National Park Service
U.S. Department of the Interior

Monocacy National Battlefield
Frederick, Maryland

Cultural Landscape Report
Thomas and Worthington Farms



June 2013

Resource Stewardship and Science
Division of Cultural Resources, National Capital Region



Cultural Landscape Report

Thomas and Worthington Farms

Monocacy National Battlefield

Frederick County, Maryland

Historical Overview

Significance Summary

Analysis and Evaluation

Treatment

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Resource Stewardship and Science
Division of Cultural Resources, National Capital Region
2013

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U.S. Department of the Interior
National Park Service
National Capital Region
Cultural Landscapes Program
Washington, DC

NPS Document Number: MONO 894 120281

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Cover Photo: View of the Thomas Farm (National Capital Region, 2012).

Title Page: View of the Worthington Farm (National Capital Region, 2012).

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EXECUTIVE SUMMARY

The Thomas and Worthington farms are two component landscapes of Monocacy National Battlefield. Located about three miles south of Frederick, Maryland, these two rural landscapes set the scene of significant action throughout the Civil War, specifically during the Battle of Monocacy.

The Thomas and Worthington farms derive significance under National Register Criterion A in the areas of military history, social development, industrial and agricultural history, and commemoration; Criterion C in the area of architecture; and Criterion D for archeology. The period of significance begins in 1724, the date of initial patenting and settlement of lands encompassing both properties, and extends through the important events of the Civil War era. The period ends with the construction of the Vermont Monument on the Thomas Farm property in 1915. (The period of significance for the entire battlefield extends to 1964 because that is when the final commemorative structure was built. This structure is outside the boundaries of the Thomas and Worthington properties.)

The 280-acre Worthington Farm became part of the park in the 1980s. Following its acquisition, the National Park Service (NPS) restored the exterior of the house and removed most of the adjoining nineteenth and twentieth century outbuildings. Although the Worthington Farm has lost features that existed during the Civil War, the landscape retains its historic rural character through the surviving circulation systems, field and forests patterns and main house. Conversely, the 240-acre Thomas Farm was acquired by the NPS in 2001, and today contains the majority of the historic buildings and structures, including two eighteenth century buildings (main house and stone tenant house) and a variety of nineteenth and twentieth outbuildings. The natural systems and topography, circulation, and most of the agricultural field and forest patterns remain the same as those that existed during the historic period.

Yet, the Thomas and Worthington farms are faced with many challenges related to effectively interpreting the battlefield landscape, modifying the circulation patterns to provide accessibility, and balancing the natural and cultural values within the park. The primary focus of this cultural landscape report is to provide direction for the long-term management of both properties within the overall battlefield landscape.

Acknowledgments

This report was a collaborative effort between the National Capital Region and Monocacy National Battlefield. The report was prepared by Michael Commisso and Martha Temkin, Cultural Resource Specialists with the National Capital Region. Maureen Joseph, Regional Historical Landscape Architect, provided project oversight.

The staff of Monocacy National Battlefield were knowledgeable and supportive throughout the research and writing of this document. Invaluable to the project were Rae Emerson, former Acting Superintendent; Andrew Banasik, Natural Resources Program Manager; Joy Beasley, former Cultural Resources Program Manager; Al Kirkwood, Facilities Management Division Chief; Tom Gwaltney, former Archeologist and GIS Specialist; Jeremy Murphy, Chief Ranger; and Brett Spaulding, Park Ranger and Volunteer Coordinator.



Introduction

INTRODUCTION

As part of Monocacy National Battlefield, the Thomas and Worthington farms are located approximately three miles south of Frederick, Maryland, on the southwest side of Maryland Route 355 and on the east side of the Monocacy River. Today both properties feature similar agricultural landscapes that were present in 1864, dominated by a patchwork of rolling fields and forest, a network of transportation corridors, and late-eighteenth and early-nineteenth-century buildings and structures. The 240-acre Thomas Farm was acquired by the National Park Service in 2001 and the Worthington Farm was purchased in 1983 and consists of 280 acres (Figure 1.0 and 1.1).

PROJECT SCOPE, ORGANIZATION, AND METHODS

The surviving historic agricultural landscape encompassing the Thomas and Worthington farms provide opportunities for visitors to interpret a pivotal time and place in American history. Yet, Monocacy National Battlefield is faced with many challenges related to effectively interpreting the battlefield landscape, modifying circulation patterns to provide accessibility, and balancing natural and

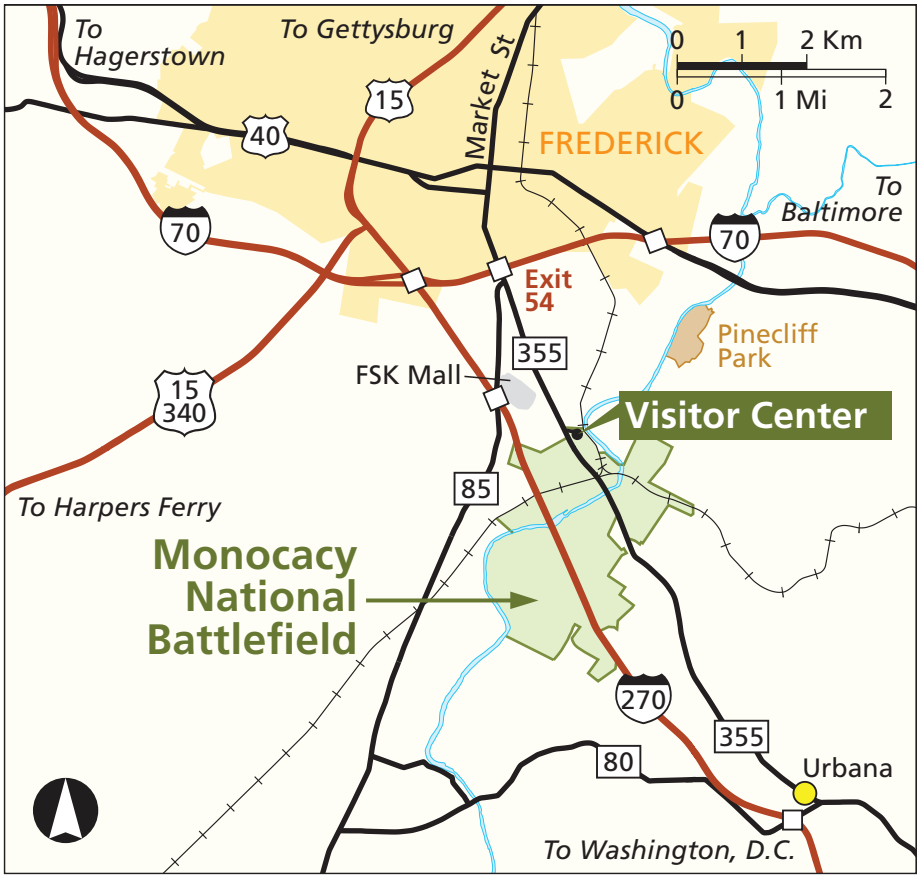


Figure 1.0.
Monocacy Battlefield encompasses approximately 1,650 acres in Frederick County, Maryland about 30 miles northwest of Washington, D.C. (National Park Service, Harpers Ferry Center).

cultural values. The intent of this cultural landscape report is to provide direction for the long-term management of the battlefield landscape.

The *Cultural Landscape Report for the Thomas and Worthington Farms* incorporates and expands upon the site history, existing conditions, and landscape characteristics and features information contained in the Monocacy National Battlefield and Thomas Farm (Araby) Cultural Landscape Inventories. The primary focus of this report defines a framework for the treatment of the Thomas and Worthington farms and describes specific guidelines and tasks to enhance historic character in keeping with applicable National Park Service

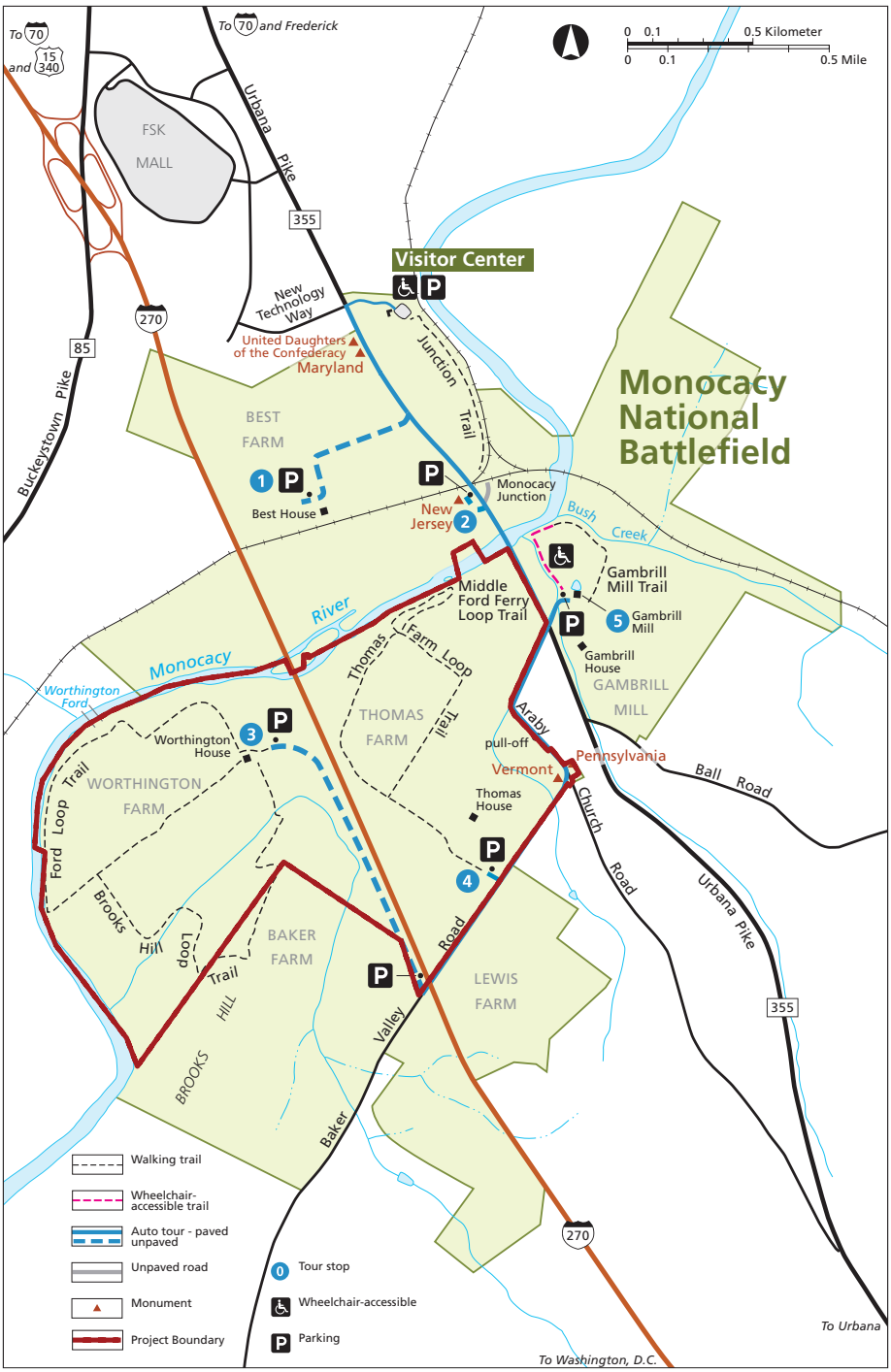


Figure 1.1.
Monocacy Battlefield is comprised of six properties: the Baker, Best, Lewis, Thomas, and Worthington farms, as well as the Gambrill Mill tract. This project focuses on the Thomas and Worthington farms (Harpers Ferry Center and Monocacy National Battlefield Park Brochure, annotated by National Capital Region, Cultural Landscapes Program).

legislation, policies, guidelines, and planning. Specific direction on the treatment of the Thomas and Worthington farm landscapes is built largely upon the actions outlined in the park's *General Management Plan* (2010). However, the Resources Stewardship Strategy (2011) and Long-Range Interpretive Plan (2009) are other planning documents that inform treatment of the battlefield along with short and long-term treatment tasks to preserve and enhance the historic character of both properties.

This report has been developed according to the *Guide to Cultural Landscape Reports: Contents, Process and Techniques* (National Park Service, 1998). The treatment guidelines and tasks are consistent with the guidelines established by the *National Park Service Management Policies* (2006), *Director's Order 28: Cultural Resource Management* (1999), and *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (1996). Research for this cultural landscape report has been undertaken at a thorough level of investigation, which includes review of all historical resources including both primary and secondary sources.[1]

This report is organized into two chapters beginning with this chapter, Introduction, that builds upon previous documentation, including Cultural Landscape Inventories for the Monocacy Battlefield (2004) and Thomas Farm (2010). This chapter provides a brief history of the Thomas and Worthington farm properties, followed by an updated analysis and evaluation of integrity of both landscapes with respect to the historic period (1724-1915). The second chapter, Treatment, begins by establishing a framework for treatment based on the park's enabling legislation, policies, guidelines, current planning efforts, and broad issues that affect the historic character of the farmsteads. This chapter establishes a primary treatment and articulates the appropriate treatment philosophy that describes the intended character of the landscape. Following this section, the chapter outlines the specific efforts necessary to retain and enhance the historic character of the landscape and to improve landscape interpretation. The chapter concludes with a summary table of treatment tasks. This report includes graphic plans that document and evaluate the cultural landscape. These include a period plan in the historical overview that illustrates the detailed condition of the landscape at the end of the period of significance; five existing conditions plans that depict the landscape in its present condition; and ten plans showing treatment issues and recommended tasks. The plans were developed from a combination of historic maps and photographs, field inventory, and discussions with park staff and others knowledgeable about the site.

DESCRIPTION OF THE STUDY AREA

The study boundaries for this report encompass the Thomas and Worthington properties. The Thomas and Worthington farms are located about three miles south of Frederick, Maryland, on the southwest side of Maryland Route 355 and on the east side of the Monocacy River. The Thomas Farm, also known as *Araby*, is bounded on its northern side by the Monocacy River, on its southern side by Baker Valley Road, on the west by US Interstate 270, and on the east by MD Route 355 and Araby Church Road. It measures approximately 240 acres. The Worthington Farm, also known as *Clifton*, is located immediately west of the Thomas Farm, west of Interstate 270 and northwest of the Baker Farm. The northern and western boundaries are formed by a curve of the Monocacy River, with Brooks Hill forming the southern boundary. The Worthington Farm currently contains approximately 280 acres.

These two farms are being considered together in this Cultural Landscape Report because they were created largely out of one historic landholding by Griffin Taylor between 1847 and 1851. The two farms are also linked by the role they played in the Battle of Monocacy (see Figures 1.0 and 1.1).

HISTORICAL OVERVIEW

The history of the Thomas and Worthington farms is extracted from the *Monocacy National Battlefield General Management Plan* (2010), *Archeological Overview, Assessment Identification, and Evaluation Study of the Thomas Farm* (2010), *Monocacy and Thomas Farm Cultural Landscape Inventories* (2004 and 2009), and *Thomas and Worthington House Historic Structures Report*s (2010 and 1995).

EARLY HISTORY, 1715 AND BEFORE

Native Americans have had a presence in the Monocacy River drainage and Monocacy National Battlefield area since the earliest human occupation of North America. Although a complete archeological survey of the battlefield has not been undertaken, surveys of Frederick County have shown that the Monocacy Valley experienced intensive Native American settlement, particularly along the Monocacy River. It is likely that the prehistoric occupations on the battlefield's component landscapes, including the Thomas and Worthington farms reflect this pattern. Native American occupations spanning over 10,000 years and ranging from Early Archaic to late Woodland period short-term base camps and lithic scatters have been documented at the Best, Thomas, and Worthington farms.[2] [For further information, see Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm,* National Park Service, 2010.]

INITIAL EUROPEAN SETTLEMENT AND EARLY GROWTH, 1715-1812

European explorers and traders may have arrived in the Maryland Piedmont region as early as 1715. The earliest land surveys in Frederick County were made primarily by European settlers in the 1720s, and are generally characterized by land speculation ventures that were subdivided and sold or leased to tenants.

Dwindling economic opportunities and increasing competition for available land in southern Maryland and the Eastern Shore facilitated westward movement of English settlers, many of whom brought enslaved laborers with them into the Monocacy region. Pennsylvania Germans from Philadelphia and southeastern Pennsylvania also migrated into Frederick County. Two distinct agricultural systems developed in the Monocacy region by the mid-eighteenth century, arising out of the predominantly English and German migrations into the area. German settlers generally farmed smaller tracts of land, cultivating corn and wheat and other subsistence crops. British settlers, conversely, initially sought to replicate the tobacco and slave economy of the tidewater area; however, climate differences and market fluctuations eventually precipitated greater reliance on commercial grain cultivation in the Monocacy area, even among slaveholders.[3]

The earliest surveys in Frederick County were made in the 1720s. One of the first in the Monocacy Battlefield area was *Henry*, a 385-acre tract surveyed in 1724 for John Radford, a Prince George's County carpenter. This tract was located along the west side of the Monocacy River, just north of the project area. (This tract was later resurveyed along with several other parcels to become *Arcadia* [Figure 1.2]. A small portion of the western edge of *Arcadia* eventually became part of the Thomas Farm.) However, most of the lands that now comprise the Thomas and Worthington farms were made up of a portion of a 1,400-acre land grant called *Wett Work*. The *Wett Work* tract, first surveyed in 1729 for land speculator John Abbington, extended southward from a bend in the river near the present railroad crossing, along the east side of the river to a place approximately opposite Buckeystown. Additional parcels that were patented during this time, and would

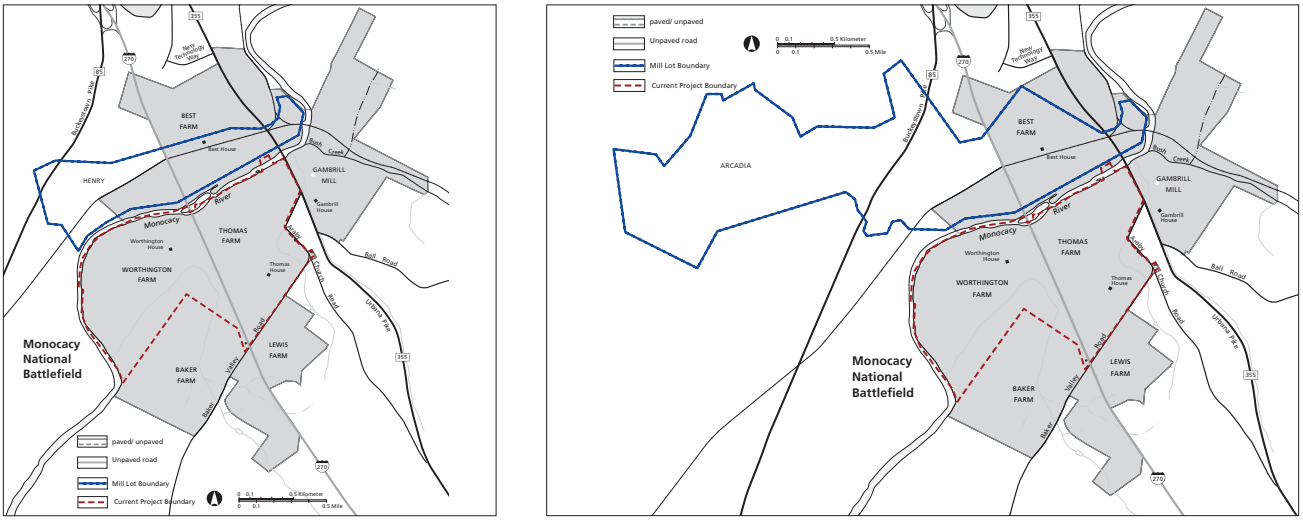


Figure 1.2.
One the earliest surveys in the Monocacy Battlefield area was *Henry,* a 385-acre tract surveyed in 1724. This tract was one of several parcels that were resurveyed to become *Arcadia. (Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm (2010),* National Capital Region).

eventually be incorporated into the park boundary were the *Mill Lott*, and *Ballengers Endeavour* tracts on the west side of the Monocacy River (Figure 1.3).[4]

The French and Indian War (1756-1763) seriously disrupted western expansion, but some land speculation and settlement continued to occur in the Monocacy area. In 1759, James Marshall, a Scottish merchant, began acquiring large portions of the *Wett Work* tract, and by 1770 he had acquired portions of the *Henry*, *Mill Lott*, and *Ballengers Endeavour* tracts, which he later resurveyed into one parcel that he called *Arcadia*. However, the *Arcadia* tract was not patented until 1793. While it is not clear where on the property Marshall and his family lived during the forty years of his ownership, the brick manor house on the Thomas Farm property is believed to have been constructed c. 1780, and is attributed to James Marshall.[5]

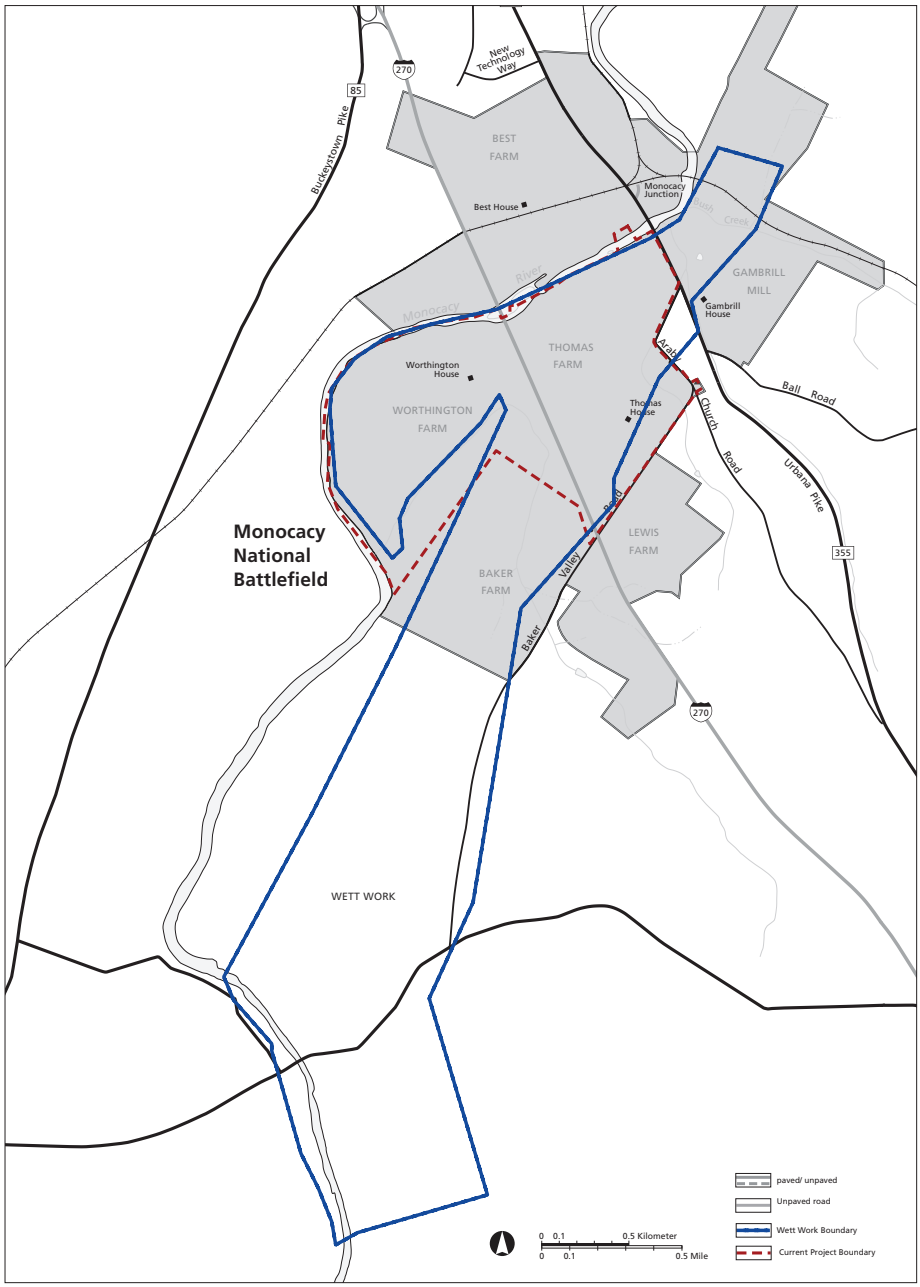


Figure 1.3.
A large portion of the current park boundary, including the Thomas and Worthington farms is made up of a portion of the original 1,400-acre land grant known as *Wett Work (Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm (2010),* National Capital Region).

By the close of the eighteenth century, the Monocacy area was a bustling agricultural community, and it also exhibited significant industrial development. By 1790, Frederick County was the largest wheat producer in the United States, and also supported the cultivation of flax, corn, orchard fruit, rye, oats, potatoes, and hay. Other important industries developed in the Monocacy area during the 18th and 19th centuries including sawmills, iron furnaces, and glass production.

As population, commerce, and agricultural output expanded in Frederick County, the development of transportation systems became increasingly important. In the 18th century a number of river crossings were established at low places on the banks of the Monocacy River. One such ferry, the Middle Ford ferry, crossed the Monocacy River within the present day boundary of the Thomas Farm a short distance downstream of the Maryland (MD) Route 355 highway bridge. Owned by James Marshall, the ferry landing site—which also included a tavern—remained a prominent feature well into the 19th and twentieth centuries.

The need to transport goods between western Maryland and the port towns of Georgetown, Baltimore, and Annapolis, as well as the absence of navigable inland water routes, led to the development of a regional road system. Around 1748, the Georgetown Road was established; it is known today as MD Route 355. Transportation later improved during the first half of the nineteenth century. The Georgetown Road was chartered as a turnpike in 1805, and continued to serve as the main route between Washington, D.C. and Frederick until the mid-twentieth century. A covered wooden bridge carrying the Georgetown Road over the Monocacy River was constructed around 1828, rendering obsolete many of the ferry crossings and fords that were established during the eighteenth century, including the Middle Ford ferry. Construction of the bridge and turnpike necessitated realignment of the road to the east; a portion of the original alignment of the Georgetown Road forms part of the eastern boundary of the Thomas Farm and is today known as Araby Church Road.[6] More transportation improvements came in 1828, when construction began on America's first railroad, the Baltimore and Ohio (B&O). The B&O Railroad reached the Monocacy area in 1830 and was located north of the present day boundaries of the Thomas and Worthington farms, but within the current national battlefield boundary.[7]

DEVELOPMENT OF THE THOMAS AND WORTHINGTON FARMS THROUGH THE CIVIL WAR, 1812-1865

Following the death of James Marshall in 1803, his heirs began selling his personal property. An advertisement in the Frederick Town Herald described the property as followed:

> The subscriber will expose to public sale, the farm whereon he now lives, part of a tract of land called "Wet Work," [sic] containing, four hundred and ten acres, lying about three or four miles from FrederickTown. The main road

> leading from Frederick to Georgetown runs through it, dividing it completely for two farms, leaving on one side about 250 acres with a handsome brick building, as neatly finished as any in the country—on the other side, about 150 acres, with as good a mill seat and constant stream of water, as any to be found, agreeably to the size of the stream. On this lot there is about 40 or 50 acres of wheat and rye seeded in good order and time. On the lot 250 acres, about one hundred is seeded down in wheat and rye, in very good order.[8]

Beginning in 1812, Colonel John McPherson, Sr., an entrepreneur, bought 415 acres of land on the west side of the Monocacy River from James Marshall's heirs. Over the next two decades, Colonel McPherson and his son John, Jr. assembled various portions of adjacent tracts to create a 1,111-acre property that became known as *Araby*. The four distinct areas within the larger landscape of the *Araby* tract were the *Mansion House farm*, *Hill Farm*, *Araby Mills*, and the *Araby rail side community*. (Figure 1.4) These tracts were all tied to the intersection and crossroads created by the passage of the Georgetown Pike over the Monocacy River and the Monocacy Junction of the Baltimore and Ohio Railroad. In all, the various parcels purchased by the McPhersons encompassed land that eventually became the Thomas, Worthington, Baker, and Lewis farms. This report focuses mostly on the *Mansion House Farm* (Figure 1.5).[9]

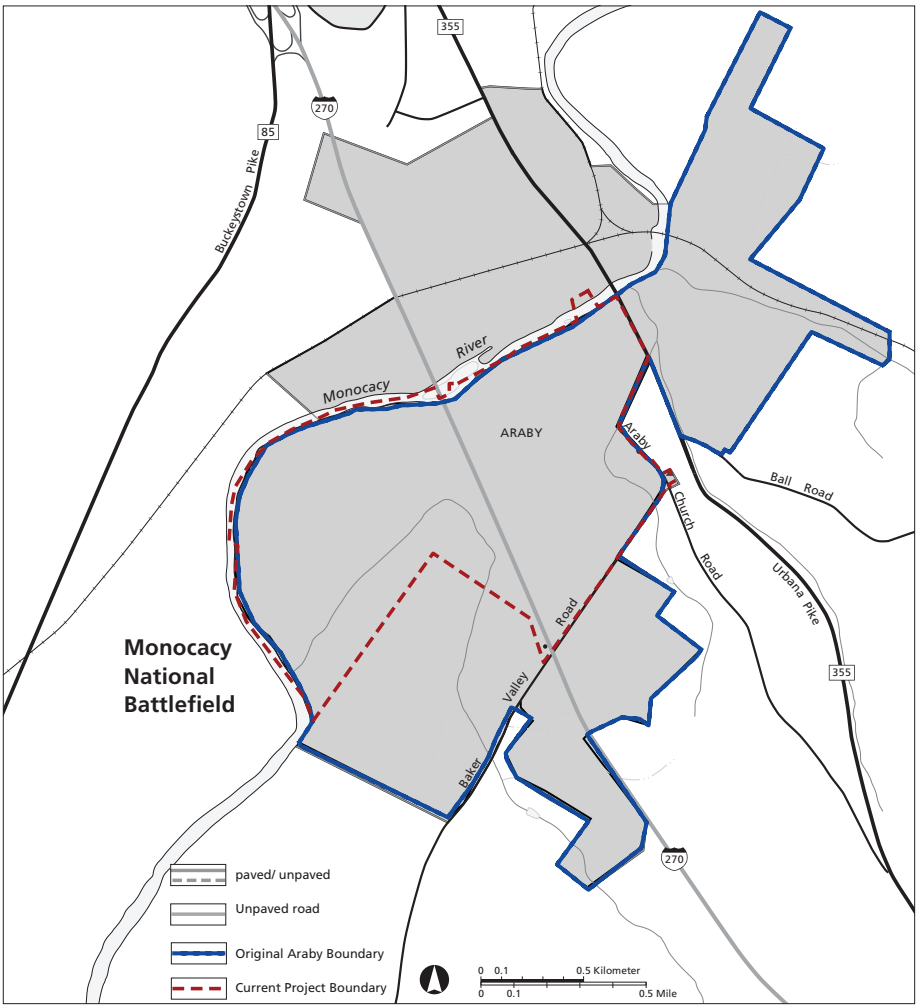


Figure 1.4.
In 1831, John McPherson, Jr. had various landholdings--previously owned by his late father John McPherson--resurveyed into an approximately 1,111-acre tract that he later called *Araby* (National Capital Region).

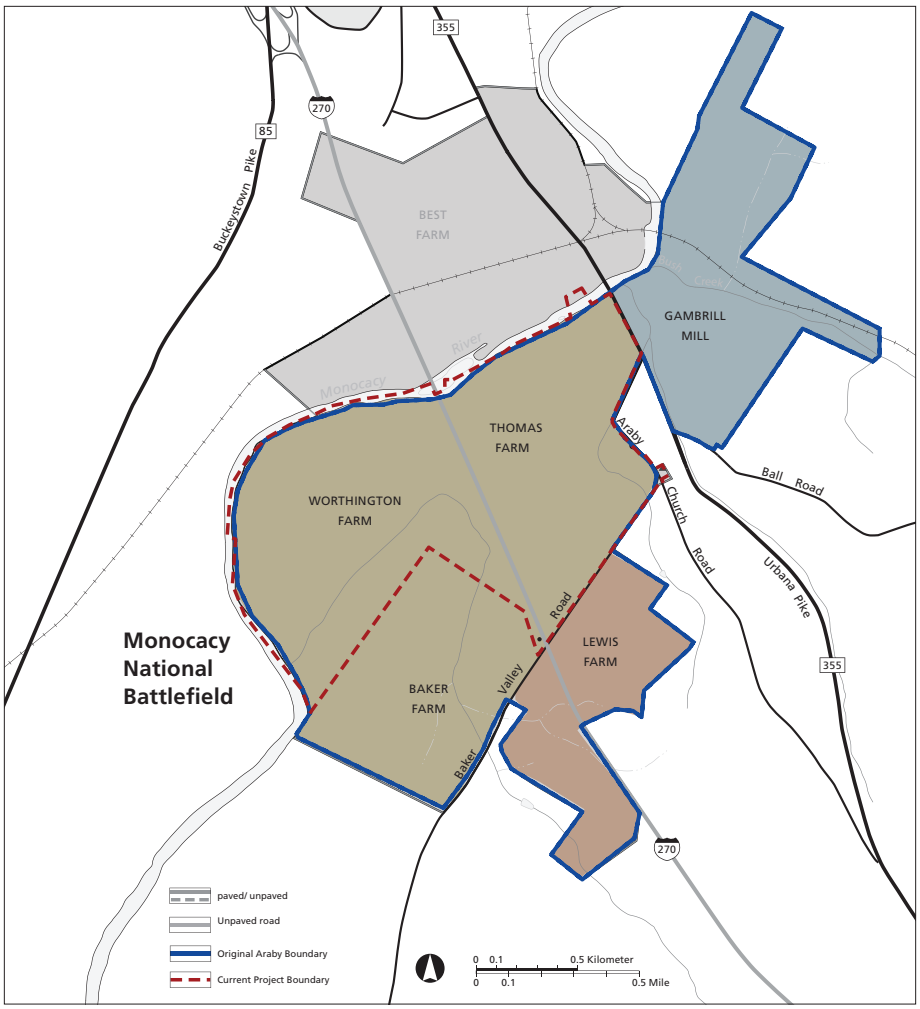


Figure 1.5.
The subdivision of Araby in 1844 led to the formation of several parcels which today form five of the six component properties at Monocacy National Battlefield: Gambrill Mill and the Lewis, Baker, Worthington, and Thomas farms (National Capital Region).

Although Colonel John McPherson, Sr. died in 1829, his son continued to make a number of improvements to the *Mansion House farm* between 1829 and 1844. McPherson presumably added the columned front porch and constructed the large brick barn, which likely replaced an earlier barn. The brick barn is depicted in a c.1882 rendering of the property (Figure 1.6). By 1844, McPherson was deeply in debt. In order to satisfy his creditors, he divided his Araby tract into smaller parcels and sold them. Of the four tracts that were sold, the 277-acre *Mansion House farm*—which included the c.1780 brick manor house, was sold in two parcels (226 acres and 51 acres) to Worthington R. Johnson on April 23, 1844, who in turn sold it to Isaac Baugher on August 4, 1847. According to an 1847 insurance document, the property is described as having a Brick Barn, a smokehouse, a stone tenant house, corn cribs, and a hog pen.[10]

By 1848, Isaac Baugher had died, and in 1852 his heirs sold the 226-acre *Mansion House Farm* to Griffin Taylor, a wealthy local farmer. Taylor had already acquired substantial landholdings in the area; he purchased the 656-acre Arcadia tract from John McPherson, Jr. in 1835, and in 1841 he purchased a 512-acre parcel owned by John L. and Eleanor Harding. Shortly thereafter Taylor sold 380 acres of the 512-acre parcel to Daniel and Edward Baker, retaining 132 acres as part of his



Figure 1.6.
A c. 1882 rendering of *Araby* depicts the main house, as well as several domestic and agricultural outbuildings (Monocacy National Battlefield Archives).

own. Daniel and Edward Baker divided the property in 1849, and Daniel received the 214 acres that are now known as the Baker Farm within the Monocacy Battlefield.[11]

Following the purchase of numerous parcels, Griffin Taylor combined several of his landholdings to form *Clifton*, a 300-acre property adjoining the property that contained the c.1780 manor house, which later retained the name *Araby,* on the west between 1847 and 1852. Located above a bend of the Monocacy River, *Clifton* was bounded by the river on the north and west, by Brooks Hill and the Baker Farm to the south and to the east and by the *Araby* on the northeast. A road that provided Clifton with access to the Georgetown Pike was located on a sliver of land that ran across neighboring *Araby* parallel to the river. Around this time, Taylor also constructed a two-story brick farmhouse on the *Clifton* property between 1851 and 1852, but it appears that he may have resided at *Araby*.

