development.	Avenue of Approach (Native) Key Terrain Features include heavily glaciated landscape and wetlands and ridges	Culture.	Study Area; Cheapside Ancillary Site & Key Terrain
Pisgah Mountain	Pisgah Mountain is located immediate north, northeast of Great Falls and is east of Fall River.	English forces massed on the southern slope of Pisgah Mountain prior to their assault on Peskeompskut village.	Wooded, Open Space, Land Conservation, Moderate Residential Development.	Key Terrain, Observation, Key Terrain, Avenues of Approach (English allied), Avenue of Retreat (English)	Location, Setting, Feeling, Association, Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Key Terrain
White Ash Swamp	White Ash Swamp is a large wetland that runs in a northeasterly direction to the north of Rocky Mountain. It is fed by Cherry Rum Brook.	Native soldiers occupied White Ash Swamp and struck English forces as they retreated towards the Green River after their attack on Peskeompskut. Several groups of English were ambushed in the swamp as they tried to escape.	Moderate Residential Development, Moderate Historical Impacts	Key Terrain, Observation, Cover & Concealment (Native), Obstacles, Avenues of Approach (English), Avenue of Retreat (English)	Location, Setting, Feeling, Association, Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; White Ash Swamp Core Area & Key Terrain Feature
Deerfield River	The Deerfield River is located south of Rocky Mountain and north of the Deerfield Meadows. It runs easterly until it empties into the Connecticut River.	Native Soldiers were positioned along the northern banks of the Deerfield River guarding the fording areas against English incursions.	Moderate Residential Development, Moderate Historical Impacts	Key Terrain, Observation, Cover & Concealment, Obstacles.	Location, Setting, Feeling, Association, Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Key Terrain

Green River	The Green River is located to the west of Rocky Mountain and the present-day Town of Greenfield. It runs southerly until it empties into the Deerfield River.	The English advanced along the west side of the Green River and forded it during their route of approach where the Mill River emptied into it. The English returned to this location during their retreat and it was at the ford where Captain Turner was killed.	Minimal Residential Development, Moderate Historical Impacts	Key Terrain, Observation, Cover & Concealment, Obstacles, Avenues of Approach (English), Avenue of Retreat (English)	Location, Setting, Feeling, Association, Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Green River Ford Core Area & Key Terrain Feature.
Cherry Rum Brook	Cherry Rum Brook is located in present-day Greenfield and runs easterly between Mill Brook and feeds the White Ash Swamp.	English forces general followed Cherry Rum Brook after fording the Green River. The brook brought the to the White Ash Swamp and the Falls River further east.	Moderate Residential Development. Moderate Historical Impacts	Key Terrain, Observation, Cover & Concealment, Obstacles, Avenues of Approach (English), Avenue of Retreat (English)	Location, Association, Feeling, Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Key Terrain
Falls River	Falls River runs south between the present-day towns of Greenfield and Gill. It empties south into the Connecticut River.	English forces tied their horses in a location just west of Falls River and stationed some soldiers to guard them. Turner's company crossed the Falls River and advanced east towards their objective.	Minimal Residential Development, Moderate Historical Impacts	Key Terrain, Observation, Cover & Concealment, Obstacles, Avenue of Approach (English) & Retreat (English). Key Terrain	Location, Association, Feeling, Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; English Assembly Point Core Area; Key Terrain
The Great Falls	The Great Falls is a large waterfall system that runs north and south across the Connecticut River between the present-day towns of Gill and Montague. A large bedrock outcropping	The Great Falls attracted Native peoples to the region for thousands of years. In 1676 Native peoples congregated at Great Falls to plant and fish. The English quickly became aware of large Native communities around Great Falls at	High Industrial Development, Wooded.	Key Terrain, Obstacles.	Location, Setting, Feeling, Association, Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Peskeompskut Village Core Area

	historically split the waterfall. Today there is a modern dam to regulate water levels.	Peskeompskut.				
Smead Island	One of two major islands about three miles below the Great Falls in present-day Greenfield.	One of two islands south of the Great Falls upon which an undetermined number of Native soldiers were encamped. These men mobilized after the English attack and counterattacked the English near Falls River and along White Ash Swamp.	Wooded, Open Space, Land Conservation	Key Terrain, Observation, Cover & Concealment (Native), Avenues of Approach (Native)	Location, Setting, Feeling, Association, Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Smead Island Ancillary Site
Rawson Island	One of two major islands about three miles below the Great Falls in present-day Greenfield.	One of two islands south of the Great Falls upon which an undetermined number of Native soldiers were encamped. These men mobilized after the English attack and counterattacked the English near Falls River and along White Ash Swamp.	Wooded, Open Space, Land Conservation	Key Terrain, Observation, Cover & Concealment (Native), Avenues of Approach (Native)	Location, Setting, Feeling, Association Material Culture.	Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Rawson Island Ancillary Site
Miscellaneous						
Peskeompskut Encampment (North)	One of two known Native encampments surrounding the Great Falls. One encampment was located on the north side while the other was on the southern shore.	A large village site where Native peoples from multiple communities had lived since the late winter in anticipation of planting and fishing. The northern village was attacked by English forces on the morning of May 19, 1676.	Minimal Residential Development. , Moderate Industrial Development, Moderate Historical Impacts	Key Terrain, Cover & Concealment, Obstacles, Avenue of Approach (English), Avenue of Retreat (Native).	Location, Association, Feeling, Avenue of Approach (English), Avenue of Retreat (Native) Material Culture.	Native Village; Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Peskeompskut Village Core Area

Peskeompskut Encampment (South)	One of two known Native encampments surrounding the Great Falls. One encampment was located on the north side while the other was on the southern shore.	A large village site where Native peoples from multiple communities had lived since the late winter in anticipation of planting and fishing. Victims of the English attack fled to the southern village. Men from the southern village rallied and counterattacked soon after.	High Residential Development. High Industrial Development, High Historical Impacts	Key Terrain, Cover & Concealment, Obstacles, Avenue of Approach (English), Avenue of Retreat (Native).	Location, Association, Feeling, Avenue of Approach (Native), Material Culture	Native Village; Battle of Great Falls/Wissatinnewag-Peskeompskut Study Area; Peskeompskut Village Core Area

