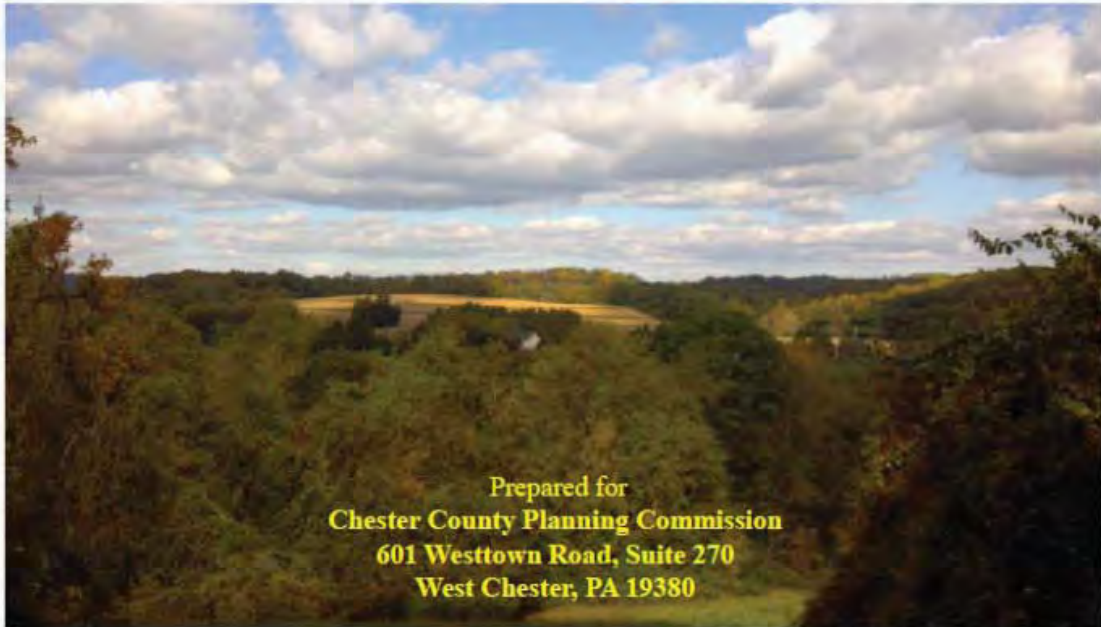


**Historical, Archeological, Geophysical, and Geomorphic Assessment  
of Four Strategic Battlefield Landscapes  
Brandywine Battlefield  
Chester County, Pennsylvania**

*AMERICAN BATTLEFIELD PROTECTION PROGRAM GRANT GA-2287-13-004*



Prepared for  
**Chester County Planning Commission**  
601 Westtown Road, Suite 270  
West Chester, PA 19380

**JMA** cultural heritage  
services  
A CCRG COMPANY

FINAL  
March 2016

**HISTORICAL, ARCHEOLOGICAL, GEOPHYSICAL, AND GEOMORPHIC  
ASSESSMENT OF FOUR STRATEGIC BATTLEFIELD LANDSCAPES  
BRANDYWINE BATTLEFIELD  
CHESTER COUNTY, PENNSYLVANIA**

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PREPARED FOR  
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FINAL  
MARCH 2016

**REDACTED**

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## ABSTRACT

This report provides detailed KOCOAs analyses for four Brandywine Battlefield Strategic Landscapes representing the Crown Forces flanking march on September 11, 1777. The study builds upon earlier County studies and current work, particularly work focused on the settlement pattern and the road network.

Archeological field work focused on two principal elements that are crucial to understanding the battle and its avenues of approach – the location of Trimble’s Ford, and the road that linked Camp Linden Hill Road to Lucky Hill Road. The combination of geomorphology, study of the topography, archeological inquiry, and historical research has provided strong evidence to re-located these features on the Chester County landscape, and this information can assist in future planning and interpretation efforts.

Through a combination of ground-penetrating radar survey and geomorphic testing, there is strong evidence that a road trace along the floodplain east of the Brandywine likely attributed to the 1777 Trimble’s Ford still exists buried within the floodplain of the West Branch of the Brandywine. Based on the presence of high amplitude geophysical reflections creating a linear pattern, the presence of compacted deposits and asphalt- or cinder-type material recovered in geomorphic augers, the road trace appears to be a single alignment trending from the river bank generally southeast across the floodplain to the unnamed channel of the Brandywine that cuts the present floodplain. This trace then likely crosses the unnamed channel of the Brandywine and then trends to the northwest towards the floodplains’ current bank of the Brandywine. Upon crossing the unnamed channel of the Brandywine, the data suggests that there are actually two buried potential road traces that are found at different depths (at 2ft and 4 ft below ground surface) that trend at an eight degree difference, thus spreading as the traces move south.

In addition, when the northern trace is extended across the Brandywine towards the buried surface found in the western bank of the river, the trend of the buried potential road trace is maintained and thus that may represent a remnant of the 1777 Trimble’s Ford.

Assessment of archeological potential for resources associated with the battle is also presented below. Since no formal archeological survey was conducted as part of this study, this assessment is intended to review potential for battle-related artifacts.

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## 1.0 INTRODUCTION

### 1.1 GOALS OF THE STUDY

The study of four strategic landscapes associated with the Brandywine battlefield has as its overall goal to verify and build upon previous planning efforts, confirming and/or updating information and adding to the understanding of the battle and its future planning, education, interpretation, and preservation. JMA, a CCRG company, utilized historic maps and aerials, in addition to available descriptive texts, to attempt to relocate key defining features related to several strategic battlefield landscapes identified as part of an overall project directed by the Chester County Planning Commission related to the Brandywine Battlefield.

The 2013 Brandywine Battlefield Preservation Plan (CCPC 2013) prioritized significant areas and elements of the battle and battlefield for further study, planning, and possible protection and/or interpretation. These areas contain defining features key to the battle that include: land areas used by troops (for campsites, marching routes, and combat) and civilians; natural features (topography, streams, wetlands, and landforms); and built features (roads, fords, buildings, farms, and cultural/ commerce centers). In evaluating such defining features, the 2013 Plan identifies and recommends 13 battlefield strategic landscapes for further consideration and planning.

Given the complexity of the battle and large size of the battlefield (approximately 35,000 acres), the strategic landscapes are being considered in phases. Trimble's and Jefferis' Fords Strategic Landscapes, along with plans for Marshallton and Sconnelltown/ Strode's Mill, represents phase one strategic landscapes planning. Together, the four landscapes form the northern Brandywine Battlefield, where tactical battle staging<sup>1</sup> occurred during the morning and into the afternoon of September 11, 1777. Strategic landscapes and their defining features are areas to focus local planning, land conservation, and historic resource protection efforts (Figure 1).

For the purposes of this technical report, KOCOA analyses of these Strategic Landscapes were developed and field investigations to identify and map Trimble's Ford 1777 site, and to identify and map road bed connecting Camp Linden Road with Lucky Hill Road (1754 Road Trace) were completed. Understanding and analyzing the existing landscape (structures, lands, and archaeology) within the battlefield during the British advance using General Howe's flanking strategy through East and West Bradford Townships provides a landscape context to the written first-person accounts. These features are identified through a combination of geophysical survey and geomorphic testing and analysis. Based on research of historic maps and aerials, a general location of the potential Trimble's Ford site and the road bed connecting Camp Linden Road with Lucky Hill Road were identified and further examined through the analysis of data.

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<sup>1</sup> Tactical battle staging in the northern battlefield includes: American reconnaissance (Marshallton and Trimble's Ford Landscapes), northern British tactical flanking advance (Trimble's and Jefferis' Fords Landscapes), and last leg of the flanking advance/ preparation for battle (Sconnelltown /Strode's Mill Landscape). Osborne Hill Landscape is related to Strode's Mill as an area of battle staging/preparation; however, it will be discussed in earnest as part of the core battle in future battlefield strategic landscapes plans.

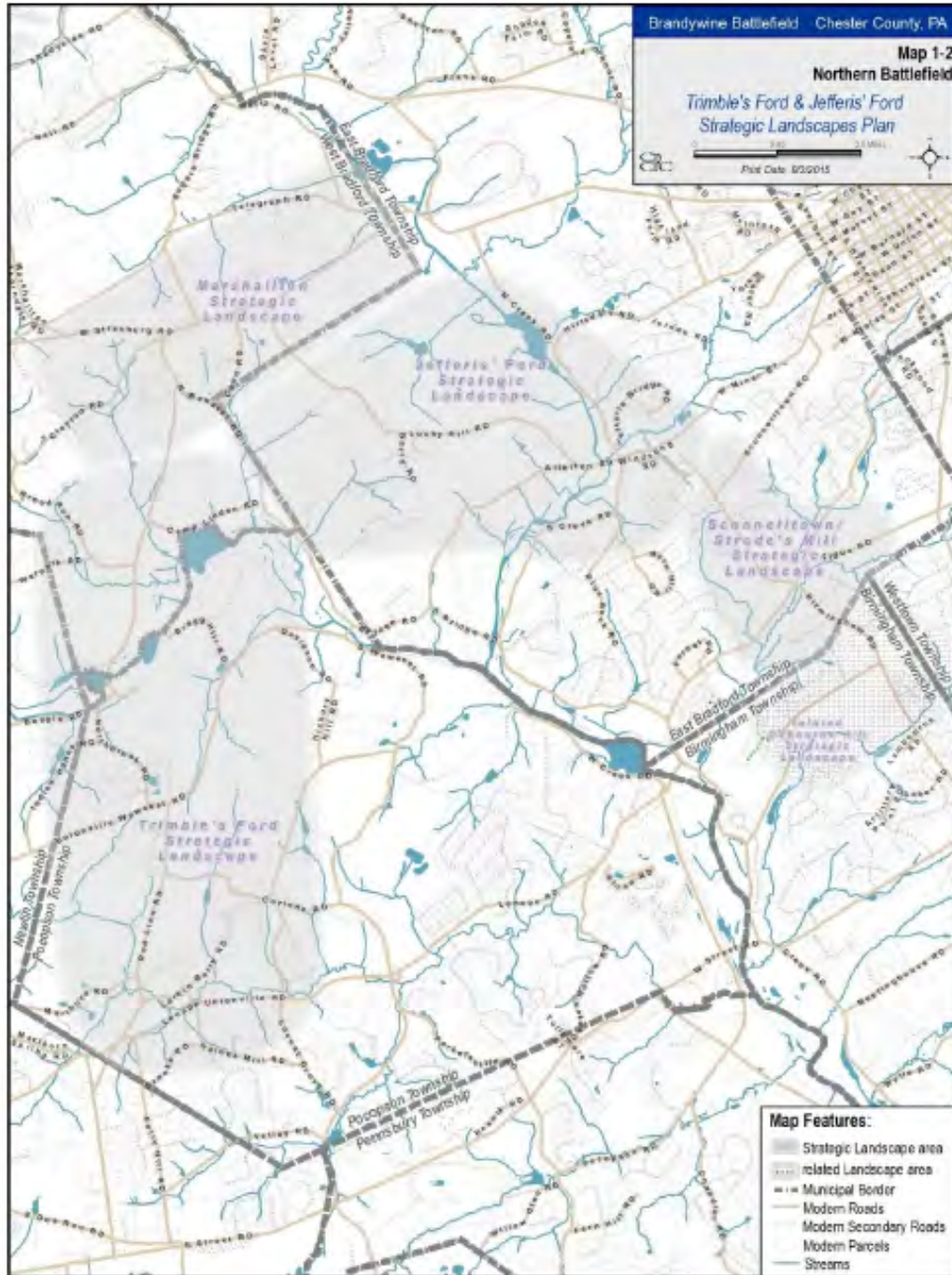


Figure 1. Map depicting the locations of the four Brandywine Battlefield Strategic Landscapes discussed in this report (from the Chester County Planning Study, 2015).

NOTE: Strategic Landscapes represent generalized areas for study and planning purposes and their boundaries do not denote 'lines in the sand'. Tactical battle staging in the northern battlefield includes: American reconnaissance (*Marshallton and Trimble's Ford Landscapes*), northern Crown Forces tactical flanking advance (*Trimble's and Jefferis' Fords Landscapes*), and last leg of the flanking advance/ preparation for battle (*Scanneltown /Strode's Mill Landscape*). Osborne Hill Landscape is related to Strode's Mill as an area of battle staging/preparation.

## 2.0 HISTORICAL OVERVIEW

The following historical overview and time sequence is adapted from *Brandywine Battlefield Preservation Plan* (CCPC 2013: chapter 1).

The late summer of 1777 in the upper Delmarva Peninsula and adjoining southeastern Pennsylvania witnessed the start of the military campaign that resulted in the capture of Philadelphia by Crown Forces<sup>2</sup> (25 September 1777). Two years of warfare had preceded the Philadelphia Campaign, with much of the principal military action on land occurring in New England, New York and New Jersey. Crown Forces setbacks occurred in December 1776 (First Battle of Trenton) and in early January 1777 (Battle of Princeton). These reversals resulted in the Crown Forces wintering in New York City and in the vicinity of New Brunswick and Perth Amboy, New Jersey, and American forces taking up winter quarters around Morristown, New Jersey.

During the months of May and June in 1777, the inability of General Sir William Howe to force a decisive battle or outmaneuver General George Washington in New Jersey led to the movement by sea of the balance of Crown Forces from Staten Island to Elk Neck in Maryland. Numbering approximately 15,000 men, the Crown Forces were transported by the British fleet up the Chesapeake Bay and landed at the Head of Elk on 25 August. Their intent was to advance overland to capture Philadelphia, the fledgling capital of the United States (Black 1998:124).

In a series of hard-fought engagements, American and Crown forces battled each other across the landscape and on the waters of Northeastern Maryland and the Lower Delaware Valley. In a series of engagements – Cooch’s Bridge (3 September), Brandywine (11 September), the Battle of the Clouds (16 September), and Paoli (20-21 September) – Crown Forces maneuvered and fought their way to the colonial capital of Philadelphia, which was taken on 25 September (McGuire 2006). By far the largest of these engagements – both in terms of land area covered and numbers of troops involved – was the Battle of Brandywine.

On September 11, 1777, Sir William Howe’s army launched a two-pronged attack on the American position along Brandywine Creek. One column commanded by Hessian General Kynphausen departed Kennett Square along the Great Nottingham Road (current US Route 1), and attacked General George Washington’s troops stationed at Chadd’s Ford.

A second column, commanded by Howe and Lord Charles Cornwallis, followed a more circuitous route, travelling north from Kennett Square, and then turning east and fording the west and east branches of the Brandywine Creek at Trimble’s Ford and at Jefferis Ford.

The column arrived at an area near Birmingham Road in Birmingham Township and from there they attacked Washington’s northern flank from right rear. American formations responded to this maneuver by forming a series of defensive lines, but were out-maneuvered. The final action of the day occurred along the Old Wilmington Road south of Dilworthtown when Major General Nathanael Greene positioned his Division and the remnants of other Continental formations in a semi-circular line that was able to blunt the Crown Forces advance. As evening approached and daylight waned, Washington’s Army

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<sup>2</sup> Throughout this report, the phrase Crown Forces will be used to identify what is traditionally called the British Army. Crown Forces is more encompassing than British or Royal, since the army commanded by Howe was composed of military formations from the British Isles, Germanic states, and North America.

retreated east along modern US Route 1. His forces reformed near the City of Chester in what is now Delaware County, Pennsylvania.



Circa 1777/78, Detail William L. Clements Library, Map #556, Part of the modern counties of Philadelphia, Bucks, Montgomery, Delaware, Chester, Lancaster, in Pennsylvania...