Taylor died in 1855, and his trustees advertised his two farms, *Araby* and *Clifton*, for sale in 1856. An advertisement in the Frederick Examiner described both properties as followed (Figure 1.7):

> 1st—That beautiful and productive farm called "Araby", containing 261 acres of Land, more or less. This farm was the residence of the late deceased, and is one of the most desirable in the country. It lies three miles South of Frederick, on the Georgetown road and within half a mile of the Baltimore and Ohio Railroad, and in sight of a large flouring mill. The improvements are of the best order, consisting of a large two-story brick mansion house, with back building suitable for a large family; a stone tenant house, blacksmith shop, a large Switzer barn, corn crib, smoke house, ice house, with all other suitable necessary outbuildings; running water in nearly every field, and a pump and running fountain in the barn yard. There is a large iron ore bank on this farm, which makes it more valuable. This Farm, from its location, improvements and fertility, would be a desirable place for one wishing to retire from business. There is one of the finest Turnpike roads leading to it from Frederick, in the State. There is also a large apple orchard on the premises.



PUBLIC SALE
OF
FREDERICK COUNTY
LAND.

BY Virtue of a decree of the Circuit Court for Frederick County, sitting as a Court of Equity, the subscribers, as Trustees for the sale of the

REAL ESTATE

of Griffin Taylor, late of said county, deceased, and of which he died seized and possessed, will proceed to sell said Lands,

On Saturday, the 8th. of March 1856,

at 10 o'clock, A. M., at the City Hotel, in Frederick City, Md.

FIRST.—THAT BEAUTIFUL AND PRODUCTIVE

FARM,

called "Araby," CONTAINING

261 acres of Land,

more or less. This Farm was the residence of the late deceased, and is one of the most desirable in the county. It lies three miles South of Frederick, on the Georgetown road and within half a mile of the Baltimore and Ohio Railroad, and in sight of a large Flouring Mill. The improvements are of the best order, consisting of a large TWO-STORY BRICK

MANSION HOUSE,

with Back Building, suitable for a large family; a stone Tenant HOUSE, Blacksmith Shop, a large Switzer Barn, Corn Crib, Smoke House, Ice House, with all other suitable necessary out-buildings; running water in nearly every field, and a Pump and running fountain in the Barn yard. There is a large Iron ore bank on this Farm, which makes it more valuable. This Farm, from its location, improvements and fertility, would be a desirable place for one wishing to retire from business. There is one of the finest Turnpike roads leading to it from Frederick, in the State. There is also, a large

APPLE ORCHARD,

on the premises.

2nd.-The Farm,

adjoining Araby, called "Clifton,"

CONTAINING 300 ACRES

more or less; 280 Acres are in a high state of cultivation, the residue in Timber, and is acknowledged to be one of the most productive Farms in Frederick County. There is running water in every field. The improvements consist of a new TWO-STORY BRICK

HOUSE

AND KITCHEN, a good Frame Barn, and a Corn Crib, sufficiently large to house four hundred barrels of Corn; with a large number of

FRUIT TREES,

around the dwelling. [illegible] of these Farms will be shown to those wishing to view them, by calling on Michael Keefer, who resides adjoining this Farm. The Turnpike runs to this

Figure 1.7.
An 1856 advertisement in the *Frederick Examiner* for the sales of Griffin Taylor's two farms, *Araby* and *Clifton* (Frederick Examiner, February 8, 1856, Image on file at Monocacy National Battlefield Archives).

> 2nd –The Farm, adjoining Araby, called "Clifton," containing 300 acres more or less; 280 acres are in a high state of cultivation, the residue in Timber, and is acknowledged to be one of the most productive Farms in Frederick County. There is running water in every field. The improvements consist of a new two-story brick house and kitchen, a good Frame Barn, and a corn Crib, sufficiently large to house four hundred barrels of Corn; with a large number of fruit trees around the dwelling. …"[12]

In 1856, John F. Wheatley and Turner A. Ball purchased *Araby*, along with the newly created *Clifton* property. Wheatley and Ball formed a partnership with James H. Gambrill, the recent purchaser of the adjacent Araby Mills, to start up a distillery. Ball planned to farm *Araby* and *Clifton* to provide the mill with rye or barley, which Gambrill would grind into malt, and furnish Wheatley with the products needed to run the distillery. When acquired by Ball and Wheatley, *Clifton* was a relatively undeveloped property, probably due to Taylor's untimely death. *Clifton* had fewer structures than the *Araby* farm property consisting of just the main house, kitchen, frame barn, and a corncrib. Ball, who resided on Clifton, presumably added additional outbuildings. He also is thought to be responsible for some interior improvements to the main house which included a "trompe l'oeil" paint scheme that may have been done by Constantine Brumidi. Brumidi is famous as the creator of the U.S. Capital Frescoes.[13]

The Thomas Farm

Due in part to an economic recession that began in 1857, the distillery venture failed shortly thereafter. In 1860, Wheatley and Ball sold the *Araby* property to C.K. Thomas; Ball continued to live at *Clifton* until he sold to John Worthington in 1862. This action served to separate *Araby* and *Clifton* again. At this point, the manor house became known as *Araby*, while the property became known as the Thomas Farm.

The property that Thomas acquired in 1860 was prime agricultural land. The built environment of the farm was an important indicator of its value. As described in the 1856 *Frederick Examiner*, there was a "Mansion House. . .suitable for a large family." Other structures included a corncrib, icehouse and smokehouse (Figure 1.8). Other "necessary and suitable outbuildings" were also found on the property. These may have included pigpens, sheep enclosures and poultry houses. All were important to the management of a successful agricultural enterprise. The existence of a "large Switzer barn" underscores the important role of grain production. This type of barn, also known as a forebay or bank barn, was designed to facilitate the threshing and storage of wheat. The property also included a stone tenant house and blacksmiths shop. The existence of the tenant house suggests a farm operation that required additional, or outside, labor, either slave or free. The blacksmith shop may have been necessary due to the size of the farm operation or because of the property's proximity to the Georgetown Turnpike.[14]



Figure 1.8.
An image of the Thomas Farm icehouse, taken in 1929. During the historic period, the Thomas farm property included numerous outbuildings and structures including the Icehouse shown above. The Worthington Farm can be seen in the background (Balitimore Sun, BCN-236-BS).

Thomas does not appear on the 1860 agricultural census, but a tax assessment from that year lists his ownership of two sets of farm buildings on 299 acres, worth $29,900. In 1870, his farm had a real-estate value of $24,000, with farm products worth $6,220, nearly twice the value of the neighboring *Clifton*, which had only slightly less improved acres than the Thomas Farm. Thomas produced a significantly higher amount of corn and wheat than his neighbors.

Other physical characteristics of the Thomas Farm included open fields (cropped, meadow and pasture), fencing, an apple orchard, woodlots and yards. In order to keep animals out of the growing crops, internal fencing was constructed, which created a system of delineated fields on the property, similar to the field patterns found on the other Monocacy farms. Property owners also erected fences along the turnpike and the railroad and used them as boundary markers. Fencing was generally of the "post and rail" type and described as "high." Osage orange, or *Maclura pomifera*, may have been used as living fencing on the farm during this period. This tree, native to Kansas and Arkansas, was introduced in the east as a form of hedge material by the 1850s. A remnant line of mature Osage orange trees remains near the intersection of the old Georgetown Pike and Urbana/ Buckeystown Roads (now Araby Church Road and Baker Valley Road). Another linear element of the Thomas Farm landscape was the formal entry drive lined by two parallel rows of deciduous trees. The drive led straight from the turnpike to the main house and is still extant on the farm. The woodlot for the property was a wooded area on the eastern foot of Brooks Hill and the orchard likely existed along the Baker Valley Road near its intersection with a farm lane.[15]

The Worthington Farm

T. Alfred Ball continued to reside at *Clifton* until 1862, when the property was sold to John T. Worthington. Worthington later changed *Clifton's* name to *Riverside Farm*. Worthington had previously farmed a property in a district north of the Georgetown Pike and east of the Monocacy River, where he had been a successful agricultural entrepreneur.

The system of farm lanes and roads served the *Riverside Farm* (hereafter referred to as the Worthington Farm) internally and linked it with the Monocacy community, Frederick and markets of Washington and Baltimore. Griffin Taylor was likely responsible for the riverside road, now referred to as the Upper Carriage Road, which linked the Worthington Farm to the Georgetown Pike. The road was substantial enough to require the construction of a large culvert and retaining wall where it crossed an unnamed stream. The culvert and wall appear to be made from stone quarried out of an adjacent hillside. There is also evidence of an additional riverside road, now referred to as the Lower Carriage Road, one nearer to the riverbank than Taylor's road. This other road may have been cut earlier and possibly connected Middle Ford to the ford associated with Arcadia.[16]

The Arcadia ford, now referred to as the Worthington Ford, was located where Ballenger Creek flows into the Monocacy River, about a mile west of the highway bridge over the Georgetown Pike. It connected the eastern side of the original Arcadia tract with the western "manor" side and provided access to the Buckeystown Pike. This ford remained in use well into the 1860s after Arcadia



Figure 1.9.
An image, taken in 1929 by the Baltimore Sun, showing the kitchen garden at the Worthington Farm. Although its unclear when the garden was established, it is assumed that it existed during the historic period. The Thomas Farm can be seen in the background (Balitimore Sun, BCN-225-BS).

was subdivided and Thomas Claggett acquired the western portion containing the manor residence. A road trace that may be related to this ford is located on Worthington. An existing trace of an historic sunken lane descends from the southwest corner of the Worthington house across the slope to the river. It apparently connected the center of the farm with the fields along the river and perhaps with the ford. The trace runs through a wooded area between two lines of mature Osage orange trees. An additional lane, located north of the Worthington House, may have served as a connection to the Lower Carriage Road.[17]

The farm was already a very productive agricultural enterprise at the time of Worthington's purchase. The farm consisted of approximately 300 acres: 276 acres improved and 25 acres unimproved. The livestock included cows, horses, swine and oxen. Worthington focused on the production of winter wheat, Indian corn, hay and butter. Although it's unclear when these features were established, twentieth century imagery and maps suggest the property consisted of fruit trees within the domestic yard and an orchard and kitchen garden south of the main house. Worthington's agricultural operation compares favorably with other prosperous local farmers (Figure 1.9).[18]

Documentation suggests that when Worthington acquired the property in 1862, numerous ancillary buildings were clustered tightly together on the south and west side of the main house. In particular, two small one-and-a-half story buildings were located near the south end of the main house. These buildings likelyhoused the "few slaves" owned by Worthington. Apparently, Worthington made few changes to the property's spatial arrangement or building cluster (Figure 1.10).[19]

Fencing on the Worthington property delineated certain areas around the clusters of structures at the center of the farm and along certain fields. These included post and six-rail, picket, paling fences. In addition, Worthington may have planted living fences and hedgerows, as indicated by the mature Osage oranges lining the





Figure 1.10.
Images, taken in 1929, showing the Worthington Farm slave or tenant quarters, livestock enclosure and various outbuildings. Although construction dates for these features are currently unknown, it is assumed that they existed during the historic period. Remnants of the water pump, shown on the left, is all that exists today (Balitimore Sun, BCN-224-BS and BCN-234-BS).

sunken road traces and those delineating the large rectangular area that contained a kitchen garden and orchard just south of the main house (see figure 1.9). [20]

The Worthington Farm remained a viable and highly successful farm throughout the nineteenth century, utilizing slave and then tenant labor. The stone foundation of a small two-room house at the northwest base of Brooks Hill suggests that there were different types of residents working on the Worthington Farm. These individuals may have included free blacks, whites and/or mulattos, as well as slaves..[21]

The Civil War and Battle of Monocacy

By the mid-19th century, Frederick, Maryland, was a prosperous community. Major highways leading to Washington and Baltimore converged, and the B&O Railroad passed nearby. This transportation corridor not only contributed to the development of the area, but it also became a target for Union and Confederate armies throughout the Civil War because it facilitated movement of troops and supplies. Military activities continued in the Junction area throughout the Civil War. As they passed through along the Georgetown Pike, portions of both the Union and Confederate armies camped around Monocacy Junction, particularly during the Maryland and Gettysburg Campaigns in 1862 and 1863. Archeological evidence has found that short-term encampments were found across the Monocacy River from the Thomas Farm at the Best Farm. In addition, prior to the Battle of Gettysburg, Union General Winfield Scott Hancock used the Thomas House as his headquarters for three days in late June, 1863.

Events occurring in 1864, however, had the most dramatic impact on the Thomas and Worthington farms, as well as other properties of the area. The Battle of Monocacy took place on July 9, 1864 and the natural and cultural features of both farms were to play significant roles that day. Confederate General Jubal Early's forces arrived in Maryland after forcing General David Hunter to retreat from his defensive position at the northern end of the Shenandoah Valley, thus leaving open the route to Washington, D.C. Early's forces converged on the Union position established at the Monocacy Junction. Although considered a Union loss, the Battle of Monocacy proved a valuable defensive effort. Heavy Confederate casualties, a 24-hour delay in the march to Washington, and exhaustion of Southern troops prevented Early from reaching his goal in time and successfully attacking the capital city.

By the summer of 1864, the Confederate Army was essentially paralyzed at Petersburg, Virginia. Confederate General Robert E. Lee hoped to relieve the pressure on his forces by bringing the war to the north and distracting Union General Ulysses S. Grant's Army of the Potomac. The opportunity arose when Grant brought most of the Union troops defending Washington, D.C. to

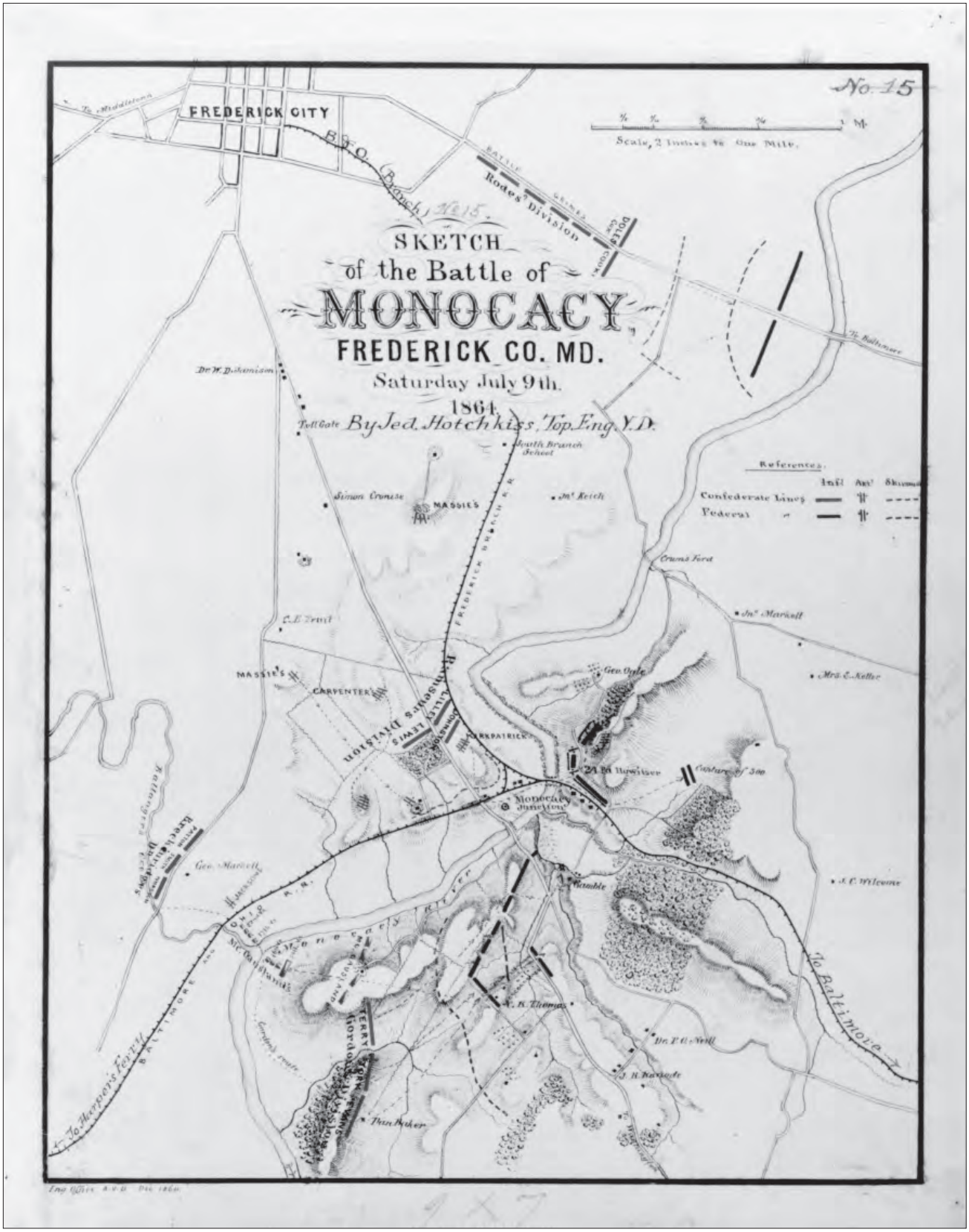


Figure 1.11.
Map of the Battle of Monocacy by Confederate cartographer, Jedediah Hotchkiss, 1864 (Monocacy National Battlefield Archives).

Petersburg, Virginia. Seizing his opportunity, General Robert E. Lee devised a bold and daring invasion with four objectives; to force the Union Army out of the lower Shenandoah Valley; to divert Union forces away from Lee's army at Petersburg, Virginia; to threaten Washington, D.C. or possibly to capture it in an attempt to deal a death blow to the sagging Union support; and to reduce the chances of reelection for President Abraham Lincoln.[22]

In mid-June 1864, Confederate Jubal Early reorganized his army and proceeded from Petersburg then north to Harper's Ferry, where they arrived on July 4. Agents along the B&O Railroad had been tracking Early's army and reporting to the railroad president, John Garrett. Garrett notified Secretary of War Edwin Stanton, in Washington, many times of the developing emergency, but got little support. By July 3, Garrett frustrated by the slow response from the administration in Washington, turned to Union General Lew Wallace, commander of the military district that included the Monocacy River area. Wallace responded to those concerns by taking the troops in his command from Baltimore to the Monocacy Junction on July 6. He placed his forces between the covered turnpike bridge and the railroad bridge as well across the turnpike in order to protect the railroad bridge and to prevent Early from reaching either Baltimore or Washington D.C.[23] Wallace ordered his troops to dig rifle pits on the east side of the river, both above and below the turnpike bridge. These fortifications supplemented those already in place above the eastern end of the railroad bridge. Wallace stationed other forces at the Worthington and Thomas farms. He also positioned some troops along the turnpike, opposite the Thomas Farm entry drive (Figure 1.11).

Following skirmishes on July 7 and 8 in the mountain passes and on the outskirts of Frederick, fighting shifted to area surrounding and encompassing the Thomas and Worthington properties. On July 9, Confederate troops, under the command of General John McCausland, forded the Monocacy River at the Arcadia ford (Worthington/McKinney ford), just downstream from the covered bridge over the Georgetown Pike. Once over the river, their march uphill was obstructed by fences and fields full of recently harvested stacks of grain. Waiting Union soldiers also lay in their path, relatively well protected by the fence line that ran along the boundary between the Worthington and Thomas farms. This fence line quickly became the center of some of the heaviest fighting of battle. Union and Confederate troops swept back and forth on the fields on either side of this line; the combatants moving between the main house at Worthington and the Thomas house in their effort to seize control of the Georgetown Turnpike. The fighting was so intense that bullet holes permanently marked the wooden porch posts of the Thomas House. By the end of the battle, the confederates had initiated three advances, resulting in heavy casualties on both sides with the eventual retreat of the Union army across the Georgetown Pike and toward Baltimore. Both the Thomas and Worthington houses were used as field hospitals.[24] Although Confederate forces captured a large number of Union soldiers, Wallace achieved

his aim of delaying Early's advance on Washington D.C. The capital city was saved by these actions.

One month after the Battle of Monocacy, the vicinity around the Thomas Farm continued to be a focal point of military activity. On August 6, 1864, Union General Ulysses S. Grant met with General Phillip Sheridan at the Thomas Farm, along with other generals to plan Sheridan's Shenandoah Valley Campaign. This campaign later devastated Lee's Army and contributed to his decision to surrender in April 1865. [25]

POST WAR, AGRICULTURAL ECONOMY, AND COMMEMORATIVE PERIOD, 1865-1915

After the Civil War ended, the Thomas and Worthington families began the process of rebuilding and recovery. Despite the intense fighting that took place on the Monocacy properties during the Civil War, the damages claimed to the Federal Government for reimbursement were meager. Nearly all of the claims were for damage done by Union troop's enroute to Antietam in 1862.[26] However, John T. Worthington made claims in 1862 and in 1864. For claims made in 1864, Worthington said that he lost sixty acres of corn in the field, thirty bushels of wheat stock, 360 fence rails, eighty rails to the cord, and there was a weeklong occupancy of 360 acres. Worthington stated that the damages were caused by General Hunter's command in 1864. General Hunter, however, was away in West Virginia during the Battle of Monocacy.[27]

In the ensuring years, Frederick County quickly regained its agricultural prosperity. Corn and wheat production remained high, and the production of dairy goods, fruits, and vegetables increased. During this period, the Thomas and Worthington properties also recovered successfully from any war damages that could have affected production and property value. Improvements were made to the Thomas House mansion after the battle resulted in a doubling of the insurance coverage purchased by its owner. The Thomas family may not have repaired all of the battle damage, as the bullet holes in the porch pillars were still evident in 1893. John T. Worthington installed a more elaborate doorway to his farmhouse in the 1870s. Fences continued to be rebuilt and maintained and fields were replanted according to the seasons.

Agricultural Changes in the Late Nineteenth and Early Twentieth Centuries

As the nineteenth century ended, a shift in the type of agricultural cultivation gradually became evident in Frederick County and on the Monocacy properties in particular. Dairying, already on the rise, became the mainstay of Frederick County farms, bringing with it the silos and dairy barns still ubiquitous on the landscape. Central Maryland, of which Frederick County is a part, contained the largest and

best dairy herds in the state. Corn for animal feed soon became the primary crop, though the region continued to produce large quantities of wheat and barley.

Mechanization increased at the beginning of the twentieth century, leading to a reduction in the need for manual labor. Rural populations began to decline as county residents moved to nearby cities in search of work. The closure of foreign markets during World War I and the rising cost of agricultural mechanization forced many area farmers out of business, but the county's agricultural output remained high even during the Depression.[28]

Changes in Ownership at the Thomas and Worthington Properties

Following the death of C.K. Thomas in the 1890s, his children, Samuel and Alice assumed ownership of the property and subsequently leased it out for farming. Upon Alice's death in 1910, the property was acquired by Eugene Sponsellar, but eventually sold to William G. Baker, Sr., one of the largest land owners in Frederick County. During this time, the mansion and the well-tended house grounds of the immediate post-war period became neglected and overgrown (Figures 1.15-1.16). This may have been because the tenants did not live on the property, but only leased the agricultural fields. The only landscape improvements made at the Thomas Farm during this time was the construction of a Pennsylvania-style frame bank barn over the foundation of the earlier brick barn.[29]

By the 1890s, John T. Worthington became too ill to continue farming. Two widowed family members moved into the house to care for Worthington and his wife. Sometime after 1900, one of these individuals may have been operating a boarding house in the residence. However, this arrangement appears to have had little impact on the physical landscape of the farm. The only noteworthy landscape change came in the early years of the twentieth century, with the addition of a dairy barn and auxiliary dairy building. These additions coincided with the general trend of converting to dairy farming.[30]



Figure 1.12.
Image of the Thomas House in 1888. Note the evergreen trees along the front elevation of the property (Monocacy National Battlefield Archives).



Figure 1.13.
Image of the Thomas House in 1893 showing the property in disrepair; the windows are broken and the grounds are overgrown (Monocacy National Battlefield Archives).

Lawyer Glenn Worthington, lived in Frederick and his younger brother, Clarke, lived in Virginia. The Worthington brothers, after the deaths of their mother and father in 1902 and 1905, inherited the property. They did not take up residence, but leased the farm to tenants. Given the pattern of tenancy and renting seen in this period on many of the Monocacy farms, the farm fields may have been rented out before the death of the elder Worthingtons. The farm continued to be a highly profitable one, achieving a value of $100.00 per acre by the 1920s.[31]

Commemoration of the Battle of Monocacy

Commemoration of the Battle of Monocacy began in the in the late nineteenth century. Coinciding with the 25th anniversary of the battle, Monocacy veterans formed a national association in 1889. They met in Frederick that year, visited sites associated with the battle, and made plans to build a monument. An advertisement placed by James Gambrill in 1897 for the sale of Edgewood emphasized the "magnificent view of the historic field of the Battle of Monocacy." This descriptive language suggests that by the end of the century, the Monocacy area community understood and perceived a distinct landscape called "Monocacy Battlefield." [32]

More veteran reunions took place over the years, but the first monument was not built until 1907, when the state of New Jersey put up a statue on the Best Farm—the property adjacent to the Thomas Farm—to honor the 14th New Jersey Regiment.

Veterans from other states followed New Jersey's example. By 1915, four monuments marked strategic locations on the battlefield. The State of Pennsylvania Monument, constructed in 1908, a thirty-five-foot granite shaft, topped by a polished granite ball, with inscriptions carved into the stone of each side of the square base. Located on the east side of the original Georgetown Pike, almost opposite the Thomas Farm entry lane, it was surrounded by a fence made of granite posts and galvanized iron piping. The half-acre monument site provided visiting veterans an expansive view of the surrounding farmlands to the south and west. Six years later, the Daughters of the Confederacy later constructed the Confederate Monument in 1914 on the west side of the Georgetown Pike at the northern end of the Best Farm. Shortly thereafter, the State of Vermont constructed a monument in 1915. It was located at the corner of the old Georgetown Pike (now Araby Church Road) and the Baker Valley Road, at the southeast corner of the Thomas Farm. This monument consists of an eight-foot rectangular granite monolith with a bronze tablet shaped like a Greek cross with a granite post at each corner of the plot. Three small stone steps lead up to it from the edge of the road. From its location on an embankment above the road, veterans were able to view the full extent of the Thomas and Worthington farm fields where the afternoon phase of the battle took place. (Drawing 1.0)[33]

20TH CENTURY DEVELOPMENT AND EARLY PARK PLANNING, 1915-1982

Interest in creating a national park at the site of battle began when a group of prominent Frederick County citizens formed the Monocacy Battlefield Memorial Association. This group included Glenn H. Worthington, who had watched the battle from the cellar of his family's farmhouse, and James H. Gambrill, Jr. In 1928, they lobbied Congress for legislation to make the Monocacy Battlefield a national park.

The proposed plan for the development of Monocacy Battlefield called for roads that would allow access to the important areas of the battlefield. These areas included the fence line between the Thomas and Worthington farms and Clifton, the route of the Confederate forces from the Worthington/McKinney Ford (formerly the Arcadia Ford), as well as routes to the existing regimental monuments. The plan utilized existing roads where possible, but some new roads needed to be constructed. Two additional monuments were also included in the proposal: a Battlefield Monument to be located on the Thomas Farm and a Confederate Monument to be located on Worthington. Congress passed legislation on June 21, 1934, creating Monocacy National Military Park. However, because Congress failed to set aside funds for the purchase of land and donations failed to develop, the battlefield concept had no physical reality (Figure 1.14). Consequently, the longstanding agricultural landscape was unaffected by the passage of the legislation. [34]

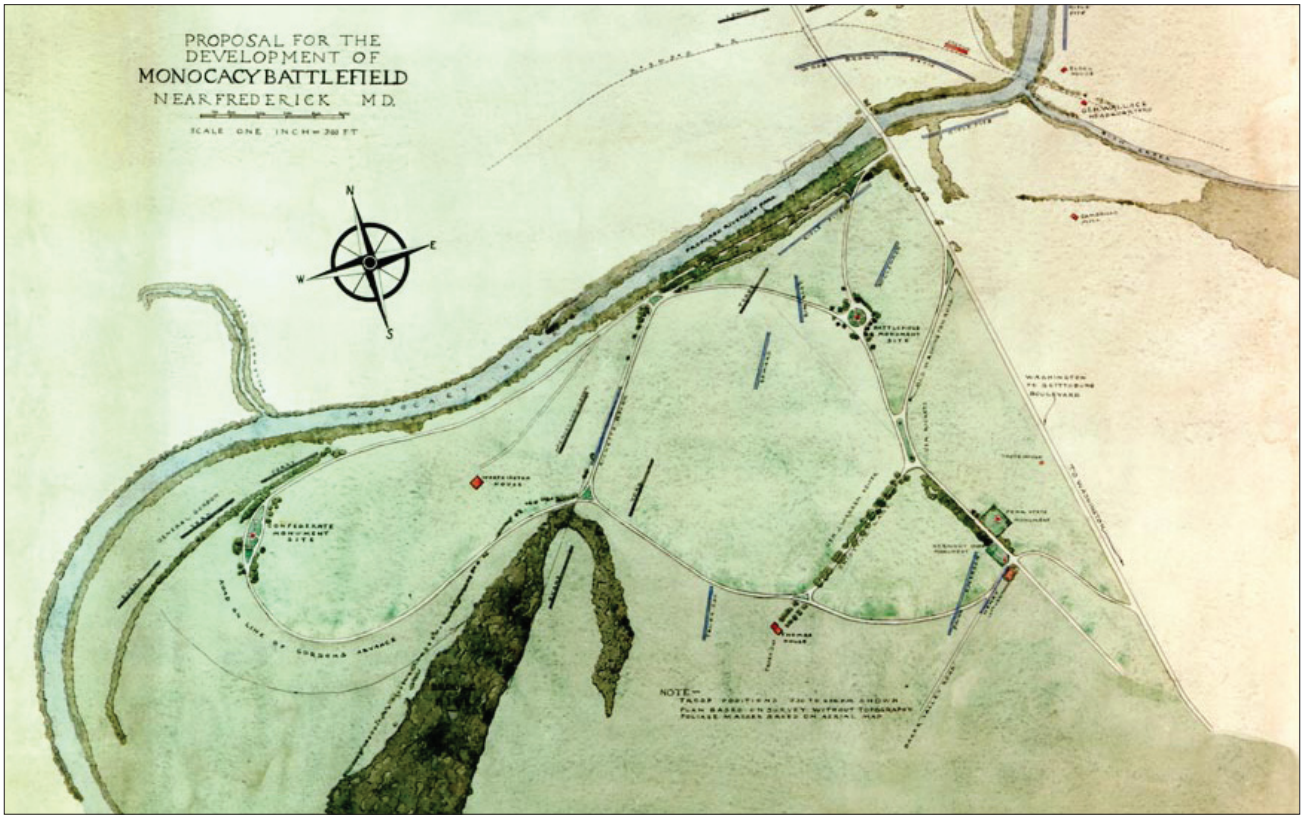


Figure 1.14.
Image showing the *Plan for the Development of Monocacy Battlefield,* c.1920. The proposed plan for the development of Monocacy Battlefield called for roads that would allow access to the important areas of the battlefield. These areas included the fence line between the Thomas and Worthington farms, the route of the Confederate forces from the Worthington/McKinney Ford (formerly the Arcadia Ford), as well as routes to the existing regimental monuments (Monocacy National Battlefield Archives).

By the mid-1930s, the Monocacy properties were no longer occupied by the upper-class gentry of Frederick County. The Thomas and Worthington farms were both occupied by tenants. While the agricultural fields retained the same general shape as in the late nineteenth century, the crops growing on them changed from hay to feed corn, as dairy farming dominated central Maryland. This shift to dairy farming also influenced the new construction of silos, milking barns and large loafing sheds throughout the region.

The transportation system that influenced development of the Monocacy area in the nineteenth century continued to be important in the twentieth. The railroad remained essential in the delivery of goods to markets and upgraded its lines for larger engines around 1930. The improvement of public roads came about with the introduction and increased utilization of the automobile. In the 1920's, the county improved the Georgetown Pike, by realigning it to eliminate the sharp turn near the entrance to Araby Mills. It was also paved with cement concrete, creating "the first modern road in Frederick county." This realignment created a new, more streamlined segment that ran north-south. The original segment of the pike was renamed Araby Church Road, probably after the small church located at the road's intersection with Baker Valley Road. Adjacent to the Thomas Farm, the elongated triangular area created by Araby Church Road and the new route of the turnpike was too small to remain viable as agricultural land. The owners of the property sub-divided this area into small lots, which they sold to different individuals. Soon a neighborhood of small houses arose on these individual properties.

In the years immediately following the establishment of Monocacy National Military Park, the National Park Service (NPS)conducted several field investigations of the area. As a result of the field investigations, a land acquisition plan was developed that included a proposal to create a road that would allow visitors to tour the battlefield site. However, the 1940 proposal was never implemented, because Congress failed to appropriate any funds.[35]

In 1951, a significant change to the Monocacy landscape occurred with the construction of Route 240, now known as Interstate 270. The four-lane interstate highway had a tremendous impact on the Monocacy properties as it passed through multiple properties , including the Thomas and Worthington farms. Its construction took portions of these farms out of use and created new property boundaries. The highway completely blocked passage between the Worthington and Thomas properties and also necessitated the construction of a new access road to the Worthington property. The completion of the interstate also encouraged additional suburban-type growth in the region, as it became the primary north-south commuting route between Washington DC and Frederick. The Georgetown Pike, which had been renamed Maryland Route 355 by 1937, ceased to serve as the primary road between Washington DC and Frederick.

Landscape Changes at the Thomas and Worthington Farms

The Baker family ownership of the Thomas farms ended when C. Edward Hilgenberg purchased the farm in 1949. He in turn sold it to Robert E. and Josephine R. Clapp in 1954, just after construction of the interstate. The construction of the new highway severed the Thomas farm's physical connection with Worthington. It also separated a small portion of the Thomas farm property from the whole. This piece, now located on the west side of the interstate, was sold to the owners of Baker Farm. Aerial photographs illustrate that sometime between 1864 and 1937 the Araby Church Road (formerly the Georgetown Pike) alignment shifted slightly to the west. The segment of road directly in front of the farm entrance lane was relocated about approximately 75 feet to the east, creating a lens-shaped area that became filled in with vegetation by 1937. A house was built in this area, probably between 1937 and 1952. During this period, the Hilgenberg family added electricity, plumbing, and central heating to the Thomas house. They also removed the c. 1860 Italianate porch, and constructed a screen porch on the north elevation, a brick garage on the south elevation, and a concrete stave silo near the barn.

Following the acquisition of the Thomas farm by the Clapps in 1954, substantial changes were made to the property, specifically the house grounds. Between 1954 and 1960, the Clapps had plans drawn up for a designed garden by T. Stuart Haller, a local landscape architect. The installed garden included rooms of varied plantings, established hedges to disguise pool and parking areas, and used brick



Figure 1.15.
Image of the Worthington Farm in the 1930s. Note the open character of the property, as well as the numerous outbuildings adjacent to the house (Monocacy National Battlefield Archives).

paths and stone walls to define functional areas. Over the next several years, Mrs. Clapp planted a boxwood garden in a traditional geometric Colonial Revival style and developed a lower terrace in front of the stone tenant house. A livestock pond was later built in the pasture adjacent to the Araby Church Road and Baker Valley Road. In 1960, the Clapps had a pool and tennis court constructed near the stone tenant house, and shortly thereafter built a milking parlor and milk house and attached pole barn loafing shed to the bank barn.