Identifying Battle Locations

Several prospective battlefield and ancillary site locations were previously identified in the final report of the Pre-Inventory and Documentation project by integrating information from the following sources: primary accounts, local oral history, local artifact collections, land records, historical maps, aerial photographs, site visits, and KOCOA analysis. All of these sources were used to reconstruct battlefield events, identify battlefield and site locations, and delineate potential boundaries. It is likely that additional battle events and sites will be identified as fieldwork progresses. The testing of known and additional locations which may contain battle-related objects is entirely dependent on landowner permissions. It is anticipated that additional landowner permissions will need to be obtained as the battlefield survey progresses.

Battlefield Resources

Identifying the nature, location, and extent of battlefield resources are critical components in documenting and reconstructing the battlefield terrain and events associated with the battle of Great Falls. The Pre-Inventory and Documentation Plan report identified a number of battlefield resources, but these identifications were based on documentary research and a very limited walkover (Figure 3). It is anticipated that a more intensive walkover survey combined with the recovery of battle-related objects associated with terrain features will identify a number of additional battlefield resources. Four types of battlefield resources are expected within the Battle of Great Falls Battlefield Boundary: Natural Features, Cultural features, Military Engineering Features, and Battle-related Artifacts.

Natural Features

The natural terrain or topography of the Great Falls battlefield landscape is defined primarily by the drainage pattern and relative elevation. Important terrain features within the battlefield landscape that would be expected to potentially contain battle-related objects include swamps and wetlands, high and well-drained ground adjacent to swamps and wetlands that were suitable for horses, and chokepoints such as fords and stream crossings. Nuances of the terrain that may have influenced the battle may not be apparent until battle-related artifacts are recovered. It is also important to assess how much the terrain has changed since the battle event. For instance, have streams been diverted or channeled? Have swamps and bogs been drained or filled? Have battlefield terrain been destroyed or altered to a significant degree by road construction and development? Assessment of the impacts and integrity of battlefield terrain will be an important aspect of the battlefield survey.

Cultural Features

Cultural features are elements of the historic landscape created by humans. The cultural landscape influenced the location and direction of battle. Road networks (in this case paths and trails) determined the collision of combatants and influenced the direction and speed that military units could travel to reach or withdraw from the battlefield. An abandoned and cleared horticultural field adjacent to wetlands provided both protection and a clear field of fire for the Native combatants. Cultural resources are susceptible to decay and alteration: domestic structures such as wigwams disappear; fields grow up; new roads cover or bypass old trails and paths, and natural vegetation can obscure old trails and paths. Often historical research can guide the battlefield archaeologist to remnants of these features, or at least their possible location. However, as is often the case with poorly or under documented seventeenth century battlefields, the nature and distribution of battle-related artifacts serve as the best sources of documentation on the location of battle events and associated cultural features and key terrain features.

The cultural landscape contained within the Great Falls Battlefield Landscape was the result of thousands of years of Native land use, including horticulture, and forest management, and to a much lesser extent the result of Euro-American settlement and land use except for the more southern areas of the battlefield approaching Deerfield. The cultural landscape in the

vicinity of Wissatinnewag-Peskeompskut consisted of numerous paths and trails used by both Colonists and Native people in the region and at the time of the battle. It will be important to determine through additional historical research where these paths were located and if they were used during the battle as avenues of advance and retreat by the Colonial and Native combatants. The cultural landscape also consisted of Native domestic sites/villages including the two on the north and south sides of the Great Falls. Several more specialized Native sites or encampments may have been placed at strategic locations within the Battlefield Landscape such as at Cheapside, and Smead's and Rawson's Islands.

Military Engineering Features

Military earthworks (e.g., field fortifications, entrenchments, trenches) constructed by soldiers or laborers are an important resource for understanding a battle event. Surviving earthworks often define critical military objectives, key terrain, opposing lines of battle, and no man's land. There is little or no evidence of military engineering features such as palisades or otherwise fortified places present at the time of the Battle of Great Falls. The exception may be Cheapside which was the southernmost Native position at the time of the battle and served as a lookout for any English forces approaching from the south and to guard the Deerfield River Ford.

Battle-related Artifacts

The recovery of artifacts associated with the Battle of Great Falls/Wissatinnewag-Peskeompskut is the most significant component of the battlefield survey. Undisturbed patterns and relationships among soil layers, artifacts, features, and sites convey important information about past events and connect the physical reality of the battle to its broader landscape. Seventeenth Century colonial battlefields such as Great Falls are often poorly or under-documented by seventeenth century historians or chroniclers of the battle compared to later eighteenth and nineteenth century battles. What little information is available often provides very little detail on the nature and progression of the battle and the locations of battle events, and contemporary sources are often biased, incomplete, contradictory, and unreliable. In addition, there is rarely a Native account of the battle and therefore the battle narratives do not provide a Native perspective on battle events. The nature and distribution of battle-related artifacts are

often the only source of reliable information available to reconstruct many aspects of the battlefield. Most defining features identified in historic documents and in the field are archaeological resources found beneath the surface, which provide evidence of the actions that took place; soldiers waiting or tending horses, fighting, attacking or defending villages or fortifications, or moving to attack or retreat. The artifactual evidence associated with battle events is used to:

- Verify troop movements and transportation methods (i.e., horse, wagon, supply trains, etc.)
- Map out battle actions in time and space to interpret and reconstruct a battle's progress
- Reveal previously unrecorded facets of the battles
- Confirm locations of villages or structures, roads and paths
- Verify or disprove long-believed myths or "official" accounts
- Understand the effects of the battle on noncombatants
- Offer a more complete picture of the life of Native and Colonial soldiers in camp and in battle