Figure 2. British Headquarters map, 1777, showing locations of Trimble's and Jefferis Fords.

## 2.1 TIME SEQUENCE

7:00 to 7:45AM: **Cornwallis's Division** continues to move north along Red Lion Road to Unionville-Wawaset Road. From there, they turn west onto Bragg Hill Road. This is the road that leads to Trimble's Ford. The rear of the column of **Cornwallis's Division** is still on Unionville Road near Street Road.

8:00 AM: **Cornwallis's Division**, specifically the **Hessian Field Jaegers Corps** and the **British Light Infantry Battalions**, begin crossing the Creek's western branch at Trimble's Ford. The rear of this column is still on Red Lion Road near Haines Road. South of Martin's Tavern near Northbrook Road and Strasburg Road, American Colonel Hannum and Squire Cheney witness a cloud of dust rising from **Cornwallis's Division** approaching the ford from the south. Cheney rides to warn Washington who is at the Ring Road House in Chadds Ford.

9:30 AM: **Cornwallis's Division** continues to cross the Creek at Trimble's Ford. They move east onto Lucky Hill Road and then Allerton Road. This road leads to Jefferis Ford.

10:45 AM: **Ross's Detachment of American Light Infantry** moves south to Northbrook and North Wawaset Roads.

11:00 AM: The **British 4th Brigade** is the last military formation of **Cornwallis's Division** to cross the Creek at Trimble's Ford.

11:15 AM: **Ross's Detachment of American light infantry** (70 men) sends a note to Washington to report that the British have crossed the Creek and are flanking to the north.

11:45AM: **Cornwallis's Division** begins crossing the Brandywine Creek's eastern branch at Jefferis Ford. Sir William Howe forces Emmor Jefferis, a Quaker farmer, to guide them. The **Hessian Field Jaeger Corps** turn south onto Birmingham Road, while 6,000 men of **Cornwallis' Division** wait to cross at the ford.

Noon: **Cornwallis's Division** continues crossing the Creek's eastern branch at Jefferis Ford.

1:00 PM: Joseph Townsend, a member of the Birmingham Meeting, witnesses the advance of **Cornwallis's Troops** through Scennelltown at Birmingham Road and Scennelltown Road.

**Cornwallis's Troops** halt their southern advance and begin to organize near Strode's Mill at Birmingham Road and PA 52.

The **British Light Infantry** and the **Hessian Field Jaeger Corps** line up on the south side of PA 52 just south of Strode's Mill.

1:15 PM: **Ewald's Hessian Jaegers** move south along Birmingham Road to near County Club Road.

1:30:to 2:15 PM: Most of **Cornwallis's Troops** stop to rest on Osborne Hill north of Lenape Road and west of Birmingham Road and prepare for battle.

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## 3.0 RESEARCH DESIGN

Within the strategic landscapes in question the potential exists for archeological remains that are associated with potentially one military-related activity: 1) Troop Movements on 11 September 1777. In this case, the application of a KOCO terrain analysis to investigate the troop movements leading to the engagement at Brandywine is limited chiefly to road systems and stream crossings. Associated events include the looting or damage caused by the Crown Forces, and to some extent limited landscape damage (destroyed fencing for example). None of these actions are likely to leave significant archeological evidence.

“Understanding the historic terrain of a battlefield as it was at the time of the action is critical to the understanding of any battle” (Foard 2009:136). Battles are temporary, albeit seminal, events fought on cultural landscapes that had a variety of cultural actions – transportation routes, agricultural development, settlement patterns, population change – already occurring before the battle and that continue to exert influences on the field after the battle. Field patterns and farmsteads are changed and give way to subdivisions, roads are altered, vacated, rerouted or widened, and woodlands are reduced or removed from the landscape. Following Foard’s analysis of the battlefield at Sedgemoor and adapting it for application to a North American setting, the primary terrain elements affecting the battlefield are physical geography, settlement and land use, and communications (Foard 2003:33-35).

### 3.1. PHYSICAL GEOGRAPHY

The Battle of Brandywine was one of the largest combat actions of the Revolutionary War. Despite ongoing development pressures, the Brandywine Battlefield still retains many significant features it had in 1777, such as historic buildings and open spaces that were crossed by troops. Unlike the battles in Boston or New York City, Brandywine was fought in a rural setting of farms and small villages, some of which still exist. This day-long series of troop movements and firefights covered 35,000 acres of Chester and Delaware Counties in Pennsylvania. Much of the economic success of the Quakers was due to the highly productive agricultural soils found in southeastern Pennsylvania, including the Brandywine Valley. The Brandywine Valley also supported numerous Quaker owned mills, over 130 at the height of use. These mills were powered by fast flowing waters that course through the valley’s gently rolling topography (CCPC 2013).

The Battlefield is located in the southern reaches of the Brandywine Creek Watershed which covers 352 square miles, with 567 miles of streams. The main stem of the Brandywine Creek flows through the middle of the Battlefield. The Creek is fed from the north by its East and West Branches which meet in the northern part of the Battlefield. Land along the West Branch tends to be more rural while the East Branch communities are more suburbanized. Prior to World War II, the entire watershed was largely agricultural and highly productive. The Brandywine Creek flows south into northern New Castle County, Delaware, where it once powered the many water mills that operated in the Wilmington, Delaware area.

The geology of the Battlefield is characterized by hard, mostly metamorphic rock formations that have resulted in a combination of flat and sloping terrains. This topography is generally flatter to the north, gradually becoming hillier to the south. There are steep hillsides and cliffs along the lower reaches of the main stem of the Brandywine Creek (CCPC 2013).

## 3.2 SETTLEMENT AND LAND USE

Geographer James Lemon has divided the eighteenth century in the Philadelphia region into three periods of urban or town growth (Lemon 1967). The first period, from 1700 to 1729, was one of urban stagnancy after the initial rapid growth of the seventeenth century. However hamlets - unplanned towns that sprang up at crossroads and around taverns, ferries and mills did begin to appear at this time. The second period of urbanization that Lemon recognizes, 1730 to 1765, saw a renewal of town growth based on internal trade. In the area around Philadelphia, the towns of Lancaster, Reading and Wilmington, as well as those towns further away but still accessible to Philadelphia such as York and Carlisle, were examples of this period of urban growth. Chester County lacked towns of any real size, and thus nodal places such as Kennett Square, Trimbleville, Sconnetown, and Dilworthtown, developed during this period. Lemon's third period of urban development, 1766-1800, was marked by less noticeable town growth that paralleled a more erratic economic pattern. The few hamlets or villages that were present in this part of Chester County were generally focused on taverns, mills, and ferries (Warden 1989:2).

By the start of the Revolution, Chester County had a population of approximately 30,000 (Warden 1989:1). Quakers were the largest religious group in the county, accounting for approximately 40 percent of the population. Their early settlement in the eastern portions of the county meant that considerable numbers of members of the Society of Friends resided in the Brandywine Valley (Warden 1989:4).

In this portion of Chester County the majority of farmsteads were set on smaller fields with the house, barn and other structures grouped in clusters off main roads. During this period, dwellings and their associated farmsteads were generally sited on well-drained soils with small agricultural fields located close-by. Separating the cultivated fields and pasture lands were hedgerows sited along property lines as boundary markers, although contemporary documents suggest that worm fences and post and rail fences made from chestnut were not unknown. Fences would also be used as a means to contain cattle, horses, and other livestock, keeping them from ravaging the crops and gardens (Rhoads et al. 1989:51-53). There were woodlots that provided wood for fuel, material for the construction of farmhouses and other structures, and forage for livestock. It is estimated that a farmer could clear approximately 5 to 10 acres of woodland annually during this period (Williams 1989:63). In the decade preceding the American Revolution (circa 1767-1777), cleared land generally accounted for close to half of the total property. The average size of farms declined throughout the eighteenth century in Chester County, dropping from about 500 acres in 1693 to less than 130 acres by 1791 (Ball and Walton 1976:105; Kulikoff 2000:134-135). By 1750, it appears that the density of rural settlement in southeast Pennsylvania was approximately five households per square mile (Ball 1976:628).

Structures present on agricultural complexes dating to the war years included small dwelling houses generally built of wood (log and frame), and/or stone or less likely brick. Dwelling plans included a range of traditional options, such as hall, hall-parlor, double-cell, cross-passage, and four-room. Surviving foundations of this period are most often constructed of stone or occasionally brick, but some may have been of earthfast or impermanent construction, a building style that characterized much of the architecture in British North America during this period (Carson et al. 1981). A range of outbuildings such as kitchens, granaries, barns, springhouses, smokehouses and meat houses would have been present on farmsteads.

Farming and agricultural pursuits were the most significant occupations for 80 to 90 percent of the region's population (Egnal 1975:201). In the Brandywine Valley farming took the form of mixed husbandry, combining the cultivation of grains and the raising of livestock. Research into southeast



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Pennsylvania for this time period indicates that on an average farm of 125 acres, twenty-six acres would be in grain; thirteen in meadow for hay; twenty for pasture; eight or nine in flax or hemp, roots, other vegetables, fruits, and tobacco; three for the farmstead; and the remaining sixty acres would be fallow and woodland (Ball 1976: 628; Lemon 1972:167).

The farms in the Brandywine River Valley were part of a broader regional economy that was centered in Philadelphia, a major urban center that in the last quarter of the seventeenth century began to dominate the economic scene in the lower Delaware Valley (Walzer 1972). Farmers in the region sent their grains to the local milling centers, where the wheat flour and bread were then shipped to Philadelphia for export to the West Indies, other North American colonies, and southern European countries. The area's farmers quickly adapted to this market system of agriculture. It is estimated that over one-half of the farmsteads in the area were situated within eight miles (or a half-day's journey) of a mill or shipping wharf (Walzer 1972:163).

Historian Jackson Turner Main categorizes southeastern Pennsylvania as a commercial farm community, or a community that sold a high proportion of its agricultural produce. Quaker farmers in the Brandywine Valley were prominent players in the regional economy (Warden 1989). For this type of community to exist, good farmland and accessibility to markets were necessary. Main's research found that these communities were characterized by high percentages of wealth, rich men, artisans, professionals and merchants, and a high proportion of large vs. small farmers (Main 1973:33-34).

Studies of the economic development of the region through the eighteenth century have found the period to be one of modest changes in agricultural productivity (Ball 1976; Ball and Walton 1976; Egnal 1975; Kulikoff Lemon and Nash 1968; Sachs 1953). These changes, based on population growth and the rise in per capita income, can be seen in two distinct periods; 1720 to 1745, and 1745 to 1760. Minor fluctuations throughout the century were caused by King George's War, the French and Indian War, and the non-importation agreements of 1766 and 1769-1770. In addition, colonists were affected by alternating periods of prosperity and depression. Philadelphia continued to be the major urban center in the region, and from about 1750 until the end of the century was the dominant commercial and social center of the eastern seaboard, with a population second only to New York City.

Agricultural practices in southeastern Pennsylvania followed an extensive, rather than an intensive, use of the land (Lemon 1972:169). Not until the 1750's did three-field or four-field rotational patterns of planting, and only occasionally six-field rotation, become prevalent and widespread. By the start of the Revolution, the use of field rotation patterns was common throughout the Middle Atlantic. Post-war contemporaries reported that through the use of these rotational patterns yields ranging between six and twenty bushels of wheat per acre were harvested (Bausman and Munroe 1946; Strickland 1801:42-45). The extensive use of the land was based on wheat production as one of the most valuable and important trading commodity that the region could export. It has been suggested that this pattern of land use was the result of a lack of adequate labor supply, the availability of inexpensive land, household consumption, the market, and the attitudes of the people of the region (Lemon 1972:179).

From a study of wills, inventories of personal and real property, tax assessments and other legal documents related to various farmsteads specific to the project area as well as in Chester County, it can be determined that farmers of the Revolutionary era cultivated wheat, oats, rye, Indian corn, potatoes, turnips, pumpkins, flax and hemp (Michel 1981). In a study of the farms that comprised the Valley Forge encampment, Rhoads, Ryan and Aderman also discuss the likelihood that "all period farmsteads included a prominent kitchen garden...located near the house with good soil and full sun [that were] important

factors in the choice of a site” (Rhoads et al. 1989:49-50). The region boasted sizeable aggregations of fruit trees; apple orchards and peach orchards were not unknown on farmsteads in the area. Most farms also had varying kinds of livestock, including horses and oxen, used for both transportation and cultivation purposes; cattle, used “primarily for home needs,” hogs and pigs; sheep; various types of fowl, including chickens; and occasionally bees. It would appear that livestock was kept primarily for home use (Rhoads et al. 1989:53-55).

### 3.3 COMMUNICATION

Roads and road traces, as avenues of approach and retreat for military troop movements, are important KOCOAs defining features for battlefield analysis. A well planned transportation system was established throughout the rural communities surrounding Philadelphia to move goods and families to the Yearly Meeting. For the terrain analysis of these strategic battlefield landscape, roads are the key defining features. Understanding where roadways were located at the time of the battle is necessary for understanding primary reports from the field of battle and locations where historic battle activities would likely have occurred. For local planning purposes, this information is needed to craft guided planning and interpretation strategies. One extraordinary outcome of this project is the research undertaken by Chester County Archives, whereby an approximated 1777 road network could be mapped for this project using the best known primary source material at the time of this plan (Figure 3).

The eighteenth century road network was generally formed through a system of approved roads (via road petitions) that typically connected destinations such as mills, taverns, crossroad villages, and places of worship. Often roads with similar destinations shared the same road name, creating confusion for people (including soldiers in both armies) who were unfamiliar with the road system. For example, there were several "Roads to the Great Valley," which led to the industrial corridor in the colonial-era Caln Township and Great Valley.

### 3.4 KOCOAS ANALYSES

Military-historical research is integral to the battlefield interpretive process developed by the American Battlefield Protection Program, in which surveyors apply the precepts of KOCOAs military terrain analysis. The KOCOAs acronym stands for the analytical concepts of **K**ey Terrain/Decisive Terrain, **O**bservation and Fields of Fire, **C**over and Concealment, **O**bstacles, and **A**venues of Approach and Withdrawal. With reference to a given battle location, analysis of these aspects of military movement, position and combat as they apply to that land area combines documentary research and field survey, and enables identification of the battlefield’s **Defining Features** and thus its appropriate boundary. The research examines and analyzes primary sources for the battle such as participants’ letters, journals, and memoirs, and early post-battle accounts based on direct experience of the terrain, to discern location references for KOCOAs elements. The KOCOAs process, and the supporting research, is directly applicable to archeological investigation at battle locations, providing documentation for the military actions that took place at those locations (Lowe 2000).



Figure 3. The Brandywine Battlefield road network 1777. Traces depicted in red illustrate roads that were present at the time of the battle, with their corresponding dates of creation.

NOTE: 1777 Fords of the Brandywine Map depiction by Clifford Parker, Chester County Archives. Base map is 1847 *Map of Chester County, Pennsylvania: from original surveys* / by S.M. Painter & J.S. Bowen; projection & drawing by J.S. Bowen; engraved by Edw'd Yeager, Philadelphia. 1777 roads provide a delineation of best available primary source information from Chester County Archives as researched by Archival staff.