Until the building of the interstate, the Worthington farm's landscape had remained relatively unchanged. The tenant family that had first occupied the farm in 1905 remained there through three generations until 1953.The farmhouse was well maintained at least through the 1930s, and the number and arrangement of farm outbuildings stayed about the same (Figure 1.15). The boundaries of the farm fields remained intact, although there was some increase in fence line and riparian vegetation. However, the impact of the construction of the interstate highway on the Worthington landscape was significant. The federal government condemned a two-hundred-foot wide parcel of the property for a right-of-way for the new road. This right-of-way separated the northeast corner of the farm and the narrow portion of the property that included the riverside entry road from the main portion of the farm, which lay on the west side of the embankment constructed to carry the interstate across this area. The embankment effectively blocked any through passage along this old road, which subsequently went out of use. The area of Worthington that lay east of the interstate became overgrown with trees by the 1970s.

With the Worthington farms only access road cut off by the interstate, a new road was built parallel to and below the west side of the embankment. This served as the entry lane and connected the farm to Baker Valley Road. With these changes,

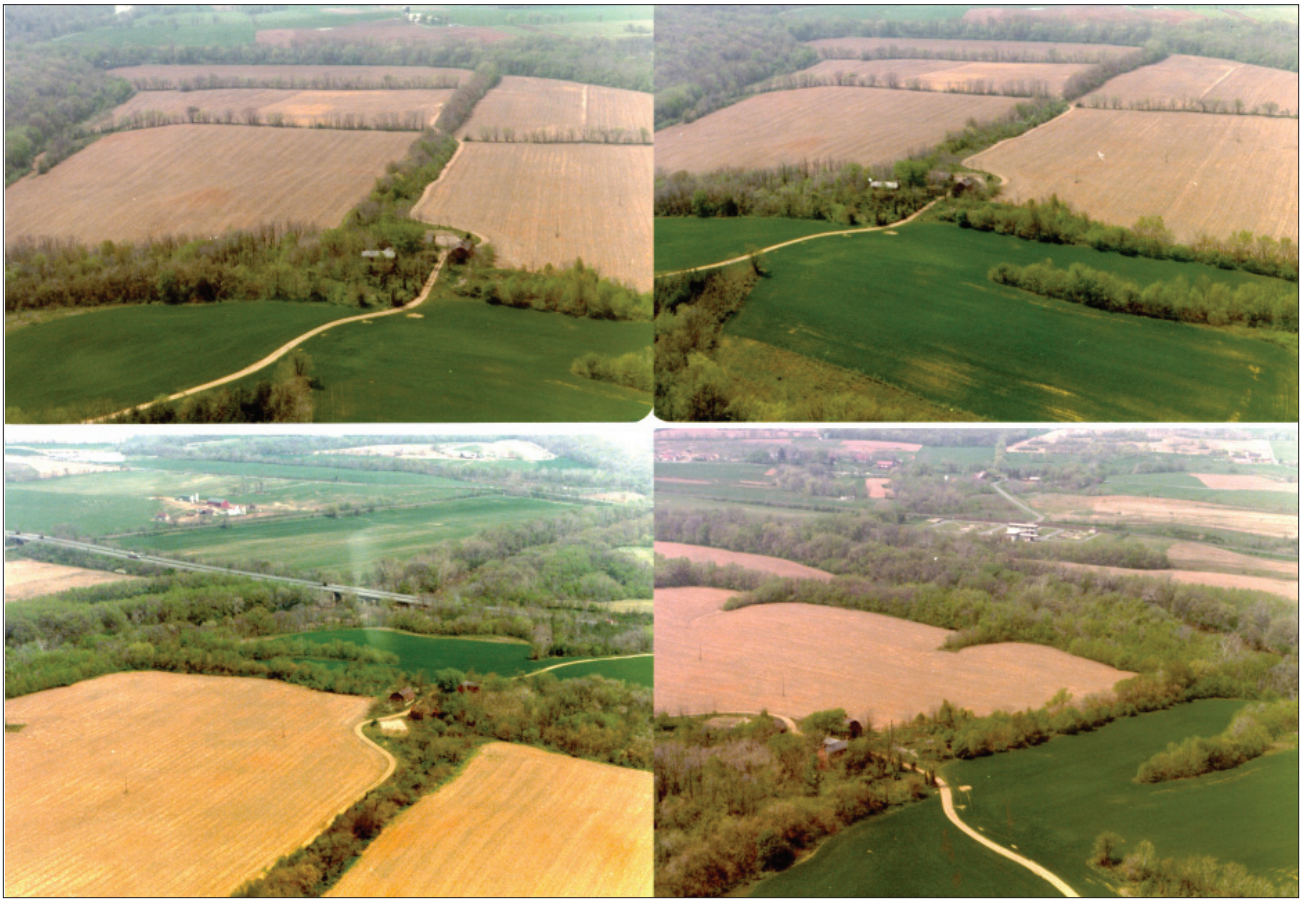


Figure 1.16.
Various aerial images taken in 1980 of the Worthington farm property. The National Park Service purchased the property in 1982. At that time four buildings remained on the property: the house, an early twentieth-century dairy barn, and two outbuildings (Monocacy National Battlefield Archives).

the orientation of the farm changed from the historic Georgetown Turnpike/ modern Route 355 to Baker Valley Road. The interstate also physically severed Worthington from its historic relationship with its former parent property, the Thomas Farm. In 1953, Jenkins Brothers Inc., a corporate truck farming operation, purchased the property from the Worthington family. During the early part of this corporate ownership, laborers who worked for Jenkins were mostly migrant farm workers. At this time the main house served as a barracks. This resulted in changes only to the interior of the structure. The barn and outbuildings were abandoned and allowed to deteriorate. Between 1952 and the early 1970s, the band of trees and shrubs growing along the field lines and the river continued to expand. Additional woody growth filled in the rectangular-shaped area that formerly contained a garden and orchard located just south of the house. The cluster of farm buildings also became obscured by vegetation.

Overall, the field patterns on the Worthington farm remained similar to their nineteenth-century form. The exception to this was the corner field, west of the new highway. A large borrow pit dug there as part of the interstate's construction left the area with a steep excavated slope near the intersection of the old and new entry lanes. This deep cut left much of the corner field unusable for cultivation. By the early 1970s, dense woods covered this disturbed area. The lack of maintenance to the barn and outbuildings indicates that the old dairy operation at Clifton ended during the Jenkins ownership (Figure 1.16).[36]

Early Park Planning

In 1964 the Maryland Civil War Centennial Commission placed a marker on the Best Farm to commemorate the 100th anniversary of the Battle of Monocacy. As development and suburbanization continued to increase, a group of concerned citizens met with local politicians and NPS representatives to preserve the battlefield site. They initiated a campaign to give the National Park Service the authority to establish the boundary of the national battlefield. The initial concept for the proposed park incorporated two non-contiguous tracts, about a mile apart. The southwest tract contained about 1200 acres, which included the Thomas Farm property. The Worthington Farm was not part of the early concept. The northeast tract contained about 300 acres and was centered upriver at Jug Bridge, where the old National Road crossed the Monocacy River. The proposed boundaries and acreage were adjusted and modified over the next few years. Planners removed the northwest tract from the plan and later incorporated Worthington into a reconfigured southwest tract. At this time, the entire park proposal encompassed about 1,650 acres. Shortly thereafter, the National Park Service, along with local elected officials, had the Monocacy Battlefield designated as a national historic landmark in 1973; in 1975 it was official placed on the National Register of Historic Places.[37]

During the planning period, the NPS began acquiring the land needed to make Monocacy National Battlefield a physical reality. They gained control over the battlefield through both direct purchases and the use of scenic easements. Once these transactions were completed, the NPS modified selected areas to accommodate park needs. The majority of the land remained agricultural in use, with its overall historic character intact.

NATIONAL PARK SERVICE OWNERSHIP, 1982-PRESENT

The National Park Service purchased 280 acres of the Worthington property in 1982. At that time four buildings remained on the property: the house, an early twentieth-century dairy barn, and two outbuildings (see Figure 1.16). In 1983 the NPS stabilized the main house and demolished all of the outbuildings. As part of the stabilization project, the agency removed the front porch from the house and erected a chain link fence around the building. In addition, the area around the house was cleared of most trees. By the late 1990s, this cleared area was being maintained as lawn. However, the former location of the rectangular garden and orchard southeast of the house remained wooded. With the exception of the area affected by the interstate and the area immediately surrounding the house, the farm's historic field patterns and spatial relationships remained largely intact. The farmers that leased the land for feed crops and/or cattle grazing removed some hedgerows separating fields between 1970 and 1983.



Figure 1.17.
(left) View of the Worthington House following its acquisition by the National Park Service in 1982. As shown, at the time of its purchase, the Worthington House was in poor condition and had to be stabilized in 1983; (right) In the late 1990s, the NPS began planning a series of improvements to the property. One of the projects included the restoration of the exterior of the Worthington House, completed in 2004 (Monocacy National Battlefield Archives; NCR 2012).

To enhance the visitor experience at the Worthington Farm, the NPS began planning improvement to the property in the late 1990s. One of the first projects was to construct a pedestrian trail system, which opened to the public in 1999. Because of the emphasis on the pedestrian experience at Worthington, vehicles were required to park at a gravel lot, which was constructed in 1999 near the intersection of the Worthington entrance road and Baker Valley Road. The NPS also installed a metal gate and information kiosk in this location. The other project focused on restoring the exterior of the Worthington house to its appearance at the time of the Battle. This work was later completed in 2004 (Figure 1.17). In recent years, an additional parking area has been constructed closer to the Worthington house.

The NPS acquired the Thomas Farm from the Clapps in 2001. From 2001 to 2008, the farm was subject to a life tenancy, the terms of which permitted only limited access to the interior of the house. The house and outbuildings were unoccupied beginning in 2002, which greatly accelerated the deterioration of some of the buildings historic fabric. Nonetheless, the National Park Service undertook a number of historic preservation projects on the main house and its associated domestic and agricultural dependencies, including stabilization and preservation of the bank barn, silo, corncrib, shed, well/pump house, stone tenant house, and brick outbuilding. Projects undertaken on the main house included in-kind replacement of the slate roof on the main house; repair and rehabilitation of all the window and door openings; asbestos and termite remediation, rehabilitation of the rear ell porch, and interior foundation repairs.

SIGNIFICANCE SUMMARY

The significance summary has been paraphrased from the *Monocacy and Thomas Farm Cultural Landscape Inventories* (2004 and 2009), and the *National Register of Historic Places Nomination for Monocacy National Battlefield* (2000, updated 2008).

As part of the Monocacy National Battlefield, the Thomas and Worthington farms derive significance under National Register Criterion A in the areas of military history, social development, industrial and agricultural history, and commemoration; Criterion C in the area of architecture; and Criterion D for archeology. The period of significance begins in 1724, the date of initial patenting and settlement of lands encompassing both properties, and extends through the important events of the Civil War era. The period ends with the construction of the Vermont Monument on the Thomas Farm property in 1915. (The period of significance for the entire battlefield extends to 1964 because that is when the final commemorative structure was built. This structure is outside the boundaries of the Thomas and Worthington properties.)

CRITERION A

Military History:

The Thomas and Worthington farms are significant under Criteria A within the area of military history as two sites that were significant in Civil War history. The location of Monocacy Junction and the railroad and highway bridges over the Monocacy River gave the location strategic importance. Both Union and Confederate troops passed through the area in 1862, 1863, and engaged in battle on both properties in July 1864. Prior to the Battle of Gettysburg, Union General Winfield Scott Hancock used the Thomas House as his headquarters for three days in late June, 1863. Union and Confederate tensions came to head in spring 1864 during the Valley Campaign, as Confederate Major General Jubal Early pushed north through the Shenandoah Valley in an attempt to attack the capital from the North and to divert Grant's pursuit of Lee in the South. In order to allow Grant sufficient time to send reinforcements to Washington, D.C. and in defense of the strategic supply lines provided by the Georgetown Pike, the B & O Railroad, and the Monocacy River, Union General Lew Wallace engaged in Early in the Battle of Monocacy on July 9, 1864. Some of the most intensive fighting during the battle occurred on the Thomas and Worthington farms. Although the Battle of Monocacy was a Union loss, the casualties suffered by the Confederates, their exhaustion, and the extra day for Union forces to assemble crippled the Southerners' attack on the capital city.

Social Development, Industrial and Agricultural History:

The Thomas and Worthington farms are significant under Criteria A within the area of social development and industrial and agricultural history in this part of Maryland. The Monocacy area was populated by a culturally diverse group of people, some of whom were important in the early economic and political development of the state. These groups, which consisted of families from

tidewater Maryland, French refugees, Scots, and a large number of African-American slaves, blended interacted and developed the properties that eventually became the agricultural landscape of Monocacy National Battlefield. These properties included the Thomas and Worthington farms.

Commemoration:

The Thomas farm is also significant under Criteria A within the area of commemoration. In 1889, veterans formed a national association to coincide with the twenty-fifth anniversary of the battle. However, no national monuments were built until 1907 when the State of New Jersey placed a monument to the 14th New Jersey Regiment. By 1915, three additional monuments were constructed, which included the Vermont Monument on the Thomas Farm. The monument is located at the corner of the old Georgetown Pike (now Araby Church Road) and Baker Valley Road, at the southeast corner of the Thomas Farm.[38]

CRITERION C

Architecture:

The Thomas and Worthington farms are significant under Criteria C within the area of architecture as a distinctive collection of 18th and 19th century architecture. The Thomas Farm main house is an example of a Georgian manor residence built by wealthy merchant, James Marshall. The Worthington Farm house, constructed between 1847 and 1852, is an excellent timepiece enhanced by fine interior painted decoration, attributed to Constantine Brumidi.

CRITERION D

Archeology:

While an archeological investigation is still warranted at the Worthington farm, recent work at the Thomas farm has identified numerous archeological resources. The Middle Ford Ferry Tavern (18FR819) is significant under Criteria A and D, for its association with and demonstrated potential to yield information about early American commerce, transportation, and colonial tavern history. The Thomas Yard area (18FR820) and the Thomas Blacksmith Shop (18FR871) were found to be significant under Criterion D as contributing resources to Monocacy National Battlefield. The two prehistoric sites (Thomas Farm II, 18FR821 and Thomas Farm I, 18FR822) require further evaluation to determine National Register eligibility.

UPDATED ANALYSIS AND EVALUATION

The *Cultural Landscape Inventories for Monocacy National Battlefield* (2004, updated 2007) *and Thomas Farm* (2009) evaluated the historic character of the battlefield landscape, which includes the Thomas and Worthington properties, by examining the site's defining characteristics. However, in the years since these reports were completed, site conditions have changed. This updated analysis of both properties landscape characteristics provides the most current and complete foundation for this cultural landscape report.

EVALUATION OF INTEGRITY

Integrity is the ability of a property to convey its historic identity or the extent to which a property evokes its appearance during a particular historic period, usually the period of significance. While evaluation of integrity is often a subjective judgment, particularly for a landscape, it must be grounded in an understanding of a property's physical features and how they relate to its significance. The National Register program identifies seven aspects of integrity including location, design, setting, materials, workmanship, feeling, and association. Retention of these qualities is essential for a property to convey its significance, though all seven qualities of integrity need not be present to convey a sense of past time and place. According to National Register Bulletin #40, *Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields*, the most important aspects of integrity for battlefields are location, setting, feeling, and association.

Archeological resources are documented in other reports and will not be evaluated in this report. Overall, the Thomas and Worthington farms retain integrity of location, setting, feeling, materials, and association. However, the Thomas farm also retains integrity of design, materials, and workmanship.

Location

Location refers to the place where the cultural landscape was constructed or where the historic event occurred. The Thomas and Worthington farms occupy their historic locations, where the earliest European settlement began between 1720 and 1750, and where the Battle of Monocacy took place in 1864. The sites remain in a rural quiet setting. The intact topography, historic eighteenth and nineteenth century buildings, structures, and road traces, and field and forest patterns continue to provide visitors with a thorough understanding of the evolution of settlement within the area as well as the Civil War and the Battle of Monocacy.

Evaluation: Both properties retain integrity of location.

Design

Design is the combination of elements that create the form, plan, space, structure, and style of a cultural landscape. Although design has been diminished with the loss of outbuildings at the Worthington Farm, many of the significant buildings and structures on the Thomas Farm are extant, and their arrangements are retained. For both properties, the overall spatial organization of the agricultural landscape, based on patterns of functional use for grazing or farming crops and residential support purposes is largely evident today.
Evaluation: Thomas Farm retains integrity of design; Worthington Farm no longer retains integrity of design.

Setting

Setting refers to the physical environments within and adjoining the cultural landscape. Overall, the Thomas and Worthington farms retain their historic rural agricultural setting characterized by broad fields framed by woods and trees and fence lines. The setting has been altered through the construction of Interstate I-270 and the subsequent loss of historic views, as well as suburban development scattered outside the park boundary. However, the majority of development is not visible from the Thomas and Worthington farms. The setting at the Worthington farm has also been slightly diminished by the loss of historic structures and outbuildings.
Evaluation: Both properties retain integrity of setting.

Materials

Materials are the physical elements, both natural and constructed, that existed historically within the cultural landscape. The Thomas and Worthington farms retain built materials that reflect the architectural and land use traditions of the groups that settled the area. The Thomas and Worthington houses illustrate the cultural traditions associated with the vernacular architecture of properties. Existing utilitarian buildings at the Thomas Farm also retain their original materials. Likewise, the plant materials on both properties, represented by field crops such as hay and corn, as well as grass, pastures, and fence line trees, all retain integrity.
Evaluation: Both properties retain integrity of materials.

Workmanship

Workmanship refers to the physical evidence of the crafts in the construction of and use of the landscape. With exception to the workmanship associated with the mid-nineteenth century house on the property, the Worthington farm retains little workmanship dating to the historic period due to the absence of many historic

built features. The Thomas Farm, on the other hand, retains workmanship as the building clusters and individual structures remaining on the site continue to reflect their agricultural and commemorative origins and functions. Both cultural landscapes however, continue to retain workmanship of agriculture, which is evident in the working agricultural operations on both farms.
Evaluation: Thomas Farm retains integrity of workmanship; Worthington Farm no longer retains integrity of workmanship.

Feeling

Feeling is an expression of the aesthetic or historic sense of a particular period of time in a cultural landscape. The Thomas and Worthington farms possess a distinct character that can no longer be found in many places in and around Frederick, Maryland. These two properties continue to evoke the feeling of a rural farm community. In particular, the presence of historic buildings, structures, circulation patterns, and the layout of the fields and forest patterns all contribute to the historic agricultural and early twentieth century commemorative landscape feeling associated with the battle sites.
Evaluation: Both properties retain integrity of feeling

Association

Association refers to the direct link between the important historic event or person and the cultural landscape. The historic event that is most crucial to understanding the landscape of the Thomas and Worthington farms was the battle that took place on Monocacy National Battlefield, which has been termed "The Battle that Saved Washington." While this battlefield landscape encompasses over 1000 acres, the 240-acre Thomas Farm and 280-acre Worthington Farm were in many ways at the center of the conflict. Some of the heaviest fighting occurred in the fields and house grounds of the Thomas and Worthington farms.
Evaluation: Both properties retain integrity of association.

EVALUATION OF LANDSCAPE CHARACTERISTICS

Landscape characteristics are the broad patterns, systems, and feature categories that compose the landscape and determine how people interact with it.
The analysis of landscape characteristics and features serves to identify the components of the landscape that define the historic character and contribute to the historic significance of the property. The analysis entails comparing existing conditions to what was present during the historic period and making an evaluation of whether the landscape characteristic or feature contributes to the landscape's historic character. The landscape characteristics and features evaluated for the Thomas and Worthington properties include natural systems

and topography, spatial organization, vegetation, land use, views and vistas, circulation, buildings and structures, small-scale features, and archeological sites. For each characteristic, the analysis is organized and presented in the following manner:

Historic Condition, a brief discussion of the feature's history and evolution as it relates to the period of significance;

Post Historic and Existing Conditions, an overview of changes that have occurred since the end of the period of significance (1915); and

Evaluation, a determination of whether the feature contributes to the historic character of the landscape.

Contributing features generally date to the period of significance, 1724-1915, and retain association with the Civil War and the Battle of Monocacy or are part of the early settlement and development of the region. Non contributing features generally postdate the period of significance or have been so altered from the historic condition that they no longer help convey the site's significance.

Natural Systems and Topography

Historic and Existing Conditions

The Monocacy River watershed is the primary natural system in the area of the battlefield and on the Thomas and Worthington Farms. This watershed includes the floodplain of the Monocacy River and Bush Creek, as well as several smaller unnamed tributaries that are mostly intermittent or seasonally inundated. One tributary is located on the Thomas Farm. It begins on Lewis Farm, courses under Baker Valley Road, and crosses in front of the Thomas Farm to follow an original segment of the historic Georgetown Turnpike. It then runs along the entry drive to the Gambrill Mill before emptying into the Monocacy River just below the mouth of Bush Creek Drive. Sometime between 1937 and 1952, a pond was constructed near this stream to provide water for livestock use. This pond was removed in by the NPS in 2007.

In general, the lowlands and surrounding terraces, slopes and ridges drain into the Monocacy River. Historically, the natural hydrology of the "well-watered" fields along the Monocacy added considerable value to these agricultural areas, including the Thomas and Worthington farms.

For the most part, the natural flow of the region's watershed along the existing curves in the land has not been altered or diverted significantly from its historic configuration. Natural terraces rise from both sides of the river, with those on the east side of a larger scale and elevation. Small channels and gullies, which carry run off from the higher slopes and ridges, cross these terraces. In some cases, culverts were constructed to allow for the passage of roads over these

tributaries. Two large stone-faced culverts were built on the Thomas Farm in conjunction with the roads now known as the Upper and Lower Worthington Carriage Road Traces. The Upper Road trace leads from the Georgetown Pike to the Worthington Farm, and was probably constructed by Griffin Taylor when he developed the Worthington (historically known as Clifton) property. The Lower Road trace is likely older, and may have connected Middle Ford to a ford located further south along the river. These road traces run along the east bank of the Monocacy between the main house at Worthington and the turnpike bridge.

The general topography of the Monocacy Battlefield—including the Thomas and Worthington farms—is that of a river valley with a gently rolling upland of moderate relief. The high point of the battlefield is Brooks Hill, located on the Baker and Worthington Farms. However, for the most part, the topography on both properties consists mainly of naturally occurring swales and hollows, along with a high ridge that runs along the river (Drawings 1.0-1.1).

Evaluation:
The natural systems and topography of the area contributes to the historic character of the Thomas and Worthington farms as they influenced early settlement of the area, as well as the spatial organization of both farms. The hollows and swales on the farm were also important during the Battle of Monocacy, as they provided cover and protective positions for soldiers on both sides of the battle. With exception to the grade changes made in the construction of I-270, the natural systems and topography remain intact, with virtually no alteration since the period of significance.

Spatial Organization

Historic Condition:
The spatial organization of the Thomas and Worthington farms during the period of significance was heavily influenced by the Monocacy River, the local topography and the road which eventually became known as the Georgetown Turnpike. In addition, historic ownership patterns determined by land grants, patents and deeds also affected the layout of both properties. The historic farm buildings were generally clustered together near the main house and, as is typical of the period, were located at a high point of the farm (Drawing 1.0).

Post-historic and Existing Conditions (Since 1915):
The spatial organization of the Thomas Farm has been only minimally altered since the late nineteenth century, and the arrangement of the Thomas Farm today continues to reflect that of the period of significance. The main building cluster and the agricultural fields remain in their nineteenthcentury locations, as do many of the farm's internal circulation features. The addition of the twentieth century concrete-block and the 1950s landscaping of the house grounds has had some

impact on the integrity of spatial organization on the farm. All of these additions are, however, reversible. The abandonment of the ferry had a minor impact on the spatial organization of the property.

Only one structure remains on the Worthington Farm; the main brick farmhouse constructed between 1847 and 1852. The historic cluster arrangement is no longer extant due to the loss of outbuildings. However, the field system and circulation patterns have substantial integrity, with exception of the eastern portion where the construction of I-270 adversely impacted the historic eastern boundary of the farm (Drawings 1.1-1.5).

Evaluation:
Despite some changes to the vegetation, circulation, and historic buildings on the property, the spatial organization of the Thomas Farm has remained relatively unchanged since the historic period. It retains a high level of integrity and continues to contribute to the historic character of the property. At the Worthington farm, the field and forest patterns and circulation remain similar to its historic conditions, but the spatial organization has been altered with the loss of historic buildings. Overall, the integrity of the property has been slightly diminished, but still contributes to the historic character of the landscape.

Vegetation

Historic Condition and Existing Conditions (Since 1915):
Historically there were three primary types of vegetation that occurred within the landscapes of the Thomas and Worthington farms. These were: (1) managed woods comprised of primarily native vegetation, (2) agricultural crops, pastures and live fences, and (3) ornamental plantings associated with residential development. During the period of significance, most of the woods were either clear-cut for manufacturing purposes (i.e. blacksmithing) or intermittently harvested to meet fuel and construction needs. Open grasslands were used for grazing of livestock or cultivated for crops. Fruit trees were planted for orchards, and thorny species planted as living fences. Although never extensive, the size of the orchards decreased over time, while the amount of space devoted to ornamental trees, shrubs and plants increased. Ornamental plantings were added around the Thomas and Worthington houses, and eventually the monuments.[39]

Prior to World War II, farmers typically controlled the vegetation that grew up between fields, along swales and in ravines by tight plowing and culling. However, advances in mechanization and changes in farming practices that have occurred since then have altered the scale and level of management for individual fields and wooded areas. Currently at the Thomas and Worthington farms, and on the overall battlefield landscape, wide bands of woody trees, shrubs and vines mark the edges of the fields and grow in the old fence lines. Some vegetation also serves

as a riparian buffer along the river and streams.[40]

In the nineteenth century, the agricultural press promoted living fences as a replacement for expensive post and rail fencing. Living fences were praised for their beauty, for the protection and shelter they provided, and for their effect on the temperature and moisture levels of the climate. Osage orange (*Maclura pomifera*) discovered growing on the plains of the mid-west, was brought east in 1803 to Philadelphia. Once recognized for its suitability as hedging, in the 1840s, growers were motivated to make it available commercially sometime after 1850. For example, Warder's 1858 edition of "Hedges and Evergreens" promoted it as the hedge standard for the United States. Significant stands of Osage orange trees remain in multiple locations on the Worthington Farm and along the Baker Valley and Araby Church Roads within the Thomas Farm. These trees presumably mark areas that were used for grazing, served as corrals, or by contrast needed protection from livestock.

Agricultural censuses list the products grown on the Monocacy farms during the second half of the nineteenth century. These censuses also revealed the gradual shift from production of grains for markets to dairy products and the production of grain as livestock feed. The farmers leasing from the NPS currently grow a variety of small grains, corn and grasses for hay on the Thomas and Worthington farms, in addition to keeping dairy cows on the properties. The planting of these crops within the historic fields and the continued use of the farm for livestock pasture contributes to the historic character of the cultural landscape.

Over time the ways in which grain and hay have been harvested have changed, as well. Shocks of corn and sheaves of wheat, oats, barley, or rye figured prominently as features in the landscape of the battle. Their large forms provided cover to troops fighting on the recently cut fields within the Worthington and Thomas farms. They were also recorded in an historic survey and photographic reconnaissance conducted by the National Park Service in 1940.

The intentional planting of trees, shrubs and flowers to enhance properties may have begun in the late 19th-century at the Thomas Farm. The age of some of the individual trees located along the entry drive at the Thomas Farm have yet to be determined, but several may date to the period of significance. Aerial photography also indicates that several large trees shaded the main houses at the Thomas and Worthington farms. A vegetable and ornamental garden likely existed within the Thomas and Worthington properties during the historic period. Typically, a vegetable garden would have been situated near the main house. As shown in early twentieth century photography, at one time—presumably during the historic period—the large rectangular wooden area southeast of the Worthington house was open and contained a vegetable garden and orchard and was enclosed with picket, post and six-rail fencing, and a living fence of Osage orange. At the Thomas Farm, an orchard is depicted on the 1864 Hotchkiss map of the battlefield. It

was located where the cement block tenant house on Baker Valley Road now stands. Any historic vegetable gardens or orchards that once existed have now disappeared from both the Thomas and Worthington farms. In the 1950s, an ornamental garden was constructed at the Thomas Farm. The original garden plan was designed by T. Stuart Haller, a landscape architect with an office in the Frederick area. Haller's original concept created several "rooms" of varied plantings linked by brick pathways and also utilized walls and hedges to define functional areas and hide modern appurtenances. The garden appears to have been significantly modified from Haller's original design; as a result, in its current state, the garden landscape is more rustic than formal. It is now a remnant of the original designed garden.

At least two trees located on the Thomas Farm are known to date to the 18th century. They are both sycamores (*Platanus occidentalis*). One - estimated at over 310 years old – stands slightly south of the tavern site, on the east side of the Georgetown Road trace. This tree has been documented by the Historic American Landscape Survey as a historic witness tree (HALS No.MD-10). The other is found along the original Georgetown Road/Pike trace adjacent to Araby Church Road. (A full list of trees found along the entrance lane, in the domestic yard and near the house can be found in two HABS reports on the Thomas Farm (MD-1251) 2007 and 2009).

Finally, there is a pair of White Oaks (*Quercus alba*) located on the south side of a historic fence line at the northwest base of Brooks Hill, itself spanning the southwestern boundary of the Worthington Farm (HALS no. MD-12). The trees stand on either side of what was presumably a path that once led to a small, two-room dwelling house, of which only the stone foundation remains. Given their location, the trees may have been intentionally planted in the nineteenth century and may be associated with the history of Worthington Farm's African American community.

The present character of the vegetation on each of the properties is a mix of crops, native species, and non-native exotic species. The riparian vegetation and the wooded slopes still retain significant numbers of native trees and understory, such as tulip poplar (*Liriodendron tulipifera*), sycamore (*Platanus occidentalis*), sassafras (*Sassafras albidum*), maple (*Acer sp.*), and ash (*Fraxinus sp.*). However, the areas along highways, railroads, and in the internal fence lines along fields contain a variety of non-native and invasive vegetation, including common buckthorn (*Rhamnus cathartica*), Japanese honeysuckle (*Lonicera tartarica*), garlic mustard (*Alliaria petiolata*), Japanese stilt grass (*Microstegium vimineum*), and tree-of-heaven (*Ailanthus altissima*) (Drawings 1.0-1.5).

Evaluation:
Except for the previously mentioned sycamore and white oak trees and the stands of Osage orange, none of the remaining trees on both farms contribute to the

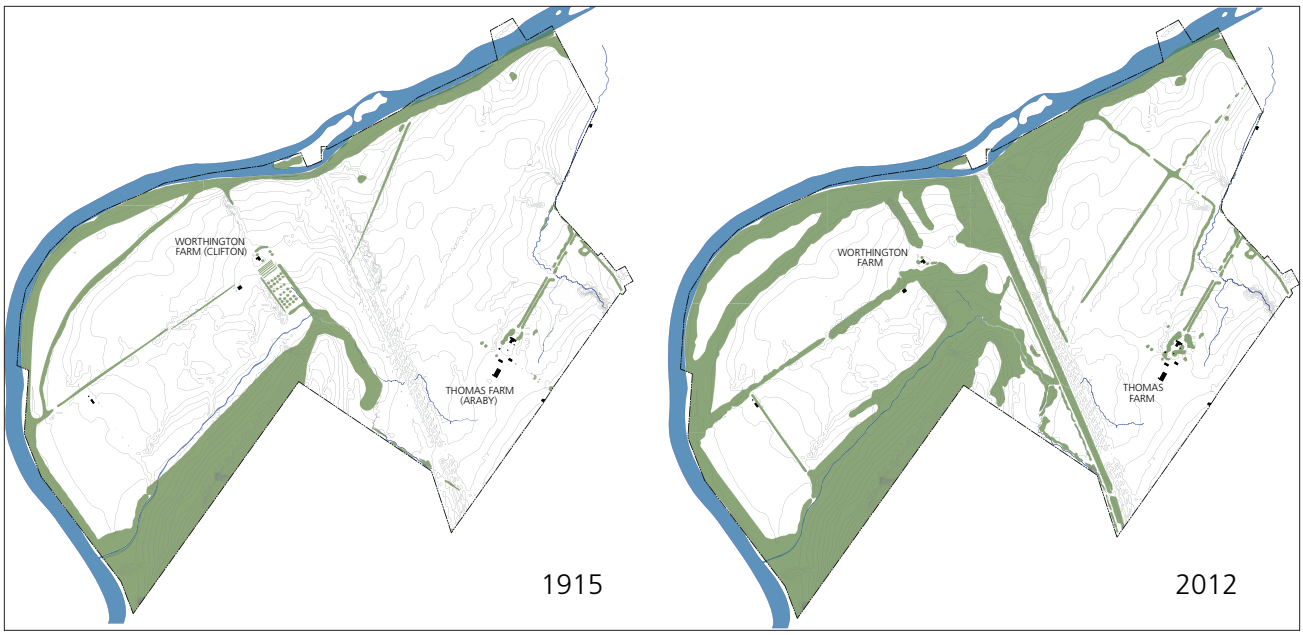


Figure 1.18.
Diagram showing changes in vegetation at the end of the historic period in 1915 and today (NCR 2012).

historic character of the cultural landscape, due to their recent addition. However, at the Thomas Farm, the trees lining the entrance lane and the large trees throughout the house grounds are compatible with the historic character. While these particular trees were not there during the period of significance, it is likely that similar species were. (Note: Several of the trees located along the entrance lane may date to the latter end of the period of significance if they were dated). In addition, the vegetation along the field boundaries, wooded slopes—specifically on Books Hill, and along the river are also non-contributing but compatible as they help to demarcate the contributing features of the boundaries (Figure 1.15).

Land use

Historic Condition:

Throughout most of the eighteenth, nineteenth, and first half of the twentieth centuries, the Monocacy area, including the Thomas and Worthington farms, has been valued primarily for its fertile soils. The overall character of the soil, as well as the combination of the rich river bottom lands and the gentle slopes, has provided a physical environment highly conducive to agriculture. Over time, the adaptation of this landscape for various forms of agricultural production has marked its physical development. Native Americans probably camped on the lower slopes of the river while they fished and gathered foodstuffs. Tenants occupied the small settlement farms in the early 1700s, and industrious individuals such as James Marshall established farm operations and mills devoted to the production of grain. By the late 19th-century, farmers in the area including the Thomas and Worthington families converted their operations to dairy farming. Local industry and transportation systems also grew, in order to provide support for these agricultural developments.

The short term use by the military during the Civil War also played a role in the

historic significance of the Thomas and Worthington farms.

While it involves only a small portion of the Thomas Farm property, another important aspect of land use on the farm is commemoration. The placement of the Vermont Monument at the intersection of the historic Georgetown Pike (now Araby Church Road) and Baker Valley Road in 1915 was part of a larger Civil War commemorative movement that reached its peak in the early 20th century, near the 50th anniversary of the war's end (Drawing 1.0).

Post-historic and Existing Conditions (Since 1915):
Agricultural activities remain the most prevalent form of land use at the Thomas and Worthington farms. The NPS continues to lease agricultural fields and space for dairy cows to local farmers on the properties, who grow corn and hay crops in the same 19th-century field patterns that existed during the Civil War.

The military use of both properties was short-lived, but the commemorative aspect remains. The Vermont Monument completed in 1915 and located in its original position, represents this aspect of the Thomas Farm's land use. The development of Monocacy National Battlefield as a national park has expanded this type of use to include waysides and trails that enable visitors to experience more of the battlefield than just the monuments.

Some park visitors also use both properties as recreational space; this use includes dog walkers and people more interested in the natural resources of the farms than its historic resources (Drawings 1.1-1.5).

Evaluation:
The land use of the Thomas and Worthington farms has changed little since the period of significance, and contributes to the historic character of the properties.

Views and Vistas

Historic Condition:
During most of the period of significance, the views and vistas to and from Thomas and Worthington Farms were expansive and open. Beginning in the 18th century, farmers cleared land for agricultural use, while the owners of the earliest local industries cut trees to help advance their operations. By the mid-nineteenth century, the landscape of a typical farm in the Monocacy area was one of cultivated fields, meadows, pasture, occasional woodlots and a few orchards. The views then and today could best be appreciated from high points, such as Brooks Hill, which is located just beyond the boundaries of the Worthington Farm. Slight elevations also afforded excellent views and, as is true at the Thomas and Worthington Farms, most of the farmstead building clusters were constructed on rises for this reason.