Battlefield Preservation

The first step toward battlefield preservation is defining exactly where the battlefield is on the ground and what remains to preserve of the battlefield. This requires establishing a boundary of the battlefield on a map. The boundary must be historically defensible; historical and/or archeological evidence and source materials must show that the boundaries encompass legitimate historic resources. Battlefield areas should be defined as objectively as possible to include the salient places where events occurred and important landmarks, and should accurately reflect the extent of the battle. The initial survey should include all known historic resources associated with the battle. Once the battlefield survey is completed and the final battlefield map marked with defining features and boundaries, informed preservation decisions can be made. The battlefield survey should result in the definition of three boundaries:

- Battlefield Boundary, which encompasses the ground over which units maneuvered in preparation for combat
- Core Area, which defines the area where the most significant combat occurred, and
- Potential National Register Boundary (PotNR), which contains only those portions of the battlefield that have retained integrity.

Battlefield Survey

The goal of battlefield survey is to identify and document the historic and geographic extent of battlefields on modern maps, determine site integrity (as defined in National Register Bulletin 40: Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields), provide an overview of surviving resources, and assess short and long term threats to integrity. Specific steps involved in this process include:

- research the battle event;
- develop a list of battlefield defining features;
- visit the battlefield;
- locate, document, and photograph features;
- map troop positions and features on a USGS topographic quadrangle;
- define battlefield boundary and core engagement areas for each battlefield;
- assess overall site integrity and threats;
- define a potential National Register boundary for the battlefield; and
- complete documentation.

The battlefield survey of the Battle of Great Falls will focus on identifying the locations of battlefield(s), sites, actions and movements of combatants, and acquiring a representative sample of battle-related artifacts to reconstruct battle events as well as to determine site boundaries and assess site integrity. An important step in this process will be to analyze the defining features, battles, actions, and sites associated with the Great Falls battlefield according to KOCOA standards and determine the effect these features had on the outcome of the Great Falls battle. The defining features from battles actions and sites will be categorized into critical, major, and minor defining features. The critical defining features will be mapped, using GPS and GIS technology, surveyed using geophysical equipment (e.g., metal detectors, Ground Penetrating Radar, Electrical Resistivity), and if non-metallic objects are anticipated select areas (particularly the site of the Peskeompskut Village) will be archeologically tested using 50cm x 50cm shovel test pits and 1m x 1m excavation units.

Fieldwork will consist of an initial walkover reconnaissance and visual inspection of the battlefield followed by archeological investigations in the form of metal detector surveys and archeological survey and excavation. Other remote sensing methods (e.g., Ground Penetrating Radar, Electrical Resistivity) may be conducted within the village area to better define features and disturbances. Metal detector surveys are necessary to associate the battlefield events to identifiable locations and to acquire physical evidence (i.e., musket balls, brass arrow points,

military accoutrements, etc.) to document troop positions, actions and sites, define battlefield boundaries, refine Battlefield and Core Area Boundaries, and assess site integrity. A defining feature may be any feature mentioned in battle accounts that can be located on or in the ground, including both natural terrain features and man-made structures (e.g., domestic structures). The KOCOA system has been developed by military experts to analyze defining features, focusing primarily on key terrain but also with consideration for historic structures and sites that were significant to the battles. Key terrain, obstacles, cover and concealment, observation points and avenues of approach and retreat are the five categories into which a defining feature can be placed. One of these five criteria must be met in order for a feature to be classified as a "defining feature."

Research & Field Methods

Prior to the initiation of fieldwork all primary historic records, secondary sources, diaries, previous research files, and tribal oral histories and traditions will be reviewed to re-familiarize battlefield archaeologists with the broader historical and contemporary cultural and historical context of the Great Falls battle, as well as to develop a more site specific context for the overall battle and discrete actions. Staff members of the MPMRC, the battlefield survey team including, archeology consultants with extensive experience on seventeenth century battlefields, and students from the University Of Connecticut Archeological Field School in Battlefield Archaeology will comprise the personnel conducting the majority of the fieldwork at the Battle of Great Falls.

Site Identification & Documentation

The historical and archeological research program for the Battle of Great Falls will initially focus on the four battlefield Core Areas (Peskeompskut Village, English Assembly Area, White Ash Swamp, Green River Ford) shown in Figure 2. The battlefields Core Areas encompass distinct physiographic features (e.g., swamps, high ground, etc.), sites (Peskeompskut Village; English Assembly Area) and battlefield actions and movements (Peskeompskut Village; English Assembly Area; White Ash Swamp, Green River Ford). The survey of the battlefield will consist of four phases which will often happen simultaneously throughout the research and field program, as real time information from laboratory analysis is needed to continuously assess the nature and evolution of the battlefield to make appropriate field decisions.

Field Methodology

Fieldwork will be conducted in four phases adapted from and adjusted to suit the needs of the seventeenth century battlefield at Great Falls; 1) Orientation Phase, 2) Inventory Phase, 3) Recovery Phase, and 4) Laboratory and Evaluation Phase. These phases will be conducted concurrently and fieldwork will be guided by the work plan outlined below.

Orientation Phase

The Orientation Phase includes: making contact with landowners and acquiring permissions; conducting additional historical research (in particular deed research to reconstruct land use patterns), visual inspection of the Battlefield Boundary and Core Areas, establishing spatial references with GPS and total station, and conducting Viewshed analysis.