The KOCOAs analysis is applied to all ABPP projects (Lowe 2000). Terrain features, be they manmade such as roads or buildings or natural such as ridges or forests, mean different things to different people. A painter looks at forests, hills, waterways or meadows for their artistic value. A farmer considers them with a view toward producing foodstuffs or generating income. A soldier looks at them for their military value, how he could integrate them into offensive or defensive positions, how they fit into his plans for offensive or defensive action. This is not only important for understanding why a commander would (or would not) position infantry or artillery or cavalry at a certain place on the terrain at a certain point during the engagement (why faulty positioning would occasionally have disastrous consequences), but also helps to interpret the authenticity of battlefield maps. Furthermore, evaluation of terrain from a military point of view can help to provide reasonable explanations to "fill in" gaps in our knowledge of events caused by a scarcity of primary sources, e.g., in the case of troop movements. "Military usage" of terrain would demand that forces be re-deployed under cover of ridges or through low-lying ravines outside the view of the enemy. Similarly depending on the task assigned to a force during any stage of the engagement, troops might be redeployed via a causeway or road if speed is of the essence or through a forest or circuitously if the element of surprise is paramount. Taking these, and similar military aspects into consideration, the terrain becomes an integral part of the reconstruction of a battle as the stage on which the action unfolds.

This field survey used the KOCOAs method of military terrain analysis to analyze, verify and/or update, and interpret the previously established troop movements, battle actions, and historic resource locations within each of the four Brandywine Battlefield strategic landscapes. As stated above, the acronym KOCOAs, developed by the United States Army, stands for five key elements of a battlefield; (K) Key/decisive terrain, (O) Observation and field of fire, (C) Cover and concealment, (O) Obstacles, and (A) Avenues of approach/withdrawal. Military terrain analysis has been taught to West Point Cadets since before the Civil War. See Table 1 for definitions of the terms used in KOCOAs analysis. Officers on both sides employed the concepts of terrain analysis; it is common to find references to key terrain, avenues of approach, etc., in their official reports and descriptions of events. KOCOAs provides a method of conceptualizing a landscape from a military point of view and more importantly a way to evaluate the field of conflict using a method taught to and used by the combatants themselves.

Table 1. KOCOAs Definitions (From McMasters 2009)

<b>Term</b>	<b>Definition</b>
Key terrain	Any local feature that dominates the immediate surrounding by relief or another quality that enhances attack or defense
Decisive terrain	Ground that must be controlled in order to successfully accomplish the mission
Observation	The ability to see friendly and enemy forces and key aspects of the terrain to allow management of the conflict
Field of fire	An area that weapons may effectively fire upon from a given position
Dead space	An area within the maximum range of a weapon or an observer, but which cannot be seen or fired upon from a given position
Cover	Protection from enemy fire
Concealment	Protection from enemy observation
Obstacles	Natural or man-made terrain features that prevent, impede, or divert military movement
Avenue of approach	Relatively unobstructed ground route that leads to an objective or key terrain
Avenue of withdrawal	Relatively unobstructed ground route that leads away from an objective or key terrain
Mobility corridor	Area or location where movement is channeled due to terrain constrictions

A soldier looks at fields, forests, ridges, rivers, etc., for their military value, how he could integrate them into offensive or defensive positions, how they fit into his plans for offensive or defensive action. This is not only important for understanding why a commander would (or would not) position infantry or artillery or cavalry at a certain place on the terrain at a certain point during the engagement (why faulty positioning would occasionally have disastrous consequences), but also helps to interpret the authenticity of battlefield maps. Furthermore, evaluation of terrain from a military point of view can help to provide reasonable explanations to "fill in" gaps in our knowledge of events caused by a scarcity of primary sources, e.g., in the case of troop movements. "Military usage" of terrain would demand that forces be re-deployed under cover of ridges or through low-lying ravines outside the view of the enemy. Similarly depending on the task assigned to a force during any stage of the engagement, troops might be re-deployed via a causeway or road if speed is of the essence or through a forest or circuitously if the element of surprise is paramount. Taking these and similar military aspects into consideration, the terrain becomes an integral part of the reconstruction of a site of conflict as the stage on which the action unfolds.

Table 2. Strategic Landscape Defining Features and corresponding KOCO A Categories

<b>Defining Feature</b>	<b>KOCO A Category</b>
Marshallton Village	Key Terrain
Martin's Tavern	Key Terrain
Road Trace #1: Vicinity of Bragg Hill Road (est. 1728)	Avenue of Approach
The Great Valley Road (Red Lion Road and Northbrook Road)	Avenue of Approach
Trimble's Ford(s)	Key Terrain, Obstacle
Camp Linden Hill Road	Avenue of Approach
Road Trace #2: Road between Camp Linden Hill Road and Lucky Hill Road	Avenue of Approach
Lucky Hill Road	Avenue of Approach
The Strasburg Road	Key Terrain
Ross' location – Red Lion Road near Locust Grove Road	Observation, Field of Fire
Jefferis Ford	Key terrain, Obstacle
Birmingham Road "Defile"	Key Terrain, Avenue of Approach, Obstacle
Sconneltown High Ground	Key Terrain, Observation
Joshua Clayton House	Observation
Brandywine Creek (east branch, west branch)	Key Terrain, Obstacle

**Road Trace #1, Vicinity of Bragg Hill Road** (*Avenue of Approach*). A portion of the trace of the road extending from modern Route 842 to the dead-end section of Bragg Hill Road is still evident in the tree line extending north from Route 842 toward the West Branch of the Brandywine. Extending north from Street Road, the trace was laid out in 1728. The road was present at the time of the battle, but is now abandoned.



Plate 1. Road trace #1 leading to Trimble's Ford, view to the north from intersection of Route 842 and Red Lion Road. Trace is represented by the treeline visible in the center of the image.



Plate 2. Road trace #1, view to the northeast along the treeline, representing the trace of the road leading to Trimble's Ford.

The road was the avenue of approach for Lord Cornwallis' flanking column of Hessian and British soldiers. Sir William Howe's Hessian aide de camp, Friedrich von Muenchhausen, recorded in his journal that "At five o'clock in the morning General Howe marched off to his left, up the Brandywine. Our column consisted of two battalions of English light infantry, two battalions of English grenadiers, two

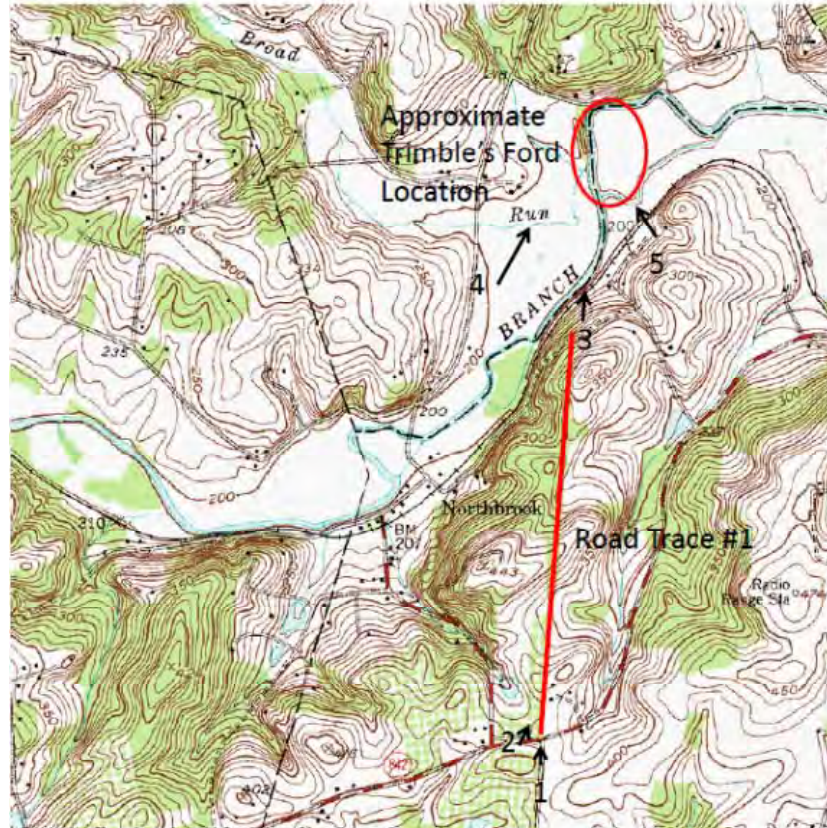


Figure 4. Locations of photos for the Trimble's Ford area. Numbers correspond to plates in the text.

battalions of English Guards, two brigades of English infantry, two squadrons of dragoons, the Hessian jaegers and the Hessian grenadiers. Since our column had no baggage, but did have a number of sappers in the van, we moved forward quickly in spite of the great heat" (von Muenchhausen 1974:31). Captain Johann Ewald of the Hessian Field Jaeger Corps led this column, and he noted that "...The column on the left, under Lord Cornwallis, which General Howe personally accompanied, began marching to the left toward Jefferis's Ford, where the Brandywine Creek has two branches which are very good for crossing, in order to outflank the fortified position of the enemy [along Brandywine Creek]" (Ewald 1979:81).

Ewald was literally the point man for the entire flanking movement and he described the general character of the Brandywine Valley landscape that the Crown Forces were moving through. Taking his role as the point guard for the army, Ewald wrote that "I was ordered to march as slowly as possible, and to use all caution in order not to fall into an ambush, as the area was traversed by hills, woodlands, marshes, and the steepest defiles" (Ewald 1979:83). The landscape was a general topic of note for several of the Hessian and British officers, who commented on woods, hills, and unevenness of the ground (Anonymous 1777; Burgoyne 1987:48; Montrossor 1881:416).



Plate 3. The view to the northeast of the rolling hills along the west branch of the Brandywine on the road leading to Trimble's Ford (Road Trace #1).

**Martin's Tavern** (*Key Terrain, Chester County Militia Staging Area*) The Martin's Tavern intersection was a major regional crossroads point and was a key strategic military feature. Control of the crossroads meant control of the north-south Road to the Great Valley (approximate route shown in pink beginning at C and ending at A) as it came up from Trimble's Ford, and control of the east-west Strasburg Road (a section of which is shown from B to 2) leading to Marshallton village and Martin's Tavern and connecting to Turk's Head Tavern (in the former Turk's Head village and today's West Chester Borough).

Militia formations, and possibly some of the light infantry, were located in the vicinity of Martin's Tavern on the morning of 11 September. This is certainly the case with Colonel John Hannum of the 1st Battalion of Chester County Militia, Major Joseph Spear of the 8th Battalion (the unit commanded by Patterson Bell), as well as Thomas "Squire" Cheyney (a county 'sub-lieutenant' responsible for organizing militia). Spear left Martin's Tavern before dawn and traveled south towards Welch's Tavern east of Kennett Square about five miles away. Skirmishing and several sharp but short engagements between Knyphausen's column and Maxwell's light infantry started at around 6am near the intersection of modern US Route 1 and Lenape Road/PA Route 52, well south of Martin's Tavern. The sound of firing throughout the morning, while not heavy and indicating a major engagement, was clearly audible to Crown Forces flanking column and is remarked upon in their writing (cf., Buettner 1915:49; Kipping and Smith 1974:31). Given the sounds of the engagement between General Knyphausen's column and the American forces in the vicinity of Chadds Ford, American militia, dragoons, and light troops not engaged in fighting but in the area around the forks of the Brandywine would have been on alert.

Sometime before 10am, Hannum and Cheyney worked their way south along the Road to the Great Valley from Martin's Tavern about one mile south to a vantage point where they could see Trimble's Ford. While at this location they observed the crossing of the ford by Lord Cornwallis' division. At the time, they watched the column as it was in mid-crossing, with formations queuing to cross extending



along today's Bragg Hill Road already across the ford and halted on the Camp Linden road extending east towards Jefferis' Ford, as well as waiting in the fields surrounding Trimble's Ford (Harris 2014:252; McGuire 2006:188). Historic resource review and landscape analysis suggests Hannum and Cheyney's location was at or near the Joshua Clayton House on today's Northbrook Road (parcel 50-9-23). Cheyney was related to the Clayton family by marriage and the house commands a good view of Trimble's Ford. While not substantiated in any historical account, the local legend of Cheyney's ride to warn Washington has its roots here (Harris 2014:262-265; McGuire 2006:188).

**Ross's Location - Red Lion Road near Locust Grove Road** (*Observation and Fields of Fire*). American Forces arrayed on the west side of the Brandywine Creek and in the vicinity of Martin's Tavern consisted of detachments from Maxwell's Light Infantry Corps comprising Continental soldiers and Pennsylvania militia, as well as patrols of Continental light dragoons under the command of Colonel Theodorick Bland. Maxwell's light troops were intended to serve as a reconnaissance force to slow enemy movements and provide information about enemy formations and maneuvers. Troops in Maxwell's Light Corps were drawn from a number of Continental regiments and battalions (a term used interchangeably during the War) within the army, including Pennsylvania, New Jersey, Virginia, and North Carolina. In addition to the Continentals, the American Light Infantry Corps included a large proportion of riflemen, many of whom were volunteers from the counties militias of Lancaster, York, North Hampton, and Cumberland in Pennsylvania. These Pennsylvania militia company volunteers were attached to the Light Corps specifically because they were armed with rifles. To further supplement the Light Corps, General Washington also ordered a volunteer battalion of Chester County militia to join Maxwell on September 1<sup>st</sup> (Catts 2004). This unit, the 8th Battalion Chester County Militia commanded by Patterson Bell, was ordered to join with Maxwell's light troops on 1 September, but it is possible that Bell's men did not actually organize until 6 September (Smith 1976:9).

About a week earlier, on 2 September, Washington had provided guidance to Maxwell regarding the role of his light corps, and this advice can be applied to the method of patrolling used by the light troops on the morning of 11 September. Washington advised Maxwell to "keep small parties upon every Road that you may be sure of the one they take." A similar pattern of patrolling and reconnaissance can be seen in Maxwell's deployment of his corps after the Battle of Brandywine and in the days leading up to the Battle of the Clouds (16 September).

American formations were attempting to cover the various avenues of approach to the battle. It is likely that small groups of light troops and dragoons were deployed along the principal west-to-east roads leading from the general Kennett Square vicinity towards the Brandywine Creek, such as the modern US Route 1 corridor and the roughly parallel Street Road (PA Route 926). Patrols were also stationed along the Road to the Great Valley that crossed at Trimble's Ford and led to Martin's Tavern.

Crown Forces officers report encountering American forces soon after they began the flanking march. Ewald noted that "...I led the advanced guard of the column under Lord Cornwallis, which consisted of sixty foot jaegers, Lieutenant Hagen with fifteen mounted jaegers, a company of Highlanders from the 42nd Regiment under Captain McPherson, and a company of light infantry under Captain Scott. I had hardly marched half an hour [approximately 6,600 feet - see Ewald 1979:378, n25] when I ran into a warning post of the enemy, five to six hundred men strong, who withdrew from one favorable position to another under constant skirmishing until around noontime (Ewald 1979:83).

The journal of the Hessian Field Jaeger Corps elaborated further on this skirmishing with American forces, but the number of Americans reported was considerably lower than what was reported by Ewald.

The Field Jaeger Corps reported that: "...about two miles this side of the Brandywine we met an enemy patrol of one hundred men, which retreated into the woods, leaving a few prisoners behind. This force was the one which notified General [George] Washington of our approach and convinced him to change his belief, which up till now, was that our army really intended to cross at Chadds Ford, and to detach the largest part of his army to oppose us...."(Burgoyne 1987:48). Von Muenchhausen is the only source to note that American mounted troops were encountered on the march, writing that "at noon our vanguard came upon 200 rebel dragoons, who wounded some of our men by their fire, but they soon retreated" (von Muenchhausen 1974:31). He is almost certainly referring to Colonel Bland's dragoons.