These relatively unrestrained views were also important during the Battle of

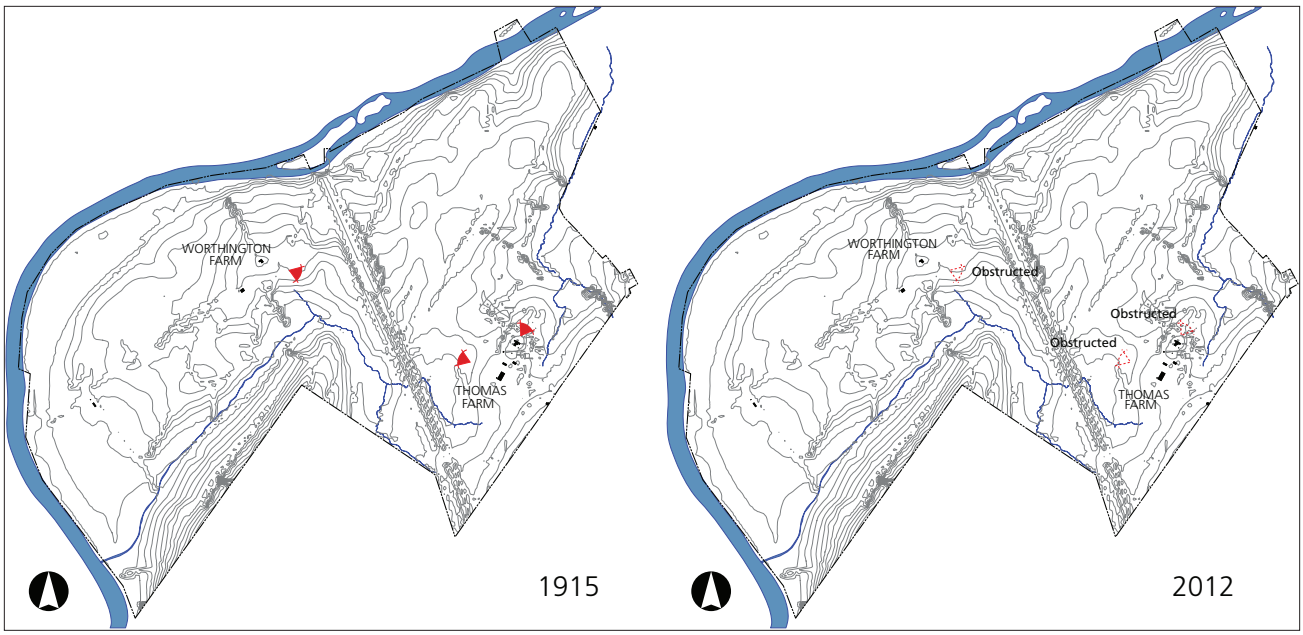


Figure 1.19.
Diagram showing changes in views at the end of the historic period in 1915 and today (NCR 2012).

Monocacy. The most significant and crucial viewpoints during the battle were between the Worthington and Thomas Farms, as well as the view towards the Georgetown Pike from the Thomas Farm main house (Drawing 1.0).

Post-historic and Existing Conditions (Since 1915):
Today, tall vegetation impedes many of the open views and vistas that existed during the period of significance. Trees that were planted in the 20th-century around the Thomas house and domestic yard interfere with the views northeast toward the historic Georgetown Pike and west toward Worthington Farm. The vegetation and the embankment of Interstate 270 is the most prominent obstruction to historic views across the fields of the Thomas and Worthington farms that formed the center of the battle (Drawings 1.1-1.5).

Evaluation:
Overall, the views between the Thomas and Worthington farms and the views from the Thomas House looking east toward Georgetown Pike contributes to the historic character of both properties, but they have been diminished by the encroachment of vegetation (Figure 1.16 and 1.17).

Circulation

Historic Condition:
The roads, drives, lanes, fords, and road traces within the Thomas and Worthington farm properties reflect the historic agricultural landscape where circulation developed to accommodate planting, harvesting, care of livestock and the transportation of products to markets. The first documented road through the area is the portion of the old Indian trail that was later incorporated into the route of the Historic Georgetown Road, later called the Georgetown Turnpike. Prior to late 1820s, the Georgetown Road (or Turnpike) led to a ferry crossing,



Figure 1.20.
(top) Views between the Worthington and Thomas farms were critical during the Battle of Monocacy in 1864 (Monocacy National Battlefield Archives); (bottom) However, in recent years, vegetation along the embankment of Interstate 270 has obstructed these views (Thomas Farm CLI, 2009).

known as Marshall's Ferry, Middle Ford or Middle Ford Ferry. The ferry crossing site is approximately 350 feet downstream from the present highway bridge, and is shown on land plats as a notch in the property line jutting across the river. When William Marshall sold the ferry parcel in 1812, improvements on the 5-acre tract included a dwelling, a stable and a blacksmith shop. The ferry and ferry house locations are well-documented on the 1794 Griffin map and the ca. 1830 Monocacy Lateral Canal map, as well as in descriptions of the 5-acre tract found in deeds. The 5-acre ferry tract extended more than 700 feet northwest and was more than 300 feet wide on the east bank of the river.

In 1828, the Monocacy River was bridged and the Georgetown Road was realigned resulting in the abandonment of the ferry crossing. The portion of the Historic Georgetown Road trace that led to the ferry site likely dates to the 1740s.[41]

When James Marshall settled the farmstead, now referred to as the Thomas Farm (Araby), in c. 1780s, he built an entrance lane that led from the Georgetown Pike (now Araby Church Road) to the main house. This entrance lane circled in front of the house, while a secondary branch extended along the west side of the house to access the outbuildings. The lane also connected to a farm road, now referred

to as the Thomas/ Worthington Farm Road that began at Baker Valley Road and terminated in an agricultural field southwest of the Thomas farmstead. This road may have continued to the Worthington Farm, but it is unclear based on a 1937 aerial photograph and current conditions.

Following the subdivision of the Thomas Farm (Araby) in the 1840s, Griffin Taylor acquired, among other properties, a portion of the larger Araby tract—which included the main house—and created Clifton as a companion property (now referred to as the Worthington Farm). At that time, carriage roads were built adjacent to the Monocacy River extending to the Worthington property. Beginning at Route 355, near the bridge, the carriage roads were graded out along the steep terrain and equipped with stone culverts over gullies and ravines. While it is assumed that the Upper Carriage Road was constructed in the early 1850s, the Lower Carriage Road may have already existed at this time as it likely provided access to the fords prior to the construction of the bridge. At the house, the Upper Carriage Road tied into the entrance lane before converging into a sunken lane that extended to the west to agricultural fields along the Monocacy River and the Worthington-McKinney ford (Drawing 1.0).

Post-historic and Existing Conditions (Since 1915):
Following the historic period, Frederick County resurfaced the Historic Georgetown Road from a gravel to a paved surface in 1923. At this time, the road was also realigned, when a new section of the road was created. The new section required cutting into the hills just north of the study area. The old section of the road was renamed Araby Church Road. Shortly thereafter the Georgetown Pike was officially called Maryland Route 355. Field analysis suggests that Araby Church Road has shifted as well, although this slight realignment may not be related to the 1923 road improvements. An original section of the road is visible in the spatial relationship established by the hollow near the entrance lane to the Thomas Farm (Araby), in the remnant fence line behind the Vermont Monument.

The Thomas Farm entrance lane still leads from Araby Church Road (the original Georgetown Pike) to the Thomas Farm main house and extends in a southwesterly direction. Lined with many old-growth, overarching deciduous trees, the paved driveway heads straight to the house, then curves around it to the east, leading to a parking area. The 19th-century circular drive is no longer extant, but a portion of the lane that extended along the west side of the house remains as a visible trace.

Today, the Upper and Lower Carriage Roads exist only as traces. Starting at Route 355 just near the highway bridge the trace (at first just one road) follows the river west. Near a large historic culvert it splits; the lower road continues along the river and the upper road leads towards the Worthington Farm. The upper road trace is lost as it approaches Interstate 270. (Note: This trace is listed as two separate structures and referred to as the Upper and Lower Worthington Carriage Road on the LCS.). Similar to the Upper and Lower Carriage Roads,

the Thomas/Worthington Farm Road Trace only remains a trace. This route can still be followed from Baker Valley Road past the Blacksmith Shop ruins and the south side of the stone tenant house, and then across the fields to the southwest of the Thomas Farm building complex, continuing toward the Worthington Farm. The trace ends where it meets the field boundary that now abuts Interstate 270. An additional sunken lane trace—partially lined with Osage orange—exists immediately north of the Worthington House, however, further research is warranted to determine its date of construction and contribution to the significance of the property.

The most significant change in the pattern of vehicular circulation across the battlefield site happened with the construction of Maryland Route 240/Interstate 270 in the early 1950s. The permanent disruption caused by this four-lane highway forever altered the pastoral character of the area and seriously undermined its integrity. Its advent created an artificial boundary between the Thomas and Worthington properties, brought high levels of noise and increased automobile traffic, and encouraged the wide-spread suburbanization of Frederick. Access to the Worthington farm was also severed resulting in the construction of an access road that paralleled the interstate highway before meeting up with the historic entrance lane.

Farm lanes on the Monocacy battlefield site have passed in and out of use. Some of the lanes along fence lines have become obscured by overgrown vegetation, as bands of trees, shrubs and vines along the fence lines have become more extensive. This phenomenon has caused newer lanes to develop in parallel locations on the Worthington farm. Other changes since the historic period have occurred at the Thomas Farm, which included the installation of brick pathways by the Clapp family in the 1950s and the more recent improvements by the National Park Service to address visitor use such as the trails and parking areas (Drawings 1.1-1.5).

Evaluation:
With exception to the changes made by the Clapp family at the Thomas Farm and the construction of Interstate 270 in the 1950s, and the more recent addition of trails and parking areas, the overall circulation within the Thomas and Worthington farm properties remain largely unchanged (Figure 1.18).

Buildings and Structures

(For additional information on the buildings and structures at the Thomas and Worthington farms, refer to the *Cultural Landscape Inventories for Monocacy National Battlefield and Thomas Farm*, *Archeological Overview and Assessment and Identification and Evaluation Study of the Thomas Farm*, and *Historic Structure Reports* for *Thomas House and Worthington House*.

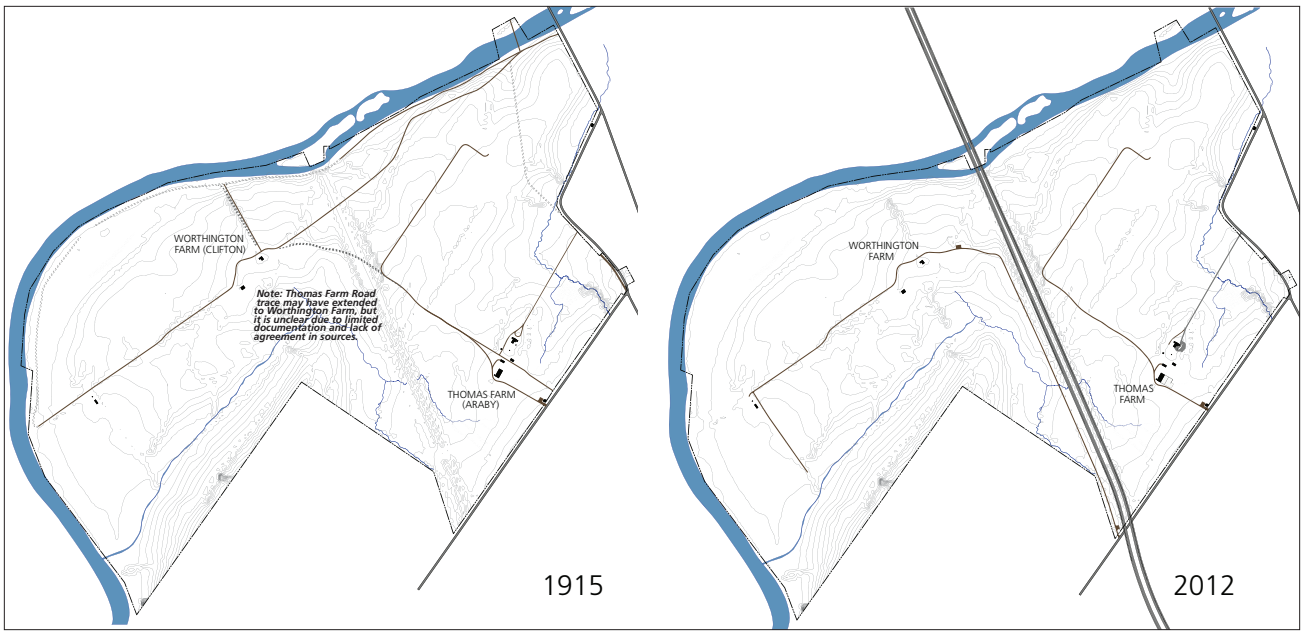


Figure 1.21.
Diagram showing changes in circulation at the end of the historic period in 1915 and today (NCR 2012).

Historic Condition:

During the historic period (c.1794-1915), buildings were a defining characteristic of both properties. At the Thomas Farm, the main house was the first building constructed by 1780. Shortly thereafter a complex of service buildings were constructed southwest of the house that included a stone tenant house, brick outbuilding, frame equipment shed, frame well/pump house, brick barn (later replaced by a timber frame bank barn), corn cribs, icehouse, log smokehouse, blacksmith shop, and hog pen. While some of the outbuildings may have been damaged or destroyed during the Civil War, most of the buildings remained intact as evidenced by an 1882 rendering of Araby (Thomas Farm).

Following the acquisition of lands that were later combined to form the Worthington property (formerly known as Clifton)—some of which included portions of Thomas Farm (Araby), Griffin Taylor built the main house between 1847 and 1852. Shortly thereafter he constructed several outbuildings for the operation of the farm. Although little known about the original farmstead's layout, an advertisement for the sale of Griffin Taylor's estate in the 1856 Frederick Examiner listed the property as having "…a new two-story brick house and kitchen, a good frame barn, and a corncrib, sufficiently large to house four hundred barrels of corn…." Also, 1929 images taken by the Baltimore Sun, a 1930 drawing of the farmstead and a 1937 aerial photograph show numerous outbuildings—including two tenant/slave quarters—to the north, south, and west of the house. (Drawing 1.0).

Post-historic and Existing Conditions (Since 1915):

Following the historic period, some of the outbuildings at the Thomas Farm were removed, including the smokehouse, icehouse, corn crib, and hog pen. The blacksmith shop fell into disuse and is currently a ruin. There is no documentation

to suggest that there were substantial changes to the property prior to the mid-twentieth century. In the 1940s, the utilities were upgraded at the Thomas house and additions were constructed on the east and west elevations. At this time, a formal colonial revival style garden was designed and installed, along with a swimming pool and tennis court. The stone tenant was later altered to become pool house.

Following the National Park Service acquisition of the Thomas farm in 2001, a number of exterior improvements occurred at the Thomas house, including the stabilization and repair of the rear ell porch (2005); installation of new gutters and



Figure 1.22.
(top) Image of the Thomas Farm Main House in 1949 (Hilgenburg Photo Collection, Monocacy National Battlefield Archives); (bottom) Similar image of the Thomas House in 2012 (NCR 2012).



Figure 1.23.
(top) Image of the south elevation of the Thomas Farm Stone Tenant House in 1931 (Fred Cross Photo Collection, Monocacy National Battlefield Archives); (bottom) Image of the north elevation of the Stone Tenant House in 2012 (NCR 2012).

downspouts (2005); in-kind replacement of the slate roof and rehabilitation of the dormer windows (2006-2007); and repair and rehabilitation of the windows and doors (2008-2010).[42] In addition to these changes, many outbuildings were also stabilized during this time. In 2009, the bank barn and brick silo were also restored.

Today, extant contributing buildings on the Thomas Farm include an 18th-century brick main house, an 18th-century stone tenant house, a 19th-century brick outbuilding, a 19th-century frame equipment shed, a 20th-century frame well/pump house, a 20th-century timber frame bank barn constructed on the foundation of an earlier brick barn, a late 19th century brick silo, and a 19th-century timber-frame wagon shed/corn crib.

Two non-contributing buildings are located some distance from the main farm complex. One is a concrete block tenant house, which stands at 4460 Baker Valley Road. It dates from the late 1950s and was constructed to house farm laborers. It is presently used as seasonal housing. The second is an early twentieth-century

frame building located at 4150 Araby Church Road, near the junction of Araby Church Road and MD Route 355. This building is known colloquially as "the tollhouse;" however, historic maps and other records indicate that the tollhouse associated with the Georgetown Pike was located several miles to the north, at Evergreen Point (at the confluence of the Georgetown and Buckeystown Pikes). This building has clearly been moved to the current location, as it is situated on a concrete slab and has no other foundation. It was probably moved in the 1940s.

When the National Park Service acquired the Worthington Farm in the 1980s, the majority of the buildings and structures were in poor condition and had to be removed. Today, the only building remaining from the historic period is the Worthington house. A few outbuildings exist southwest of the main house, but their significance and date of construction are currently unknown.



Figure 1.24.
(top) Image of the Thomas Farm Bank Barn and Stone Tenant House in 1949 (Hilgenberg Photo Collection, Monocacy National Battlefield Archives); (bottom) Image of the Bank Barn and Stone Tenant House in 2012 (NCR 2012).

The main house is a two-story, five bay brick dwelling with an L-extension to the rear. The house faces northeast, typical of Maryland farmhouses, and is designed with a Georgian inspired window, window, door, window, window plan. However, the detailing exhibits strong influence from the Greek Revival and Italianate styles from the third quarter of the nineteenth century. In 2003-2004, as part of an extensive restoration and rehabilitation project, the National Park Service rebuilt the front porch of the house, painted the exterior, and replaced the shutters (Drawings 1.1-1.5).

Evaluation:

At the Thomas farm, many of the buildings and structures from the historic period are still extant and remain in their original locations. Many of the modern, non-contributing structures have been removed since the National Park Service acquired the property. For these reasons, the building and structures retain a high level of integrity and continue to contribute to the property's significance.



Figure 1.25.
(top) Illustration of the Worthington House and outbuildings as shown in Glenn Worthingtom's book *Fighting for Time (***Monocacy National Battlefield Archives); (bottom) Image of the Image of the Worthington House in 2012 (NCR 2012).**

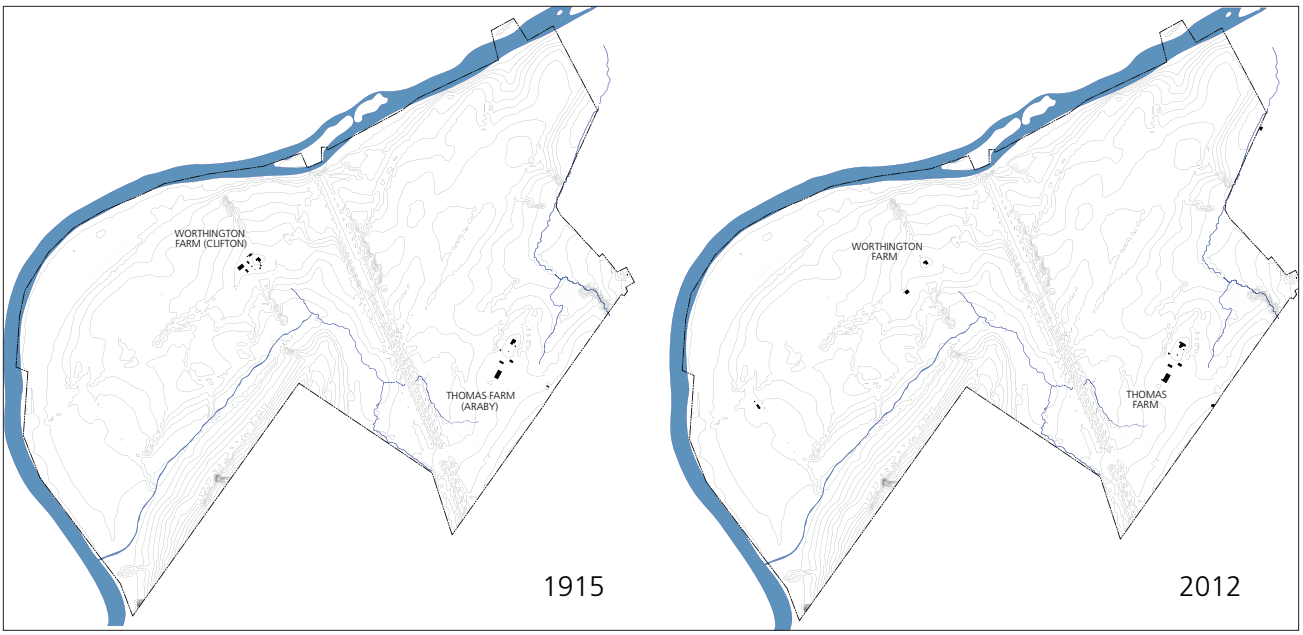


Figure 1.26.
Diagram showing changes in buildings and structures at the end of the historic period in 1915 and today (NCR 2012).

The buildings and structures on Worthington property changed markedly between 1864 and 2012. Of the several buildings that stood during the Civil War, only the main house currently exists. Despite this, the primary building remains with much of its historic character intact (Figure 1.19-1.23).

Small-scale Features

Historic Condition:
During the historic period, fences were the dominant small-scale feature at both the Thomas and Worthington farms, surrounding most of the fields, house grounds, and gardens. Fence systems developed over time in response to the changing character of agriculture. As the properties were subdivided, a variety of fence types were employed to mark boundaries, define pastures and keep livestock out of cultivated land. Early on wood plank and split-rail fencing were used extensively, however, as the nineteenth century progressed, wood fencing became less prevalent, as stone fences, living fences, and post and wire fencing came into use. While it is uncertain within the area, the change in fence types may have signaled agricultural innovation or it may have indicated that local timber resources were depleted.

Fences played an important role in the Battle of Monocacy. For example, intense fighting between Union forces under General Ricketts and the Confederate cavalry under General McCausland occurred along the fence line that marked the historic boundary between the Thomas and Worthington farms. However, soldier's accounts do not describe the actual fence from the time of the battle. The present fence line remnant of a post and wire fence, now encircled by trees and shrubs, marks this important section of the historic battle line. After the Civil War, fences remained the dominant small-scale feature within both landscapes. These

included wood plank fences likely in the barn yard pens, and barbed-wire and wood-post fences around the fields and pastures (barbed wire fencing became widely available in the 1870s). On both properties, house grounds were enclosed with a combination of painted picket and plank fencing, and later barbed wire fencing.

In the early twentieth century, commemorative efforts by veterans groups, as well as the United Daughters of the Confederacy, led to the construction of numerous monuments throughout the Monocacy Battlefield between 1907 and 1964, which included the Pennsylvania monument in 1908 (not on Thomas and Worthington properties, but within project area) and Vermont monument in 1915. Located at the corner of the historic Georgetown Pike (now Araby Church Road) and the Baker Valley Road, at the southeast corner of the Thomas Farm, the Vermont monument consists of an eight-foot rectangular granite monolith with a bronze tablet shaped like a Greek cross with a granite post at each corner of the plot. Three small stone steps lead up to it from the edge of the road. From its location on an embankment above the road, veterans were able to view the full extent of the Thomas and Worthington farm fields where the afternoon phase of the battle took place (Drawing 1.0).

Post-historic and Existing Conditions (Since 1915):
Following the historic period, many fences were removed while others fell into disuse. Today, fences range from historic remnants to extensive lengths of new post and electrified fencing, board fencing, two types of high-tensile wire fencing, three-rail administrative fencing, and post and bale barbed-wire fencing. Also, fence remnants are today scattered throughout both landscapes. At Worthington, a six-rail fence post was found near the site of the rectangular enclosure that historically contained a garden and orchard. Living fences of Osage orange have also been identified at both properties.

Other small-scale features on the Thomas and Worthington properties include a stone retaining wall built in the mid-20th century by the Clapp family at the Thomas Farm and an old artillery piece and water pump at the Worthington Farm. The artillery piece currently positioned at Worthington next to the house is not original to the battlefield, but adds to the historic setting and is located on an artillery spot documented during the battle. Although the exact date of construction for the existing water pump is currently unknown (it is shown in a 1929 image), its location immediately south of the Worthington House may have been the site of a former well or pump that existed during the historic period.

The Vermont and Pennsylvania monuments still are within their original locations. In 2008, the Pennsylvania and Vermont monuments were cleaned and restored. This was the first time that a thorough top-to-bottom cleaning of these monuments had been undertaken since they were first constructed in the early 20th century.

After the acquisition of both properties by the National Park Service, many changes were made to address visitor accessibility and safety. These improvements, as reflected within the landscape included the installation of many small-scale features such as directional signs, lighting, trash receptacles, and interpretative signage (Drawings 1.1-1.5).

Evaluation

Besides the remnant six-hole fence post at Worthington, none of the fences located on the Thomas and Worthington Farms are contributing, but those that are similar to the fences found during the period of significance are compatible. Although not original to the battlefield, the old artillery piece currently positioned at Worthington next to the house adds to the historic setting and is located on an artillery spot documented during the battle. The stone retaining wall, installed by the Clapps, is a modern introduction to the landscape and is non-contributing.

The Vermont and Pennsylvania Monuments remain in their original locations, are in excellent condition and retain a high degree of integrity. As such, they both contribute to the historic character of the cultural landscapes.

Archeology Sites

Historic Condition and Existing Conditions:

The Thomas and Worthington farms contains numerous archeological remains from throughout its history. Recent work at the Thomas farm has identified numerous archeological deposits containing domestic and agricultural artifacts, and remains from service buildings and landscape features. The investigation located the brick foundation of the blacksmith shop, as well as the probable location of an icehouse within the house grounds. The work also uncovered the sites middle ford ferry site and tavern. An archeological investigation at the Worthington farm is warranted in the future as it may reveal important information on the area's earliest history and the Civil War. These include surface and subsurface resources such as the secondary dwelling site, which may be the location of a possible servant's quarter.

Evaluation:

Archeological resources at the Thomas and Worthington farms that relate to early settlement and development (commerce, transportation, and colonial tavern history), as well as the Civil War are significant and contribute to the historic character of both properties.

ENDNOTES

1 As defined in the National Park Service Cultural Resource Management Guidelines (DO-28, 1998), "thorough" means research in selected published and documentary sources of known or presumed relevance that are readily accessible without extensive travel and promise expeditious extraction of relevant data; interviewing all knowledgeable persons who are readily available, non-destructive investigation, and presenting findings in no greater detail than required by the task directive.

2 National Park Service, General Management Plan for Monocacy National Battlefield (2010), 7. (hereafter, "GMP")

3 Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm* (Regional Archeology Program, National Capital Region, National Park Service, 2010), pg. 7.

4 Martha Temkin, *Cultural Landscape Inventory for Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2000, updated 2007), pg. 30.

5 Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm* (Regional Archeology Program, National Capital Region, National Park Service, 2010), pgs. 15-17.

6 Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm* (Regional Archeology Program, National Capital Region, National Park Service, 2010), pgs. 10.

7 National Park Service, *General Management Plan for Monocacy National Battlefield* (2010), pg. 9.

8 Paula Stoner Reed, *Cultural Resources Study: Monocacy National Battlefield* (Paula S. Reed Associates, Inc., Hagerstown, Maryland, 2004); as quoted in Joy Beasley and Tom Vitanza, *Historic Structure Report for the Thomas House* (United State Department of the Interior, National Park Service, Cultural Resources Division, Monocacy National Battlefield) p. 27.

9 The four distinct areas within the larger landscape of the Araby tract were the Mansion House farm, Hill Farm, Araby Mills, and the Araby rail side community. The Mansion House farm was eventually subdivided to become the Baker, Worthington, and Thomas Farms; the Hill Farm became the Lewis Farm; and Araby Mills became the Gambrill Mill.

10 Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm* (Regional Archeology Program, National Capital Region, National Park Service, 2010), p. 31.

11 Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm* (Regional Archeology Program, National Capital Region, National Park Service, 2010), p. 32.

12 *Frederick Examiner*, February 8, 1856; as quoted in Joy Beasley and Tom Vitanza, *Historic Structure Report for the Thomas House* (United State Department of the Interior, National Park Service, Cultural Resources Division, Monocacy National Battlefield) p. 32.

13 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p.49.

14 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p. 44.

15 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p. 44.

16 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p. 47-48.

17 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p.48.

18 A 1937 aerial photograph and historic images taken by the Baltimore Sun in 1929 shows an orchard, kitchen garden, livestock enclosure, outbuildings and tenant quarters on the Worthington property.

19 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p.48.

20 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p.48.

21 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p.48.

22 National Park Service, General Management Plan for Monocacy National Battlefield (2010), 11.

23 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p.55.

24 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) p.57.

25 Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm* (Regional Archeology Program, National Capital Region, National Park Service, 2010), pg. 38.

26 More of the property owners at Monocacy who submitted claims did so for 1862. Few were put in for 1863 when Union encampments intruded on the landscape, and only two were submitted for 1864. Several explanations come to mind for the pattern of the claims. First, the frustration with the whole process may have discouraged potential claimants. Second, claims were considered only for Union damage. With the Battle of Monocacy, where a much greater number of Confederates than Federals were involved in the fight, it may have been difficult to establish that the damage was caused by Union troops. Finally, most of the Monocacy landowners were slave owners and may have been Southern sympathizers. Their loyalty may have been questioned and difficult to prove. Paula Stoner Reed, *Cultural Resource Study for Monocacy Battlefield* (United States Department of the Interior, National Park Service, 1999, updated 2001 and 2004) pg. 55.

27 Paula Stoner Reed, *Cultural Resource Study for Monocacy Battlefield* (United States Department of the Interior, National Park Service, 1999, updated 2001 and 2004) pg. 56.

28 National Park Service, General Management Plan for Monocacy National Battlefield (2010), 13.

29 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 65-66.

30 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 68.

31 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 68.

32 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 65-66.

33 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 65-66.

34 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 70.

35 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 70

36 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 75

37 National Park Service, *General Management Plan for Monocacy National Battlefield* (2010), pg. 14.

38 Paula Stoner Reed, *National Register of Historic Places Nomination for Monocacy National Battlefield* (United States Department of the Interior, National Park Service, 2008). Sec. 8, Pg. 2.

39 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg. 114.

40 Martha Temkin, *Cultural Landscape Inventory for the Monocacy Battlefield* (United States Department of the Interior, National Park Service, National Capital Region, 2009) pg 114.

41 Martha Temkin, *Cultural Landscape Inventory for the Thomas Farm* (United States Department of the Interior, National Park Service, National Capital Region, 2009)

42 Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm* (Regional Archeology Program, National Capital Region, National Park Service, 2010), p. 30.

TABLE 1.0: CULTURAL LANDSCAPE EVALUATION FOR THOMAS & WORTHINGTON FARMS			
CHARACTERISTIC/FEATURE	LCS/CLI ID	EVALUATION	COMMENT
Thomas Farm			
Vegetation			
Two sycamore trees		Contributing	Planted mid-18th century
Osage Orange trees along Araby Church Road		Contributing	Planted mid-19th century
Crops		Non-contributing	
Field boundary vegetation		Non-contributing	Established late twentieth century
Large trees in the front yard (red oak, American elm)		Non-contributing	Trees are not historic, but compatible
Trees along entrance lane		Non-contributing	Trees are not historic, but compatible
Trees along Thomas/Worthington Road Trace		Non-contributing	
Domestic yard garden		Non-contributing	Constructed in 1950s
Trees planted as screens near the main house		Non-contributing	
Land use			
Agricultural land use		Contributing	Started in 1780s
Views and Vistas			
From main house towards historic Georgetown Pike		Contributing	Established c. 1780
From Thomas Farm towards Worthington Farm		Contributing	Established c. 1850s
Circulation			
Historic Georgetown Road Trace	500232/136766	Contributing	Constructed c. 1740s
Upper Worthington Carriage Road trace	500446/136768	Contributing	Constructed c. 1850s
Lower Worthington Carriage Road trace and culvert	500512/136770 and 136818	Contributing	Constructed c.1740s-1850s
Thomas /Worthington Road trace	500431/136772	Contributing	Constructed c1740s-1850s
Entrance lane and trace	NA/136774	Contributing	Constructed c. 1780s
Ferry site	NA/136776	Contributing	Constructed c. 1740s
Interstate 270	NA/101529	Non-contributing	Constructed c. 1950s
NPS pedestrian recreational trail	NA/136780	Non-contributing	Constructed c. 2006
Parking area	NA/136794	Non-contributing	Constructed c.2000s
Modern internal farm lanes	NA/136782	Non-contributing	Constructed c. 1950s
Brick walkways	NA/136792	Non-contributing	Constructed c. 1950s
Buildings and Structures			
Main house	045130/136802	Contributing	Constructed c. 1780
Blacksmith Shop ruins	NA/136804	Contributing	Constructed c.1800s
Bank barn	323376/136806	Contributing	Constructed early 20th century
Brick silo	NA/136808	Contributing	Constructed late 19th century
Corncrib/wagon shed	495222/136810	Contributing	Constructed 19th century
Frame shed	323375/136812	Contributing	Constructed mid-19th century
Frame well/pump house	500443/136814	Contributing	Constructed early 20th century
Stone tenant house	419543/136816	Contributing	Constructed 18th century
Brick outbuilding	323372/NA	Contributing	Constructed 19th century
Tenant house (4460 Baker Valley Road)		Non-contributing	Constructed 1950s
Toll house (4150 Araby Church Road)		Non-contributing	Constructed early 20th century; moved to location in 1940s.
Foundation ruins near ferry site		Undetermined	Unknown date of construction
Slate embankment		Undetermined	Unknown date of construction
Ferry platform		Undetermined	Unknown date of construction
Small-scale Features			
Vermont Monument		Contributing	Constructed 1915
Fences		Non-contributing	
Waysides		Non-contributing	Constructed after 2001
Terrace wall in domestic yard		Non-contributing	Constructed mid-20th century
Archeological			
Tavern site		Contributing	
Icehouse		Contributing	
Others (ferry landing)		Contributing	
Worthington Farm			
Vegetation			
Remnant Osage Orange (*Machura pomifera*) along fence lines		Contributing	Planted c. 1850s-1890s
Worthington Farm white oaks (*Quercus alba*)		Contributing	Planted c. 1850s-1890s
Field boundary vegetation		Non-contributing	
Crops		Non-contributing	

Land use			
Agricultural land use		Contributing	Started in 1780s
Views and Vistas			
From Brooks Hill toward Worthington Farm and the Historic Georgetown Pike		Contributing	Established in c.1850s.
From Worthington Farm towards Thomas Farm		Contributing	Established in c.1850s.
Circulation			
Worthington Farm lane (Portion of farm entry drive near house)	045035/101534	Contributing	Constructed c. 1847-1852
Sunken lane to Worthington/McKinney ford	045053/101537	Contributing	Constructed c.1847-1852
Auxiliary Farm lane adjacent to historic sunken lane	NA/95819	Non -contributing	Constructed c. 1960s-1980s
Worthington Farm lane (portion that parallels I-270)	045035/101524	Non-contributing	Constructed c. 1950s
NPS trails (except those portions that follow contributing historic segments)	NA/101532	Non-contributing	Constructed c. 1980s-2000s
Parking area	NA/101533	Non-contributing	Constructed c. 2006
Sunken lane to Lower Worthington Carriage Road Trace (north of Worthington House)	NA	Undetermined	Unknown date of construction
Buildings and Structures			
Main house	045030/95798	Contributing	Constructed c.1847-1852
Outbuildings	NA/NA	Undetermined	Unknown date of construction
Small-scale Features			
Six-hole fence post		Contributing	Constructed c. 1850s
Artillery piece (Cannon)		Non-contributing	Established after 1982
Fences		Non-contributing	Constructed late twentieth century
Water pump		Undetermined	Unknown date of construction
Archeological			
Secondary dwelling site		Undetermined	Possible servant quarters constructed c. 1870-1880.

Cultural Landscape Report

Thomas &Worthington Farms Monocacy National Battlefield

Frederick, Maryland

Historic Period, 1724-1915

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

SOURCES

1. National Capital Region, *Cultural Landscape Inventories for the Monocacy National Battlefield* (2004, revised 2007) *and Thomas Farm* (2009).
2. 1929 Baltimore Sun photography
3. 1909/1922 USGS Map
4. 1937 Aerial Photograph
5. 1864 Jedediah Hotchkiss Map.