Spatial Reference – The first step in determining the precise geographic location of artifacts (provenience) and mapping cultural and terrain features will be to establish a permanent grid or referencing system over the Battlefield Boundary and Core Areas. A GIS data base will be constructed to aid in the collection, maintenance, storage, analysis, and output of spatial data and information. In its earliest stages, the GIS database will consist of 2 ft. contour base maps of selected areas with terrain features, hydrology, and soils. Through the course of the field season the GIS database will expand to include property information (boundaries, ownership) stone walls and stone structures, modern features such as roads and disturbed areas, and all battle-related sites, artifacts, and features. To establish provenience throughout the project area a combination of methods will be utilized. The first step will be to develop a procedure so that all cultural materials and features identified within the Core Areas can be assigned a unique spatial reference. A conceptual 1- meter grid will be established over the 2 ft. contour base maps with the intent of eventually identifying portions of the grid in real space. A Global Positioning System (GPS) will aid in this process. A GPS is a series of orbiting satellites such that at any given time and place at least four are within range of any position on Earth's surface. By determining the distance from the four satellites, the receiver can calculate its precise location in horizontal and vertical space in a process called trilateration. Current technology can potentially achieve (rarely realized however) up to 10 centimeter accuracy and sometimes even less. However, in reality there are many factors such as tree cover, aspect of availability, and position of satellites that sometimes caps accuracy minimally to a 2-5 meter range (and sometimes 10m if

there is tree cover) depending on conditions and the time of day. This level of accuracy would not be acceptable to map concentrations of objects either from battle actions or those associated with domestic sites where accuracy within 50cm must be achieved. In previous projects, experience has shown that GPS readings, even with 5-meter accuracy, is sufficient to map battle-related objects that are widely distributed over a relatively large area (acres) but is not sufficient to map and interpret actions and activities that occurred within one quarter acre or less. In these instances a total station will be used to physically establish a grid on the ground to ensure accuracy within 50 centimeters.

The first step in integrating a localized grid into the "conceptual" GPS grid will be to establish one or more permanent datum points in a fixed and permanent location such as the corner of a stone wall. Multiple GPS readings will be taken at the datum(s) over several days and at different times of the day. These points will then be plotted on a geo-referenced map which will exhibit a clustering of the GPS readings into a bulls-eye pattern. The center of this bulls-eye will be the datum point for that particular area. A grid will then be constructed in GIS across the localized area by establishing parallel and perpendicular polyline transects at 1-meter intervals and coordinates will be assigned based on a Cartesian system (e.g., N150 E200). To make directional measurements easier, the grid will be oriented towards true north (14.6 degrees west of magnetic north in west-central Massachusetts). The result will be a physical grid established over any given survey area and provenience on any given artifact can then be determined to the nearest 50- centimeters or less.

The actual grid(s) will be established by setting plastic stakes on northing and easting transects at 10-meter intervals. The use of plastic (versus metallic) inhibits interference with metal detectors operating in close proximity. The grid will be established over any area where metal detecting or archeological fieldwork will take place. Each stake will be labeled by their Cartesian coordinates (e.g. N25 E100). Shovel Test Pits, trenches, and excavation units will be placed along established grid lines. Metal detector finds will also be provenienced using established grid lines.

Viewshed Analysis - Viewshed Models can be developed using elements of KOCOA and GIS. Identified cultural and terrain features can be geo-referenced and integrated into cumulative Viewshed Models. A Viewshed is a raster-based map of individual "cells" in which from each cell a straight line is interpolated between a source point and all other cells within an elevation

model to find whether or not the cell exceeds the height of the three dimensional line at that point. Therefore, the result of each calculation is either positive or negative. If the result is positive (1) then there is a direct line of sight, if it is negative (0), there is no line of sight.[22]

The resultant Viewshed Models illustrate locations that could be seen from elevations, such as the Native outpost at Cheapside, or other prospective elevations (Figure 3). Viewshed Models provide insight into what locations the combatants could see from particular positions and potentially predict possible village and battlefield locations. The Viewshed Models are extremely useful for conceptualizing the battlefield landscape and identifying key terrain, avenues of approach and retreat, obstacles and areas of concealment and observation. This analysis will be performed on a number of prospective locations at Great Falls to assess other prospective locations.

Inventory Phase

Walkover Reconnaissance – A walkover reconnaissance survey will be conducted throughout the battlefield landscape and Core Areas for which permission has been granted. It is anticipated that additional landowner permissions will be necessary through the duration of the project as the battlefield landscape continues to evolve. The purpose of the walkover in the battlefield Core Areas will be to assess the nature and integrity of the terrain, in addition to the identification of artifacts present on the surface.

Metal Detection – A metal detector is a remote sensing device designed to locate subsurface metallic items based on the differential electrical conductivity of metallic objects. All metal detectors include a handle, search coil, cable, and metal box that contains the battery, tuning apparatus, and in more recent detectors, a computer that provides the ability to program the detector for certain kinds of metals, digital readouts of metal type, and possible metal depth. All metal detectors work on the same general principle. An electromagnetic field produced from the search coil, when held at ground surface, penetrates the earth in a cone shape emanating downward from the coil. Coils are available in a variety of sizes designed to provide preferences with regard to depth, discrimination, and precision in pinpointing object locations. Generally, larger coils are more effective for locating deeply buried objects; potentially an important factor in some areas of the battlefield with deep topsoils. It is anticipated that much of the battlefield

[22] David Wheatley and M. Gillings. Spatial Technology *and Archaeology: The Archaeological Applications of GIS*. New York, NY: Taylor & Francis, 2002.

terrain will be characterized by deeply plowed soils in the terrestrial portion of the battlefield and deeply buried objects below the swamp matrix and water in the White Ash Swamp. Larger coils are less effective in discriminating between metals (i.e., brass and lead from iron), a critical consideration where non-battle-related metallic artifacts often constitute 95% of the assemblages on any given landscape.