Whether Ross' detachment of light infantry began the morning at Martin's Tavern is not known. Perhaps more likely is that this 70-man detachment was positioned south of the west branch of the Creek, patrolling roads as were other light detachments. It is known however, that at 11am, Ross – identifying his position as on the Great Valley Road and listing his unit affiliation as D.P.R, or Dunlap's Partizan Regiment, elements of which were attached to Maxwell's Light Corps – penned a message to Washington:

Sept. 11 '77 Great Valley Road

Eleven oclock AM –

Dear General,

A large body of the enemy—from every account 5000, with 16 or 18 field pieces, marched along this road just now. this Road leads to Taylor's [2] & Jeffries [3] ferries on the Brandywine, and to the Great Valley at the Sign of the Ship [A] on the Lancaster Road to Philada. There is also a road from Brandywine to Chester by Dilworth's Tavern [D]. We are close in their rear with about 70 Men. Capt. Simpson lay in ambush with 20 men, and gave them three rounds within a small distance, in which two of his men wase wounded, one mortally. I believe Genl. Howe is with this party, as Joseph Galloway is here Known by the inhabitants, with many of whom he spoke, and told them that Genl Howe was with him. Yours, James Ross Lieut. Col. D. P. Regt.

Ross's note can be read as a warning to Washington that the road he has found the Crown Forces on – identified as the Great Valley Road (also termed Road to the Great Valley per Chester County Archives) – presented multiple avenues of approach to the American position. He says that from this road the Crown Forces can reach Jefferis' Ford (3) or Taylor's Ford (off Map 3-1 to the north), or go even further north and strike the Lancaster Road at the Sign of the Ship (A), or head southeast towards Dilworth village (D). His message suggests that his detachment was patrolling the area south of the west branch of the Brandywine Creek and encountered Cornwallis' column as it moved towards Trimble's Ford. Ross' detachment is on the south side of the Creek, somewhere on today's Red Lion Road probably near the intersection with Locust Grove Road (blue star on Map 3-1 shows approximate position). His position was previously identified and incorporated into the 2010 Study and 2013 Plan as being north of Trimble's Ford. The proximity to Jone's/Painter's Ford (yellow star with C) and the Continental Army from this location supports the fairly timely delivery of his message to Washington. The rear of the Crown Forces column came under fire from a portion of Ross' command, but was not seriously impeded. Ross' detachment seems to have hung on to the rear of the Crown Forces column until after the battle, when he is reported in East Bradford Township at night fall (McGuire 2006:264).

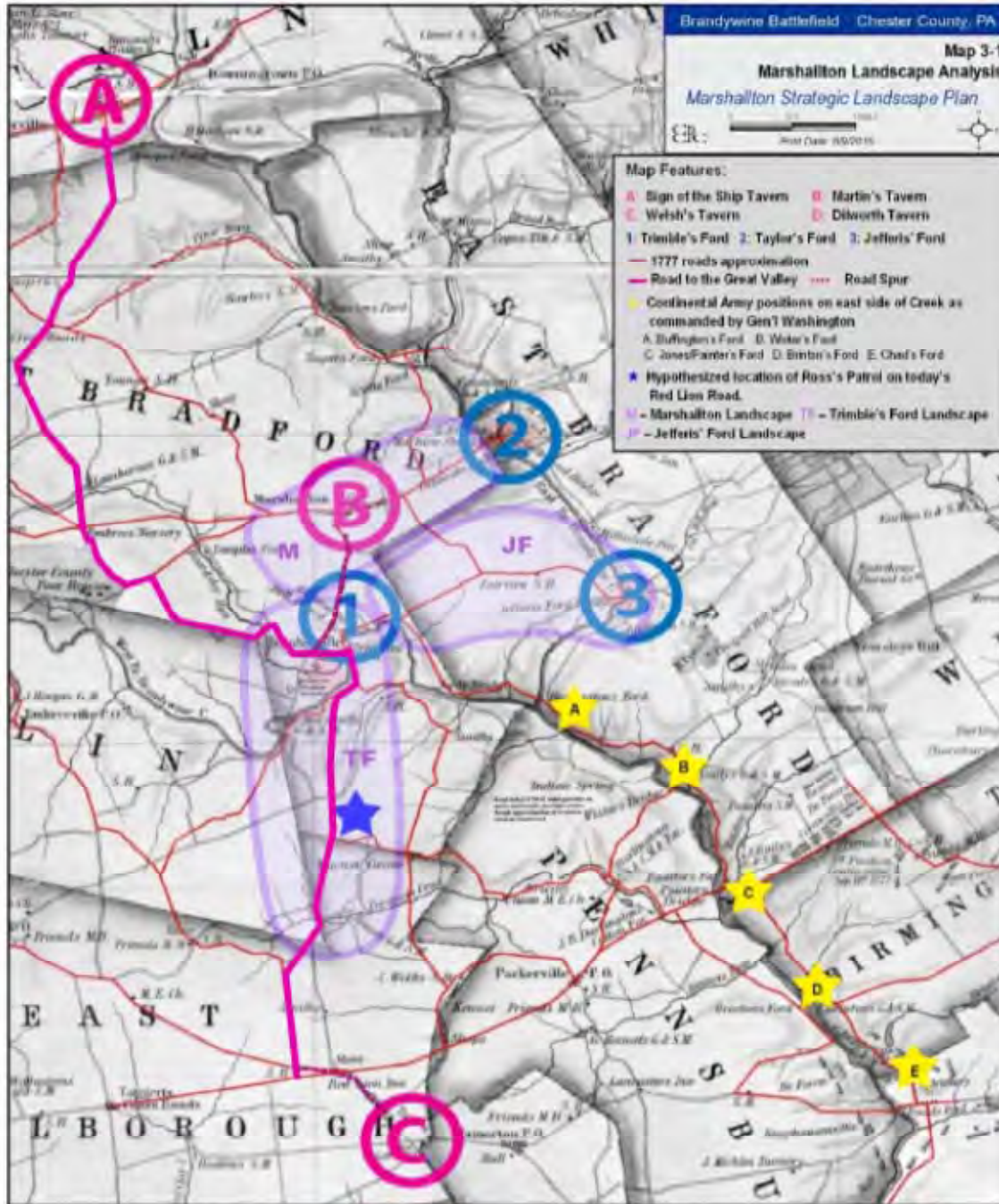


Figure 5. Elements of the Marshallton and Trimble's Ford Strategic Landscapes mentioned in the text. Letters and stars are keyed in the text. From the Chester County Planning Study 2015.

**Trimble's Ford (Key Terrain, Obstacle).** The Bragg Hill Road extended to the two fords at Trimble's Ford. The Ford was apparently in use by 1728 when the Bragg Hill Road was established. The ford was

likely used prior to the creation of the road. Both fords are clearly depicted on the British Headquarters Map dating to circa 1777/78 (Figure 2 and Plate 4).



Plate 4. General vicinity of Trimble's Ford on the west Branch of the Brandywine.

The importance of Trimble's Ford as a key component of the colonial road infrastructure should not be underestimated and can be seen in the number of roads and Townships it served. From the south, the four primary roads to the Great Valley from Kennett, East Marlborough, Newlin, Pocopson and Pennsbury converged at the floodplains that formed the ford. The 1742 Road that intersected the 1728 Road to the Great Valley, which was utilized by Crown Forces, brought goods and people from East Bradford and Birmingham Townships north via Trimble's Ford. Locally, the ford was the main crossing of the Creek from Marshallton and points north towards Baltimore. The first covered bridge in the County, c. 1807, was built southwest of the ford in Northbrook village at the site of an early small private bridge owned/used by the Marshall family to connect their land holdings on either side of the Creek. Once safe passage over the Creek was available via the public bridge, the ford fell into disuse until it vanished along with the immediate road system serving it.

Few of the first-person accounts actually describe the ford. Von Muenchhausen notes that Cornwallis' column crossed in "up to three feet of water" (von Muenchhausen 1974:31). He also mentions that the bridges at both fords (Trimble's and Jefferis) were destroyed, but there is no historical documentation to suggest that bridges were present at either location at the time of the battle. Ewald described both fords as good crossing locations but "enclosed by hills" (Ewald 1979:84). The Hessian Field Jaeger Corps journal referred to the crossing of the "first arm" of the Brandywine as "Tinkloss Ford" (Burgoyne 1987:48), while British engineer John Montrossor termed it "Trumbull's" and noted that their morning march was aided by a fog (Montrossor 1881:416).

Period maps and the geomorphological study of the ford area (detailed below) indicate that there were two stream crossings at this location, a smaller one immediately south of the West Branch of the Brandywine, and the larger Trimble's Ford on the Brandywine itself (Plates 4 and 5).



Plate 5. View to northeast showing approximate location of the smaller secondary ford on the road to Trimble's Ford. Located on the west branch of the Brandywine floodplain.

**Jefferis' Ford** (*Key Terrain, Obstacle*). Historical documentation and period maps indicate that the current location of the Allerton Bridge is at the approximate location of the 1777 Jefferis Ford. The 1832 petition to construct a bridge on the state road to Baltimore notes that the bridge will be built at Jefferis Ford. As with Trimble's Ford above, the location of Jefferis Ford is demarcated on the British Headquarters Map of 1777 (Figure 2).

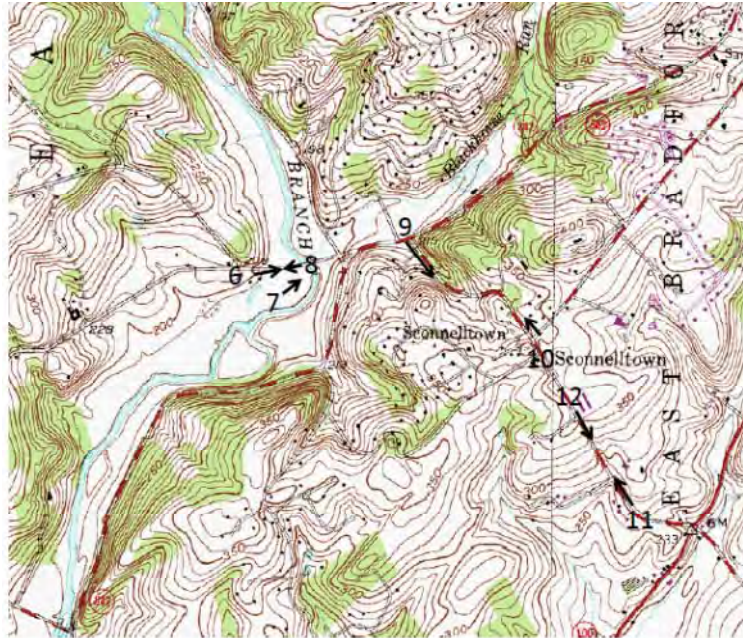


Figure 6. Locations of photos for the Jefferis Ford and Scanneltown areas. Numbers correspond to plates in the text.



Plate 6. View to the east along Allerton Road, looking at modern bridge crossing at Jefferis Ford.



Plate 7. The modern bridge crossing is reportedly at the same location as the 1777 ford. View to the east under the bridge, showing the east branch of the Brandywine.

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An 1863 map prepared for the American Civil War defenses around Philadelphia by Union engineer Henry Whiting depicts a wooden bridge at the Jefferis Ford crossing of State Road, but also notes that the bridge is at the location of the 1777 Jefferis Ford (Figure 7).

As with Trimble's Ford, there are few first-person descriptions of the ford itself. Von Muenchhausen comments that the waters at Jefferis, like those at Trimble's, were up to three feet deep (von Muenchhausen 1974:31). Perhaps the most detailed description of the ford area is provided by local resident Joseph Townsend. A member of the Society of Friends, he was attending a week-day meeting at the wheelwright shop (later owned by Philip Price) when he heard a disturbance caused by several local people who were visibly upset because the Crown Forces were coming. As Townsend and some others strived to calm the locals down, "...our eyes were caught on a sudden by the appearance of the army coming out of the woods into the fields belonging to Emmor Jefferis, on the west side of the creek, above the fording-place. In a few minutes the fields were literally covered over with them, and they were hastening towards us. Their arms and bayonets, being raised, shone as bright as silver, the sky being clear and the day exceedingly warm...."(Townsend 1846, quoted in Futhey and Cope 1881:75).

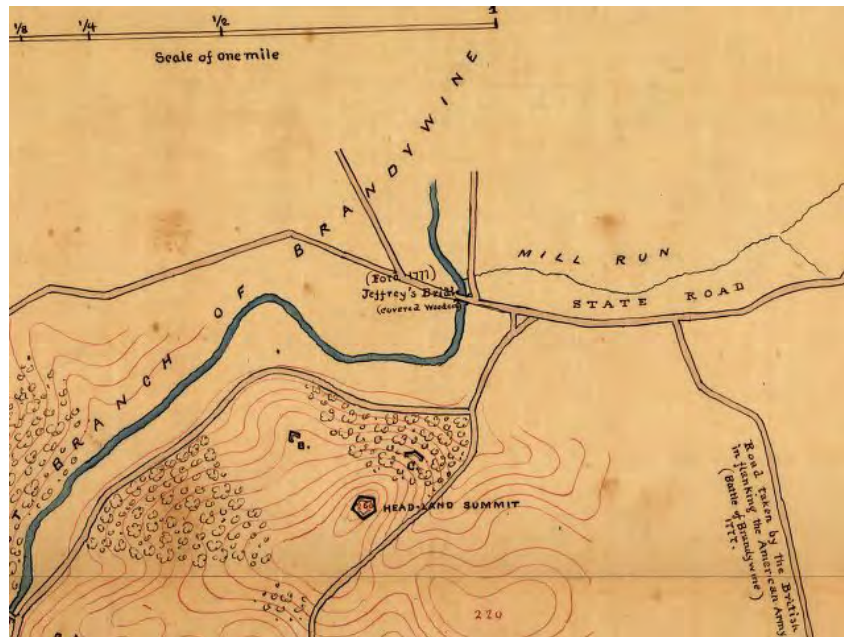


Figure 7. Detail of the *Map of the Reconnaissance of the Brandywine Creek* (Whiting 1863) locating Jefferis Ford at the bridge crossing, and depicting the location of Birmingham Road and the "defile."



Plate 8. View to the west along Allerton Road from the modern bridge showing the field location mentioned by Townsend, as the Crown Forces rested near Jefferis Ford.



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Several secondary historical sources report that liquor was stored at the Jefferis farm, located west of the ford, and that this liquor was broken into by Hessian soldiers and consumed. This is a difficult story to confirm or refute, as elements of it may have some truth. Whether Hessians were the responsible party is problematic.

Prior to the battle there was considerable movement of vehicles, troops, and supplies from Wilmington to the Chad's Ford area as Washington's army shifted position in response to Sir William Howe's movement out of Newark. The roads behind the American lines (generally east of the Brandywine) were alive with activity. The pension record of Pennsylvania militiaman John Clarke states that previous to the Battle of Brandywine he "was employed by Benjamin McCowan who was in the service of the Wagon Master Genl. to collect wagons and horses for the use of the American Army to convoy the baggage of the Army to the battle ground - the neighborhood settlement was composed principally of what was then termed "Hickory quaques" [Hickory Quakers] - most inveterate Tories and the wagons and horses were obtained by impressment..." (Clarke 1853).

Harris (2014:260 n33) attributes the story to an 1877 article published in *Lippincott's Magazine of Popular Literature and Science* by Howard Jenkins. In the story, Jenkins relates that:

"Emmor Jefferis, who lived at the ford in a substantial house, was surprised at such an arrival of visitors. There lay in his ample cellar great store of wines and other liquors, silks, cloths, etc., the most valuable goods of some of the merchants down at Wilmington, which they had hauled up to this point when they considered their own town threatened. As the British pressed their company upon Emmor with great unreserve, they speedily found the prize in the cellar. The casks were rolled out, the heads knocked in, and the officers, quaffing the old Madeira, drank to its rebel owners, whose chagrin may be imagined when they heard of its fate...." (Jenkins 1877:325).