DRAWN BY

Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

LEGEND

- Removed feature
- Building or structure
- Unpaved road or path
- Unpaved trail
- Historic road trace
- Fence line
- Deciduous specimen tree, wooded area
- Deciduous/evergreen shrub, shrubland
- Pasture
- Hay field
- Cultivated crop
- Mown turf
- Wetland (scrub or grasses)
- Hydrology (river, creek, stream, or pond)
- NPS legislative boundary
- Project boundary
- Views and vistas
- 298 10′ contour

NOTES

1. Plan shows conditions in 1915 with changes since 1724.
2. Locations of Worthington Farm outbuildings, fences, orchard, and kitchen garden are conjectural and based on 1929 imagery; exact locations are unknown due to limited documentation.
3. Thomas Farm Road trace may have extended to Worthington Farm, but it is unclear due to limited documentation and lack of agreement in sources.

0′ 125′ 250′ 500′ 1000′ (1″=700′)

Drawing 1.0

Cultural Landscape Report

Thomas &Worthington Farms Monocacy National Battlefield

Frederick, Maryland

2012 Existing Conditions Overall Site

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

SOURCES

1. National Capital Region, *Cultural Landscape Inventories for the Monocacy National Battlefield* (2004, revised 2007) *and Thomas Farm* (2009).
2. Monocacy National Battlefield and Frederick GIS Data
3. Orthophotography, 2005, 2009, and 2012.
3. Site visits, June and July 2012.

DRAWN BY

Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

LEGEND

- Building or structure
- Paved road or path
- Unpaved road or path
- Unpaved trail
- Historic road trace
- Deciduous specimen tree, wooded area
- Deciduous/evergreen shrub, shrubland
- Pasture
- Hay field
- Cultivated crop
- Mown turf
- Wetland (scrub or grasses)
- Hydrology (river, creek, stream, or pond)
- NPS legislative boundary
- Project boundary
- Views and vistas
- 298 — 10′ contour

NOTES

1. Plan shows conditions in 2012.
2. All features shown in approximate scale and location.
3. Tree and shrub species indicated where known.
4. Cultivated fields planted in 2012.

0′ 125′ 250′ 500′ 1000′ (1″=700′)

Drawing 1.1



DRAWN BY
Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

NOTES
1. Plan shows conditions in 2012.
2. All features are shown in approximate scale and location.
3. Tree and shrub species indicated where known.

SOURCES
1. Monocacy National Battlefield and Frederick County GIS Data
2. Orthophotography 2005, 2009, and 2012.
3. Site visits, June and July 2012.

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

LEGEND

- Building or structure
- Paved road or path
- Unpaved road or path
- Historic road trace
- Deciduous tree, wooded area
- Deciduous/evergreen shrub
- Pasture
- Hay field
- Cultivated crop
- Mown or unmanaged turf
- Wetland (scrub or grasses)
- Hydrology (river, stream, or pond)
- NPS legislative boundary
- NPS fee boundary
- 298 2' contour

Cultural Landscape Report
Thomas & Worthington Farms
Monocacy National Battlefield
Frederick, Maryland

2012 Existing Conditions Commemorative Area

0' 10' 25' 50'
1"=60'

Drawing 1.2



Cultural Landscape Report

Thomas &Worthington Farms Monocacy National Battlefield

Frederick, Maryland

2012 Existing Conditions Thomas Farm

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

SOURCES

1. National Capital Region, *Cultural Landscape Inventories for the Monocacy National Battlefield* (2004, revised 2007) *and Thomas Farm* (2009).
2. Historic American Buiildngs Survey, *Thomas Farm (Araby)* (2007).
3. Monocacy National Battlefield and Frederick GIS Data
4. Orthophotography, 2005, 2009, and 2012.
5. Site visits, June and July 2012.

DRAWN BY

Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

LEGEND

- Building or structure
- Paved road or path
- Unpaved road or path
- Unpaved trail
- Historic road trace
- Deciduous specimen tree, wooded area
- Deciduous/evergreen shrub, shrubland
- Pasture
- Hay field
- Cultivated crop
- Mown turf
- Wetland (scrub or grasses)
- Hydrology (river, creek, stream, or pond)
- NPS legislative boundary
- Project boundary
- Views and vistas
- 10′ contour

NOTES

1. Plan shows conditions in 2012.
2. All features shown in approximate scale and location.

0′ 25′ 50′ 100′ (1″=100′)

Drawing 1.3



DRAWN BY
Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

NOTES
1. Plan shows conditions in 2012.
2. All features are shown in approximate scale and location.
3. Tree and shrub species indicated where known. For plant names refer to table XX: Thomas House grounds plant list.

SOURCES
1. HABS Documentation, Thomas Farm (Araby), 2007
2. Orthophotography 2005, 2009, and 2012.
3. Site visits, June and July 2012.

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

LEGEND

- Building or structure
- Paved road or path
- Unpaved road or path
- Historic road trace
- Deciduous tree, wooded area
- Deciduous/evergreen shrub
- Pasture
- Hay field
- Cultivated crop
- Mown or unmanaged turf
- Wetland (scrub or grasses)
- Hydrology (river, stream, or pond)
- NPS legislative boundary
- NPS fee boundary
- 2' contour

Cultural Landscape Report
Thomas & Worthington Farms
Monocacy National Battlefield
Frederick, Maryland

2012 Existing Conditions Thomas House Grounds

0' 10' 25' 50'
1"=50' **Drawing 1.4**



Cultural Landscape Report

Thomas &Worthington Farms Monocacy National Battlefield

Frederick, Maryland

2012 Existing Conditions Worthington Farm

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

SOURCES

1. National Capital Region, *Cultural Landscape Inventories for the Monocacy National Battlefield* (2004, revised 2007) *and Thomas Farm* (2009).
2. Historic American Builidngs Survey, *Thomas Farm (Araby)* (2007).
3. Monocacy National Battlefield and Frederick GIS Data
4. Orthophotography, 2005, 2009, and 2012.
5. Site visits, June and July 2012.

DRAWN BY

Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

LEGEND

- Building or structure
- Paved road or path
- Unpaved road or path
- Unpaved trail
- Historic road trace
- Deciduous specimen tree, wooded area
- Deciduous/evergreen shrub, shrubland
- Pasture
- Hay field
- Cultivated crop
- Mown turf
- Wetland (scrub or grasses)
- Hydrology (river, creek, stream, or pond)
- NPS legislative boundary
- Project boundary
- Views and vistas
- 10′ contour

NOTES

1. Plan shows conditions in 2012.
2. All features shown in approximate scale and location.

0′ 25′ 50′ 100′

Drawing 1.5 (1″=50′)



TREATMENT

TREATMENT

The Thomas and Worthington farm properties, with their rolling agricultural fields and forests, late eighteenth and early nineteenth-century buildings and structures, continue to evoke early settlement and the Civil War despite changes brought on by the construction of Interstate 270 and recent residential and commercial development surrounding the park. Yet regardless of its evocative nature, the landscape encompassing both properties has lost some of its historic character through changes in the vegetation, circulation, buildings and structures, and small-scale features. This chapter establishes a plan for the treatment of the historic landscape that will help the park address these issues and preserve and enhance the historic character of the sites.

As defined by National Park Service cultural landscape methods, the purpose of a landscape treatment plan is to set forth guidelines for preserving and enhancing historic landscape characteristics and features within the context of contemporary park uses.[1] Treatment essentially describes the future appearance of the landscape at the level of planning and preliminary design; it does not generally provide construction-level details necessary for implementation. Treatment also does not address routine and cyclical measures, such as tree pruning and lawn mowing, necessary to maintain the existing character of a landscape.[2]

The chapter begins by presenting a framework that, based on applicable policies, standards, and regulations, established an overall treatment philosophy that describes the intended historic character of the landscape. Based on this framework and a summary of general treatment issues, the body of this chapter provides narrative guidelines and tasks to preserve and enhance the historic character of the Thomas and Worthington farm properties. The narrative guidelines and tasks are supported by graphics including a series of treatment plans (Drawings 2.0-2.9).

TREATMENT FRAMEWORK

The framework for treatment of the Thomas and Worthington farms is guided by the legislation that established Monocacy National Battlefield (previously known as Monocacy National Military Park) (Public Law 73-443; H.R. 7982).[3] Based on the enabling legislation, the park's purpose is articulated in the General Management Plan (2010) as follows:

> To preserve the breastworks, earthworks, walls, and other defenses and shelters used by the Confederate and Union armies on July 9, 1864, as well as the buildings, roads and outlines of the battlefield; to commemorate the Battle

> of Monocacy; and to provide opportunities for visitors to understand and appreciate the significance of the Battle of Monocacy within the full context of the Civil War and American history.

As a unit of the national park system, treatment is also guided by the mission of the National Park Service "…to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (Organic Act of 1916). The application of this mission to cultural landscapes is articulated in *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, which in turn are interpreted within a hierarchy of regulations and policies in National Park Service management. As cultural resources, management of the Thomas and Worthington farms is guided by *36 CFR Part 2: Resource Protection, Public Use and Recreation (Preservation of Natural, Cultural and Archeological Resources)*. The application of these regulations to cultural landscapes is contained within *National Park Service Management Policies* (2006), and *Director's Order #28* (Cultural Resources Management).

Of relevance to the battlefield landscape that encompasses the Thomas and Worthington farms, DO-28 provides guidance on management of biotic systems, which it defines as plant and animal communities associated with human settlement and use. It directs management of specimen vegetation such as trees, hedges, and orchards to ensure health and vigor and, if appropriate, provide for propagation of the next generation, especially for rare or unavailable plants. For vegetation systems such as woods and agricultural lands, DO-28 calls for managing for overall patterns to allow for natural dynamics and crop rotation. Exotic plant species, which are often part of cultural landscapes, should be monitored and controlled to avoid spreading and disrupting adjacent natural plant communities. In addition to biotic systems, DO-28 states that historic circulation features should be rehabilitated to accommodate health and safety codes (such as the Americans with Disabilities Act and Architectural Barriers Act), but in ways that minimize impacts on historic character; earthworks should be maintained with a healthy, vigorous vegetation cover to minimize erosion and loss of integrity; and monuments, memorials, and landscape remnants—often significant as part of a cultural landscape, be evaluated separately as they may be significant in their own right.

RELATIONSHIP TO EXISTING PLANNING DOCUMENTS

The *General Management Plan for Monocacy National Battlefield* (2010) is the primary planning document for directing treatment of the battlefield landscape. The General Management Plan (GMP) serves as the over-arching document that sets the long-term goals for the national park unit. Working within the National Park Service's mission to preserve and protect cultural resources, the GMP

recognizes the need for supplemental cultural resource research and planning projects. It calls for engaging in the appropriate historical and archeological studies to inform and shape a cultural landscape treatment plan.

Although the GMP did not specify a treatment approach for the Thomas and Worthington farms, it did recommend that cultural resources, including historic structures, landscapes, archeological sites, and monuments that contribute to the significance of the national battlefield, be stabilized, preserved, and maintained in good condition. The plan also called for landscape features significant for understanding the Battle of Monocacy and that have been degraded by modern intrusions such as I-270 be reestablished, landscape protection strategies be developed, agricultural activities be continued to maintain the historic agrarian character of the national battlefield's landscape, and modern utilities, transportation systems, and rights-of-way be minimized to protect the integrity of the battlefield's nationally significant qualities.[4] Specifically, the GMP identified the following actions for the treatment of the Thomas and Worthington farm landscapes:

- Reestablishing field and forest patterns
- Removing the borrow pit from the Worthington Farm side of I-270 and reestablishing the agricultural field
- Reestablishing significant vistas between the Worthington and Thomas farms
- To the extent possible, reestablishing the fence line between the Worthington and Thomas farms
- Working with the MD State Highway Administration to minimize the impacts from any widening of I-270 and to reconnect and enhance the battlefield landscape
- Constructing a pedestrian deck over I-270
- Improving circulation at the Thomas and Worthington farms to accommodate visitor use
- Developing a new commemorative area along Araby Church Road near the existing Pennsylvania and Vermont monuments.[5]

The most recent planning document that informs future treatment of the Thomas and Worthington farm landscape is the *Resource Stewardship Strategy* (RSS), completed in March 2011. The plan serves as a bridge between the broad direction provided in the GMP and specific actions that need to be taken to achieve or maintain desired conditions. To better assist in the planning and management of the park, the RSS defined the fundamental resources and

values that the National Park Service is responsible for preserving at Monocacy National Battlefield. These resources and values, contained within the park's enabling legislation, are the particular systems, processes, experiences, scenery, structures, and other features that are essential to achieving the park's purpose and maintaining its significance.[6] Monocacy National Battlefield's fundamental resources and values include:

1. **Cultural resources related to the Battle of Monocacy.** The battlefield landscape includes historical components such as archeological resources, earthworks, transportation features, commemorative monuments, and historic structures related to the Civil War. Other cultural resources include museum collections and artifact assemblages; and

2. **Natural resources related to the Battle of Monocacy.** The battlefield landscape includes natural components such as waterways , agricultural fields, meadows or other open land, forested areas, and witness trees that were in existence at the time of the Battle of Monocacy; and

3. **Soundscape and viewshed: Visitor experience of personal immersion into the battlefield setting.** Monocacy National Battlefield provides an opportunity for visitors to experience a landscape that has changed little since the Battle of Monocacy. The ability of visitors to immerse themselves in this landscape is fundamental to their understanding of the events associated with the Battle of Monocacy.[7]

Although the fundamental resources and values are those things around which the park is based, there are other important resources and values—not primary to the park's purpose and significance—which are also important to park management. These other important resources, specific to cultural resources, encompass archeological sites that are not fundamentally related to the Battle of Monocacy but are important to the understanding of regional history, including the prehistoric occupations of the area as well as the eighteenth-century sites. Based on the fundamental and other important resources that were identified at the park, and the desired conditions that were outlined in the GMP and built upon within this plan, the RSS developed a list of comprehensive strategies and activities for the park. Specific to the treatment of the cultural landscape at the Thomas and Worthington farms, the plan recommends maintaining the historic tree lines and fence lines, rehabilitating Worthington Lane, and improving the Thomas House landscape features.[8]

Treatment of the battlefield landscape is also guided by the *Monocacy National Battlefield Long-Range Interpretative Plan* (2010). The plan defines the overall vision and long-term (5-7 year) interpretive goals of the park, examines issues and influences affecting interpretation and education, and addresses programming,

accessibility, wayfinding, and interpretive and visitor services. The plan identified eight interpretative themes—the Battle (theme 1); crossroads (theme 2); landscape (theme 3); divided loyalties (theme 4); win battle, but lose objective (theme 5);1864 Valley Campaign (theme 6); commemoration (theme 7); and environmental stewardship (theme 8), which included several site specific stories that have connections to these primary themes.[9] Following an assessment of the interpretative issues and current conditions at the park, the plan developed recommendations that included, but were not limited to realigning the Thomas Farm trail to increase opportunities for understanding the battle; creating a parking lot at the Pennsylvania and 10th Vermont monuments; and opening to the public the Worthington House and stone tenant house at the Thomas Farm. At these locations, exhibits will be installed to provide visitors with a better understanding of the civilian and larger crossroads stories during this time period, as well as the landscape uses, and how they have changed over time. [10]

Other reports and plans that have been developed to address the Thomas and Worthington farms include the *Archeological Overview and Assessment and Identification and Evaluation Study of the Thomas Farm* (2010), *Historic Structure Reports for Thomas House and Worthington House* (2010 &1995), *Cultural Landscape Inventories for Monocacy National Battlefield and the Thomas Farm (*2000 and 2009), and *Monocacy National Battlefield Cultural Landscape Evaluation and Archeological Evaluation* (1993).

GENERAL TREATMENT ISSUES

The following are general treatment issues that inform the treatment guidelines and tasks in the second part of this chapter. Properly addressing these issues will improve accessibility throughout both sites; expand landscape interpretation of the Battle of Monocacy and settlement in the region and the Civil War within the broader context of American history; and enhance the historic character of the Thomas and Worthington properties.

Preserving the Battlefield Landscape

Frederick County has experienced tremendous growth over the past decade, resulting in the loss of prime farmland and open space. Despite these landscape changes, the Thomas and Worthington farm's rural setting—dominated by the rolling topography, expansive views, wooded and agricultural open spaces, and rural road systems—remains preserved and continues to be the basis of the landscape's historic character. However, threats to the rural character of both properties are foreseeable as incompatible adjacent development and highway expansion has the potential to reduce agricultural lands, alter historic viewsheds, and impact noise and nighttime light levels. Potential issues include the development of a waste-to-energy facility—that would include a 275-foot tall smokestack—along the western boundary of the park and the widening of Interstate 270 (Figure 2.0). According to a preliminary study, as much as 12 acres primarily on the Worthington Farm side of the highway could be lost to the road work.

Public Access

According to *Director's Order #42, Accessibility for Visitors with Disabilities in National Park Service Programs and Services,* the goal of the National Park Service is to ensure that all people, including the estimated 54 million citizens with disabilities, have the highest level of accessibility that is reasonable to the programs, facilities, and services in conformance with applicable regulations and standards. Based on current regulations and standards, most of the Thomas and Worthington farm buildings, primary walks and drives are currently inaccessible to people with mobility impairments (see Appendix B: Technical Provisions for Accessible Routes).

Loss of Character-Defining Landscape Features

Although the Thomas and Worthington farm landscapes retain many characteristics that existed during the late 18th and 19th centuries, the domestic elements that reflected daily use of both landscapes have been diminished. The Thomas and Worthington properties historically incorporated elements of a

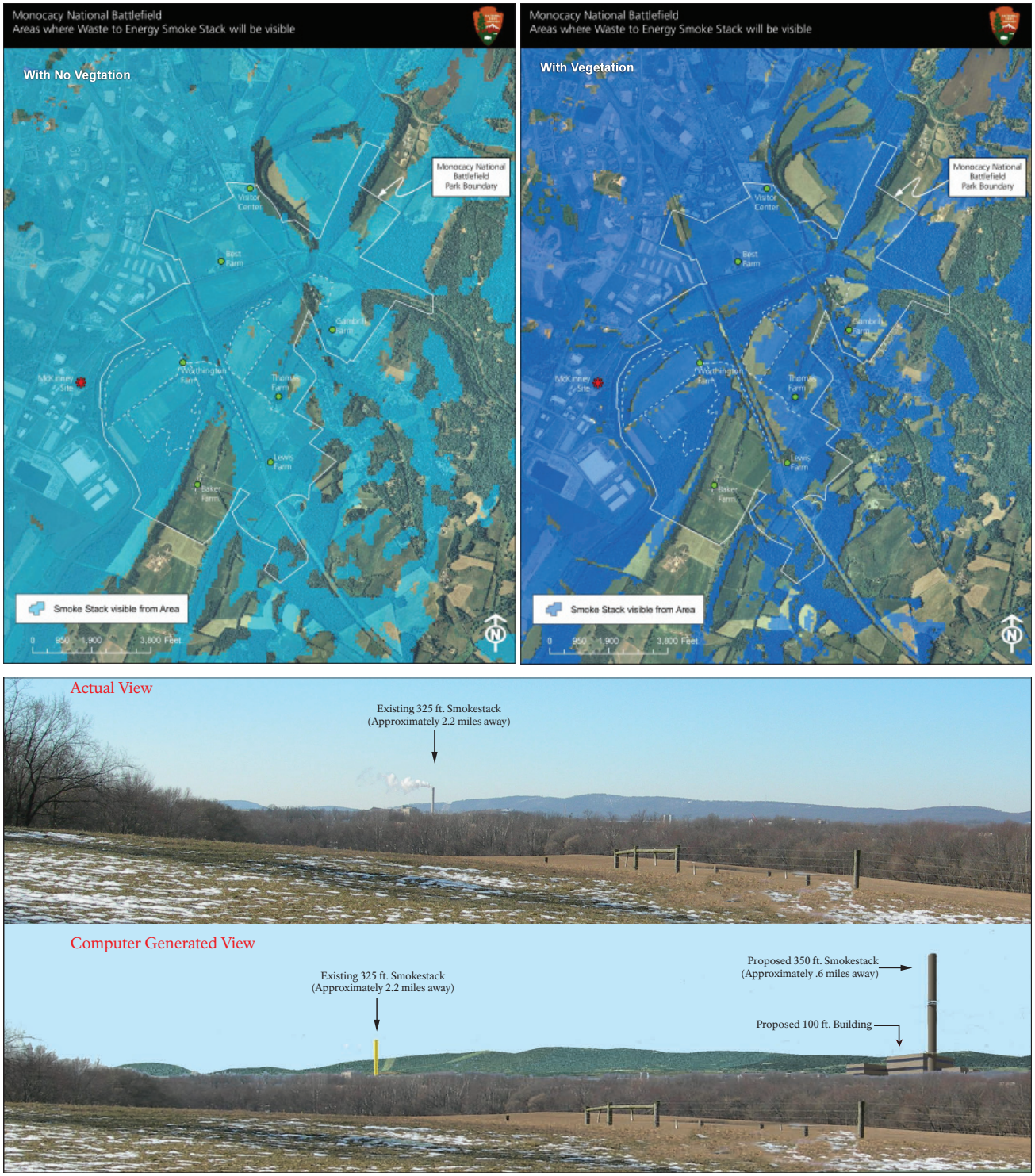


Figure 2.0.
Potential threats to the rural character of the Thomas and Worthington farms issues include the development of a waste-to-energy facility—that would include a 350-foot tall smokestack—along the western boundary of the park. (top) Viewshed analyses of the potential impacts on viewsheds within Monocacy battlefield, including the Thomas and Worthington farms; (bottom) a photosimulation, taken from the Worthington house, showing the adverse impacts on the views if the proposed facility is constructed outside the property (Monocacy Battlefield website).

working farm, including pastures and meadows, orchards, flower and vegetable gardens, and numerous service buildings. Changes in ownership and operations in the early 1900s eventually led to the removal of many landscape characteristics and features that once spoke to the domestic use of both properties.

Growth of Old Field Successional Woods

The field and forest patterns of Monocacy Battlefield, particularly on the Thomas and Worthington farm properties, are integral to the cultural landscape and play a prominent role in the interpretation and development of the park. Since construction of Interstate 270 in the early 1950s, there have been slight changes to the field patterns within the Thomas and Worthington farm properties. Adjacent to the highway on both properties, successional woods have grown up in fields and pastures and have altered the landscape's historic open character and views.

Landscape Interpretation

Educational programming and landscape interpretation at the Thomas and Worthington farms are minimal at present. There are four wayside exhibit panels at the Worthington Farm and three at the Thomas Farm. At the Worthington Farm, three wayside exhibits are inaccessible for an individual in a wheelchair. The fourth wayside panel is located along the road to the Worthington House, but there is no pull-off to safely read the exhibit. The Thomas Farm waysides, located near the parking lot, are easy to get to, but are not surrounded by an accessible surface.

White-tailed Deer Management

White-tailed deer have become a major issue in recent years at Monocacy Battlefield. According to the most recent population estimate, the park has approximately 142 deer per square mile in 2010. The deer overabundance is due to the lack of predators, mild winters, and increased suburban development providing additional deer browse throughout Frederick County. Besides their overabundance, deer browsing has adversely impacted the historic character of the battlefield landscape by damaging native plant species and forcing farmers to change agricultural practices to those less favorable to the deer. Efforts by the park to reduce the deer population throughout Monocacy Battlefield, including the Thomas and Worthington farm properties, have initially begun with the development of a White-tailed Deer Management Plan. The loss of vegetation within the battlefield and adjoining properties will continue until the Plan is implemented.

Invasive and Exotic Plant Species

The proliferation of invasive exotic plant species remains a major issue within Monocacy Battlefield, including the Thomas and Worthington farms, as they diminish historic viewsheds and threaten grassland and woodland habitats. Based on the *Monocacy General Management Plan* (2010), many invasive plant species were identified within the park. The greatest threat to the battlefield landscape, particularly in open fields, includes Johnson grass (*Sorghum halepense*), Canada thistle, (*Cirsium arevense*), Japanese hop (*Humulus japonicus*), mile-a-minute (*Persicaria perfoliata*), and bull thistle (*Cirsium vulgare*). Forested areas are mostly invaded by common buckthorn (*Rhamnus cathartica*), Japanese honeysuckle (*Lonicera tartarica*), garlic mustard (*Alliaria petiolata*), Japanese stiltgrass (*Microstegium vimineum*), and tree-of-heaven (*Ailanthus altissima*).

PRIMARY TREATMENT

As reflected in previous park planning and current park criteria for treatment, the recommended primary (overall) treatment for the Thomas and Worthington farm landscapes is rehabilitation. Rehabilitation is one of four treatment approaches in the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (the other three being Preservation, Restoration, and Reconstruction).[11] It is defined as "…the act or process of making possible a compatible use of a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values."[12]As described in *Director's Order #28* (DO-28), Rehabilitation improves the utility or function of a cultural landscape, through repair or alteration, to make possible an efficient compatible use while preserving those portions or features that are important in defining its significance. The Secretary of the Interior identifies the following ten standards under Rehabilitation:

1. *A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.*

2. *The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.*

3. *Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.*

4. *Changes to a property that have acquired historic significance in their own right shall be retained and preserved.*

5. *Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*

6. *Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.*

7. *Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*

8. *Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.*

9. *New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.*

10. *New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.*

Overall, rehabilitation is the most appropriate primary treatment for both the Thomas and Worthington farm properties because of the need to provide for contemporary park functions, visitor services, and environmental sustainability. This treatment focuses on managing the landscape for its historic character by preserving significant landscape characteristics and features, replacing in-kind key features that have been lost, and allowing for change to accommodate park visitors. Specific to the Thomas and Worthington farms, rehabilitation provides the basis for adding interpretative waysides and signage and also allows flexibility to address contemporary site issues including screening modern development and altering circulation to provide accessibility in a manner that is compatible with the historic character of the landscape. Within rehabilitation as the primary treatment, much of the feature-level treatment will involve *Preservation* and *Restoration* in order to retain and enhance the historic character of the landscape.

TREATMENT PHILOSOPHY

To guide the rehabilitation of the landscape, the recommended treatment philosophy for the Thomas and Worthington farm properties is to preserve and enhance their historic character so that they more closely evoke the landscape conditions at the outbreak of the Civil War. The intent is not to recreate the war-torn landscape that existed at the end of the Battle of Monocacy on July 9, 1864, or restore the farmstead landscapes to their mid-nineteenth century historic appearances, but rather provide visitors with a better understanding of the evolution of settlement in the region and the Civil War through the properties surviving historic features and quiet rural setting. Features that remain from the end of the period of significance (c.1915) should be preserved and enhanced, while those character-defining features that have been lost or obscured may be reestablished or enhanced to the extent feasible based on available documentation. Contemporary features may be added to the landscape to enhance visitor use, provided they are compatible with the historic character of the landscape. Farming should be continued to maintain the historic agricultural use of the property. This treatment philosophy, based on the *Secretary of the Interior's Standards*, reflects an extension of a similar philosophy used by the park in the rehabilitation of the Thomas and Worthington houses.

The Thomas and Worthington properties retain many non-historic features and traces from its post-Civil War history that are compatible with its overall historic character. These may be retained as evidence of the property's physical evolution, except where they detract from the historic character. For example, treatment should respect the dynamics of natural systems and vegetation, and only remove or alter those that detract from the landscape's defining characteristics, such as views and spatial organization. The Thomas Farm also contains many features and traces from its pre- and post-Civil War history that have acquired significance in their own right. These resources, which include a late 18th century ferry crossing site, the historic Georgetown Road trace, 300 year old sycamore trees, and the Vermont monument, should be retained as evidence of the property's physical evolution and importance to commerce and transportation, as well as the efforts to commemorate the military events at Monocacy. In keeping with the park's current monument policy, new commemorative markers should only be added in a new commemorative area located near the Vermont and Pennsylvania monuments.

TREATMENT GUIDELINES AND RECOMMENDED TASKS

The following landscape treatment guidelines and tasks are actions recommended for the 520-acre Thomas and Worthington farm properties, organized in two sections: site-wide and the Thomas and Worthington house grounds. Where appropriate, tasks list alternatives that are in keeping with the *Secretary of the Interior's Standards* and the recommended treatment philosophy for the landscape. Preservation is the default treatment for historic landscape features having no specific tasks identified. Treatment tasks are keyed to a site-wide treatment plan (Drawing 2.0) and details of the Commemorative Area and Thomas and Worthington house grounds (Drawings 2.1-2.9).

OVERALL SITE (DRAWING 2.0)

Overall guidelines for treatment of the Thomas and Worthington farm properties are to enhance the landscape's historic rural character, improve circulation and accessibility, restore field and forest patterns, maintain and reestablish historic views and viewsheds, and expand landscape interpretation. Visitor experience will be enhanced by expanding the existing circulation systems and preserving historic roads and paths, while providing the highest level of accessibility for people with disabilities. New roads and parking areas should be maintained as graded beds with unpaved surfaces (unless specifically stated otherwise). The majority of existing roads throughout both properties should be retained as they are compatible with historic character and are necessary for current agricultural practices. However, these roads should be resurfaced to blend with new circulation systems.

The field and forest patterns are integral to the cultural landscape and play a prominent role in the interpretation and development of both properties. Where appropriate to do so, efforts should be made to accurately depict the field and forest patterns that existed during the historic period. However, treatment of these features should also be sympathetic to the park's natural resources and contemporary issues, specifically the conservation of grassland habitat and the screening of incompatible land uses within and adjacent to both properties. The park should also continue its agricultural special use permit to maintain the historic field patterns. Use of historic crops and livestock is not necessary to maintain historic character, but some farming practices may be incompatible if they change the spatial character of the landscape (Figure 2.1).

The historic viewsheds are among the many features that contribute to the national battlefield's cultural landscape and are important to a visitors understanding of the broader historical context in which the Battle of Monocacy was fought. Because these views were historically associated with the open and expansive pastoral landscape, future development and the maturation and

changes in vegetation may negatively impact these characteristics. In order to preserve and enhance historic views, these features should be controlled to limit change.

Besides the military story, public understanding of the Thomas and Worthington farms could be greatly enhanced by improving interpretation of the agricultural and transportation histories at both sites. This may be accomplished through

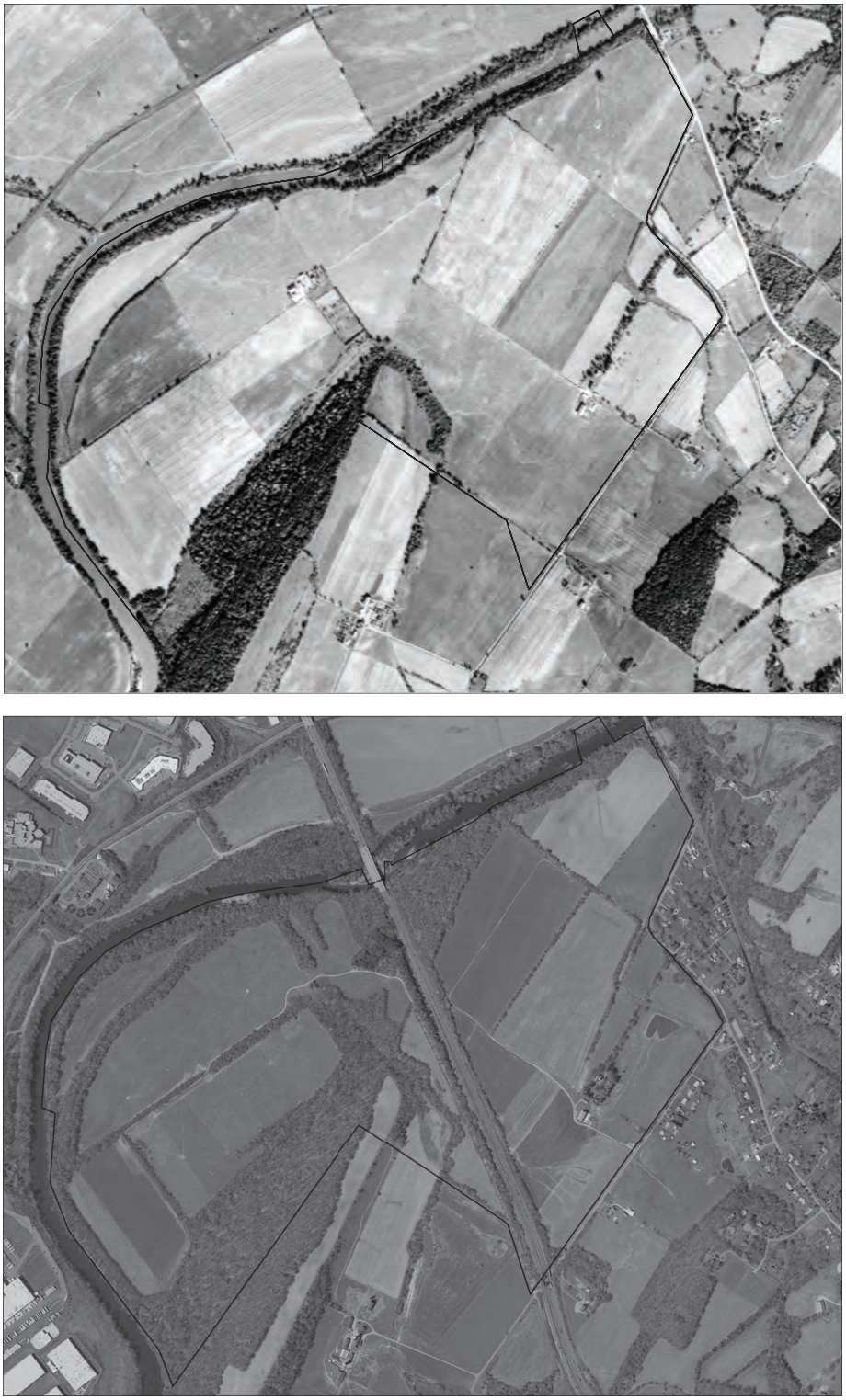


Figure 2.1.
Aerial photograph of the Thomas and Worthington farms in c.1937 (top) and an aerial photograph of the same area in c. 2005 (bottom). Both images illustrate the successional vegetation that warrants removal to reestablish historic field limits and views. Besides the woods surrounding the Worthington Farm and the trees along Interstate 270, the c.1937 aerial reflects the open character of the landscape that had remained little changed since the Civil War. (Monocacy Battlefield) Archives).

revealing and marking remnants, reconstructing lost features (if adequate documentation is available), and by creating interpretative displays. Interpretative displays would enrich the visitor experience and understanding of the cultural landscape. These displays should be designed in an inconspicuous manner to avoid impacting the historic character of the landscape.

Task 1: Preserve historic character

To maintain the rural character within Monocacy Battlefield, including the Thomas and Worthington farms, the park should continue its agricultural special use permit for agricultural activities and screen adjoining non-historic development and incompatible land uses. While addressing the rural setting outside the park boundary is challenging, the park must continue to work with federal, state, and local government entities, nonprofits, and private property owners to conserve natural resources, protect open space and historic resources, and preserve the historic viewsheds.

Initial plans by the MD State Highway Administration to widen Interstate 270 will have substantial implications on the Thomas and Worthington farm properties. Besides further obscuring the historic field configurations and historic fence and property lines, these changes will also substantially reduce battlefield acreage. In order to minimize adverse impacts to the historic resource, the park should continue to work with the Maryland Department of transportation to minimize the impacts from any widening of I-270 and to reconnect and enhance the battlefield landscape by reestablishing fence lines, field boundaries, and hedge rows.[13]

Efforts by the park to preserve the cultural landscape beyond the battlefield should also include the development of a Viewshed Protection Plan. This plan will identify the most important areas for protection (based on the analysis of the scenic, historic, and other attributes of the landscape) and provide tools for the preservation of these lands, which includes conservation easements and fee acquisition strategies, as well as funding mechanisms.

Task 2: Preserve historic road traces (including Georgetown Road trace)

Vegetation growth is affecting the character of portions of the Upper and Lower Carriage Road traces as well as the sunken lanes on Worthington Farm. Saplings and small trees should be removed as well as dead trees that have fallen across the traces. Understory growth that dies back in the winter can remain. This should be part of a periodic cyclic schedule. Along the sunken lanesla, the Osage orange trees are a contributing cultural landscape feature and should also be carefully managed (refer to task 6).