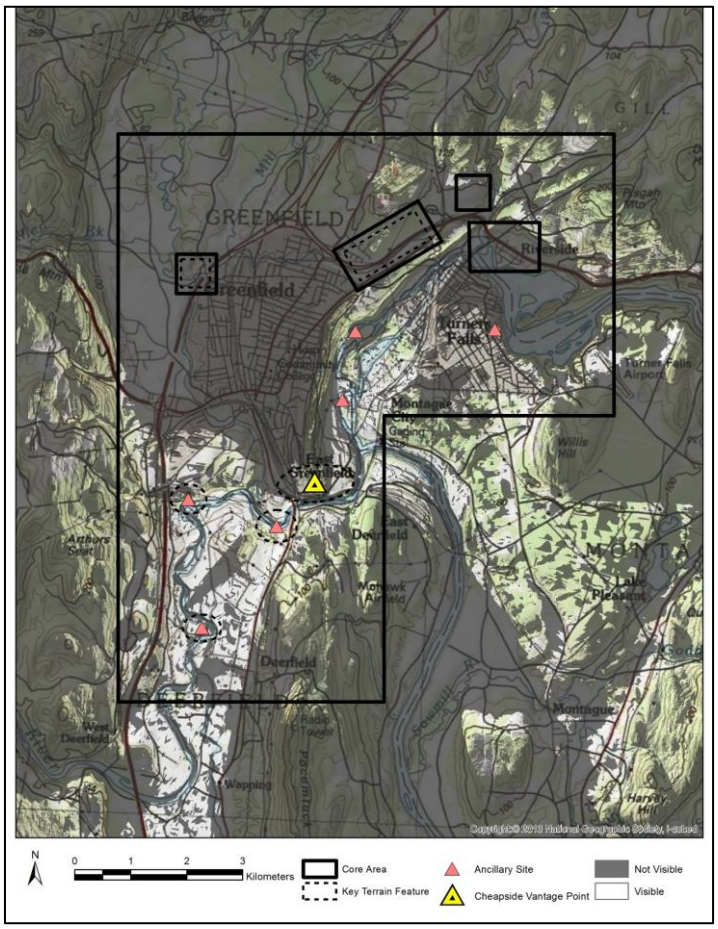


Figure 3 – Viewshed Model from the "Cheapside" Key Terrain Feature. Darkened (pink) areas are not visible from the vantage point of Cheapside

Different metal detector models and technologies (e.g., Whites vs. Mine Lab) also vary in their operating frequency and therefore their relative effectiveness in identifying certain kinds of metals under varying conditions. Therefore, some metal detectors are more effective in identifying ferrous objects and others brass, silver and copper and others lead, nickel and gold. Different metals produce different phase responses in metal detectors, allowing the instrument to effectively discriminate among different types of metals. One common manifestation of this

response is the Visual Discrimination Indicator (VDI), which quantifies the phase response of each metal into a numerical category for the operator. The broadest VDI is the assignment of negative numbers for ferrous metals and positive numbers for non-ferrous metals. Generally, two different technologies characterize the various brands of metal detectors, Very Low Frequency (VLF) and Pulse Induction (PI) units. VLF units have superior discrimination capability, compared to PI units, which generally have better depth capabilities. Factors that affect the results of a metal detector survey are the experience of operators, soil and weather conditions, Electronic emissions, and the variable qualities of metal detecting equipment which all can affect the detectorists ability to discriminate between metals, detect at various depths and in different weather conditions. The variability in metal detectors should be considered an advantage in battlefield surveys and every effort will be made to utilize as many different brands and types of metal detectors as possible.

Sampling Fraction and Transect Orientation – The field methodology that will be utilized will consist of establishing a grid of 10m x 10m blocks across any given search area. Within these blocks, 1-meter wide transects oriented north-south and east-west will be marked with flagging tape and multiple operators and different detectors will sweep within each orientation. Experience has shown that metal detector sweeps in different orientations (north-south, east-west) and by different detectorists employing different technologies are necessary to identify a representative sample of objects within a block. It is often the case that cuprous objects can be "hidden" behind ferrous objects and can only be located by detecting along different orientations. Identified metallic objects will be excavated and left in place and the location flagged.

Recovery Phase

The recovery phase will consist of two sequential steps, artifact recovery, and recording of identified artifacts. A recovery team will make tentative identifications of each object, bag the object, and record information on provenience (GPS or grid coordinates), object, operator, technology, etc. on a standard metal detective field form (Appendix III) and on a specially design application on an IPad. The degree of provenience recorded and the treatment of the object will be based on a three-tiered system. The third tier, consisting of modern objects such as aluminum foil, pop tabs, wire nails, etc.), will be provenienced to the nearest 5-meters, recorded on a field form, and placed in a discard bag for disposal. The second tier consists of generally all pre-

modern artifacts (prior to the last 25 years) that are clearly not battle-related but can provide important information on land use (e.g., ox shoes, quarrying feathers and wedges, chain links for hauling logs and quarry blocks, and axes and wedges for logging). These objects will also be provenienced to the nearest 5-meters and recorded on a field form, and placed in plastic artifact bags and returned to the MPMRC for further analysis and inventory. Some of these objects will be radiographed after additional inspection and analysis to determine if they are battle-related artifacts.

The first tier of artifacts are identified in the field as possible or most likely battle-related artifacts (e.g., dropped or impacted musket balls, hand wrought horse shoes, and dropped or broken equipment such as horse tack, gun parts, brass arrow points). These objects will be recorded to the nearest 50-centimeters, placed in a plastic artifact bag, and returned to the MPMRC for further analysis and inventory.

Prior to the commencement of fieldwork, a strategy for data collection will be developed predicated on the need to inventory a large number of battle and non-battle related objects on a daily basis by multiple crews while ensuring consistency of data recording. A FileMaker Go application was developed for IPads and employed in previous battlefield surveys. These applications provided a way to record data, interact with maps, take photos, and log GPS coordinates from a single, convenient interface. In addition to the IPad application, hard copy metal detection field will also be used to ensure reliability in data recording. The File Maker application has automated data entry, data validation, and the ability to centralize all records into a single location on a daily basis. While GPS data are generally only accurate to within a few meters on most devices, the use of GPS PRO antennas linked to each IPad achieved accuracy to within 50 centimeters 90% of the time. GPS points recorded on mobile devices were later rechecked with a Trimble RTX GPS device to ensure continued accuracy. This process provided enough precision to document the general locations and boundaries of archaeological resources and connection to external, higher grade GNSS devices when necessary.