Jenkins may in turn have gotten the story from *Nile's Weekly Register*, and the editor of the paper, Hezekiah Niles. As reported sixteen years earlier in the *West Chester Village Record* (February 16, 1861), Niles was actually born in October 1777 a few weeks after the Battle of Brandywine at the residence of James Jefferis on the east side of the main (east) branch of the Brandywine near Jefferis' Ford. The *Village Record* proudly claimed the noted publisher as a "Chester County man" and Niles himself wrote more than once in the *Weekly Register* that the "...myrmidons of George the 3d, threatened to bayonet him, before his was born...."(Anonymous 1861). As reported in the *Village Record*

"...When Howe's army moved from the Head of Elk for Philadelphia, it was generally expected that the march would be by way of Wilmington, Delaware, - and many of the inhabitants of that place sought to evade the evils of such a visit by retiring, with whatever property they could conveniently remove, up the country to and around the forks of the Brandywine. A number of grocers and merchants sent their choice liquors, and other valuables, to the house of Emmor Jefferis, (now David McConkey) on the West side of the ford, - where they happened to be exactly in the route of the enemy, and became the prey of the spoilers. Mrs. Niles, being a resident of Wilmington, and near her confinement, sought a refuge in the family of James Jefferis....The Hessian auxiliaries of Britain were notorious for maltreating and plundering the inhabitants. They menaced the life of Mrs. Niles for hesitating to surrender her personal property...."(Anonymous 1861).

From these accounts, likely based on verbal conversations with actual participants, it seems that the area around the Forks of the Brandywine was considered "safe" by the inhabitants of Wilmington and northern

New Castle County, as they sought to get out of the way of the two armies. Confirmation of the movement of goods and civilians comes from Major General Nathanael Greene. Greene commented on this refugee movement in a letter to his wife dated 10 September, the day prior to the battle. He wrote that "...here are some of the most distressing scenes imaginable. The Inhabitants generally desert their houses, furniture moveing [sic], Cattle driving and women and children traveling on foot. The country all around resounds with the cries of the people. The Enemy plunder most amazingly [sic]...." (Greene 1980:154-156).

The owners of the goods purportedly damaged and/or consumed by the Crown Forces at Jefferis' Ford may have made claims for such damages, but those claims would not be with the Chester County Depredation Files. Instead, since the owners were reputedly Wilmington, Delaware, merchants, the damage claims from Delaware should include their records. Unfortunately, the damage claims for New Castle County, and Christiana Hundred where the borough of Wilmington was situated, are not as detailed or thorough as those for Chester County. The published summary in the Delaware Public Archives only provides a list of claimants and the amounts of the claims; few of the claims provide any detail as to what was damaged (DPA 1919:1196).

The list for Christiana Hundred is entitled "Damages in Christiana Hundred don [sic] by the Enemy" suggesting that the majority of the claims were likely for properties occupied by Crown Forces following the Battle of Brandywine. Total damages claimed in Christiana Hundred were over £4,719, higher than for other sections of the county. On September 13 at least two battalions of the 71<sup>st</sup> Regiment of Foot occupied Wilmington, augmented over the following days by the Combined Hessian regiment, the wounded men from the battle, and the Hessian Mirbach regiment, bringing the occupation force to a total strength of nearly 2,200 men, a number nearly double the population of Wilmington. When the British and Hessian forces departed in mid-October, they destroyed their temporary fortifications and closed the hospital.

**Birmingham Road "Defile"** (*Key Terrain, Avenue of Approach, Obstacle*). Upon clearing Jefferis' Ford, the Crown Forces column turned right (east) on the Birmingham Road which led toward high ground around Scennelltown and eventually to Birmingham Meeting House (elev. approximately 390 ft. asl). The route that column took was into what Ewald referred to as a "terrible defile." The road is identified on Whiting's 1863 map of the Brandywine (Figure 3). Ewald (1979:84) wrote that:

About two o'clock in the afternoon the army crossed the Brandywine, which has two branches enclosed by hills, where the road ran up along a deep and winding precipice. I halted on this side of the defile, where Lord Cornwallis himself came to me. My guide asserted that if we did not meet the enemy here, he must have been defeated by General Knyphausen, whose fire we had heard during the whole day and which moved on with us.

I took twelve jaegers and let them pass the defile by twos, two hundred paces apart, with instructions to take post as soon as all twelve were across and had reached a point where they could see far around. But as soon as the van of the enemy was encountered, they were to retreat by twos.

I was astonished when I had safely reached the end of this terrible defile, which was over a thousand paces long, and could discover nothing of the enemy a good half hour away. Lord Cornwallis, who had followed me, was surprised himself and could not understand why the warning post [he may be referring to Ross' detachment] with which I had fought from morning

until around noon was not stationed here. The pass had been left wide open for us, where a hundred men could have held up either army the whole day.

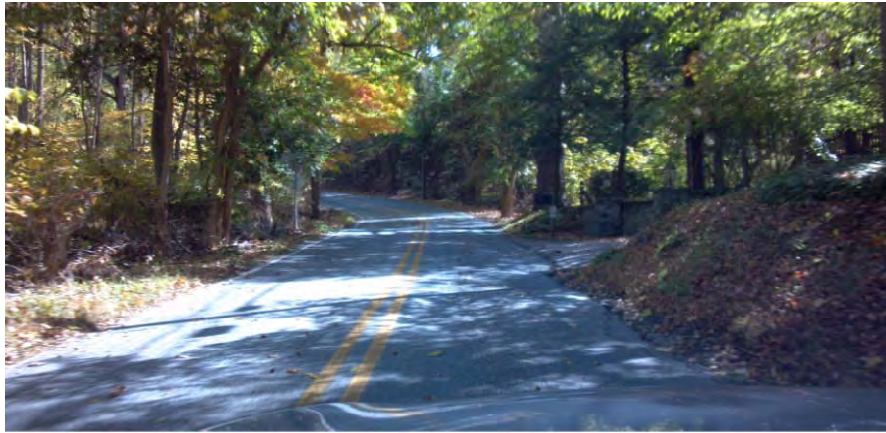


Plate 9. View to the south along Birmingham Road, in the “defile” noted by Ewald. Note the steep climb and deeply incised roadbed.

Quaker Joseph Townsend also reported the use of the Birmingham Road in his recollections. He noted that after the Crown Forces crossed at Jefferis' Ford he made his way home, which was located in the direction of the Turk's Head (today's West Chester). He anticipated that the Crown Forces would march passed his home but when that did not happen, he went to find out why. He found that the flanking column had turned "when in sight of Jefferis' Ford we discovered that they had turned their course towards Birmingham; and were passing by where the meeting [Friends meeting] on that day had been held...The space occupied by the main body and flanking parties [of the Crown Forces] was near half a mile wide"(Townsend 1846, quoted in Futhey and Cope 1881:75).

**High ground in vicinity of Scennelltown** (*Key Terrain, Observation*). The Birmingham Road led over a rise in the vicinity of Scennelltown (elev. approximately 360 feet asl) before descending into Plum Run valley where Strodes' Mill was located. in 1777 Scennelltown was a loose agglomeration of dwellings and shops (notably a wheelwright shop) which is virtually nonexistent today. The high ground was critical for the Crown Forces flanking column to acquire, and it is noted by several of the British and German officers in their reports.

Montessor (1881:416) calls it an "open clear height." Both Royal engineer Archibald Robertson (1777) and an anonymous British officer (Anonymous 1777) note that after passing Jefferis' Ford, the column reached a "height" or were "gaining the height" where the column gathered itself before the battle. Finally, von Muenchhausen (1974:31) mentions a "steep, barren height" where the army formed into columns of brigades (this might be Osborne Hill). Having passed the defile noted above, the high ground at Scennelltown was a welcome sight and allowed the soldiers, wagons, and artillery pieces in the flanking column some time to regroup before the battle. Joseph Townsend's account notes that he observed the movement of the army and met several of the officers, while at a home in Scennelltown that "...was elevated, so that on the first floor, where we stood, we had a pretty full view of the [Crown Forces] army as they passed along" (Townsend 1846, quoted in Futhey and Cope 1881:75).



Plate 10. View to the west showing the intersection of Birmingham Road (center) and Scanneltown Road (right). The Birmingham Road leads up from the “defile.”

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Plate 11. View to the west along Birmingham Road, looking towards the “heights” at Scanneltown (in the distance).



Plate 12. View to the east along the Birmingham Road, looking from the crest of the “heights” at Sconnelltown towards Osborne Hill (distance).

Crown Forces rested and regrouped for about an hour on the Sconnelltown high ground and down into the Plum Run valley to the east where Strodes Mill was situated (purchased by the Strode family in 1737). Cornwallis formed his units into three columns of brigades that measured nearly a half-a-mile in width, and proceeded to move towards Osborne Hill (Harris 2014:267).

**Osborne Hill** (*Key terrain, Observation*). Osborne Hill is a dominant landform (approximately 370 ft. asl) to the southeast of the Plum Run valley where Route 52 (not present at the time of the battle) passes Strodes Mill and about one and a quarter miles from Sconnelltown. The hill was an important observation point for the Crown Forces. British engineer Captain John Montessor noted that during the approximately one-hour halt after ascending the defile to Sconnelltown, the Crown Forces observed the movements of the American forces in their front (Montessor 1881:416). Notations on Archibald Robertson's map indicate that the Crown Forces deployed while on the heights at Sconnelltown, and then moved forward towards Osborne Hill " in three Columns— The centre Column composed of the Jaegers, two Battalions of Light Infantry, two Battalions British [grenadiers], and three Battalions of Hessian Grenadiers in the Road—The Brigade of Guards and 16<sup>th</sup> Regiment of light Dragoons formed the right Column, and the 4<sup>th</sup> Brigade British the left Column, about 400 Yards distant on each side of the Road— The third Brigade British formed the Reserve and moved along the Road in the Rear.—"(Robertson 1777).

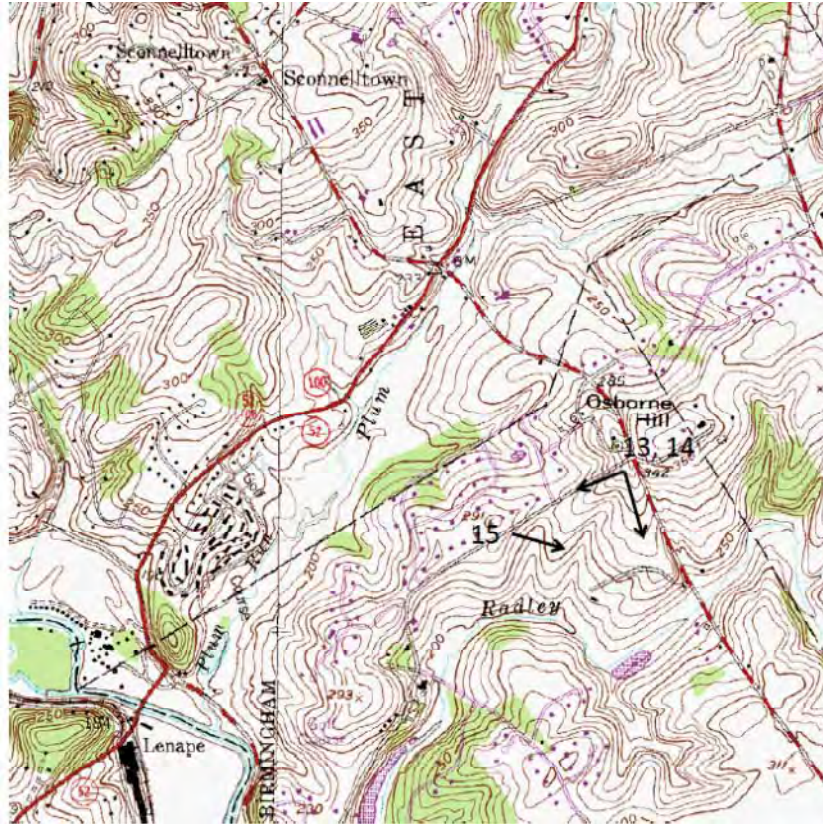


Figure 8. Locations of photos for the Osborn Hill areas. Numbers correspond to plates in the text.

Quaker Joseph Townsend was awed by the view of the Crown Forces coming over Osborne Hill. He wrote that:

"On turning our faces back [to the west] we had a grand view of the British army, as they advanced over and down the side of Osborne's Hill and the lands of James Carter; scarcely a vacant space left. While we were amusing ourselves with the wonderful curiosity before us, to our great astonishment and surprise the firing of the musketry took place. The advance-guard aforementioned, having arrived at the Street Road, were fired upon by a company of the Americans who were stationed in the orchard north of Samuel Jones' brick dwelling-house. The attack was immediately returned by the Hessians, who, stepping up the bank of the road, alongside of the orchard, used the fence as a breastwork, through which they fired upon the company that commenced the attack. From the distance at which we were from them, —though in full view until the smoke of the firing covered them from our sight,—I was under no apprehension of danger, especially when there was such' a tremendous force coming on and ready to engage in the action ; nevertheless, I concluded it best to retire, finding that my inconsiderate curiosity had prompted me to exceed the bounds of prudence" (Townsend quoted in Futhey and Cope 1881:75).

The contemporary battle maps prepared by British and Hessian officers depict the high ground at Osborne Hill and the movement of the Crown Forces towards the American battle line forming at and near the Birmingham Meeting House.



Plate 13. View to the southeast from the intersection of Birmingham Road (left treeline) and Country Club Drive, on Osborne Hill, looking towards Street Road and the American battle position.

The importance of the view from Osborne Hill was obvious to the Crown Forces as well as to residents in the area. Townsend commented that civilians gathered on the hill to watch the battle - and interesting commentary regarding spectator actions. "When I arrived on the top of the hill," Townsend wrote, "I discovered on the eminence in Samuel Osborne's field a number of my acquaintances, who were standing near to a considerable number of persons on horseback, and viewing them, with the different movements of the army. I joined in with them. It was now a time of some seriousness and alarm among them. The battle had commenced in earnest; little was to be heard but the firing of the musketry and the roaring of cannon from both parties" (Townsend quoted in Futhey and Cope 1881:75).



Plate 14. View from Birmingham Road to the south along Country Club Drive, from Osborne Hill. Guiding on the Birmingham Road, this space witnessed the movement of the columns of British and Hessian grenadiers.



Plate 15. View to the north looking along the eastern slope of Osborne Hill. Birmingham Road is in the treeline in the distance. Trees on the left side mark the edge of Country Club Drive. This area would have seen the movement from left to right of the column of the British Brigade of Guards (at about a quarter mile from the Birmingham Road).



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## 4.0 METHODS

JMA geomorphologists and historical archeologists conducted field survey within the strategic landscapes for the potential to yield spatial information and defining features as well as further insights into the battle, motivations, aftermath, and civilian involvement/interaction will be undertaken. The goals of the field survey were to: (1) resolve in the field and verify extant defining features identified in the 2013 Plan and identify any further defining features; (2) determine nature and context of defining features to assess integrity; (3) verify and further understand/identify locations of troop movements, battle skirmishes, and related historic resources and landscape elements; and (4) determine if possible archeological potential. Field visits were generally limited to public right-of-ways and publicly-accessible land. Fortunately, landowner permission allowed on-the-ground survey at the site of Trimblesville, at the location of Trimble's Ford and the approach route leading to the ford, an examination of the general location of Jefferis Ford, and field view of the 1754 road trace.

More formal field work (geophysical assessment) was completed within two segments of the Strategic Landscape, Trimble's Ford and the 1754 road trace. The methods used for each of these segments are described below.