Currently, the Georgetown Pike road trace remains largely outside the plow zone because it functions as a drainage feature. This treatment of the trace should be formalized in the agricultural special use permit with language indicating the area of the no-plow zone, and that the trace should be kept as mown lawn. Its condition should be closely monitored. In addition, the trace should be mapped using GPS to determine more precisely where it is located in the landscape (refer to task 13).

Task 3: Construct pedestrian deck over Interstate 270

An unfortunate consequence in the construction of Interstate 270 was the fragmentation of the Thomas and Worthington farm landscapes; two properties that were once connected by ownership and later in the events that took place during the Battle of Monocacy. In order to reconnect these two properties, a pedestrian deck should be constructed over the interstate highway between the Worthington and Thomas farms. The pedestrian deck will be a wedge-shaped structure covering a depressed portion of the roadway. The wedge—or trapezoidal shape—should be covered with soil and crops, fence rows, and small trees to assist visitors in visualizing the area's historic appearance without the disruption of the interstate highway (Drawing 2.0).

The National Park Service "circle trail" located within the Thomas Farm should connect over the deck to the Worthington Farm. Visitors could then traverse the most significant areas of the battlefield without having to backtrack down Worthington Lane and Baker Valley Road (see also task 20).

Task 4: Protect vegetation from browsing deer

Landscape damage from deer browsing has become a major issue in recent years within Monocacy Battlefield and the Thomas and Worthington Farm properties. Despite efforts by the park to mitigate landscape damage, deer are persistent and adaptable, and no reasonable method of deer exclusion will be one hundred percent effective at preventing deer damage. To maximize success, deer control should utilize an integrated pest management approach, employing multiple means including exclusion, scare devices, and/or repellents. Plant selection may also reduce deer damage, favoring plants that show a tolerance to deer browsing.

Due to the complex factors involved in deer management, including maintenance costs and operational constraints, it is recommended that the park contract with a deer-control specialist to design a system specifically for the site. The following recommendations may provide initial guidance for the design of a comprehensive deer control system for the Thomas and Worthington farm landscapes in the context of maintaining their historic character.

Exclusion Methods

Deer fencing should be introduced in the least conspicuous manner. Appropriate materials include black galvanized wire or plastic mesh attached to thin poles or trees. Bright orange or other highly visible fencing is not appropriate. Some vulnerable shrubs or hedges may be draped or wrapped with plastic netting to reduce deer damage. Several products are available that interfere with chewing and deter deer browsing. Netting should be used primarily during the winter when deer damage is the most severe, and may be installed as part of the process of winterizing the landscape.

Deer Resistant Plants

Plant selection may help reduce the damage by deer. Unfortunately, constraints on plant selection due to maintenance needs, plant availability, and historic character, may limit the options for plant substitution. Success of any deer resistant plant in the landscape will depend on local deer population and weather conditions.

Other Methods

Other methods of deer control include chemical repellents and physical scare devices. Chemical repellents, including commercial repellents and pepper sprays, may be effective in combination with other methods. The sprays are applied to the vulnerable foliage rendering them unpalatable to the deer. From a landscape character perspective, repellents are appropriate because they are reversible and can be placed inconspicuously. However, chemical repellents can be costly and they need to be reapplied after repeated exposure to the weather. They also can lose their effectiveness as deer can learn to tolerate them, especially when food is in short supply. Physical scare devices are usually conspicuous (by design) and incompatible with the historic character and are typically not effective over the long term. Deer become accustomed to the devices over time.

Task 5: Remove non-historic woods and tree lines

All of the agricultural fields on the Thomas and Worthington farms are defined by boundaries related to circulation and natural features. These boundary features and the fields they enclose have minimally changed in the years since the Civil War. However, in a few locations, small adjustments to the field edges would better reflect the historic field and forest patterns. In an effort to enhance the historic open spatial character of the landscape and reopen historic views, woods and tree lines that have grown up within previously open fields since the mid-twentieth century should be removed. Tree removals include woods in the areas listed below, as shown on drawing 2.0. Tree removals will require field survey and inspection to identify groves or individual trees for retention, if recommended. Implementation of these removals will require periodic maintenance to prevent

reoccurrence of the woods, except where cleared land is used by the tenant farmer.

a. Trees along Thomas Farm field edges and fence lines: To reestablish the open character and historic limits of the Thomas Farm fields, remove encroaching vegetation along field edges and trees along fence lines (hedgerows).

b. **Woods along both sides of Interstate 270**: Where deemed appropriate, reestablish vista clearing between the Thomas and Worthington farms by removing woods lining Interstate 270 (see task 10); removal of these woods will allow views and reestablish the historic open character.

c. Woods on north side of Worthington House: Reestablish historic field limits on the north side of the Worthington house to enhance the historic open spatial character of the property. The fields within the Worthington property cannot be fully restored to their historic limits because of the need to provide a riparian buffer along the Monocacy River, provide screening of incompatible land uses, specifically the roadway, and the existence of a borrow pit that remains from the construction of Interstate 270. The tree-lined road trace (mixed with Osage orange trees), —immediately north of the Worthington House, —should also be preserved as additional research is required to determine its contribution to the historic character and significance of the site.

d. Woods on the south side of Worthington House: Clear woods to allow views into the site from the Thomas Farm and to reestablish the historic open character of the property.

e. Tree line along auxiliary farm lane: Selectively remove the line of trees that grew up along the auxiliary farm lane to reestablish the open character of the property and enhance interpretation of the historic sunken lane trace.

f. Trees along Worthington Farm field edges and hedgerows: Remove the line of trees and invasive vegetation along the fence line at the southwestern end of the Worthington Farm property. In conjunction with the establishment of a meadow in the southern most field on the property (task 29), removal of this hedgerow (tree line) will improve grassland habitat within the adjoining field. Reducing the woody corridors that intrude into or border grasslands may help grassland bird populations.

Task 6: Manage Osage orange trees

Osage orange (*Maclura pomifera*) hedges were extensively used at the Thomas and Worthington Farms during the historic period as evidenced by the remaining significant stands at twovarious locations at Worthington, beside the Old Georgetown Pike trace—that parallels Araby Church Road, and along Baker Valley Road adjacent to the Thomas Farm. While it may not be feasible to reestablish the Osage orange due to lack of documentation and high maintenance costs, the existing trees should be managed and interpreted. Landscape interpretation can be greatly improved at key locations within the Thomas and Worthington Farm properties—preferably along the main entrance drive to the Thomas House, by restoring an Osage orange hedge row near the house and maintaining it as a clipped hedge for interpretative emphasis. The following are management strategies for maintaining and reestablishing Osage orange trees:

Existing Osage orange trees: The historic fencerows should be walked and observed twice a year; in September (with foliage) and in March (in dormancy). Locate any dead limbs, and then determine the cause and prune to remove dead material.

Propagation and planting of Osage orange tree (hedge) Purchase seeds. Soak the seeds in cold water for 48 hours before planting. This is especially true for spring seeding. Fall seeding does not require any pre-treatment, but should be mulched. Germination varies, but should be around 50%. Spring seeding should be in nursery beds and covered with ¼ to ½ inches of firmed soil. It is not recommend the hedgerow be directly seeded.

Careful pre-planting, site preparation, and planting are crucial for establishing Osage-orange trees. In the late summer before the following spring planting, a strip two feet wide and as long as the planting area should be dug and sprayed with an approved herbicide. After herbaceous plant dieback a layer of compost or leaf-mold should be spread and then a dense layer of at least 8 pages of newspaper should be pinned with nails over the composted strip. This is to be left until planting season in March or early April. A section of snow fence could be placed upright along the north side of the planting strip to capture winter snow drifting and extra moisture.

To form a dense hedge, pruning for newly planted Osage-orange should not begin until plants are established which is about two years after planting. In year three (spring), the first pruning cuts should completely remove the top to leave 3-4 nodes. Excess trimmings must be removed from the site should be burned or chipped and used as mulch. By year four (spring) several shoots should have emerged from the small stump left by initial pruning. The 3-4 shoots closest to the ground should be

carefully pulled to the ground and stapled horizontal using metal staples such as those recommended for attaching erosion control matting. Any central stems should be woven forward (uphill) along the hedgerow into and around the neighboring plant. In year five (spring), weave any new shoots (called plashers) uphill into the neighboring plants' shoots staying below 3'. Thick, vigorous shoots may require cutting on the side toward which the shoot is bent. In the summer of that same year, shearing should occur at 3' above the ground. By the sixth year (spring), weave the central plashers into the neighboring plant below 5'. During the summer of that same year, shear the hedge by starting at the ground ten feet from the hedge center and projecting a diagonal line to a point six feet above the hedge centerline. Shear all shoots above that line. For the seventh year and on, continue early summer shearing 1-2 inches above the diagonal visualized and used in the sixth year.[14]

Task 7: Manage invasive and successional vegetation

In an effort to reestablish and retain historic views and maintain grassland habitats, the spread of invasive plant material throughout the Monocacy Battlefield, including at the Thomas and Worthington farms, should be controlled with a combination of techniques including, prescribed burns, reseeding with native species, herbicides, and selective mowing or manual removal. Using introduced goats in fenced areas to consume the herbaceous material should also be considered.

Task 8: Reestablish and preserve roadside trees

Vegetation along historic roads and road traces are either disappearing (along Thomas Farm Road trace) or have reached their life expectancy and need to be replaced. Whether trees, including Osage orange, black locust, elm, and hackberry, were deliberately planted along historic roads and road traces on both farms remains undetermined, but they nonetheless serve to delineate the historic roads and road traces of the property and are therefore compatible with the historic character of the properties. Replacement in-kind and in-situ may be recommended for some of these trees, especially those along the Thomas Farm Entrance Lane and the Worthington Farm sunken lanes.

Task 9: Document Middle Ford Ferry Tavern Site

Based on the findings of the *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm (2010)*, future archeological and historic research at the Middle Ford Ferry Tavern site is warranted to determine the locations of other outbuildings and support structures that are noted in primary historic references.[15]

Task 10: Reestablish views between the Thomas and Worthington Farms

Views between the Worthington and Thomas Farms were critical during the Battle at Monocacy. Today, these views are blocked by vegetation. While it may not be feasible to reestablish the full breadth the panoramic views, a vista clearing should be cleared between these two sites. These views will be reestablished with the implementation of Task 5 (Remove non-historic woods) and Task 3 (Construct pedestrian bridge over Interstate 270). A vista clearing at this location will enhance current interpretation of the site and also provide a more accurate depiction of the field and forest patterns at the onset of the battle (Figure 2.2). In order to reestablish the vista, a field survey will be required to identify trees for retention and removal. To effectively screen the interstate highway without altering views, small native shrubs (no larger than ten feet in height) should be planted along the roadway to supplement the few trees that are retained within the vista clearing. All work should be done in consultation with MD State Highway Administration (refer to drawing 2.0).



Figure 2.2.
(top) Views between the Worthington and Thomas Farms were critical during the Battle of Monocacy. Today, these views are blocked by vegetation; (bottom) A photosimulation of the vista clearing between the Thomas and Worthington Farms. A vista clearing at this location will enhance current interpretation of the site and also provide a more accurate depiction of the field and forest patterns at the onset of the battle (National Capital Region).

Task 11: Rehabilitate fences within Thomas and Worthington properties

Based on historic photographs and drawings, a variety of fences were found at the Thomas and Worthington farms. These included board fencing, paling fences, picket fences, and hedges or living fences. However, over the years many fences were removed, while others added or altered to accommodate new land uses. In order to enhance the historic character of both properties, extant historic fencing should be retained and preserved and lost fencing should be restored (when documentation is available). This task involves the following actions:

a. **Rehabilitate fences within Thomas House grounds:** According to an undated engraving labeled "Araby' Residence of Col. C.K. Thomas" that appeared in Thomas Scarf's *History of Western Maryland* (1882), the grounds surrounding the Thomas house were fenced off from the adjoining barnyard and fields by board and picket fencing, as well as Osage orange hedges. The barnyard included several fenced pens that enclosed a variety of outbuildings. While it is not feasible to restore all the fencing that existed during the historic period due to the loss of built features and lack of documentation, the existing board fencing along the perimeter of the house grounds should be realigned to more accurately depict the historic spatial arrangement of the property (Drawing 2.3). Specifically, the stone tenant house should not be enclosed within the house yard as evidenced by historic images and aerial photography. A small portion of Osage orange along the Thomas Farm Entrance lane should also be reestablished as an interpretative feature (see also task 6).

b. **Reestablish fence line at Worthington Farm:** Similar to the Thomas property, the Worthington Farm included numerous fences, such as post and six-rail, picket, paling fences and Osage orange hedges, which defined the domestic yard and enclosed many service related functions. While it may not be feasible to restore the majority of fencing that existed during the historic period, a six-rail fence should be reestablished to the east of the Worthington house to redefine the boundary of the domestic yard and rectangular area that presumably enclosed a kitchen garden and orchard during the historic period (Drawing 2.6).[16]

c. **Reestablish fence line along historic boundaries:** The fence lines within the Thomas and Worthington properties were integral to the cultural landscape and played a prominent role in the interpretation and development of the park. Where appropriate to do so, preferably in locations that provide interpretative programming, efforts should be made to accurately depict the historic fence lines. As suggested in the Monocacy Battlefield General Management Plan (2010), a fence line between the Thomas and Worthington farms should be reestablished to the greatest extent possible.[17] The fence line should cross at the proposed pedestrian deck.

Task 12: Interpret sites of lost buildings and landscape features at Worthington and Thomas farms

During the historic period, the Thomas and Worthington farms included flower and vegetable gardens, fruit trees, and a variety of service related buildings and structures; however, by the mid-twentieth century the majority of the outbuildings and gardens on the Worthington Farm were removed and the Thomas Farm's historic gardens, ice house, and blacksmith shop were no longer extant. With exception to a series of images taken by the Baltimore Sun in 1929, a ca. 1880 rendering of *Araby* (Thomas Farm), and an advertisement for the sale of both properties in the *Frederick Examiner* (February 8, 1956), there is limited documentation currently available on these resources. However, these features should be interpreted since they were integral components of the historic landscapes. This interpretation may be done through the installation of traditional waysides or added to the existing smart phone "app" created for Monocacy National Battlefield.

Task 13: Rehabilitate commemorative area

An unplanned consequence of the construction of the Pennsylvania and Vermont monuments was the increased visitation to these sites. The existing commemorative area along Araby Church Road currently cannot accommodate visitors due to the lack of adequate parking and pedestrian circulation. To improve visitor safety and access to both monuments, as well as improve traffic flow, a pullout and connecting path should be constructed within the commemorative area.

The bus/car pull-out should be either located near the former location of the cinderblock house or opposite the Pennsylvania Monument. (If constructed near the former location of the cinderblock house, the pull-out should not be constructed across from the residential driveway.) The new pull-out should be approximately 12' wide and 150' in length broken into the following sections: 60' taper in, 50' bus/car bay, and 40' taper out. The pull-out should be surfaced with crushed stone aggregate consisting of hard, durable particles or fragments of crushed stone or gravel. For added strength and durability, a cellular paving system, such as a geosynthetic cellular block panel, porous cellular block panel, or porous synthetic ring and grid system, may be appropriate as a base stabilizer for the pull-out. In compliance with current ADA guidelines, a path and crosswalk—connecting the pull-out and Pennsylvania and Vermont monuments—should also be constructed to improve pedestrian access and safety. In an effort to interpret the Old Georgetown Pike road trace, the park should consider constructing the pathway along the former alignment of the historic roadway. The pathway should be approximately five feet in width and be an earthen/gravel surface that is reinforced with soil stabilizers. Brands on the market include Klingstone 400

(www.klingstone.com), PolyPavement (www.polypavement.com), "Stabilizer" as manufactured by Stabilizer Solutions, Inc., Naturalpave (www.sspco.com) or Granitecrete. Interpretation of the Old Georgetown Pike will be further enhanced by maintaining a mown shoulder along the path that delineates the width of the former roadway. Finally, the rehabilitation of the commemorative area should include retaining the Osage orange trees for interpretive purposes (Drawings 2.1 and 2.2).

THOMAS HOUSE GROUNDS (DRAWING 2.3-2.8)

Overall guidelines for treatment of the Thomas House grounds is to enhance the landscape's historic spatial character and views, improve circulation and accessibility, maintain existing mature vegetation, replace missing features , and remove incompatible modern buildings, structures, and plantings. Treatment of the circulation patterns within the Thomas House grounds should be expanded, enhanced, and restored to accommodate visitor and NPS staff use. While surface treatments will vary throughout the grounds—depending on the frequency and use, the circulation systems should blend with each other and be maintained as graded beds. While preservation is the primary treatment for the existing aged specimen trees, replacement or removal may be necessary if the trees detract from the historic spatial character, are in irreversible decline, or pose a threat to safety or adjoining historic features. A program of in-kind replacement may be appropriate, unless documented to be invasive and a threat to native plant communities in the region. In this case, use substitute plant species that are native to the area and similar in character to the existing tree species.

Reconstruction of the historic farmyard vegetable, ornamental gardens or historic outbuildings, are not feasible due to lack of documentation, but their sites in the landscape (if known) should be interpreted. Furthermore, changes that occurred in the mid-twentieth that create a false sense of historical development, such as the garden added by the Clapp family between 1954 and 1960, should also be removed. In general, the core of the Thomas Farm landscape should be maintained with a simple character in which the overall spatial organization, house, drives, specimen trees, and views predominate. Park furnishings should follow a contemporary design that is compatible in terms of materials and design with the historic rural character of the landscape.

Task 14: Improve visitor and staff parking at the Thomas Farm main house

Although the interior of the Thomas House has been rehabilitated to accommodate its new use as administrative offices, the site currently cannot support the administrative programming and functions, as well as individuals with disabilities. Treatment will enhance contemporary park functions by making

upgrades to the pedestrian and vehicular circulation on the house grounds. The following are two alternatives for improvements to staff parking and ADA access at the Thomas House.

Alternative A

As part of this alternative, a new parking area would be constructed in the location of the existing parking lot. Locating the parking lot in this area would minimize additional negative impacts to the historic core of the property and provide direct access to the Thomas House. Branching off from the proposed circular entrance lane, the parking lot would include twelve parking stalls with one designated accessible parking space. In response to heavy use, accessibility, and maintenance limitations, the use of bituminous asphalt top-dressed with a chip-seal is recommended for the parking lot. This is traditional asphalt with larger and coarser aggregate top-coat that creates a more textured, varied surface that is similar to a loose gravel surface. Like the existing entrance lane, the chip-seal top coat should be similar in appearance with the crushed stone aggregate proposed on the entrance lane trace on the western edge of the Thomas House grounds.

In compliance with current ADA/ABA guidelines, a stabilized earthen or gravel pathway connecting the main entrance of the house, the parking lot and the back porch entrance should be constructed to improve pedestrian access and safety. The construction of the pathway to the back porch will involve adding fill to ensure the finish floor elevation of the back porch is at grade with the path. Finally, the parking area should be screened with vegetation to reduce visibility of parked cars within the house grounds (Drawings 2.5 and 2.6).

Alternative B

As part of this alternative, a new parking area would be constructed in the former location of the existing parking lot. Similar to the existing parking area, this alternative will be a terraced parking lot with eleven parking spaces on the lower terrace and two accessible parking spaces. Designing the parking lot in this configuration will not only minimize additional negative impacts to the historic core, but it will reduce the amount of fill that would be needed under Alternative 1. Similar to the first alternative, the parking lot would branch off the proposed circular entrance drive lane and include a pathway that links the main entrance of the house, the parking lot and the back porch entrance to each other. However, it would require the construction of a retaining wall and stairway connecting the lower and upper parking areas (Drawings 2.7 and 2.8).

Task 15: Improve accessibility to the Thomas Farm tenant house and grounds

Based on the park's General Management Plan and Interpretative Plan, the Thomas Farm tenant house has been identified as the potential site of a visitor contact area for the Thomas Farm. However, the building and grounds are currently inadequate for public visitation. This task includes the following actions:

a. **Enlarge Baker Valley Road parking lot**: In order to improve access, as well as accommodate increased visitation to the Thomas House grounds and stone tenant house, a new parking lot should be constructed in the location of the existing parking area. The parking lot should include fourteen parking stalls with two designated accessible parking spaces and be surfaced with crushed stone aggregate (Drawings 2.3 and 2.4).

b. **Construct pedestrian path to tenant house:** Following alongside the existing modern service road—off Baker Valley Road, a pathway should be constructed to connect with the enlarged parking lot (see task 15a) and stone tenant house. The pathway should be approximately five feet in width and be an earthen/gravel surface that is reinforced with soil stabilizers. Brands on the market include Klingstone 400 (www.klingstone.com), PolyPavement (www.polypavement.com), "Stabilizer" as manufactured by Stabilizer Solutions, Inc., Naturalpave (www.sspco.com) or Granitecrete. If the park decides to rehabilitate the existing concrete tenant house as a visitor contact building, the pathway should also extend to this building (Drawings 2.3 and 2.4).

c. **Reestablish portion of Thomas Farm Road and Entrance Lane as path:** Reestablish portions of the Thomas Farm Road graded road adjacent to the tenant house and the entrance lane along the west boundary of the Thomas Farm main house. Maintaining both these roads as paths will provide access to the tenant and main houses, Thomas Farm trail, and the proposed circular entrance lane. Reestablishingof these roads will allow pedestrians to experience the entire property, and will return the historic definition of the house grounds. A section of the Thomas Farm Road that extends to Baker Valley Road should not be reestablished because of the slope, stream crossings, and wetland conditions. However, this section of the roadway, along with the blacksmith shop ruins, should be interpreted.

   Before work begins, additional archeological investigation and documentation of the traces should be carried out to determine the historic width and surface of the roadways. Both paths should consist of a stabilized earth or gravel surface that preserves the historic road traces to the extent feasible. In order to assure the paths are accessible, work may include adding fill to the road traces (Drawings 2.3 and 2.4).

d. **Reconfigure livestock (cow) enclosure:** The existing configuration of the livestock enclosure currently conflicts with the proposed access improvements to the stone tenant house. To remedy the issue, the fencing arrangement should be rearranged and the cows should be confined to the north side of the house and no longer pass between the house grounds and the feeding area south of the barn. The existing concrete pad adjoining the south elevation of the barn should be removed and a new smaller pad on the northwest side of the house be constructed. This will allow the visitors to access the Thomas House trail via the proposed path that follows a portion of the historic Thomas Farm (Drawings 2.3 and 2.4).

e. **Construct special events parking area:** Following the removal of the existing concrete pad, a stabilized turf overflow/special event parking area should be constructed adjacent to the bank barn. Selection of a stabilization system should take into consideration the existing site conditions, durability, maintenance, and the anticipated frequency and use of the proposed parking area. For all systems, select a turf-type tall fescue seed mixture that is designed to withstand compaction and is wear-resistant. Twice annually, preferably in the late spring and early fall, core aerate the soil. Overseed annually with the specified seed mix (Appendix C: Stabilization Techniques).

Task 16: Remove Thomas House garden and brick garden paths

A vegetable and ornamental garden likely existed within the Thomas House grounds during the Civil War. Following the historic period these gardens were removed and replaced a by garden designed by local landscape architect T. Stuart Haller. Constructed in the mid-20th century at the behest of Robert and Josephine Clapp, the quasi colonial revival garden—popular during this era—featured several outdoor rooms of varied plantings linked by brick pathways and also utilized walls and hedges to define functional areas and hide modern appurtenances. Over the years, the condition of the garden declined to its present state and is now a remnant of its original design. In an effort to reestablish the historic character of the Thomas House grounds, the mid-20th century designed garden and associated brick paths should be removed and maintained as lawn. The Civil War era garden that existed at the Thomas House should not be reestablished since there is no documentation on its specific location and design (see drawings 2.5-2.8).

Task 17: Reestablish Thomas House back yard walk

Following the removal of the existing brick walks that were installed in the 1950s, a stabilized earthen walk from the rear entrance of the house should be constructed that extends to the brick outbuilding and reestablished Thomas Farm

Road trace (see Task 11). While it is unknown if a similar path existed during the historic period, the established path will provide access to historic buildings and enable visitors to meander around the Thomas House grounds. The park should reuse the bricks as a soldier course along the proposed earthen walks throughout the property (Drawings 2.55-2.8).

Task 18: Rehabilitate existing Thomas Farm entrance lane

The most historically appropriate treatment is to remove the existing non-historic bituminous asphalt and return to the historic earthen/gravel surface. However, since this treatment alternative is unrealistic due to the building's current use as the parks administrative headquarters, the Thomas Farm entrance lane should be surfaced with chip-seal asphalt. This is traditional asphalt with larger and coarser aggregate top-coat that creates a more textured, varied surface that is similar to a loose gravel surface. The chip seal surface can be top-dressed with a wide range of aggregates that reproduce the appearance of the historic earthen/gravel surface. The existing width of the lane should be maintained (Drawings 2.35-2.8)..

Task 19: Reestablish Thomas Farm circular entrance lane

Nineteenth-century illustrations and landscape evidence indicates that the Thomas Farm entrance lane circled in front of the house. To enhance the historic spatial character and improve pedestrian access throughout the grounds, the circular entrance lane should be reestablished. Before the project begins, additional archeological investigation and documentation may be necessary to determine the historic width and surface of the circular entrance lane. If an archeological investigation does not reveal additional information, the roadbed should be approximately ten feet wide and surfaced in bituminous asphalt top-dressed with a chip-seal similar to the main entrance lane treatment (see task 18). Due to the existing slope on the northwestern portion of the property—along the entrance lane road trace, work will involve adding fill in some locations. However, the construction of the circular pad should avoid excavation into the existing historic roadbed (Drawings 2.35-2.8).

Task 20: Rehabilitate Thomas Farm loop trail

As part of the recommendations to reestablish the open character and historic limits of the Thomas Farm fields (see task 5a), the Thomas Farm trail should be realigned to more closely follow the historic alignment of the Upper Worthington Road trace. Due to the existing slope and surface, the trail will not be universally accessible. Finally, an additional segment of the trail should be constructed to connect to the Worthington property via the proposed pedestrian deck. This segment will branch trail will branch off the existing trail. (see Drawing 2.0).

Task 21: Remove detracting non-historic trees

During the historic period, numerous deciduous and evergreen canopy trees surrounded the Thomas House. Although most of the trees on the property are not historic, they continue to evoke the historic spatial character of the property. However, the density and type of some non-historic specimen trees do not contribute to the yards character and should be removed. Drawings 2.5-2.8 indicate a preliminary selection of trees for removal. Field checking should be undertaken prior to removals to assure that good specimens are retained.

Task 22: Reestablish evergreen trees/plantings within circular entrance lane

Throughout the historic period, two large evergreen trees—likely Norway spruces—flanked the entry walk to the Thomas House. In an effort to reestablish the historic character of the property, these trees should be replanted. While the Norway spruce on the south side of the proposed entry walk along the east elevation of the house (see task 14) can be reestablished at anytime, the other spruce should be planted once the mature red oak reaches its life expectancy and has to be removed (Drawings 2.5-2.8).



Figure 2.3.
Example of a recently planted orchard at Oxon Hill Farm, Oxon Hil, Maryland. As shown in the images, in order protect the proposed orchard plantings at the Thomas Farm from deer, wired mesh fencing should be installed around each tree. (National Capital Region, 2013).

Task 23: Reestablish orchard and screen incompatible land use

Surround the concrete block tenant house with apple trees to reestablish the general limits and character of the orchard that existed during the historic period, as shown on the Civil War-era Hotchkiss map (see Figure 1.6—to be added later). Trees should be planted on an approximate thirty-foot grid, the typical practice during the mid-nineteenth century. While the historic orchard may have been much larger, a smaller size will reestablish historic character and minimizing maintenance, as well as provide screening of the concrete block tenant house and proposed parking lot. The orchard should be approximately 175 feet long (east-west) by 135 feet deep (approximately two rows of apple trees surrounding the parking lot and building), forming a rectangular area parallel to the Thomas/ Worthington Farm and Baker Valley Roads. Although the orchard may have historically contained other fruit trees, it is recommended that the reestablished orchard be planted in apple because it is the only documented fruit species (Frederick Examiner 1856 in HABS MD-1052, 1991: 7-8; Hotchkiss 1864; U.S. Agricultural Census 1850,1860).

To protect the newly planted orchard from deer, drive three or four stakes into the ground surrounding each tree. Cut a piece of wire mesh to size (approximately 6 feet high) wrapping the mesh around the stakes. This will form a barrier around the tree, preventing it to be browsed upon by deer. There are two alternatives for selection of apple varieties; all should be standards, not dwarfs:



Figure 2.4.
Photosimulation of the orchard at the Thomas Farm. The orchard will reestablish historic character and screen the concrete block tenant house and proposed parking lot. Note: the concrete tenant house is shown painted a more suitable color that blends with the surrounding landscape (National Capital Region, 2013).

Alternative 1 (Historic Varieties): Plant varieties of apple that were used in Southern farm orchards prior to the Civil War, such as York Imperial (originally Johnson's Fine Winter), Winesap, and Ben Davis. Other popular varieties at the time included McIntosh, Rome Beauty, and Rhode Island Greening (green apples were grown in the orchard in the early twentieth century). Use multiple varieties, grouped together rather than scattered throughout the orchard.[18]

Alternative 2 (Contemporary Varieties): Use a contemporary cultivar that is hardy and disease resistant to minimize maintenance, such as Red Delicious (or Fugi), Freedom, or Goldrush. To maintain the character of an mid-1800s farm orchard, the fruit trees should be maintained in their natural habit with an unpruned scaffold form, and tall trunks that measure four to eight feet before branching (Figure 2.4).

Besides the visual screening provided by the reestablished orchard, the concrete block tenant house should be painted a lighter shade (earth tone)to minimize visual intrusion and contrast by blending with the landscape; and the color and finish should not create excessive glare (Figure 2.5) (Drawings 2.3 and 2.4).

Task 24: Screen contemporary utilities

Make contemporary utilities inconspicuous in the landscape. Use native plants or those found historically in the landscape, such as American holly (*Ilex opaca*), Eastern red-cedar (*Juneriperus virginiana*), white pine (*Pinus strobus*), sweetbay magnolia (*Magnolia virginiana*), great laurel (*Rhododendron maximum*), mountain laurel (*Kalmia latifolia*), and inkberry (*Ilex glabra*) to effectively screen the utilities. The planting layout should be simple that blends nicely with the surrounding landscape. Sufficient space should be kept between the shrubs and the utilities to allow access for maintenance purposes (refer to drawings 2.5-2.8).

Task 25: Rehabilitate Thomas House exterior

Based on the treatment recommendations found in the *Thomas House-Thomas Farm (Araby) Historic Structure Report* (2010), the exterior of the Thomas House exterior should be rehabilitated to remove non-historic features from the elevations of the structure which are not required to fulfill its purpose as administrative offices. This work will include the removal of the enclosed porch (west) and garage (east) wings. Finally, the north porch on the north elevation of the house should be reconstructed to its ca. 1860-1910 appearance (Drawings 2.5-2.8).

Task 26: Remove Thomas Farm retaining wall

Concurrent with the removal of the Thomas House gardens and brick pathways, the retaining wall near the tenant house should be removed and the lawn be regraded (Drawings 2.5-2.8).

Task 27: Replace bird house within circular entrance lane

Based on a ca. 188202 rendering of *Araby* (Thomas Farm), a bird house was located in the center of the circular entrance lane during the historic period. The park should reinstall the bird house as it helps to convey the historic use and character of the property (Drawings 2.5-2.8).

WORTHINGTON HOUSE GROUNDS (DRAWING 2.9)

Overall guidelines for treatment of the Worthington House grounds is to retain its rural character and improve visitor access and landscape interpretation. Effective treatment should find a balance between the cultural and natural resources within the area. In particular, field and forest patterns should reflect conditions at the outbreak of the Civil War, unless there is a management or environmental reason for not doing so, such as screening incompatible land uses, protecting native plant and animal species and watersheds, or altering grassland habitat. To improve visitor experience, circulation patterns within the Worthington House grounds should be retained, enhanced and expanded, while providing the highest level of accessibility for people with disabilities. Although the reconstruction or reestablishment of historic buildings and vegetative material are not feasible due to lack of documentation, these features should be interpreted. Public understanding of the Worthington House grounds will be greatly enhanced by improving the content, appearance, and location of the existing wayside exhibits, as well as planning a series of new wayside exhibits and themes for features and stories not previously interpreted.

Task 28: Improve accessibility and landscape interpretation at the Worthington Farm

The exterior restoration and renovation of the Worthington House was completed in 2004. Eventually, the park anticipates rehabilitating the interior of the house to provide exhibit space on the first floor. At present, the Worthington Farm property, including the entrance drive, does not meet accessibility specifications. Based on the *Director's Order #42, Accessibility for Visitors with Disabilities in National Park Service Programs and Services*, structures and grounds at the Worthington Farm should be universally accessible to the greatest degree possible. Based on the recommendations found in the General Management Plan (2010), a universal accessibility route should be constructed from the visitor parking lot to the house.[19] Under standards for accessibility, the path to the house must have a slope of less than 1:12 and be stable, firm, and slip resistant (see Appendix A and B). The path should be constructed along the existing entrance drive, where it terminates at a circular pad that includes a bench and waysides. At this location, visitors will have the opportunity to continue along on the trails throughout the property or continue onto a path that connects to the Worthington House (connection to house will be determined at a later date). The pathway should be approximately five feet wide and surfaced with a stabilized earthen or gravel surface, similar to what is proposed for the Thomas house grounds and commemorative area (see tasks 13 and 15).

Currently, signage at the Worthington Farm is inadequate. In particular, there is a lack of wayfinding signs on the majority of the trails and the wayside exhibits are poorly placed and inaccessible. The location of the waysides located in front of the house interferes with the view of the house and yard and encourages visitors to climb off the road and over the historic road berm to view them which could lead to the development of a damaging social trail, erosion of slope and visitor injury. Public understanding of the landscape could be greatly enhanced by improving the content, appearance, and locations of the existing wayside exhibits. In an effort to be consistent with the draft *Wayside Exhibit Concept Plan* (2012), a series of wayside exhibits should be placed at the parking area and within the proposed circular pad (see drawing 12.69).

Task 29: Establish meadow at Worthington Farm

Through the years frequent flooding of the Monocacy River has caused low yields in hay production within the southernmost field on the Worthington Farm property. Because of these circumstances, and the desire to improve and protect grassland habitat, a meadow should replace the hayfield. The process should begin with the application of herbicides across the hayfield to kill the existing hay and herbaceous material. Following their removal, the area should be seeded with a mixture of native grasses. The grass mixture should include both warm and cool

season grasses such as big and little bluestem, Indian grass, switchgrass, Virginia wild rye, Canada wild rye, and native forbs (Drawing 2.0).

ENDNOTES

1 Robert R. Page, Cathy A. Gilbert, and Susan A. Dolan, *A Guide to Cultural Landscape Reports: Contents, Process, and Techniques* (Washington, D.C.: National Park Service, 1998), 81.

2 Such tasks are addressed in a separate cultural landscape document known in the NPS as a Preservation Maintenance Plan. This plan is not included in the scope of this project.

3 On March 1, 1929, Congress authorizes the purchase and maintenance of up to one acre of land to commemorate the Battle of Monocacy, Maryland (P.L 898, H.R. 11722); On June 21, 1934, Monocacy National Military Park is established to commemorate the Battle of Monocacy, Maryland and to preserve for historical purposes the breastworks, earthworks, walls , or other defenses and shelters used by the armies therein, the battlefield at Monocacy (P.L. 73-443, H.R. 7982); On July 7, 1964, Congress designates July 9, 1964 as "Monocacy Battle Centennial"(P.L. 88-357, H.R. 9094); On October 21, 1976, "Monocacy National Military Park" is changed to "Monocacy National Battlefield." Congress also authorizes boundary and funding for land acquisition (P.L. 94-578, H.R. 3830); On December 10, 1991, Congress authorizes $20,000,000 for land acquisition at Monocacy National Battlefield (P.L. 102-202, H.R. 990).