Archeological Testing & Remote Sensing

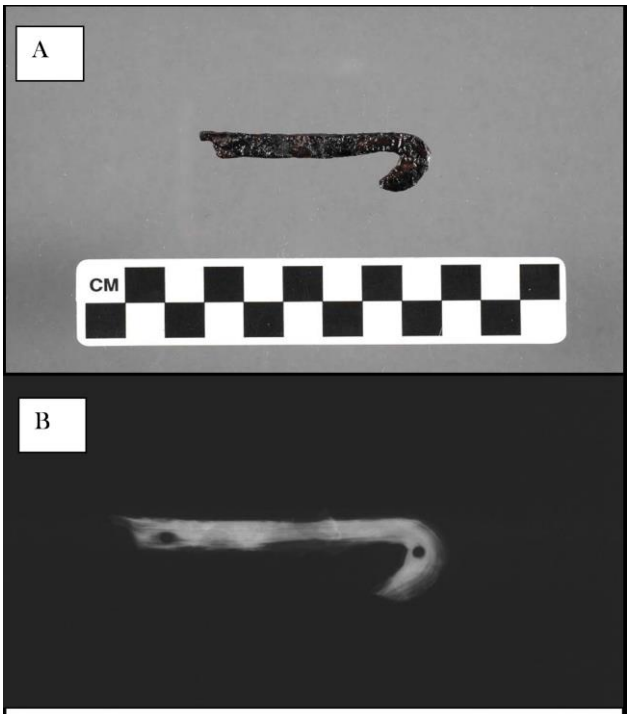
The archeological field studies will utilize two standard archeological techniques; 50cm x 50cm shovel test pits placed at 5-meter intervals and 1m x 1m excavation units. The purpose of archeological testing will be to recover non-metallic domestic artifacts associated with the

Peskeompskut Village and other sites such as Smead's island or Cheapside. Non-metallic objects in these contexts could include domestic objects such as flaked and ground stone tools, ceramics (native and European), and animal and plant remains as well as battle-related artifacts such as gunflints.

Remote sensing potentially consisting of ground penetrating radar (GPR), electrical resistivity, and magnetometers which could be employed to investigate below ground features and anomalies associated with the battlefield and domestic sites and to assess the nature and extent of disturbance.

Laboratory and Evaluation Phase

Real-time laboratory analysis will be an important component of fieldwork, as the immediate (within two to three days) results of assessment and identification of recovered metallic (primarily ferrous) artifacts will be necessary to determine if they are battle-related – an assessment often difficult to make in the field. The rapid and correct identification of (most often ferrous and cuprous) battle-related artifacts is crucial to guide and direct ongoing field operations. Laboratory analysis of potential battle-related objects recovered from the field and returned to the MPMRC for assessment and analysis will involve three sequential steps: initial examination, radiography, and conservation to remove extraneous oxide. Initial artifact examination will consist of



A) Unidentified Iron Hook, Inventory Number 59-19 / 707.
(Possible Goat's Foot Lever part)
B) X-Ray

Figure 4 – Example of utility of X-Ray technology. Features invisible to the naked eye become visible in a radiograph image.

cleaning the artifact with a soft brush to examine it by eye, as well as examining the artifact with a low-powered binocular microscope.

In many instances, the nature and age of the artifact cannot be determined from just an initial examination. If further examination is required, the next step will be to take several radiographs (XRays) of the object with different exposures and orientations. The most important aspect of laboratory analysis and research of battle-related artifacts will be the ongoing assessment and analysis of primarily ferrous objects through X-Ray Analysis. Most recovered ferrous objects are highly degraded (although interestingly seventeenth century hand wrought iron much less so) and not easily unidentifiable. X-Ray Analysis will be performed as soon as possible so battlefield staff can quickly assess if the object is hand-wrought, and what the artifact might be. In an X-Ray, hand-wrought objects exhibit a distinct "layering," or strata, from being folded over so many times in the manufacturing process (Figure 4). If the artifact is hand wrought, standard conservation procedures will be employed to clean the artifact to better discern its function.

X-Ray Analysis can also capture many features on the artifact, such as drill holes and breaks otherwise undetectable thereby greatly facilitating the identification process. Hand-wrought artifacts are considered a potentially excellent indicator of a seventeenth century battle-related artifact (not withstanding 18th and early 19th Century hand-wrought artifacts from other land use activities such as field clearing or farming). If the artifact is determined to be hand-wrought, additional X-Rays may be taken under different exposures to reveal any additional features (perforations, breaks, etc.) that would aid in identification. The final step in the identification (and conservation) process will be the removal of extraneous oxide using air abrasion. The extraneous oxide often concealed features that would aid in the identification of the artifact.

It is anticipated that a wide range of metallic objects will be recovered from the archeological survey within the battlefield landscape. These objects will include musket balls, horseshoes, tack, broken, lost, and discarded equipment, etc. A wide range of domestic metallic objects are expected associated with the Peskeompskut Village. It is also anticipated that the battlefield survey will recover a large number and variety of non-battle related objects such as. ox and horse shoes, chain links, wedges, quarry plugs, nails, etc. that will have to be identified and catalogued as well. Unfortunately these objects have to be recovered as any given area will

have to be swept multiple times and objects left in the ground can complicate the identification of additional battle-related objects. All recovered objects will be identified and entered into a central database.

Recovered artifacts will be cleaned, identified, and catalogued, and the location of each item plotted on the GIS base maps. All artifacts will be assessed for conservation needs in the field and laboratory. Metallic battle-related objects of brass, iron, lead, and pewter will undergo a full conservation process and sealed in airtight containers with silica gel to ensure their long-term preservation. This work will be performed in the archeology and conservation labs of the MPMRC. All artifacts will be curated according to National Park Service standards in the MPMRC until the Town of Montague and the Battlefield Advisory Group their final disposition.