### 4.1 TRIMBLE'S FORD SURVEY METHODS

A geophysical survey and a geomorphic assessment were conducted on April 1 and April 2, 2015 to identify the location of the 1777 Trimble's Ford (Figure 9). Ground-penetrating Radar (GPR) is the geophysical method used to collect data to relocate the approaches to Trimble's Ford. GPR is a nondestructive geophysical method that uses high frequency radio waves (microwave electromagnetic energy) to record various changes in subsurface materials without drilling, probing, or digging (Bevan 1998; Clark 2001; Conyers 2004; Conyers 2006). The signal is reflected off these changes and its intensity and travel time is recorded along grid lines. The data are presented as a continuous cross-sectional profile called a vertical time/depth section that reveals subsurface anomalies in the form of any deviation of the signal from the natural pattern. GPR profiles are used for evaluating the location and depth of anomalies that may be related to subsurface cultural features and/or objects and to investigate the presence and continuity of natural subsurface conditions and features.

For this project, the GPR survey collected geophysical data to provide information to identify probable features potentially related to the location of Trimble's Ford based on the interpretation of detected anomalies in the data. Fieldwork was undertaken using a GSSI UtilityScan™ survey cart GPR system with a distance encoder wheel using a GSSI SIR-3000 Data Acquisition System with a 400MHz antenna. This system is registered with the FCC under CFR 47, Part 15. The maximum depth window for this system is 4 meters.

Based on the interpretation of the GPR data, limited auger testing within the area most likely to contain the ford site was undertaken. JMA used an Eijkelkamp Edlman auger to extract sediments at each auger test location. During augering, sediment samples were continuously extracted and placed on a tarp in stratigraphic order. Auger tests are typically terminated when: 1) soil/sediment matrix can no longer be extracted; 2) an impenetrable surface is encountered; or 3) gravel is encountered. All auger boring locations were mapped using a handheld sub-meter Trimble GeoXT.

Auger tests are used to determine: 1) the geomorphic evolution of the landscape, 2) whether buried historic landscapes are present, and 3) the integrity of the landscape. The samples were described using standard soil description nomenclature.

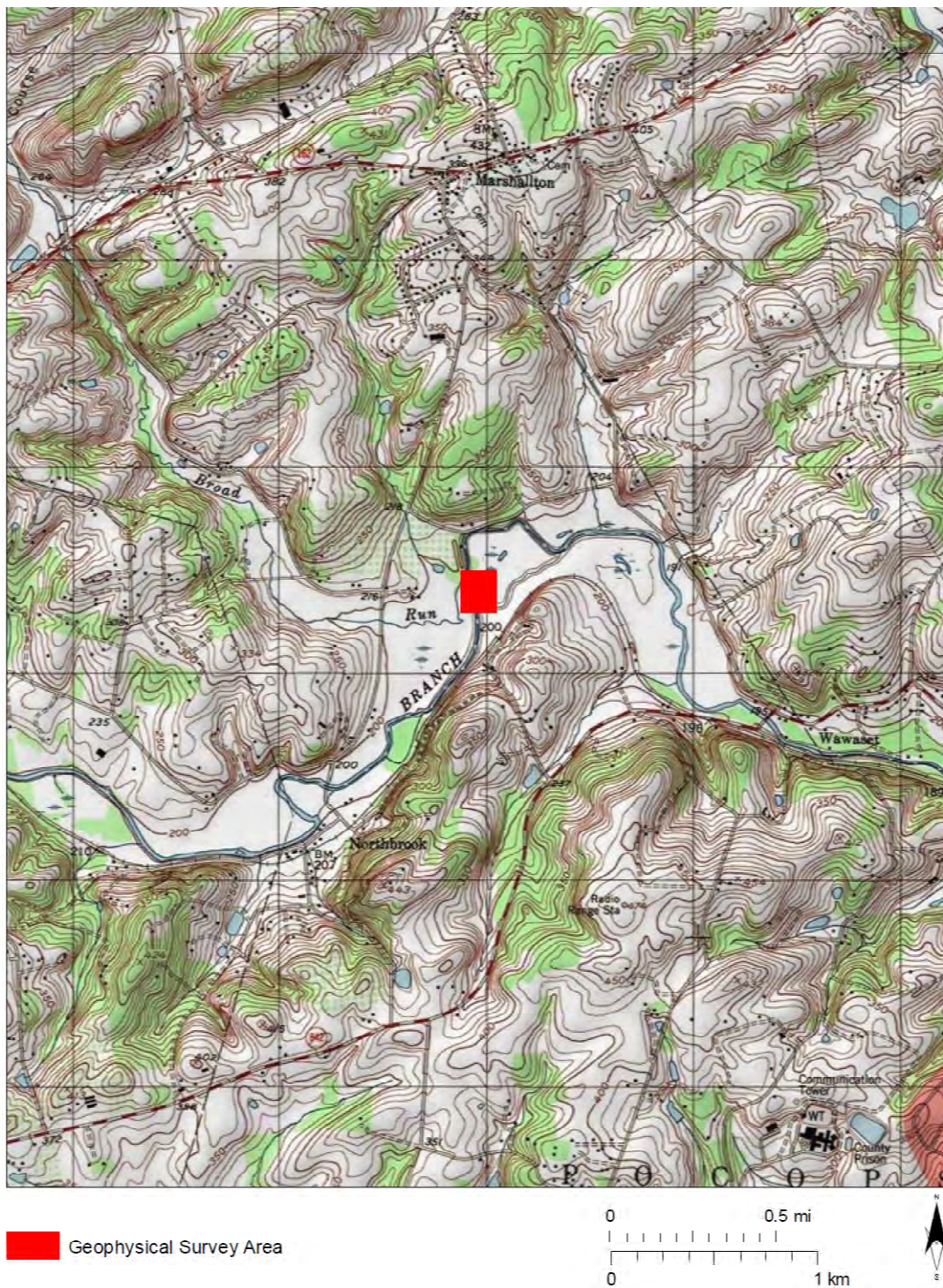


Figure 9. Trimble's Ford survey area on the 2013 *Unionville* USGS 7.5-minute topographic map.

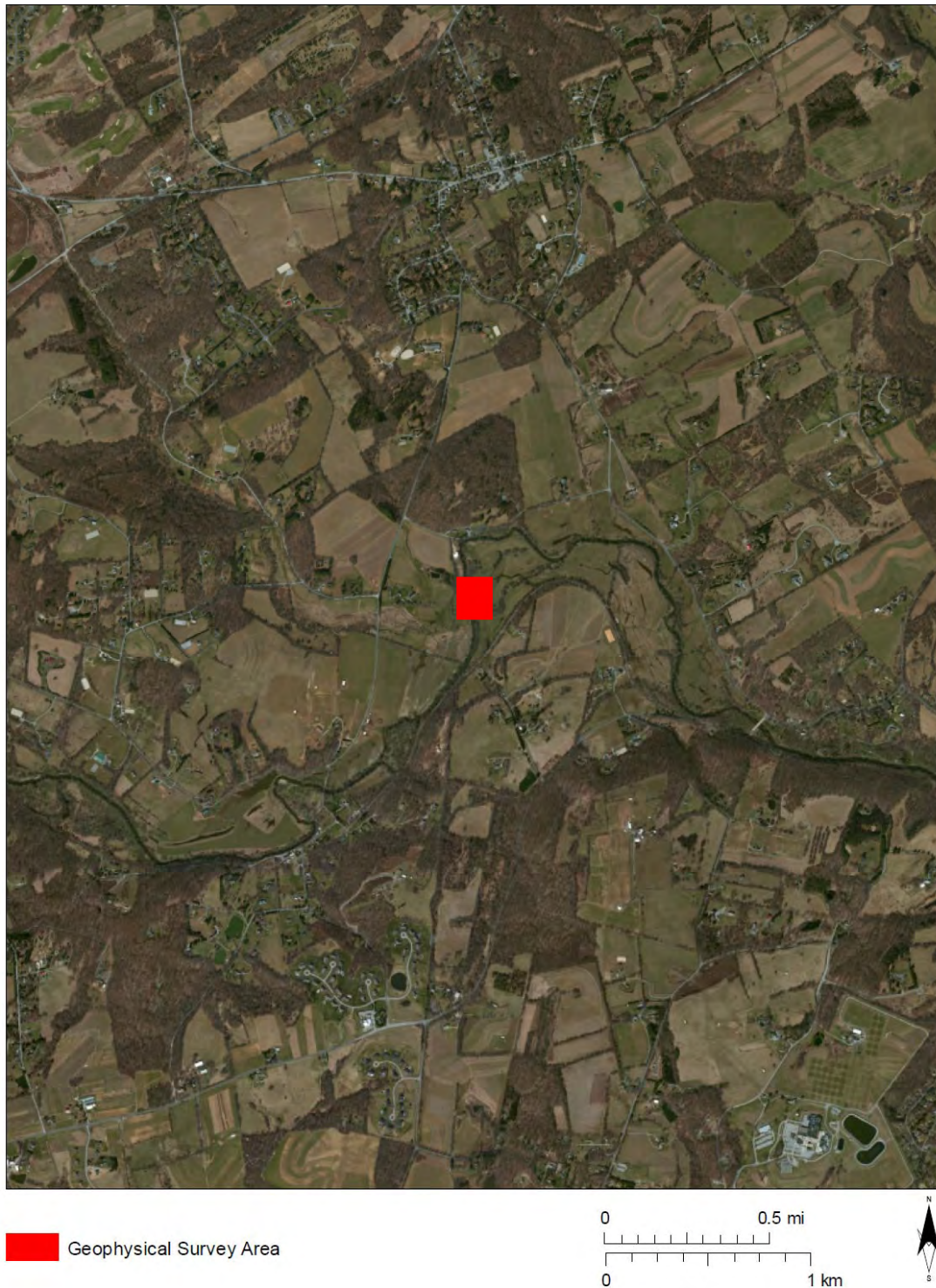


Figure 10. Trimble's Ford survey area on aerial photograph (ESRI World aerial layer, 2015).

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Features recorded include horizon designation, color, texture, consistence (i.e. resistance and/or plasticity), mottles (includes redoximorphic features), and lower boundary. After description, all soil samples were screened through quarter-inch screening for the purpose of identifying and collecting any historic artifacts.

## **4.2 1754 ROAD TRACE METHODS (ROAD FROM CAMP LINDEN ROAD TO LUCKY HILL ROAD)**

The assessment of the road trace used the KOCO method of military terrain analysis to analyze, verify, and interpret the previously established troop movements between Camp Linden Road and Lucky Hill Road within the Brandywine Battlefield strategic landscape.

Three possible road traces were locally suggested as the route of the flanking march in this segment. 1777 Fords of the Brandywine Map depiction by Clifford Parker, Chester County Archives. Base map is 1847 *Map of Chester County, Pennsylvania: from original surveys / by S.M. Painter & J.S. Bowen; projection & drawing by J.S. Bowen; engraved by Edw'd Yeager, Philadelphia. 1777 roads provide a delineation of best available primary source information from Chester County Archives as researched by Archival staff.*

Historic maps, Chester County Road records, aerial images, and field observations were combined to interpret the potential location of the road trace that connected Camp Linden Road to Lucky Hill Road during the march of the Hessian and British troops under the command of Sir William Howe and Lord Charles Cornwallis between Trimble's Ford and Jefferis Ford (Figure 3).

**REDACTED**

## 6.0 SEARCHING FOR THE 1754 ROAD TRACE (THE ROAD CONNECTING CAMP LINDEN HILL ROAD WITH LUCKY HILL ROAD)

The search for the potential 1754 road trace on the landscape between Camp Linden Road and Lucky Hill Road began with a map that is a compilation of research regarding existing roads produced by Clifford Parker from the Chester County Archives (Figure 3 and Figure 20). The detailed map research was based on an examination and compilation of Chester County road records which documented the establishment of a road in this location circa 1754. The archives map was georeferenced into an ESRI GIS workspace (.mxd) and the existing road redigitized. Digital copies of historic maps and aerials were also georeferenced into the same GIS workspace and compared. Based on local informant knowledge, two other potential road traces were examined. These road traces are identified as the Northern Trace and Southern Trace. The location of these additional potential road traces were placed on the historic maps and aerials (Figures 21 and 22).

Beginning with the 1847 *Map of Chester County*, only the 1754 road trace is depicted as a road (Figure 23). The other road traces are not identified as established roads. When the potential road traces are placed on the 1904 *West Chester* USGS 15-minute quadrangle, only the Southern Trace is depicted as an existing road (Figure 24). However, it should be noted that the Southern trace deviates from the 1904 road in the area of the graphically depicted structure.

### Potential Northern Trace



Plates 21. View to southeast along the remnant 1754 Road Trace. Yellow lines in right-hand image depict the trace.

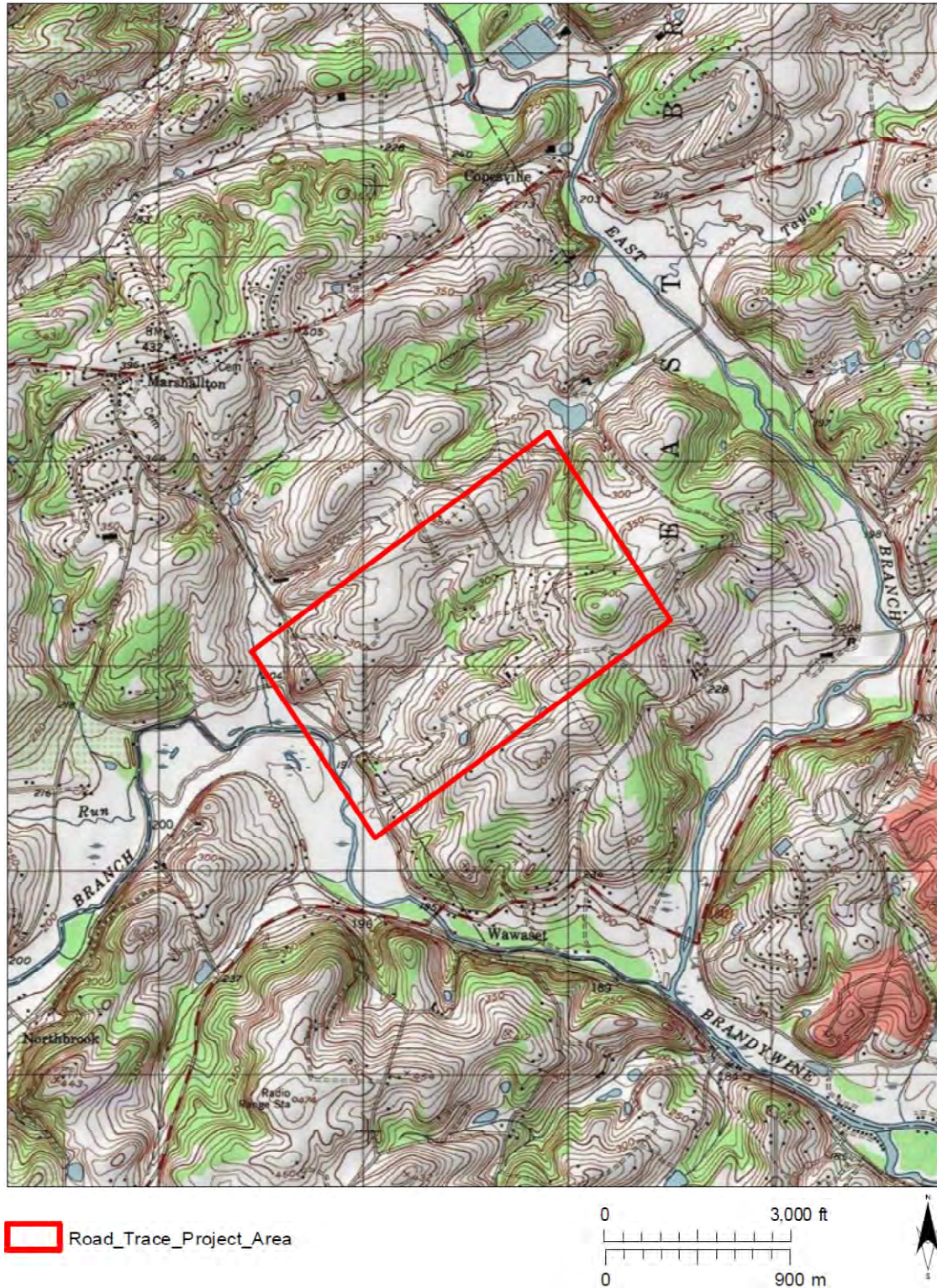


Figure 20. Study area on the 2013 *Unionville* USGS 7.5-minute topographic quadrangle.