4 National Park Service, *General Management Plan for Monocacy National Battlefield* (2010), 35-38. (hereafter, "GMP")

5 National Park Service, *General Management Plan for Monocacy National Battlefield* (2010), 75-83.

6 National Park Service, *Resource Stewardship Strategy, Monocacy National Battlefield* (2011), xi. (hereafter, "RSS")

7 National Park Service, Resource Stewardship Strategy, Monocacy National Battlefield (2011), 5-6.

8 National Park Service, Resource Stewardship Strategy, Monocacy National Battlefield (2011), 6-7.

9 Site specific stories and their connection to the primary themes at Worthington Farm include military (theme 1); history of structures (theme 3); agricultural permitting and preservation (theme 8); the Worthington Family prior to battle, during, and after battle (theme 4); McCausland's attacks (theme 1); use of Brooks Hill during attacks/natural history (theme 3); encroachment of I-270 and industry as seen across river (theme 8); changing landscape-trees/encroachment-how it effects interpretation (theme 3); crossing at Worthington/McKinney Ford-McCausland and Gordon (theme 1); Glenn Worthington's experience the battle and his involvement in the park's preservation (theme 4 & theme 7); slavery (theme 4); General Breckinridge –his interaction with Mr. Worthington during the battle and setting up his headquarters on the Worthington Farm (theme 1). At Thomas Farm site specific stories include military strategy (theme 1); agricultural permitting and preservation (theme 8); the Thomas family prior to battle, during, and after battle (theme 4); transportation-Georgetown Pike ran along the Thomas property, and prior to the covered wooden bridge, a ferry/tavern site was located on the farm (theme 2); military strategy (theme 3); architectural changes to the house in relation to the Battle of Monocacy (theme 3); I-270 encroachment (theme 8); Gordon's attack on the

Union soldiers (theme 1); Vredenburg of the 14th NJ; protecting the family during the battle; knowing the family from when his unit was encamped at Camp Hooker earlier in the war (theme 1 & theme 4); post battle-how the Thomas family, particularly Alice Thomas and Mamie Tyler, helped the soldiers (theme 4); council of war held by General Grant at the Thomas house in August 1864 (theme 2); and monuments (theme 7). National Park Service, *Monocacy National Battlefield Long-Range Interpretive Plan* (2010), 7-8.

10 National Park Service, *Monocacy National Battlefield Long-Range Interpretive Plan* (2010), 38.

11 Primary treatment alternatives considered but not recommended: Preservation is not recommended as the primary treatment for the Thomas and Worthington Farm landscapes because they would retain their existing appearance that is not consistent with the historic character of the landscape; Restoration is not recommended as the primary treatment for both landscapes due to the lack of adequate documentation, particularly regarding the vegetation (i.e. layout of vegetable and flower gardens, etc) the need to address contemporary park uses and visitor needs, and the existence of the Vermont Monument that was determined significant under Criterion A for commemoration; and Reconstruction is not recommended as the primary treatment for both landscapes because the property retains much of its historic fabric.

12 *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (Department of the Interior, 1995).

13 National Park Service, *General Management Plan for Monocacy National Battlefield* (2010), 44. (hereafter, "GMP")

14 Richard K. Sutton, *Osage-orange Hedgerow Management Plan, Homestead National Monument of America* (University of Nebraska, Lincoln, Nebraska, 2005) 13-16.

15 Joy Beasley, *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm* (Regional Archeology Program, National Capital Region, National Park Service, 2010), 149-151.

16 Although it is assumed—based on images taken by the Baltimore Sun in 1929—that a vegetable garden and orchard existed south of the Worthington House during the historic period, it remains undetermined due to the lack of documentation.

17 National Park Service, *General Management Plan for Monocacy National Battlefield* (2010), 43.

18 Susan Dolan, *Fruitful Legacy: A Historic Context of Orchards in the United States, with Technical Information for Registering Orchards in the National Register of Historic Places* (Department of the Interior, National Park Service, 2009).

19 National Park Service, *General Management Plan for Monocacy National Battlefield* (2010), 76-78.

TABLE 2.0: SUMMARY OF LANDSCAPE TREATMENT TASKS FOR THE THOMAS AND WORTHINGTON FARMS		
TASK ID	Task Name	PRIORITY (1=High, 2=Medium, 3=Low)
Site-Wide		
Task 1	Preserve historic character	1
Task 2	Preserve historic road traces	1
Task 3	Construct pedestrian deck over Interstate 270	3
Task 4	Protect vegetation from browsing deer	2
Task 5	Remove non-historic woods and tree lines	2
Task 6	Manage Osage orange trees	2
Task 7	Manage invasive and successional vegetation	2
Task 8	Reestablish and Preserve roadside trees	2
Task 9	Stabilize and document the Middle Ford Ferry Tavern Site	1
Task 10	Reestablish views between the Thomas and Worthington Farms	2
Task 11	Reestablish fence lines [rows] within Thomas and Worthington Farm landscapes	3
Task 12	Interpret sites of lost buildings and landscape features at Worthington and Thomas farms	3
Task 13	Rehabilitate commemorative area	2
Thomas Farm		
Task 14	Improve visitor and staff parking at the Thomas Farm main house	1
Task 15	Improve accessibility to the Thomas Farm tenant house and grounds	1
Task 16	Remove Thomas House garden, brick garden paths, and patio area	2
Task 17	Reestablish Thomas House back yard walk	3
Task 18	Rehabilitate existing Thomas Farm entrance lane	3
Task 19	Reestablish Thomas House circular entrance lane	2
Task 20	Rehabilitate Thomas Farm loop trail	3
Task 21	Remove detracting non-historic trees	2
Task 22	Reestablish evergreen trees within circular entrance lane	3
Task 23	Reestablish orchard and screen incompatible land use	3
Task 24	Screen geothermal wells and other contemporary utilities	2
Task 25	Rehabilitate Thomas House exterior	3
Task 26	Remove Thomas Farm retaining wall	3
Task 27	Reestablish bird feeder within circular entrance lane	3
Worthington Farm		
Task 28	Improve accessibility and landscape interpretation at the Worthington house	1
Task 29	Establish meadow at Worthington Farm	2

TABLE 2.1: PLANT LIST FOR THE THOMAS HOUSE GROUNDS		
Map Code	Botanical Name	Common Name
AH	*Aesculus hippocastanum*	Horse Chestnut
AP	*Acer platanoides*	Norway Maple
ASa	*Acer saccharinum*	Silver Maple
ASc	*Acer saccharum*	Sugar Maple
CCa	*Cercis Canadensis*	Redbud
CCr	*Carpinus caroliniana*	Hornbeam
CF	*Cornus florida*	Flowering Dogwood
CK	*Cornus kousa*	Kousa Dogwood
CL	*Cunninghamia lanceolata*	China Fir
CM	*Castanea mollissima*	Chinese Chestnut
FS	*Fagus sylvatica*	European Beech
HS	*Hibiscus syriacus*	Rose-of-Sharon
IO	*Ilex opaca*	American Holly
IS	*Ilex species*	Holly
JR	*Juglans regia*	English Walnut
KP	*Koelreuteria paniculata*	Panicled Golden-Rain Tree
LI	*Lagerstroemia indica*	Crape Myrtle
LT	*Liriodendron tulipifera*	Tulip Poplar
MGl	*Metasequoia glyptostroboides*	Dawn Redwood
MGr	*Magnolia grandiflora*	Magnolia
PA	*Picea abies*	Norway Spruce
PC	*Prunus cerasifera*	Cherry Plum
PSe	*Prunus sserotina*	Black Cherry
PS	*Pinus strobes*	White Pine
QP	*Quercus phellos*	Willow Oak
QR	*Quercus rubra*	Red Oak
RP	*Robinia pseudoacaia*	Black Locust
SJ	*Sophora japonica*	Japanese Pagodatree
TS	*Taxus species*	Yew
UA	*Ulmus Americana*	American Elm

Table 2.2: Landscape Treatment Construction Class C Government Cost Estimate for Thomas and Worthington Farms, Monocacy National Battlefield

Note: Location (Silver Spring, MD), labor, equipment, and material, and planning and compliance costs (20%) included in subtotal costs. Where appropriate, consultant (architect, engineer, etc.) fees are included in subtotal costs.

CLR Treatment Recommendations and Tasks	CLR Treatment Task Components	Items and Assumptions	Unit of Measure	Unit Cost and Subtotal	Source
Site wide					
Task 1 Preserve Historic Character	1. Continue agricultural special use permit	NA	NA	NA	NA
	2. Screen adjoining non-historic development and incompatible land uses.	Approx. 20 trees and shrubs	AC	$74.55 EA, Ilex opaca, 3-4' $49.88 EA, Juniperus virginiana, 2'-3' B&B $46.20 EA, 2'-3' B&B $51.98 Magnoli virginiana, 3'-4' B&B. $41.48 Rhododendron maximum, cont. $91.35 EA, 2'-3- $51.98 EA, Ilex glabra 2'-2'1/2" $ 288.75 EA, Acer saccharum, 1-1/2"-2" cal. $462.00 EA, Quercus rubra, 2-1/2" to 3" cal. Subtotal (includes 20% comp):$2,536	RS Means 2013 Online Version. 3293 Plants
	3. Continue to work with federal, state, and local government entities, nonprofits, and private property	NA	NA	NA	NA
	4. Continue to work with MD State Highway Administration regarding widening of Interstate 270	NA	NA	NA	NA
	5. Develop Viewshed Protection Plan	NA	NA	$62,400	PMIS 196188
Task 2: Preserve Historic Road Traces (including Georgetown Road Trace)	1. Clear saplings and small trees that fallen across traces	Approx. 100 trees (Remove selective trees, onsite, using chain saws and chipper, up to 6" diameter)	EA	$211.04 EA. Subtotal (includes 20% comp):$25,325	RS Means 2013 Online Version. 3113 Selective Tree and Shrub Removal and Trimming
	2. Georgetown Pike trace should maintained as mown lawn	Approx .5 acres (selective clearing of brush with brush saw)	AC	$1408.97/AC Subtotal (includes 20% comp):$704.00	RS Means 2013 Online Version. 3113 Selective Tree and Shrub Removal and Trimming
Task 3: Construct Pedestrian Deck Over Interstate 270	1. Construct pedestrian deck over Interstate 270 (covered with soil and crops, fence rows, and small trees)	NA	NA	$20-30 million (excluded from overall cost)	Monocacy National Battlefield General Management Plan (2010)
	2. Connect "circle trail" on Thomas Farm over deck to Worthington Farm	Approx. 6,321 SF (702 SY) or 234 CY; Base course ¾" stone base, compacted 3" deep; Pea gravel surface with Klingstone application	SY/CY/SF	$5.00/SY crushed ¾" stone base $35.00/CY pea gravel $20/gallon of Klingstone (1 gal.=12 SF) Subtotal (includes 20% comp):$26,586	RS Means 2013 Online Version. 3211 Base Courses; 3206 Schedules for Exterior Improvements; and Klingstone website

CLR Treatment Recommendations and Tasks	CLR Treatment Task Components	Items and Assumptions	Unit of Measure	Unit Cost and Subtotal	Source
Task 4: Protect Vegetation From Browsing Deer	1. Employ multiple means including exclusion, deer resistant plants, scare devices, and/or repellents	Refer to tasks 8,6,	NA	NA	NA
Task 5: Remove Non-Historic Woods and Tree Lines	1. Remove trees along Thomas Farm field edges and fence lines	Approx. 9 acres (cut and chip light trees to 6" diameter)	AC	$3,820.85/AC Subtotal (includes 20% comp):$41,264	RS Means 2013 Online Version. 3111 Clearing and Grubbing
	2. Clear woods along both side of Interstate 270	Approx. 4 acres (clearing selective trees with tractor)	AC	$5,245.93/AC Subtotal (includes 20% comp):$25,126	RS Means 2013 Online Version. 3113 Selective Clearing
	3. Woods on north side of Worthington House	Approx. 4 acres (cut and chip light trees to 12" diameter)	AC	$5,434.95/AC Subtotal (includes 20% comp):$26,086	RS Means 2013 Online Version. 3111 Clearing and Grubbing
	4. Woods on the south side of Worthington House	Approx. 4 acres (cut and chip light trees to 12" diameter)	AC	$5,434.95/AC Subtotal (includes 20% comp):$26,086	RS Means 2013 Online Version. 3111 Clearing and Grubbing
	5. Tree line along auxiliary farm lane	Approx. 4 acres (clearing selective trees with tractor)	AC	$5,245.93/AC Subtotal (includes 20% comp):$25,126	RS Means 2013 Online Version. 3113 Selective Clearing
	6. Trees along Worthington Farm field edges and hedgerows	Approx. 1.5 acres (cut and chip light trees to 6" diameter)	AC	$3,820.85/AC Subtotal (includes 20% comp): $6,877	RS Means 2013 Online Version. 3111 Clearing and Grubbing
Task 6: Manage Osage Orange Trees	1. Existing Osage orange trees. Remove dead limbs	Approx. 50 trees (Remove selective trees, onsite, using chain saws and chipper, up to 6" diameter)	EA	$211.04 EA. Subtotal (includes 20% comp):$12,662.50	RS Means 2013 Online Version. 3113 Selective Tree and Shrub Removal and Trimming
	2. Propagate and plant Osage orange hedge on Thomas Farm	Approx. 50 shrubs	EA	$30.00 EA Maclura Pomifera Subtotal (includes 20% comp):$1,800	RS Means 2013 Online Version. 3291 Planting Preparation and 32923 Plants
Task 7: Manage Invasive and Successional Vegetation	1. Remove invasive plant material	Herbicides and Supplies ½ Salary of temp. bio tech	EA	$18,000 ½ salary of bio tech $14,000 herbicides and supplies Subtotal (includes 20% comp):$38,400	Refer to PMIS 138129
Task 8: Reestablish and Preserve Roadside Trees	1. Replace trees in-kind along Thomas Farm Entrance Lane that have been removed or have reached life expectancy	Approx. 60-65 trees (not to be replaced all at once)	EA	$640.5 EA, Robinia pseudocacia, 36" Box Subtotal (includes 20% comp):$49,978.5	RS Means 2013 Online Version. 32923 Plants
	2. Plant a row of new trees along historic boundary of Thomas Farm Road	Approx. 20 trees	EA	$300.00 EA (Avg. for trees) Subtotal (includes 20% comp):$7,200	RS Means 2013 Online Version. 32923 Plants

CLR Treatment Recommendations and Tasks	CLR Treatment Task Components	Items and Assumptions	Unit of Measure	Unit Cost and Subtotal	Source
Task 9: Document Middle Ford Ferry Tavern Site	1. Refer to *Archeological Overview, Assessment, Identification, and Evaluation Study of the Thomas Farm (2010)*	Not applicable	Not applicable	Not applicable	Not applicable
Task 10: Reestablish Views Between the Thomas and Worthington Farms	1. Refer to Task 3 and Task 5	Not applicable	Not applicable	Not applicable	Not applicable
	2. Screen interstate highway with small native shrubs (no larger than ten feet in height)	Approx. 43,560 (1 AC) and 436 shrubs	SF	$50.00 (Avg. for shrubs) Subtotal (includes 20% comp):$26,160	Market Research
Task 11: Rehabilitate Fences within Thomas and Worthington Properties	1. Rehabilitate fences within Thomas House grounds (realign board fencing and reestablish Osage orange hedge)	Approx. 678 LF	LF	$24.61 Board Fencing (3-rail) Subtotal (includes 20% comp:$20,022	RS Means 2013 Online Version. 3231 Fences and Gates
	2. Reestablish fenceline at Worthington Farm	Approx. 2,154 LF	LF	$30.00 rustic rails, 3 rail, 4' high Subtotal (includes 20% comp)$77,544	RS Means 2013 Online Version. 3231 Fences and Gates
	3. Reestablish fenceline along historic boundaries	Approx. 1,706 LF	LF	$30.00 rustic rails, 3 rail, 4' high Subtotal (includes 20% comp):$61,416	RS Means 2013 Online Version. 3231 Fences and Gates
Task 12: Interpret Sites of Lost Buildings	1. Install waysides, print brochures, add to existing smart phone "app" Refer to Long-Range Interpretative Plan. *Contact Harpers Ferry*	Not applicable	Not applicable	Not applicable	Not applicable
Task 13: Rehabilitate Commemorative Area	1. Construct bus/car pullout	Approx. 1,203 SF (133 SY)	SF/SY	$5.00/SY Gravel base $6.50/SF for Gravel Pave (cells/grid) Subtotal (includes 20% comp):$10,180	RS Means 2013 Online Version. 3211 Base courses; Gravel/GrassPave website
	2. Construct pedestrian path connection to Vermont and Pennsylvania Monuments	Approx. 2,799 SF (311 SY) or 104 CY; Base course ¾" stone base, compacted 3" deep; Pea gravel surface with Klingstone application	SY/CY/SF	$5.00/SY crushed ¾" stone base $35.00/CY pea gravel $20/gallon of Klingstone (1 gal.=12 SF) Subtotal (includes 20% comp):$11,808	RS Means 2013 Online Version. 3211 Base Courses; 3206 Schedules for Exterior Improvements; and Klingstone website
Thomas Farm					
Task 14: Improve Visitor and Staff Parking at the Thomas Farm Main House	1. Alternative A	Approx. 10,652 SF (1,183 SY) Asphalt removal; Approx. 5,000 SF (555 SY) Construction of parking lot (12 spaces, 1 handicapped space); Approx. 1,303 SF (144 SY) or (48 CY) stabilized path connecting the main entrance of the house, the parking lot and back porch.	SF/SY	$3.86 SY Asphalt removal $3.72 SY Grading $8.81/SY crushed gravel base $10.11/SY asphalt concrete $.70/SY exposed aggregate finish $35.00/CY pea gravel $20/gallon of Klingstone (1 gal.=12 SF) Subtotal(include 20% comp and 2.5% engineer fees):$27,846	RS Means 2013 Online Version. 0241 Demolition; 3122 Grading 3211 Base Courses; 3206 Schedules for Exterior Improvements;

CLR Treatment Recommendations and Tasks	CLR Treatment Task Components	Items and Assumptions	Unit of Measure	Unit Cost and Subtotal	Source
	2. Alternative B	Approx. 10,652 SF (1,183 SY) Asphalt removal; Approx. 6,500 SF (722 SY) Construction of parking lot (12 spaces, 1 handicapped space); Approx. 1,613 SF (179 SY) or (60 CY) stabilized path connecting the main entrance of the house, the parking lot and back porch.	SF/SY	$3.86 SY Asphalt removal $3.72 SY Grading $8.81/SY crushed gravel base $10.11/SY asphalt concrete $.70/SY exposed aggregate finish $35.00/CY pea gravel $20/gallon of Klingstone (1 gal.=12 SF) Subtotal(include 20% comp and 2.5% engineer fees):$32,098	RS Means 2013 Online Version. 0241 Demolition; 3122 Grading 3211 Base Courses; 3206 Schedules for Exterior Improvements;
Task 15: Improve Visitor and Staff Parking at the Thomas Farm Main House	1. Enlarge Baker Valley Road parking lot	Approx. 9,410 SF (1,045 SY)	SF/SY	$8.81/SY crushed gravel base $10.11/SY asphalt concrete $.70/SY exposed aggregate finish Subtotal(include 20% comp and 2.5% engineer fees):$25,217	RS Means 2013 Online Version. Base Courses; 3206 Schedules for Exterior Improvements;
	2. Construct pedestrian path to tenant house	Approx. 2,991 SF (332 SY) or 110 CY	SF/SY/CY	$5.00/SY crushed ¾" stone base $35.00/CY pea gravel $20/gallon of Klingstone (1 gal.=12 SF) Subtotal (includes 20% comp):$12,594	RS Means 2013 Online Version. 3211 Base Courses; 3206 Schedules for Exterior Improvements; and Klingstone website
	3. Reestablish portion of Thomas Farm Road and Entrance Lane as path	Approx. 9,762 SF (1,084 SY) or 361 CY	SF/SY/CY	$5.00/SY crushed ¾" stone base $35.00/CY pea gravel $20/gallon of Klingstone (1 gal.=12 SF) Subtotal (includes 20% comp): $54,200	RS Means 2013 Online Version. 3211 Base Courses; 3206 Schedules for Exterior Improvements; and Klingstone website
	4. Reconfigure livestock (cow) enclosure	Approx: 1275 LF Remove and dispose existing fences (any type) Approx: 950 LF Fencing added Approx. 1600 SF (177 SY) or 59 CY	LF/SF	$2.00/LF Removal $3.65/SF Concrete pad $23.07/LF Open rail fencing, split rail , 3 rail, 4' high Subtotal (includes 20% comp): $36,367	RS Means 2013 Online Version. 3231 Fences and Gates; and market research for fence removal
	5. Construct special events parking area	Approx. 4,216 SF (2,108 CF)	SF/CB	$6.50 SF GrassPave $35-42 per ton for stabilized soil (1 ton=20 CF) Subtotal(include 20% comp):$37,311	Gravel/GrassPave website and Amereq, Inc. supplier for stabilized soil
Task 16: Remove Thomas House Garden and Brick Garden Paths	1. Remove vegetation and brick paths. Maintain as lawn.	Approx. 200 shrubs; 1630 SF (815 CF) brick paving to be removed	EA	$23.48/EA $.32/CF Subtotal(include 20% comp):$5,896	RS Means 2013 Online Version. 3113 Remove Selective Trees and Shrubs; 0241 Demolition
Task 17: Reestablish Thomas House Back Yard Walk	1. Construct earthen/ gravel walk connecting rear entrance of Thomas House to brick outbuilding and Thomas Farm Road trace.	Approx. 758 SF (84 SY)	SF	$5.16 SY Stone dust, 4" thick Subtotal(include 20% comp):$519.00	RS Means 2013 Online Version. 3206 Schedules for Exterior Improvements
Task 18: Rehabilitate Existing Thomas Farm Entrance Lane	1. Resurface Existing Thomas Farm Entrance Lane (with chip seal)	Approx. 1,300 SY	SY	$10.11/SY asphalt concrete $.70/SY exposed aggregate finish	RS Means 2013 Online Version. Base Courses; 3206 Schedules

CLR Treatment Recommendations and Tasks	CLR Treatment Task Components	Items and Assumptions	Unit of Measure	Unit Cost and Subtotal	Source
				Subtotal(include 20% comp):$16,863	for Exterior Improvements; 3122 Grading
Task 19: Reestablish Thomas Farm Circular Entrance Lane	1. Construct circular drive	Approx. 7,780 SF (864 SY)	SF/SY	$3.72/SY Grading $8.81/SY crushed gravel base $10.11/SY asphalt concrete $.70/SY exposed aggregate finish Subtotal(include 20% comp and 2.5% engineer fees):$23,977	RS Means 2013 Online Version. Base Courses; 3206 Schedules for Exterior Improvements; 3122 Grading
Task 20: Rehabilitate Thomas Farm Trail	1. Realign Thomas Farm trail and construct connection to the Worthington property	Approx: .3 acres	EA	$3,820/AC Subtotal (includes 20% comp):$1,375	RS Means 2013 Online Version. 3111 Clearing and grubbing
Task 21: Remove Detracting Non-Historic Trees	2. Remove trees on Thomas property	Approx: 40 trees	EA	$316.56/EA 8" to 12" Dia $80.00 Stump grinding Subtotal (includes 20% comp):$18,400	RS Means 2013 Online Version. 3113 Selective Clearing
Task 22: Reestablish Evergreen Trees/Plantings Within Circular Entrance Lane	1. Plant evergreen trees	2 Norway spruces	EA	$191.10/EA Picea abies Subtotal (includes 20% comp):$459	RS Means 2013 Online Version. 3293 Plants
Task 23: Reestablish Orchard and Screen Incompatible Land Use	1. Plant apple trees (standard historic varieties)	20 apple trees (diff. varieties, standard, 2-3 yr.)	EA	$67.20/EA Subtotal (includes 20% comp):$1,613.00	RS Means 2013 Online Version. 3293 Plants
	2. Paint concrete block tenant house	996 SF	SF	$.81 SF Subtotal (includes 20% comp):$968	RS Means 2013 Online Version. 0991 Painting, two coats
Task 24: Screen Contemporary Utilities	1. Plant native shrubs	Refer to Task 1	NA	NA	NA
Task 25: Rehabilitate Thomas House Exterior	1. Remove enclosed porch (west) and garage (east) wings. Add porch on north elevation of house. *Refer to Thomas Farm (Araby) Historic Structure Report, 2010.*	752 SF (83 SY) or 7520 CF	SF/SY	$.32/CF Small masonry bldg. Subtotal (includes 20% comp):$2,887	RS Means 2013 Online Version. 0241 Demolish, Remove, pavement, and curb
Task 26: Remove Thomas Farm Retaining Wall	1. Remove retaining wall. Re-grade lawn.	106 SF (12 SY)	SF/SY	$1.36/SF Removal of stone $2.88/SY Fine grading and seeding Subtotal (includes 20% comp):$214.00	RS Means 2013 Online Version. 0241 Demolish, Remove, pavement, and curb; 3291 Landscape Grading
Task 27: Install Bird House Within Circular Entrance Lane	1. Install bird house	1 bird house on post	EA	$500.00/EA Subtotal: $500.00	Market research
Worthington Farm					
Task 28: Improve Accessibility and Landscape Interpretation at the Worthington House	1. Construct pedestrian path connection from parking area to wayside area	Approx. 2,130 SF (236 SY) or 79 CY; Base course ¾" stone base, compacted 3" deep; Pea gravel surface with Klingstone application	SY/CY/SF	$5.00/SY crushed ¾" stone base $35.00/CY pea gravel $20/gallon of Klingstone (1 gal.=12 SF) Subtotal (includes 20% comp):$8,994	RS Means 2013 Online Version. 3211 Base Courses; 3206 Schedules for Exterior Improvements; and Klingstone website
	2. Install new wayside exhibits (refer to *Wayside Exhibit Concept Plan,* 2012)	NA	NA	NA	NA
Task 29: Establish Meadow at Worthington Farm	1. Remove existing hay and herbaceous material and plant mix of native grasses	Approx. 22 acres (York rake and hydro seed)	AC	$2,310/AC hydro seeding Subtotal (includes 20% comp):$58,159	RS Means 2013 Online Version. 3291 Planting Preparation; and 3293 Plants
		Total Cost		$951,744 (excludes construction ofpedestrian deck)	

Cultural Landscape Report

Thomas &Worthington Farms
Monocacy National Battlefield

Frederick, Maryland

2012 Treatment-Site Wide

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

SOURCES

1. National Capital Region, *Cultural Landscape Inventories for the Monocacy National Battlefield* (2004, revised 2007) *and Thomas Farm* (2009).
2. Monocacy National Battlefield and Frederick GIS Data
3. Orthophotography, 2005, 2009, and 2012.
3. Site visits, June and July 2012.

DRAWN BY

Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

LEGEND

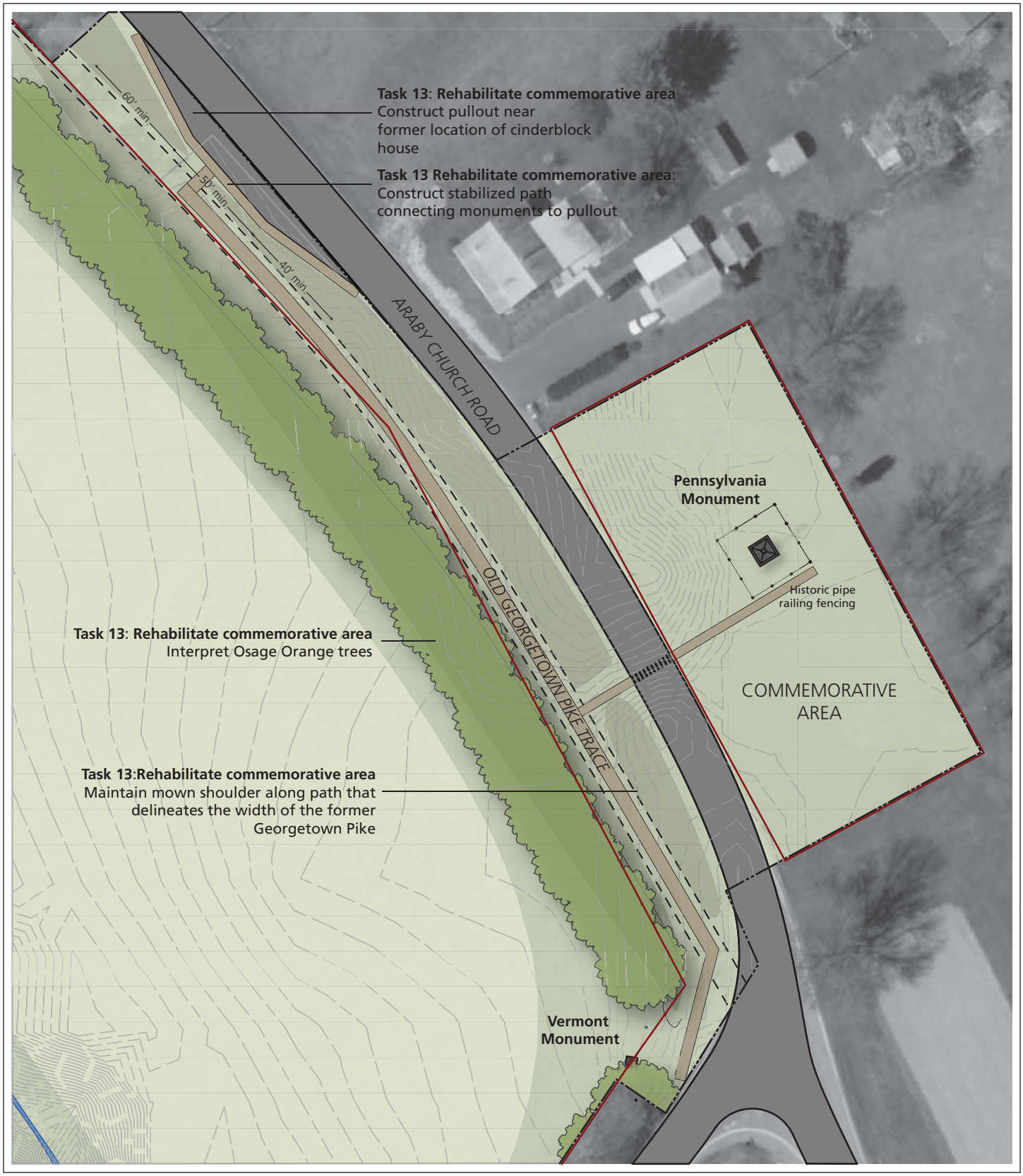
- Feature to remove
- Building or structure
- Paved road or path
- Unpaved road or path
- Unpaved trail
- Historic road trace
- Deciduous specimen tree, wooded area
- Deciduous/evergreen shrub, shrubland
- Pasture
- Hay field
- Cultivated crop
- Mown turf
- Meadow
- Wetland (scrub or grasses)
- Hydrology (river, creek, stream, or pond)
- NPS legislative boundary
- Project boundary
- Views and vistas
- 298 10′ contour

NOTES

1. Plan shows conditions in 2012.
2. All features shown in approximate scale and location.

0′ 125′ 250′ 500′ 1000′ (1″=700′)

Drawing 2.0



DRAWN BY
Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

NOTES
1. Plan shows conditions in 2012.
2. All features are shown in approximate scale and location.
3. Tree and shrub species indicated where known.

SOURCES
1. Monocacy National Battlefield and Frederick County GIS Data
2. Orthophotography 2005, 2009, and 2012.
3. Site visits, June and July 2012.

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

LEGEND

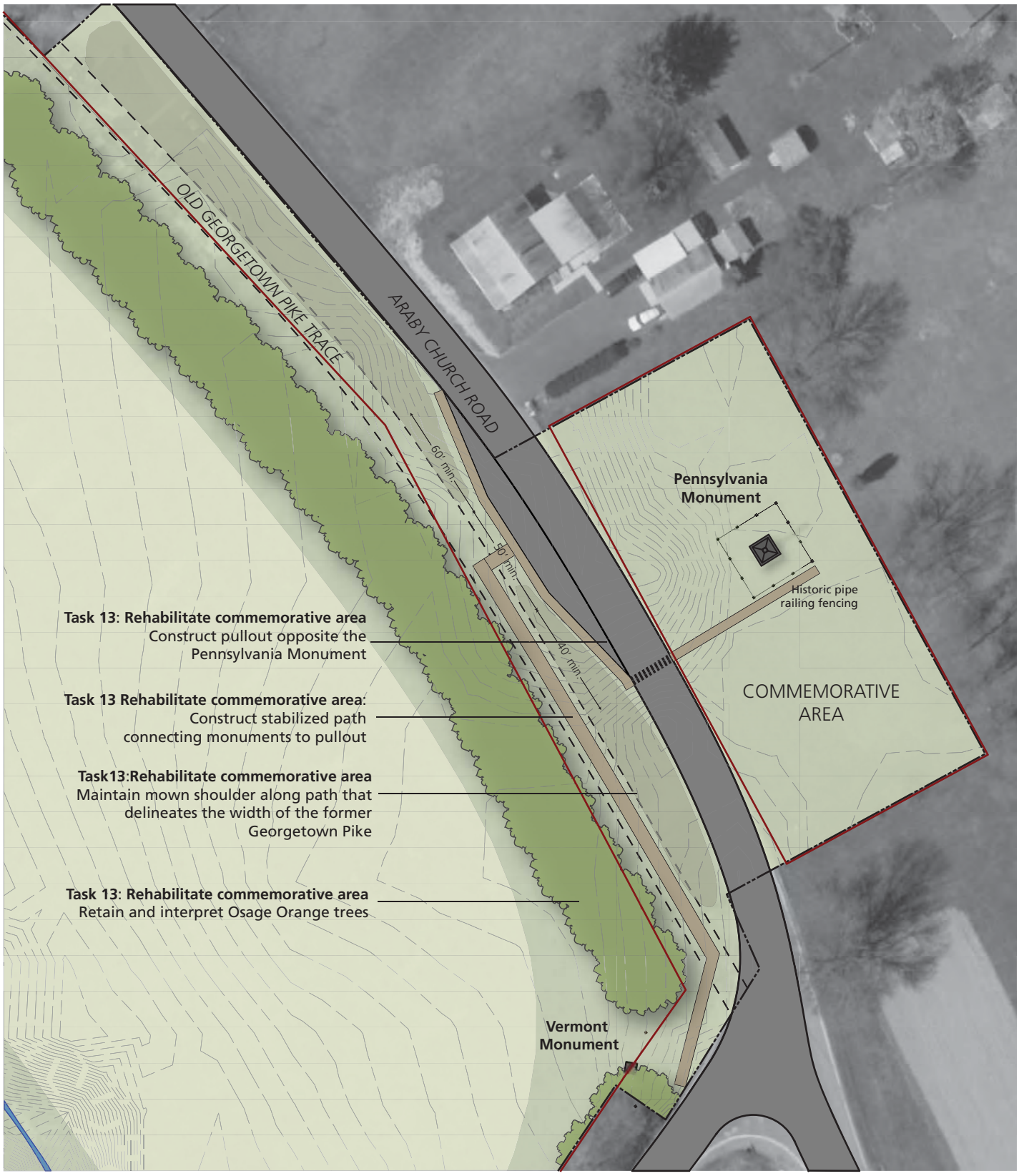
- Building or structure
- Paved road or path
- Unpaved road or path
- Historic road trace
- Deciduous tree, wooded area
- Deciduous/evergreen shrub
- Pasture
- Hay field
- Cultivated crop
- Mown or unmanaged turf
- Wetland (scrub or grasses)
- Hydrology (river, stream, or pond)
- NPS legislative boundary
- NPS fee boundary
- 298 2' contour

Cultural Landscape Report
Thomas & Worthington Farms
Monocacy National Battlefield
Frederick, Maryland

2012 Treatment-Alternative A Commemorative Area

0' 10' 25' 50'
1"=60'

Drawing 2.1



DRAWN BY
Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

NOTES
1. Plan shows conditions in 2012.
2. All features are shown in approximate scale and location.
3. Tree and shrub species indicated where known.

SOURCES
1. Monocacy National Battlefield and Frederick County GIS Data
2. Orthophotography 2005, 2009, and 2012.
3. Site visits, June and July 2012.