Treatment of Human Remains

Should any human remains be unexpectedly encountered during any phase of the project, MHC state and federal policy will dictate their handling. If human remains or suspected human remains are encountered, all work will cease. The Massachusetts Historical Commission requires that whoever encounter human remains should notify the state or local police and the regional medical examiner about the discovery and location. If the Medical Examiner determines the remains are more than 100 years old the State Archaeologist will be notified. If the State Archaeologist determines that the remains are native American, the Commission on Indian Affairs is notified.

NAGPRA and ARPA Procedures

The NPS ABPP requires that all consultants working on NPS ABPP funded battlefield projects adhere to the regulations and procedures outlined in the Archeological Resources Protection Act (ARPA; 1979) and the Native American Graves Protection and Repatriation Act (NAGPRA; 1990). These federal laws that seek to protect archeological resources and Native American burial sites on public or tribal land from disturbance or destruction.

Final Report

The final phase of the battlefield survey is to document the findings in a technical report complete with GIS mapping, object inventories and analyses, and battlefield reconstructions. A

final report will be generated upon completion of all fieldwork, artifact analysis and geophysical analysis. The report will describe the project, site, historical significance, site integrity, and will address the research goals, questions and answers to those questions. The sections of the report will include (but are not limited to):

1) Title Page
2) Table of Contents
3) Introduction
   Including: site description, historical background, and a KOCOA description
4) Materials and Method
   Description of various geophysical, geographic, and archeological tools and methodology used in data collection, photography and mapping techniques, and artifact collection methods
5) Analysis
   Description of analytic techniques employed in the archeology laboratory and the computer and technology assisted techniques used to process the GPS and geophysical data
6) Assessment
   Combines data gathered in the field and in the laboratory to address the research questions and goals, and will consider future research. Assessment of integrity and significance with respect to
   the criteria for nomination to the National Register of Historic Places
7) Conclusion
8) References

Appendix I – Project Timeline 2017-2018

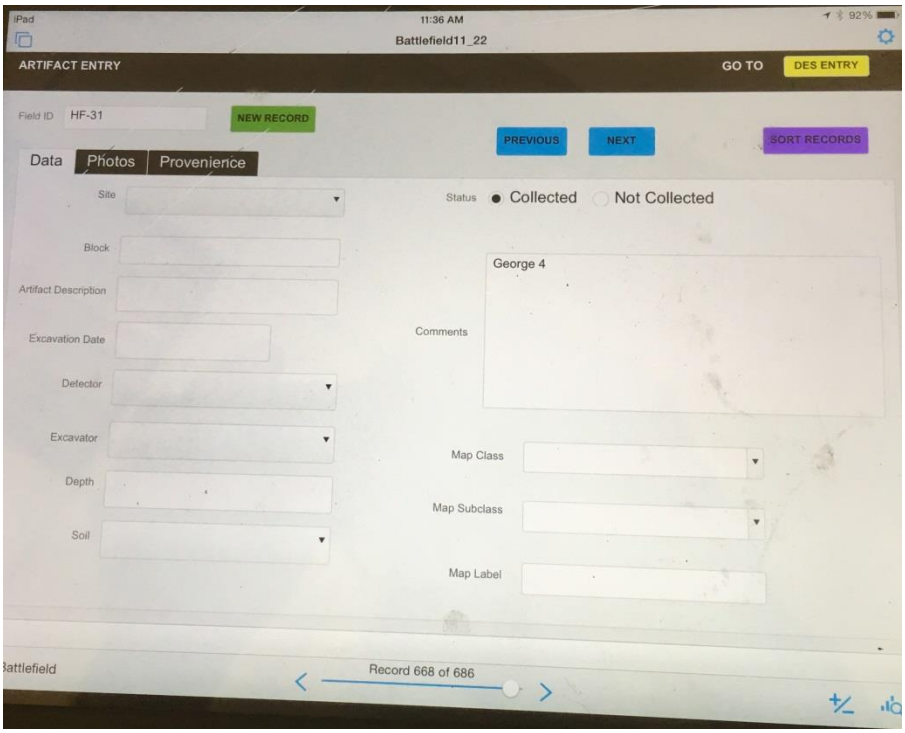
PROJECT SCHEDULE
Site Identification and Evaluation Project
Battle of Great Falls/Wissantinnewag-Peskeompskut
Mashantucket Pequot Museum & Research Center
2017

	Jan 2017	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
Meetings with Battlefield Advisory Board,			X	X	X	X	X	X	X	X	X	X
Task 1: Submit archeological research design,			X									
Task 2: Prepare and submit MHC permit			X									
Task 3: Conduct additional military and colonial history research,			X	X								
Task 4: Conduct additional historical archeological Research			X	X								
Task 5: Disseminate primary sources & revised battlefield timeline to Battlefield Advisory Board				X								
Task 6: Coordinate a public planning process,			X						X			
Task 7: Conduct metal detector surveys & other remote Sensing surveys as needed			X	X	X	X	X	X	X			
Task 8: Conduct laboratory cataloging, analysis, & conservation				X	X	X	X	X	X	X	X	
Task 9: Prepare GIS map of project area using NPS battlefield survey data dictionary								X	X	X		
Task 10: Submit Draft Technical Report												X
Task 11: Submit Revised Technical Report												
Task 12: Submit final technical report												