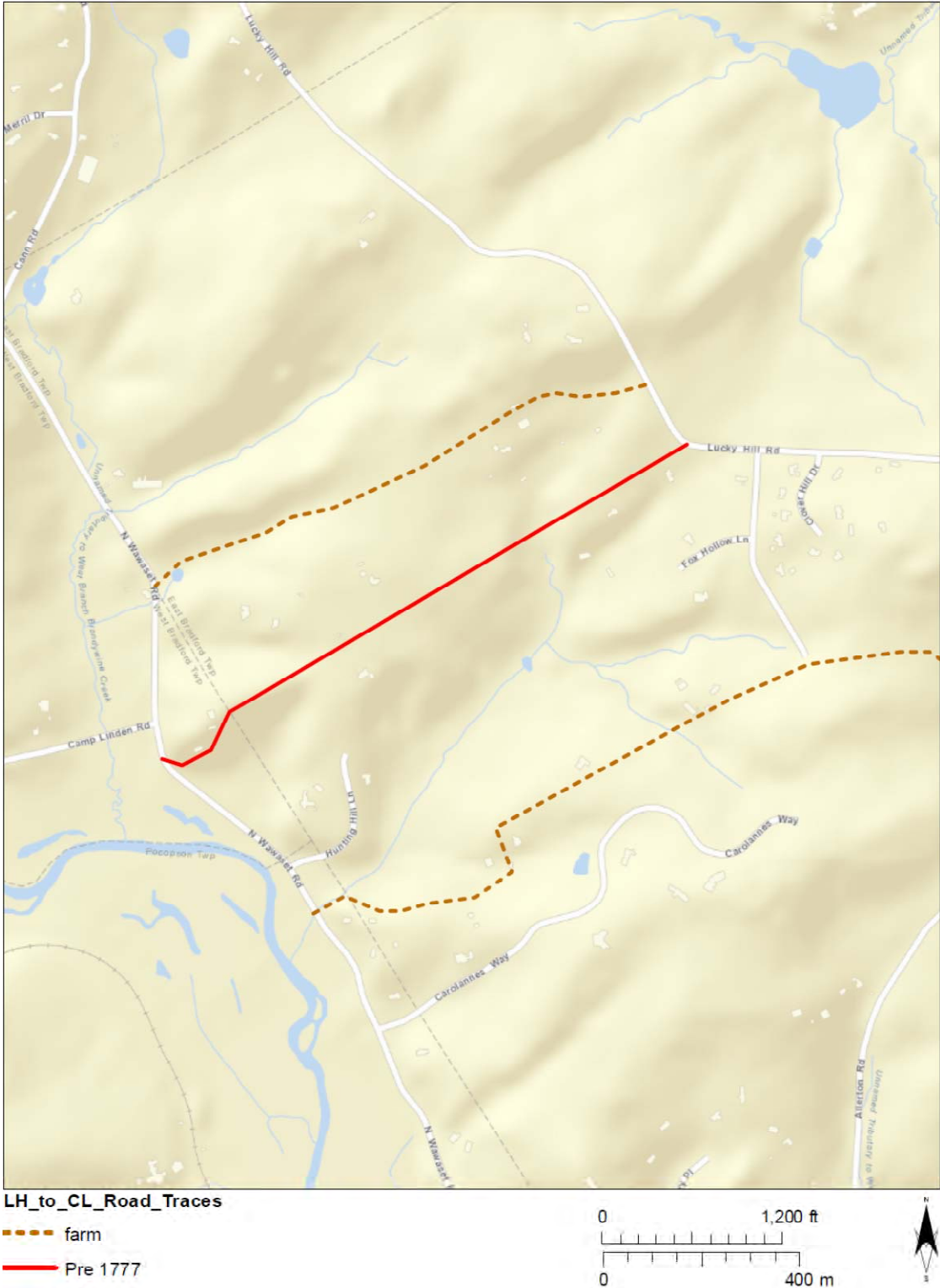


Figure 21. Potential road traces on ESRI 2015 world road map.





Figure 22. Potential road traces on detail 2013 Unionville USGS 7.5-minute topographic quadrangle.

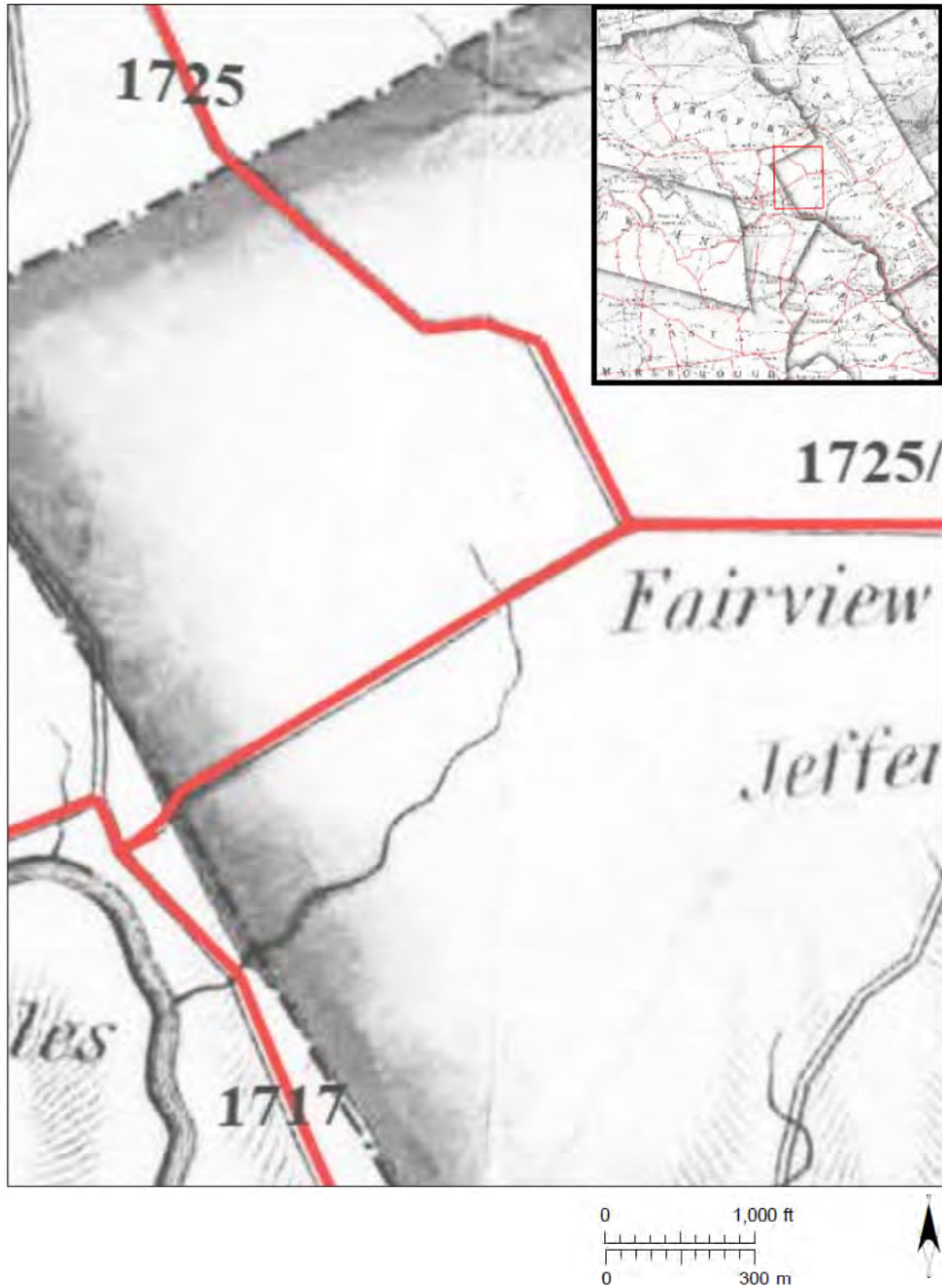


Figure 23. Potential road traces on 1847 *Map of Chester County*.

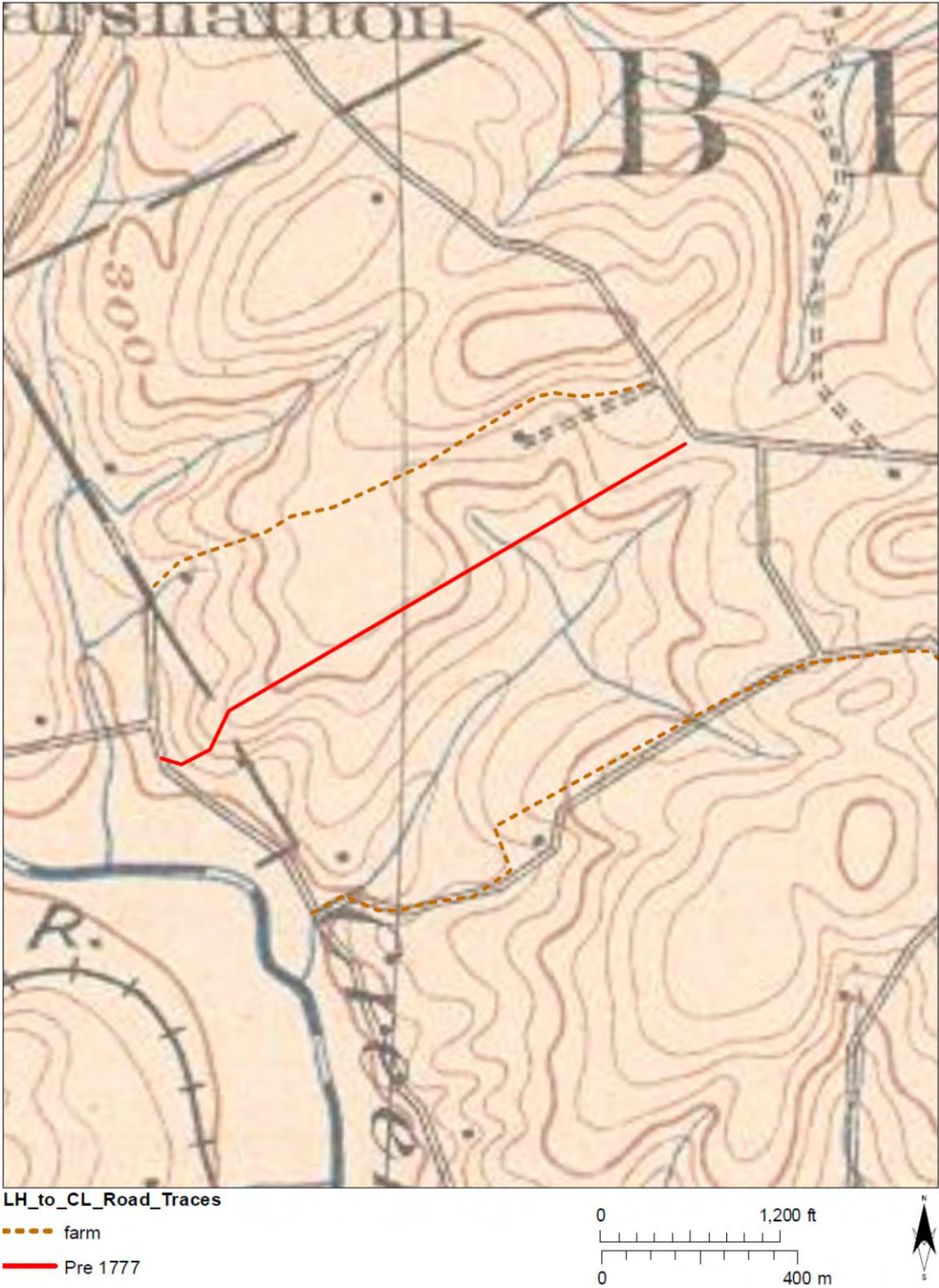


Figure 24. Potential road traces on 1904 West Chester USGS 15-minute topographic quadrangle.

From the historic maps, the potential road traces are then depicted on historic aerials. The first aerial is the 1937 aerial of the area (Figure 25). When placed on the 1937 aerial, the 1754 road trace follows a property boundary, the Northern Trace follows a farm lane, and the Southern Trace follows an existing road. Note that the path of the Southern Trace now follows the existing road while it did not follow the path of the road as mapped on the 1904 topographic map. This pattern is continued onto the 1950 aerial (Figure 26). On the present aerial, the Southern Trace is no longer a through road but is only extant to the building complex where the road makes the ninety-degree turns.

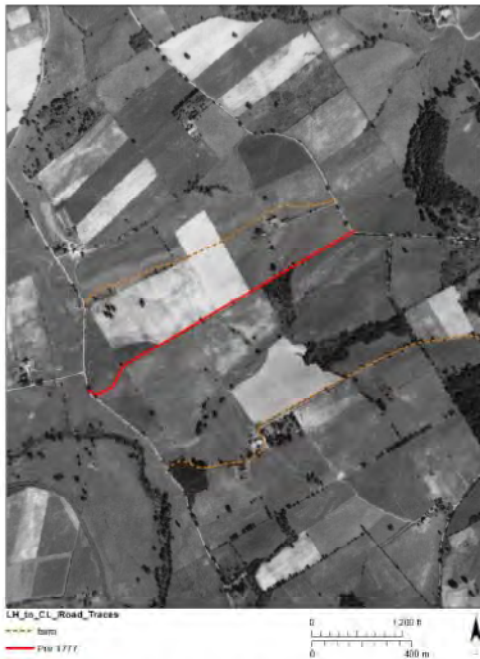


Figure 25. Potential road traces on 1937 aerial photograph.



Figure 26. Potential road traces on 1950 aerial photograph.

After reviewing the historic maps and aerials, the topography of the potential road traces was examined. The profile of the Northern Trace shows a constant rise to nearly the end of the trace (Figure 27). Overall, the total distance travelled is 0.68 miles with an average slope of 4.5 percent and a total rise of 151ft. The profile of the 1754 road trace (the central road) shows a rapid incline from the southwest for approximately 690ft and then levels off (Figure 28). The slope is fairly flat for 1568 ft and then falls and rises a couple of times and rises for 898ft at the end. Overall, the total distance travelled is 0.79 miles with an average slope of 6 percent and a total rise of 174ft. The profile of the Southern Trace rises for approximately 0.88 miles before it descends the remainder of the trace with an approximately 4.5 percent slope (Figure 29) Overall, the total distance travelled is 1.12 miles with an average slope of 5.7 percent and a total rise of 211ft. In addition, the Southern Trace does not terminate on Lucky Hill road but intersects Allerton Road.

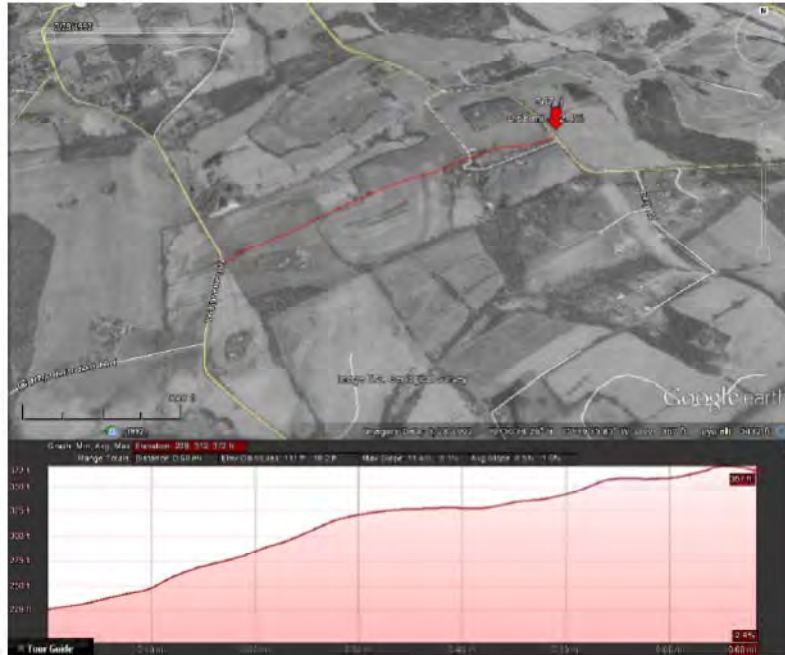


Figure 27. View of topographic profile from Google Earth of northern potential road trace.

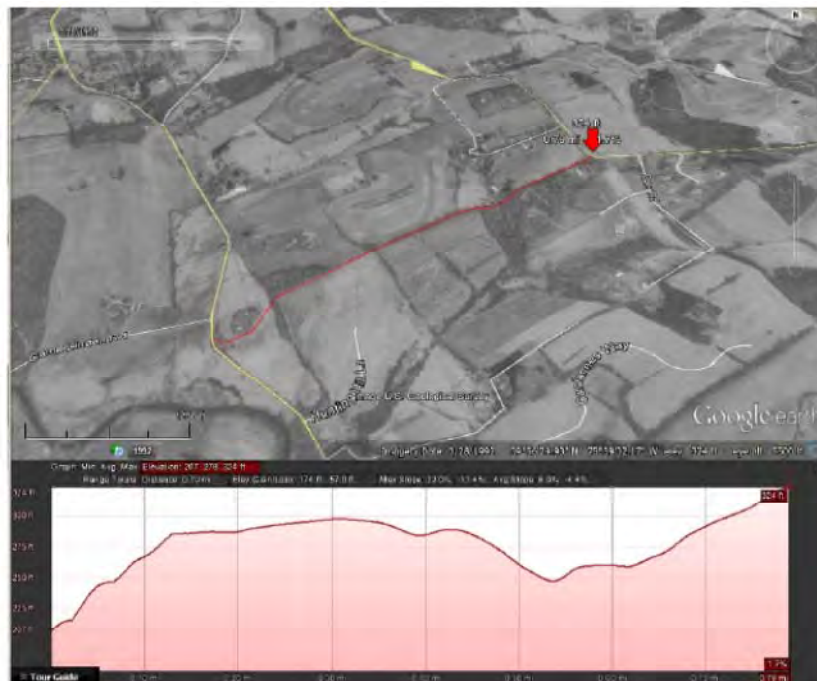


Figure 28. View of topographic profile from Google Earth of central potential road trace.



Figure 29. View of topographic profile from Google Earth of southern potential road trace.

## 7.0 CONCLUSIONS

This report provides detailed KOCOA analyses for four Brandywine Battlefield Strategic Landscapes representing the Crown Forces flanking march on September 11, 1777. The study builds upon earlier County studies and current work, particularly work focused on the settlement pattern and the road network.

Archeological field work focused on two principal elements that are crucial to understanding the battle and its avenues of approach – the location of Trimble’s Ford, and the road that linked Camp Linden Hill Road to Lucky Hill Road. The combination of geomorphology, study of the topography, archeological inquiry, and historical research has provided strong evidence to re-located these features on the Chester County landscape, and this information can assist in future planning and interpretation efforts.

Assessment of archeological potential for resources associated with the battle is also presented below. Since no formal archeological survey was conducted as part of this study, this assessment is intended to review potential for battle-related artifacts. Prior to the development of KOCOA analysis and the growth of the field of Conflict Archeology, the 1989 Brandywine Battlefield Preservation Plan (Webster et al. 1989:43-58) devoted a chapter to the archeological potential of the battlefield. The authors identified several categories of potential archeological resources that could be the result of a military action; arms and ordnance; personal weapons and possessions; headquarters, rear echelon support, and camp sites; medical facilities; burials, and; prehistoric and other historic resources (Webster et al. 1989:48-50). The archeological potentials were focused principally on the portable material culture of soldiers – knapsacks, weaponry, uniforms, accoutrements, etc. – and were less concerned with the actual lead shot, iron balls, and general detritus of military action. Their conclusion was that little would remain of the portable material culture. More recent studies of battlefields using metal detection as a method of survey have revealed that considerable amounts of battlefield debris, such as lead shot, buckles, buttons, etc., do survive and can be useful in determining the course of the battle.

### 7.1 ARCHEOLOGICAL ASSESSMENT

Fields of conflict are temporary, albeit seminal, events, superimposed on preexisting cultural landscapes. This landscape witnessed a variety of cultural actions - transportation systems, agricultural development, settlement patterns, population change – that exerted influence on the land prior to the engagement and that continue to exert influences on the field after the battle. Land use such as pasture and field patterns, farmsteads and husbandry buildings change as they give way to sub-divisions; roads are altered, vacated, rerouted or widened, woodlands are reduced or removed from the landscape. Despite these landscape alterations, the archeological evidence of conflict is often quite resilient and can be discovered through archeological investigation.

For many years the prevailing view of battlefields and archeological potential was dominated by the opinion put forward by Ivor Noël Hume that battle sites could offer little beyond metal artifacts and burials, certainly nothing archeologically or historically significant (Noël Hume 1968:188), and it was this narrow view of conflict archeology that influenced the archeological interpretations and recommendations of the Brandywine Battlefield Cultural Resources Management Study (Webster et al. 1989). In the last twenty years this view has changed dramatically, beginning with the work at the Little Big Horn National Park in the mid-1980s and now occurring with increasing regularity at Revolutionary War sites (cf. Babits 1998; Catts and Balicki 2007; Catts et al. 2014; Connor and Scott 1998; Espenshade

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et al. 2002; Fox 1993; Geier and Winter 1994; Geier and Potter 2000; Mancl et al. 2013; Martin and Veit 2005; Orr 1994; Scott et al. 1989; Scott and McFeaters 2011; Selig et al. 2013; Sivilich 2009).

The archeological character of the Flanking March is different than a formal battle of combat situation. No temporary or short-term encampments are present along the march route, and no major combat occurred during the march. The archeological potential for the Fords Strategic Landscape varies according to what sorts of archeological remains are being considered. There are two principal types of potential archeological remains that may be expected to be present; 1) Flanking March artifacts and/or features, and 2) Landscape elements (ford crossings, road traces).

### ***7.1.1. Flanking March Artifacts and/or Features***

Archeological evidence of military activities with the Fords Strategic Lands is considered to be low potential. The principal military action that occurred on 11 September was the movement of nearly 9,000 men, artillery, and horses through the Chester County landscape. Such a movement, while extremely impressive to witness, was likely fairly ephemeral in regards to the physical evidence (ie., military artifacts) that it would leave as an archeological "footprint." Crown Forces formations did stop and rest at the Trimble's Ford and Jefferis Ford crossings, but such actions were of short duration and would leave comparatively small archeological signatures.

The possible exception to this would be the skirmishing of Ross's detachment with the Crown Forces column. First-person accounts (Ewald and von Muenchhausen, for example) indicate that skirmishing began soon after the Crown Forces column started its flanking march. This action would have generated dropped and fired lead balls (musket balls) and may exhibit an archeological signature in the location where the skirmishing was most intense, perhaps in the vicinity of Red Lion Road and Locust Grove Road. On a comparative basis with the main combat that occurred later in the day at Birmingham Meeting, Sandy Hollow, Chadds Ford, and the Painter-Craig Farm, the number and density of military-related artifacts would be extremely low.

### ***7.1.2. Landscape Elements***

The archeological evidence of Landscape elements is considered to be high. This is especially true at Trimble's Ford and the road trace leading to the ford from the south (a portion of the 1726 road to the Great Valley), as well as the road trace (historically dated to 1754) leading from Trimble's Ford to Jefferis Ford.

At Trimble's Ford, while the potential for military archaeological resources is considered to be low (see above), a combination of the historical record, topographical information, and geophysical testing were used to examine the approximate ford location along the Brandywine. The geophysical testing has identified the actual ford location and portions of the 1726 road traces leading to it. The archeological potential for the location of Trimble's Ford is therefore high. The ford is a significant archeological component of the Brandywine Battlefield and its location has been verified during the current study.

At Jefferis Ford, a similar situation exists – the movement and temporary halt of a large body of soldiers is unlikely to leave a strong military archeological signature (see above). Both the march and halt are short-term events. Once again, damages caused by the Crown Forces, recorded in depredation claims, may still retain an archeological signature, but the potential is considered to be low. Based on the historical record, the location of Jefferis Ford itself is at the current bridge crossing, and thus may have



experience considerable alteration since its use in 1777. The archeological potential for evidence of Jefferis Ford is considered to be low.

## 7.2 TRIMBLE'S FORD

Through a combination of ground-penetrating radar survey and geomorphic testing, there is strong evidence that a road trace along the floodplain east of the Brandywine likely attributed to the 1777 Trimble's Ford still exists buried within the floodplain of the West Branch of the Brandywine (Figure 30). Based on the presence of high amplitude geophysical reflections creating a linear pattern, the presence of compacted deposits in Auger A1 and A4 and asphalt- or cinder-type material recovered in augers A1, A2, A5, and A6, the road trace appears to be a single alignment trending from the river bank in the vicinity of geomorphic Auger A1 generally southeast across the floodplain to the unnamed channel of the Brandywine that cuts the present floodplain. This trace then likely crosses the unnamed channel of the Brandywine and then trends to the northwest towards the floodplains' current bank of the Brandywine. Upon crossing the unnamed channel of the Brandywine, the data suggests that there are actually two buried potential road traces that are found at different depths (at 2ft and 4 ft below ground surface) that trend at an eight degree difference, thus spreading as the traces move south.

When the northern trace is extended across the Brandywine towards the buried surface found in the bank of the river, the trend of the buried potential road trace is maintained and thus the buried surface found in the western bank may represent a remnant of Trimble's Ford. Based on these evidences, it is very likely that this is the location of Trimble's Ford. Additional geophysical and geomorphic testing on the western bank of the Brandywine would likely sustain the supposition for this location being Trimble's Ford.

## 7.3 1754 ROAD TRACE

When examining the evidence for the potential road trace between Camp Linden Road and Lucky Hill Road, there is ample evidence that all three potential traces have been used in the past. The Northern Trace has never been depicted as being related to an existing road on any map. However, the Northern Trace is identifiable as a farm lane on the historic aerials. This farm lane may still have its footprint on the landscape. This potential trace also does not follow any existing or previous property boundaries. The lack of official mapping as a road and its use as a farm lane based on the historic aerials, and disassociation with an existing or previous property boundary would suggest that it has traditionally been a farm lane and not an established road. The Southern Trace follows a road that was first depicted on the 1904 USGS topographic map.

This road as a thruway has been abandoned since the 1950s. This Southern Trace was mapped as an official road in 1904, altered, was used through the 1950s, and then abandoned. This history would suggest that this road was established around the turn of the twentieth century and then abandoned mid twentieth century. The Pre 1776 road trace was depicted on the 1847 *Map of Chester County* but was not depicted on the 1904 *West Chester* USGS 15-minute quadrangle. However, the property boundary that is coincident with the Pre 1776 road trace still exists today. Local informants who have Fox hunted the area describe a road bed associated with the property line. The location of the Pre-1776 road bed is still defined by a tree line for nearly the length of the road. The combination of the Pre-1776 road bed, it being depicted on the 1847 *Map of Chester County*, and the consistency of the property line and tree line in combination with local descriptions of a road bed along the property lines would suggest that this is the location of the road connecting Camp Linden Road with Lucky Hill Road during the time of the Battle of Brandywine.



Figure 30. The locations of the potential road traces within the floodplain of the Brandywine based on the results of the geophysical survey and geomorphic testing.

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Approximately 9,000 Crown Force troops passed on the now abandoned 1754 Road Trace that connected the 1705 spur from Trimble's Ford to the 1725 Road, which crossed the Creek's east branch at Jefferis' Ford. The historical documentation developed by Chester County for this project examined the properties in 1777 that declared damages of plundering as the Crown Forces moved through the landscape. One of these farms helps support the determination of which trace was the 1754 road. Of the 10 farms in the district, Barr Farm was owned by George Carter, Jr. at the time of the battle and he recorded losses to Crown Forces who passed his residence and lands located on the north side of the 1754 Trace. Barry Farm, to the south of the 1754 Trace, was owned by Richard and Ann Jones who also reported losses to Crown Forces. The extant house, built in 1790, includes the chimney remains of the earlier Jones house in the cellar.

#### **7.4 LOCATION OF JEFFERIS' FORD**

The historical documentation, river configuration, and topography support the conclusion that the location of the 1777 Jefferis Ford is at the approximate location of the Allerton Road bridge. Road alignments crossing the Brandywine at this location and subsequent bridge construction documentation indicate that the bridge is likely sighted on the ford crossing.

#### **7.5 RESEARCH DESIGN CONSIDERATIONS**

The investigation of the four Strategic Landscapes on this portion of the Brandywine Battlefield were governed by some very specific research questions that were developed by the Chester County Preservation Planning office. While the historical and archaeological survey reported in this technical report was able to successfully locate Trimble's and Jefferis' Fords and to locate road traces and routes, other detailed research questions were also examined.

For the Martin's Tavern Strategic Landscape, the intent was to understand and analyze the historical record regarding the Ross detachment and American military activity in Marshallton and at Trimble's Ford. The historical and topographical research, in particular the County's archival research regarding the 1777 road system, were able to provide data that identifies the approximate location of the action of Ross's detachment and also address the historical record regarding Squire Cheney and other American officers.

For the Trimble's Ford Landscape, the field research, coupled with the historical record, topographic data and the County's road research succeeded in locating Trimble's Ford. This work has established the ford's location, the approximate route of the Crown Forces as they approached the ford (through the use of the road records as well as recorded depredations and sufferings by civilians), and established the larger road network leading across the ford to the Great Valley. Identify and map probable site of Trimble's Ford skirmish.

For the landscape between Trimble's and Jefferis fords, the study has established the route of march for the Crown Forces and also determined where Jefferis Ford was situated. The effect of the march on civilians, especially in the vicinity of Jefferis Ford, was also documented.

Finally, in the Sconnetown, Strodes Mill and Osbourne Hill Strategic Landscape, the study was successful in addressing local tradition regarding damages and troop exhaustion, the movement of Crown Forces, and the establishment of the Crown Forces battleline immediately prior to the start of the Battle of Brandywine.

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# **APPENDIX I**

## Geomorphic Auger Logs

**REDACTED**