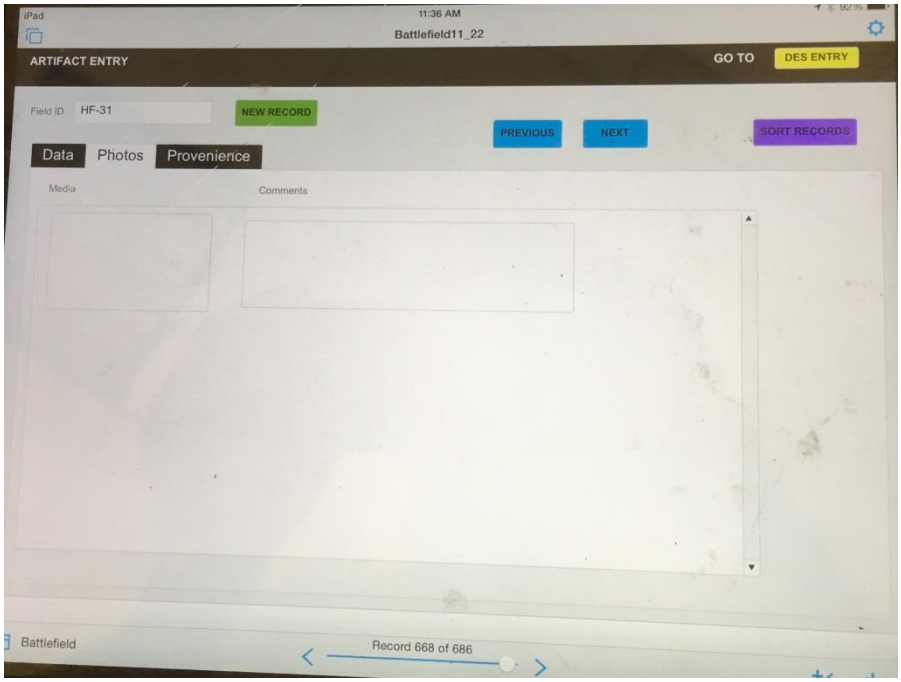
PROJECT SCHEDULE
Site Identification and Evaluation Project
Battle of Great Falls/Wissantinnewag-Peskeompskut
Mashantucket Pequot Museum & Research Center
2018

	Jan 2018	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**
Meetings with Battlefield Advisory Board,			X	X	X	X	X	X
Task 1: Submit archeological research design,								
Task 2: Prepare and submit permit to MHC								
Task 2: Conduct additional military and colonial history research,								
Task 3: Conduct additional historical archeological Research								
Task 4: Disseminate primary sources & revised battlefield timeline to Battlefield Advisory Board								
Task 5: Coordinate a public planning process,	X							
Task 6: Conduct metal detector surveys & other remote Sensing surveys as needed								
Task 7: Conduct laboratory cataloging, analysis, & conservation								
Task 8: Prepare GIS map of project area using NPS battlefield survey data dictionary								
Task 9: Submit Draft Technical Report								
Task 10: Submit Revised draft Technical Report		X						
Task 11: Submit final technical report				X				

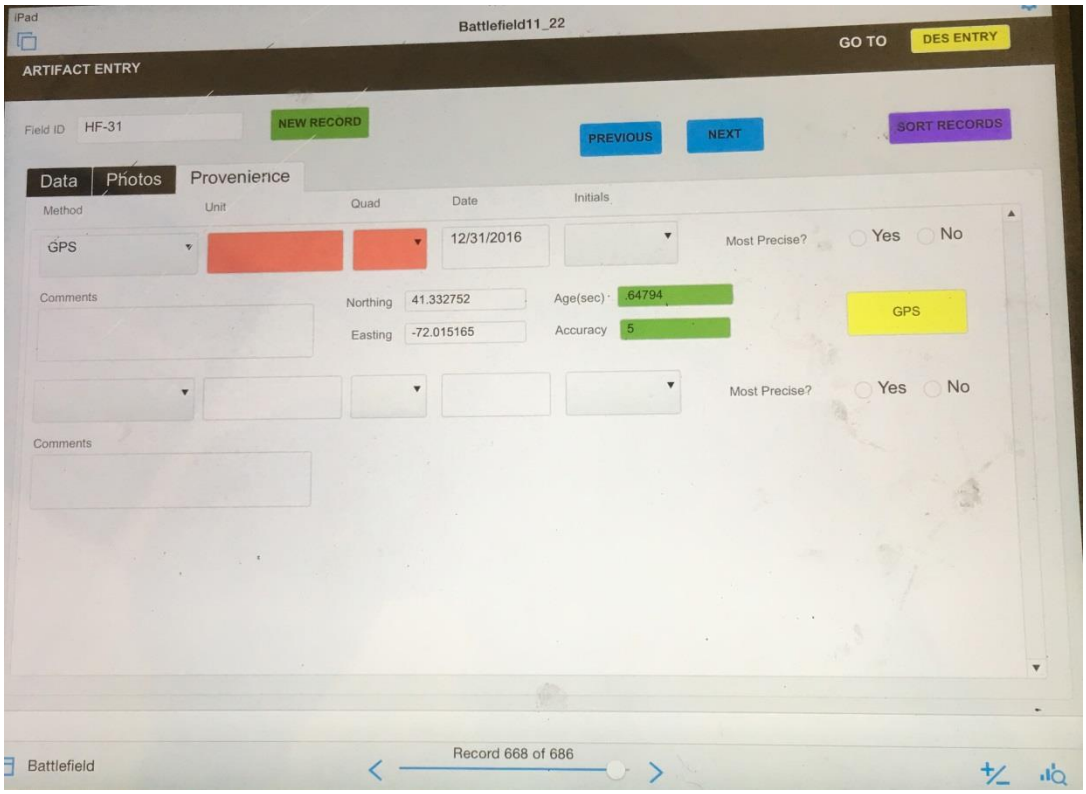
Appendix II – Data Collection



IPAD File Maker Application Page 1. Data



IPAD File maker Application Page 2. Photos



IPad File Maker Application Page 3. Provenience

Metal Detector Form Box / Random Systematic / Non Systematic

Project: Box Size: (10X10) (OT) Conditions:

Site: Box Coordinates:

Address: Sweep: Machine: Page:

Recorder: Operator: Date:

Bag	Provenience Level	FieldID	Quarter	Unit	Quad	Depth	Soil	Description	Notes/Location	Operator	INV	Discard	Comments

Additional Notes:

Metal Decting Field Form