National Park Service
National Capital Region
Cultural Landscapes Program
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LEGEND

- Building or structure
- Paved road or path
- Unpaved road or path
- Historic road trace
- Deciduous tree, wooded area
- Deciduous/evergreen shrub
- Pasture
- Hay field
- Cultivated crop
- Mown or unmanaged turf
- Wetland (scrub or grasses)
- Hydrology (river, stream, or pond)
- NPS legislative boundary
- NPS fee boundary
- 298 2' contour

Cultural Landscape Report
Thomas & Worthington Farms
Monocacy National Battlefield
Frederick, Maryland

2012 Treatment-Alternative B Commemorative Area

0' 10' 25' 50'
1"=60'

Drawing 2.2

Cultural Landscape Report

Thomas &Worthington Farms
Monocacy National Battlefield

Frederick, Maryland

2012 Treatment Plan
Thomas Farm

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

Task 18: Rehabilitate existing Thomas House entrance lane

Task 19: Reestablish Thomas House circular entrance drive

Task 25: Rehabilitate Thomas House exterior

Task 16: Remove Thomas Housegarden, brick garden path, and patio

Task 15d: Reconfigure livestock (cow) enclosure

Task 17: Reestablish Thomas House back yard walk

Task 15c: Reestablish Thomas Farm Road and entrancelane traces

Task 15e: Construct special events parking area

Task 14: Improve visitor and staff parking at the Thomas House

Task 21: Remove detracting non-historic trees

Task 15b: Construct pedestrian path to tenant house

Task 2: Preserve historic road traces

Task 23: Reestablish orchard and screen incompatible land uses

Task 9: Stabilize and document Blacksmith Shop

Task 15a: Enlarge Baker Valley Roadparking lot

Main House

Frame Shed

Frame Well/ Pump House Brick Outbuilding

Stone Tenant House

Wagon Shed/ Corncrib

Bank Barn

Brick Silo

Cement Tenant House

Osage Orange Trees

Waysides

ENTRANCE LANE TRACE

BOARD FENCING

PARKING LOT

THOMAS FARM

THOMAS FARM ROAD TRACE

AMERICAN WIRE FENCING

MODERN SERVICE ROAD

THREE-RAIL WOOD FENCING

BAKER VALLEY ROAD

310

320

330

SOURCES

1. National Capital Region, *Cultural Landscape Inventories for the Monocacy National Battlefield* (2004, revised 2007) *and Thomas Farm* (2009).
2. Monocacy National Battlefield and Frederick GIS Data
3. Orthophotography, 2005, 2009, and 2012.
3. Site visits, June and July 2012.

DRAWN BY

Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

LEGEND

- Feature to remove
- Building or structure
- Paved road or path
- Unpaved road or path
- Unpaved trail
- Historic road trace
- Deciduous specimen tree, wooded area
- Deciduous/evergreen shrub, shrubland
- Pasture
- Hay field
- Cultivated crop
- Mown turf
- Wetland (scrub or grasses)
- Hydrology (river, creek, stream, or pond)
- NPS legislative boundary
- Project boundary
- Views and vistas
- 298 10′ contour

NOTES

1. Plan shows conditions in 2012.
2. All features shown in approximate scale and location.

0′ 25′ 50′ 100′ (1″=100′)

Drawing 2.3

Cultural Landscape Report

Thomas &Worthington Farms
Monocacy National Battlefield

Frederick, Maryland

2012 Treatment Plan
Thomas Farm

Conceptual Grading & Planting Plan

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

SOURCES

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2. Monocacy National Battlefield and Frederick GIS Data
3. Orthophotography, 2005, 2009, and 2012.
3. Site visits, June and July 2012.

DRAWN BY

Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

LEGEND

- Building or structure
- Proposed planting (tree or shrub)
- Proposed 2' contour (298)
- Existing 2' contour 298

NOTES

1. Plan shows conditions in 2012.
2. All features shown in approximate scale and location.
3. This plan should be used for informational, planning refeference and illustration purposes only; not to be used as a construction document.

0' 25' 50' 100' (1"=100')

Drawing 2.4



DRAWN BY
Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

NOTES
1. Plan shows conditions in 2012.
2. All features are shown in approximate scale and location.
3. Tree and shrub species indicated where known. For plant names refer to table 2.1: Thomas House grounds plant list.

SOURCES
1. HABS Documentation, Thomas Farm (Araby), 2007
2. Orthophotography 2005, 2009, and 2012.
3. Site visits, June and July 2012.

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

LEGEND
- Feature to remove
- Paved road or path
- Unpaved road or path
- Historic road trace
- Deciduous tree, wooded area
- Deciduous/evergreen shrub
- Pasture
- Hay field
- Hay field
- Cultivated crop
- Mown or unmanaged turf
- Wetland (scrub or grasses)
- Hydrology (river, stream, or pond)
- NPS legislative boundary
- NPS fee boundary
- 2' contour

Cultural Landscape Report
Thomas & Worthington Farms
Monocacy National Battlefield
Frederick, Maryland

2012 Treatment Plan-Alt. A Thomas House Grounds

0' 10' 25' 50'
1"=50' **Drawing 2.5**

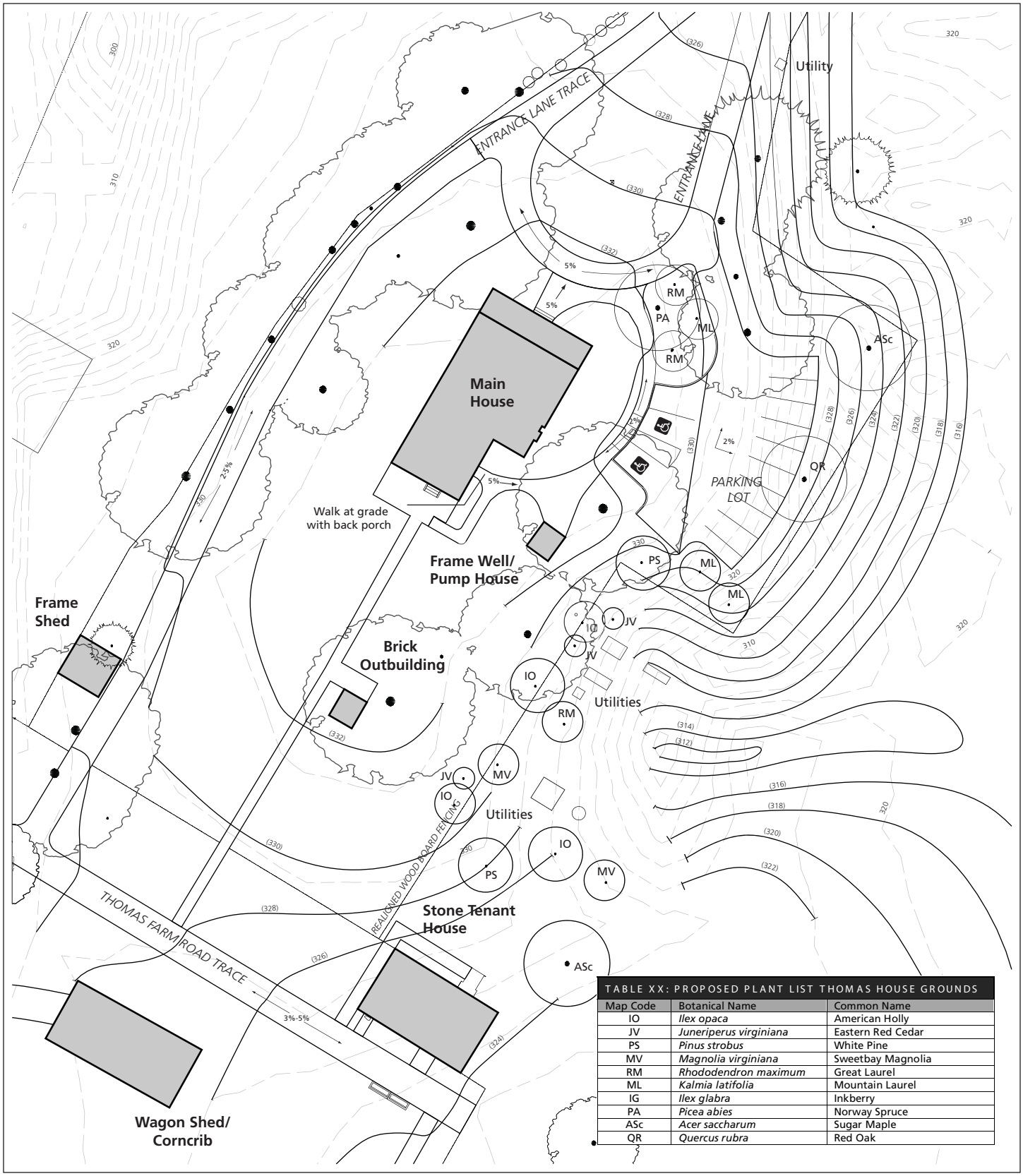


TABLE XX: PROPOSED PLANT LIST THOMAS HOUSE GROUNDS

Map Code	Botanical Name	Common Name
IO	*Ilex opaca*	American Holly
JV	*Juneriperus virginiana*	Eastern Red Cedar
PS	*Pinus strobus*	White Pine
MV	*Magnolia virginiana*	Sweetbay Magnolia
RM	*Rhododendron maximum*	Great Laurel
ML	*Kalmia latifolia*	Mountain Laurel
IG	*Ilex glabra*	Inkberry
PA	*Picea abies*	Norway Spruce
ASc	*Acer saccharum*	Sugar Maple
QR	*Quercus rubra*	Red Oak

DRAWN BY
Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

NOTES
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SOURCES
1. Monocacy National Battlefield and Frederick County GIS Data
2. Orthophotography 2005, 2009, and 2012.
3. Site visits, June and July 2012.

LEGEND
- Building or structure
- Proposed planting (tree or shrub)
- Proposed 2' contour
- Existing 2' contour

0' 10' 25' 50'
1"=50'

Drawing 2.6

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Cultural Landscapes Program
www.nps.gov

Cultural Landscape Report
Thomas & Worthington Farms
Monocacy National Battlefield
Frederick, Maryland

2012 Treatment Plan-Alt. A
Conceptual Grading & Planting Plan
Thomas House Grounds



DRAWN BY
Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

NOTES
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3. Tree and shrub species indicated where known. For plant names refer to table 2.1: Thomas House grounds plant list.

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2. Orthophotography 2005, 2009, and 2012.
3. Site visits, June and July 2012.

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National Capital Region
Cultural Landscapes Program
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LEGEND
- Feature to remove
- Paved road or path
- Unpaved road or path
- Historic road trace
- Deciduous tree, wooded area
- Deciduous/evergreen shrub
- Pasture
- Hay field
- Hay field
- Cultivated crop
- Mown or unmanaged turf
- Wetland (scrub or grasses)
- Hydrology (river, stream, or pond)
- NPS legislative boundary
- NPS fee boundary
- 2' contour

Cultural Landscape Report
Thomas & Worthington Farms
Monocacy National Battlefield
Frederick, Maryland

2012 Treatment Plan-Alt. B Thomas House Grounds

0' 10' 25' 50'
1"=50' **Drawing 2.7**

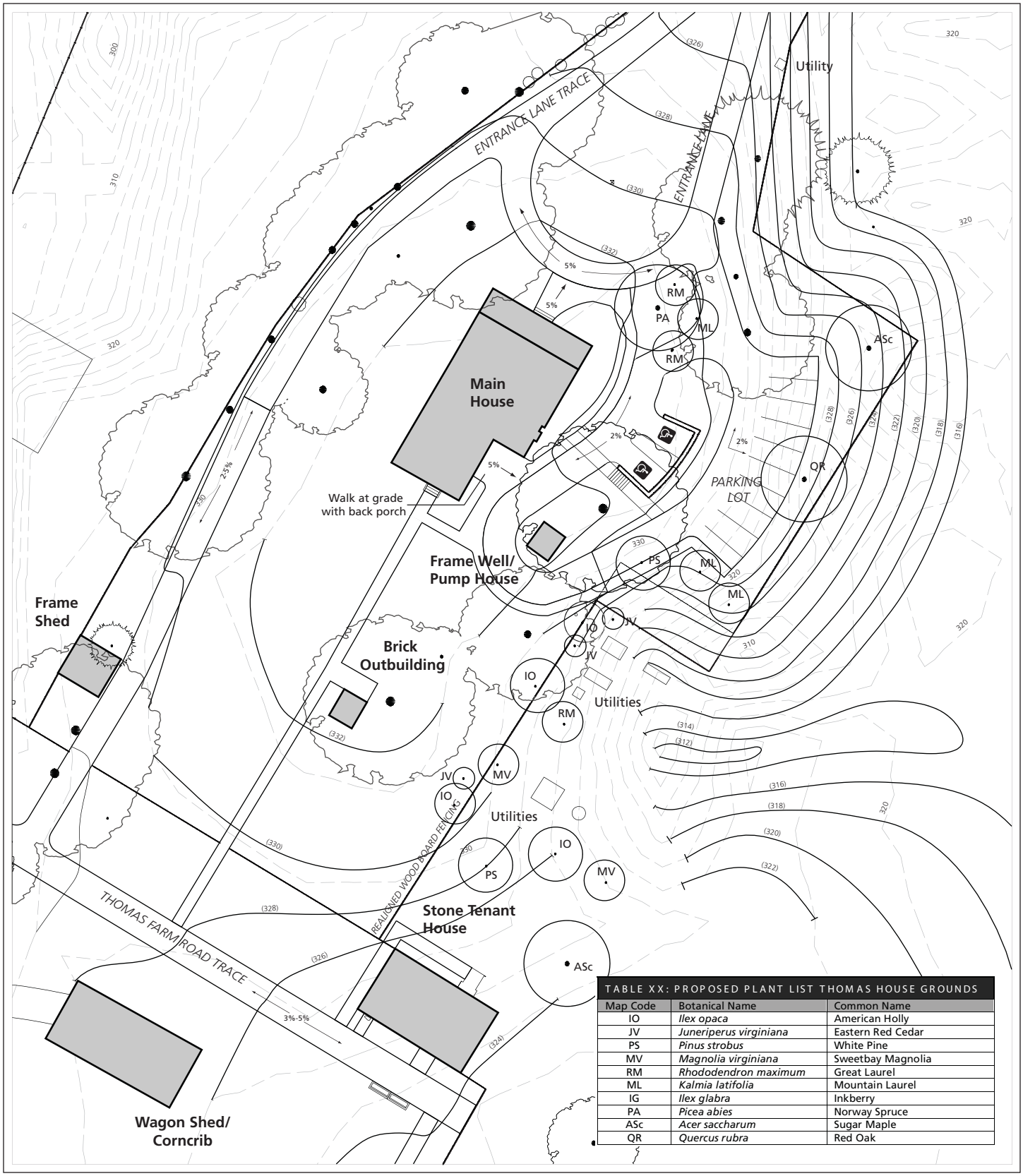


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ASc	*Acer saccharum*	Sugar Maple
QR	*Quercus rubra*	Red Oak

DRAWN BY
Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

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SOURCES
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2. Orthophotography 2005, 2009, and 2012.
3. Site visits, June and July 2012.

LEGEND
- Building or structure
- Proposed planting (tree or shrub)
- Proposed 2' contour
- Existing 2' contour

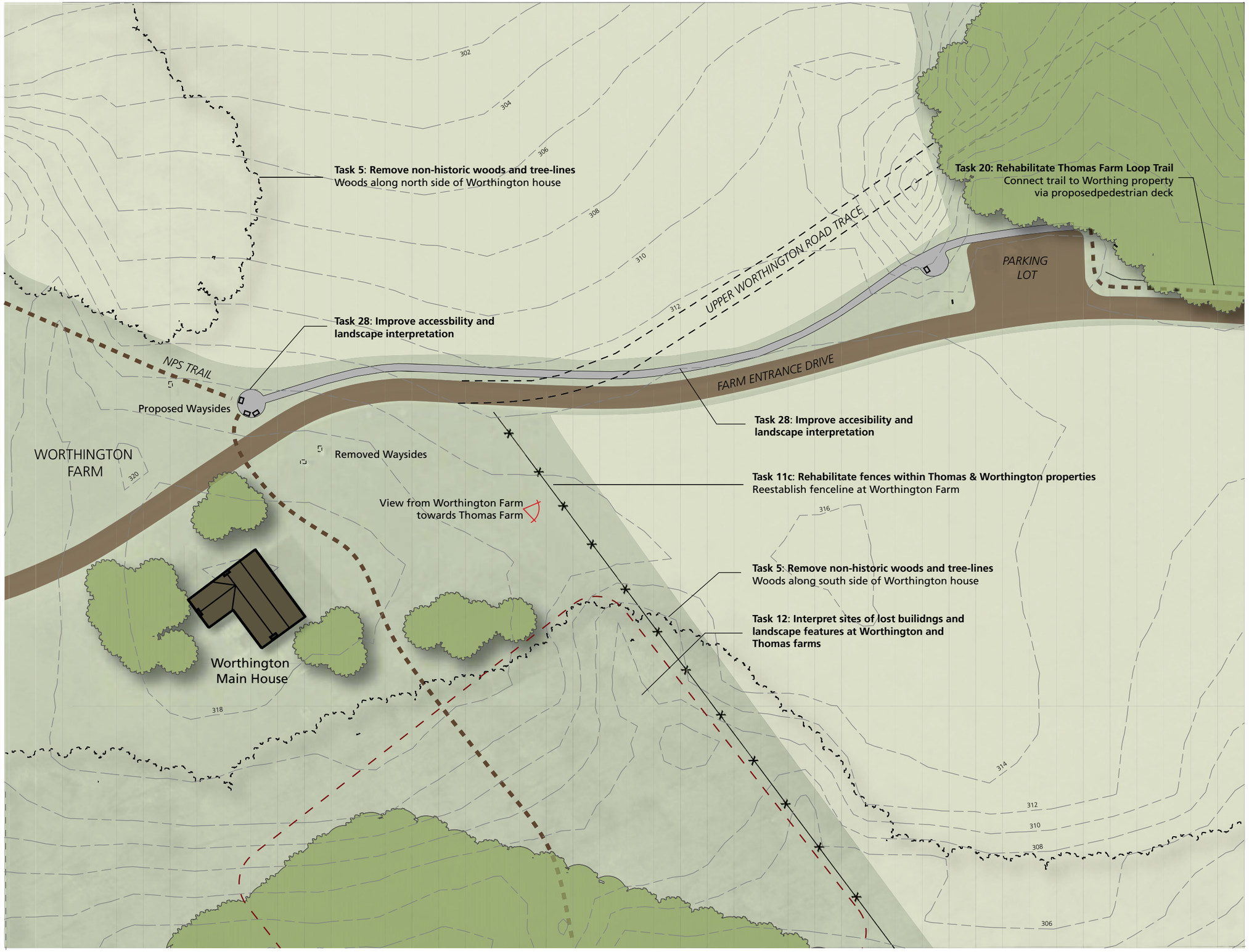
0' 10' 25' 50'
1"=50'

Drawing 2.8

National Park Service
National Capital Region
Cultural Landscapes Program
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Cultural Landscape Report
Thomas & Worthington Farms
Monocacy National Battlefield
Frederick, Maryland

2012 Treatment Plan-Alt. B
Conceptual Grading & Planting Plan
Thomas House Grounds



Cultural Landscape Report

Thomas &Worthington Farms
Monocacy National Battlefield

Frederick, Maryland

2012 Treatment Plan
Worthington Farm

National Park Service
National Capital Region
Cultural Landscapes Program
www.nps.gov

SOURCES

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2. Monocacy National Battlefield and Frederick GIS Data
3. Orthophotography, 2005, 2009, and 2012.
3. Site visits, June and July 2012.

DRAWN BY

Michael Commisso, AutoCAD 3D Map 2007 and Illustrator CS4, 2012.

LEGEND

- Feature to remove
- Building or structure
- Paved road or path
- Unpaved road or path
- Unpaved trail
- Historic road trace
- Deciduous specimen tree, wooded area
- Deciduous/evergreen shrub, shrubland
- Pasture
- Hay field
- Cultivated crop
- Mown turf
- Wetland (scrub or grasses)
- Hydrology (river, creek, stream, or pond)
- NPS legislative boundary
- Project boundary
- Views and vistas
- 10′ contour

NOTES

1. Plan shows conditions in 2012.
2. All features shown in approximate scale and location.

0′ 25′ 50′ 100′

Drawing 2.9 (1″=50′)



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APPENDIX A: ADA/ABA REQUIREMENTS AND GUIDELINES FOR CULTURAL LANDSCAPES

General

- The accessible entrance may be different to the one used by the general public (though it cannot be locked and ADAAG requires directional signage to the accessible entrance).
- A ramp steeper than is ordinarily permitted may be used in space limitations (a gradient of 16.6 percent (1: 6)
- Only one accessible restroom is required and it may be unisex.
- Accessible routes are only required at the elevation of the entrance.
- Interpretative materials should be located where they can be seen by seated persons.
- Parking areas should be related directly to the building which they serve. "Handicapped" parking stalls should be no more than (100') from building entries (Landscape architect's Portable Handbook, 2001) .

Accessible Route Minimum Specifications

- Allow only one accessible route from one site access point (such as a parking lot) to an accessible entrance. (206.2.1.) Note: Access from site arrival points may include vehicular ways.
- Width=36 inches
- Passing zone = 60 inches wide occurring at 200-foot intervals
- Wheelchair 180-degree turning zone = 60 inches x 60 inches
- Gradient = 5 percent (1:20)
- A gradient greater than 5 percent shall be called a ramp
- Cross pitches (cross slopes) = 2 percent (1:50) or less
- Abrupt level changes are no greater than 0.5 inch in height
- 0.25-inch level change is permitted without a beveled edge
- 0.5-inch level change must have a beveled edge
- Surfaces must be of stable, firm, slip resistant material

Accessible Parking

- Space =96 inches wide
- Access aisle
- Spaces and aisles have a 2 percent (1:50) maximum gradient in any direction
- Passenger loading zone (access aisle) =60 inches wide x 20 feet long, adjacent and parallel to the vehicle pull-up space

Parking Space Requirements	
Total number of parking spaces provided in parking facility	Minimum number of required accessible parking spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20, plus 1 for each 100, or fraction thereof, over 1000

Curb Ramps

- Must be located wherever an accessible route crosses a curb
- 5 percent (1:20) gradient between 8 percent (1:12) and 10 percent (1:10) is permitted for a rise of 6 inches
- Must have flared sides if they are located where pedestrians must walk across the ramp or are not protected by handrails or guardrails
- Maximum gradient of curb ramps flared sides = 10 percent
- Must have returned curbs where pedestrians do not walk across the ramp
- Built-up curb ramps must be located where they do not project out into vehicular traffic lanes
- Must have a detectable warning of raised, truncated domes or contrasting color that extends the full width and depth of the curb ramp
- Must be located where they will not be obstructed by parked vehicles
- Diagonal curb ramps (corner ramps) must have at least a 48-inch width clear space at the bottom of the ramp
- Where a sidewalk landing beyond a curb ramp is less than 48 inches deep, the curb ramp gradient must not exceed 8 percent (1: 12)

Ramps

- Must be at least 36 inches wide
- Gradient greater than 5 percent (1: 20) and a maximum of 8 percent (1: 12)
- Maximum rise on any run = 30 inches in height
- In space limitations, a ramp gradient no greater than 16.6 percent (1: 6) may be used for a horizontal run of 2 feet
- A ramp gradient between 8 percent (1: 12) and 10 percent (1: 10) may be used for a maximum vertical rise of 6 inches
- An 8 percent (1: 12) gradient and a rise greater than 6 inches, or a horizontal run greater than 72 inches, must have handrails on both sides of the ramp
- Surface must be stable, firm, and nonslip
- Ramps and landings with drop-offs on either side must have curbs at least 2 inches high
- Must be well draining to prevent the accumulation of rainwater
- Cross pitch (cross slope) must be no greater than 2 percent (1: 50) gradient

Landings
▪ Must be located at every 30-inch vertical rise in a ramp ▪ Dimensions of landing = 36 inches wide x 60 inches deep at the top and bottom of a ramp run ▪ Dimensions of landing = 60 inches wide x 60 inches deep at a ramp dogleg ▪ Drop-offs must have curbs with a minimum height of 2 inches ▪ Height of door thresholds = 0.5-inch high or less, with a beveled 50 percent (1: 2) edge ▪ Width of clear landing on latch side of door = 24 inches wide
Handrails
▪ Not required on curb ramps ▪ Required on either side of 8 percent (1:12) gradient ramps with a 6-inch rise or greater, or a 72-inch horizontal run, and on either side of stairs ▪ Must be continuous on the inner side of a dogleg ramp or dogleg stairs ▪ Must continue at least 12 inches beyond the top and bottom of a ramp and be parallel to the ground plane ▪ Must continue at least 12 inches beyond the top riser of stairs parallel to the ground plane, and continue to slope for a distance of one tread width from the bottom stair riser and become parallel to the ground plane for an additional distance of 12 inches ▪ Distance from mounting wall = 1.5 inches wide ▪ Gripping surface must be uninterrupted ▪ Diameter or width of gripping surface of handrail or grab bar must be 1.25 - 1.5 inches, or the shape must provide an equivalent gripping surface UFAS 4.26.2. ▪ Top of gripping surface = 34 - 38 inches in height above the ramp or stair tread surface ▪ Terminal ends of handrails must be rounded off or returned smoothly to the ground, wall or post
Stairs
• Must have uniform trend widths and riser heights • Width of treads must be no less than 11 inches high • Open risers are not permitted • Nosings must project no more than 1.5 inches ▪ Nosing undersides must be angled at no greater than 60 degrees from the horizontal • Handrails must be located on either side of stairs • Inside handrail at stair dogleg must be continuous • Handrails must extend 12 inches beyond the top riser, and at least one tread width and an additional 12 inches beyond the bottom riser • Handrails at the top of stairs must be parallel to the ground plane, and at the bottom of stairs, handrails must continue to slope for a distance of one tread from the bottom riser and for an additional 12 inches be parallel to the ground plane • Handrail gripping surface must be uninterrupted and be located 34 - 38 inches above the stair treads • Terminal ends of handrails must be rounded or returned smoothly to the ground, wall, or post • Stairs must be well draining to prevent the accumulation of rainwater

APPENDIX B: ACCESSIBLE TRAIL REQUIREMENTS

Excerpt, National Center on Accessibility, "What is an Accessible Trail?" *Access Today*, Special Volume, Issue 8 (Fall 2002), online at: http://www.ncaonline.org/monographs/8accessible-trails.shtml. For the most up-to-date requirements, refer to the "Draft Final Accessibility Guidelines for Outdoor Developed Areas" (October 19, 2009), http://www.access-board.gov/outdoor/draft-final.htm.

An accessible trail is a trail that is accessible to and usable by people with disabilities. Accessible trails are identified as meeting minimum guidelines established by the U.S. Access Board. The Access Board is the Federal agency responsible for creating guidelines and standards for accessible environments. After an Advanced Notice of Proposed Rulemaking that drew input across the spectrum of outdoor facilities, a Regulatory Negotiations Committee was created by the Access Board to come to consensus on technical provisions for accessibility in outdoor areas. Currently, the Access Board is preparing a Notice of Proposed Rule based on the Regulatory Negotiation Committee's report. The proposed rule, once published, will be available for public comment, issued as a final rule and then adopted by the Department of Justice. During the process of the guidelines being issued and adopted, facilities need to use the "best available information." For outdoor environments, the current best available information is the Outdoor Developed Areas Final Report. The remainder of this technical assistance paper will draw from the Regulatory Negotiation Committee's Final Report: Recommendations for Accessibility Guidelines-Outdoor Developed Areas (September 1999).

ACCESSIBLE ROUTES, OUTDOOR ACCESS ROUTES, AND TRAILS

Accessible routes, outdoor access routes, and trails are all paths that have varying requirements based on their purpose, what they connect to and the environment they fall within. [Note: Access Route is the primarily access to the site/building as defined by the Americans with Disabilities Act Accessibility Guidelines (ADAAG); Outdoor Access Route is a second-tier route; and Trail is a third-tier route.] The table at the end of the appendix identifies the technical provisions as they apply to each of the different route types.

Technical Provisions

The Outdoor Developed Areas Final Report addresses ten provisions of trail accessibility:

***Surface*:** An accessible trail includes a route from accessible parking to the trailhead. Once on the trailhead, the first issue addressed is surface. The trail surface must be firm and stable. Firmness refers to the penetration of the surface that occurs when force is applied, for example when stepped on. Stability on the other hand, refers to the displacement of the surface when a turning motion is applied to the surface, such as the twisting of a foot. In other words, firmness is a vertical measure of penetration, and stability involves how much surface material shifts when rotated pressure is applied. Examples of firm and stable surfaces include concrete and asphalt. Soil stabilizers are sometimes used to make otherwise inaccessible surfaces more firm and/or stable.

TECHNICAL PROVISIONS FOR ACCESSIBLE TRAILS			
	ACCESS ROUTE (ADAAG)	**OUTDOOR ACCESS ROUTE**	**TRAIL**
SURFACE	Stable, firm, slip resistant	Firm and stable	Firm and stable *Exception**
MAX RUNNING SLOPE	1: 12	1: 20 (for any distance) 1: 12 (for max 50 ft) 1: 10 (for max 30 ft)	1: 20 (for any distance) 1: 12 (for max 200 ft) 1: 10 (for max 30 ft) 1: 8 (for max 10 ft) *Exception- 1: 7 (for 5 ft max for open drainage structures)* *Exception**
MAX CROSS SLOPE	1: 50	1: 33 *Exception- 1: 20 (for drainage purposes)*	1: 20 *Exception- 1: 10 (at the bottom of an open drain where clear tread width is a min of 42 inches)*
MIN CLEAR TREAD WIDTH	36 inches 32 inches (for no more than 24 inches)	36 inches *Exception- 32 inches when * applies*	36 inches for any distance *Exception- 32 inches when * applies.*
EDGE PROTECTION	Where provided, min of 2 inches.	Where provided, min of 3 inches.	Where provided, 3 inches min.
TREAD OBSTACLES	(Changes in Level) 1/4 inch (no beveled edge) 1/4 - 1/2 inch must have a beveled edge with a max slope of 1: 2. Over 1/2 inch= ramp.	1 inch high max *Exception- 2 inches high max (where beveled with a slope no greater than 1: 2 and where * applies.)*	2 inches high max *Exception- 3 inches max (where running and cross slopes are 1: 20 or less)* *Exception**
PASSING SPACE	Every 200 feet where clear tread width is less than 60 inches, a minimum 60 X 60 inch space, or a T-shaped intersection of two walks or corridors with arms and stem extending min of 48 inches.	Every 200 feet where clear tread width is less than 60 inches, a minimum 60 X 60 inch space, or a T-shaped intersection of two walking surfaces with arms and stem extending min of 48 inches. *Exception- every 300 feet where * applies.*	Every 1,000 feet where clear tread width is less than 60 inches, a 60 X 60 inch min. passing space or a T-shaped intersection of two walking surfaces with arms and stem extending min of 48 inches. *Exception**
RESTING INTERVALS	(Landings) 60 inch min. length, min. width as wide as the ramp run leading to it, if change in direction occurs, must have 60 X 60 inch space.	60 inches min. length, width at least as wide as the widest portion of the trail segment leading to the resting interval and a max slope of 1: 33. *Exception- a max slope of 1: 20 is allowed for drainage purposes.*	60 inches min. length, width at least as wide as the widest portion of the trail segment leading to the resting interval and a maximum slope of 1: 20. *Exception**
* (16.1.1 Conditions for Departure) The provision may not apply if it cannot be provided because compliance would cause substantial harm to cultural, historic, religious or significant natural features or characteristics; substantially alter the nature of the setting or purpose of the facility; require construction methods or materials that are prohibited by federal, state or local regulations or statutes; or would not be feasible due to terrain or the prevailing construction practices.			

Clear Tread Width: The next provision involves clear tread width, or the unobstructed width of the trail. The clear tread width of an accessible trail must be a minimum of 36 inches. This allows a wide enough area for a person using a wheelchair or scooter to comfortably stay on the firm and stable trail surface.

Openings: The third guideline addresses openings in trail surfaces, such as spaces between the boards of a boardwalk. These spaces may not allow the passage of a sphere one-half inch in diameter. In addition, the long dimension must run perpendicular or diagonal to the main direction of travel preventing casters from wheelchairs, or tips of canes, from being caught in the spaces.

Protruding Objects: The fourth requirement addresses the needs of people who are visually impaired. Protruding objects are required to allow a minimum of 80 inches clear headroom space above the trail. In other words, any protruding objects, including vegetation, must be above a minimum of eighty inches from the ground. This space

prevents people who are blind from bumping their heads on tree branches or other objects hanging above the trail. Simple maintenance of trails is often the solution to preventing accessibility issues resulting from protruding objects.

Tread Obstacles: The fifth aspect of the guidelines addresses tread obstacles. Examples of tread obstacles include tree roots, rocks, brush, downed trees or branches projecting from the trail. Tread obstacles cannot exceed a maximum height of two inches. An exception occurs if running and cross slopes are 1: 20 or less, then the obstacle may be three inches in height.

Passing Space: The sixth technical provision, passing space, allows people who use wheelchairs to pass other hikers easily. Passing spaces need to be a minimum of 60 X 60 inches and occur at 1,000 feet intervals when the clear tread width of the trail is less than 60 inches. An alternative is a T-shaped space providing the arms and stem extend at least 48 inches beyond the intersection. The T-shape still needs to occur every 1,000 feet, whenever possible, the 60 X 60 space should be utilized to offer a more convenient way for people to pass one another.

Slope: The seventh provision addresses two slopes that are crucial elements for people with mobility impairments — running slope and cross slope. With the exception for drainage, the cross slope of an accessible trail should be less than 1: 20. In addition, running slopes must comply with one or more of four provisions with no more than 30 percent of the total trail length exceeding 1: 12.

The four provisions are as follows:

- Running slope cannot exceed 1: 20 for any distance.
- If resting intervals are provided every 200 feet, the running slope may be a maximum of 1: 12.
- If resting intervals are provided every 30 feet, the running slope may be a maximum of 1: 10.
- If resting intervals are provided every 10 feet, the running slope may be a maximum of 1: 8.

Resting Intervals: Provision eight addresses resting intervals. Resting intervals must be 60 inches minimum in length, and have a width as wide as the widest portion of the trail segment leading to the resting interval. The slope may not exceed 1: 20 in any direction.

Edge Protection: The ninth guideline regarding edge protection states edge protection is not necessarily required, however where it is provided, it must have a minimum height of 3 inches.

Signage: Signage is the final aspect addressed in the Final Report. Accessible trails should include signage with information on the total distance of the accessible segment and the location of the first point of departure from the technical provisions. Although no specific symbol has been chosen to represent an accessible trail one of the four examples displayed here may be utilized.

Conditions for Departure

Due to the dynamic nature of the outdoor environment, the Outdoor Developed Areas Final Report identifies four conditions for departure or circumstances that allow deviation from the technical provisions. These conditions

apply to each of the designated areas in the report. The application of one or more of the conditions is not an overall exemption of the entire trail. When the condition for departure no longer exists, the technical provisions re-apply. The exemption only applies to the respective technical provision, all other aspects should comply. For example, if an endangered plant species only allows 30 inches of clear tread width, the surface should still be firm and stable in addition to compliance with the remaining provisions other than clear tread width. After passing the plant, the clear tread width should return to at least 36 inches. The conditions for departure are:

Condition 1: Where compliance would cause substantial harm to cultural, historic, religious, or significant natural features or characteristics. Examples of cultural features include such areas as archaeological sites, burial grounds or Indian tribal protected sites. Historic features include properties such as those listed or eligible for the National Register of Historic Places. Examples of religious features include Indian sacred sites and other properties designated or held sacred by an organized religious belief or church. Natural features include properties such as those protected by Federal or State laws and areas with threatened or endangered species.

Condition 2: Where compliance would substantially alter the nature of the setting or the purpose of the facility, or portion of the facility. This condition addresses concerns relating to people who choose to recreate in an outdoor setting for a higher degree of challenge and risk. If the designed purpose of the trail were a cross-country training trail, accessibility would interfere with the intended experience.

Condition 3: Where compliance would require construction methods or materials that are prohibited by Federal, State or local regulations or statutes. For example, mechanized equipment may be restricted in State designated wilderness areas, or the introduction of imported materials may be prohibited in order to maintain the natural ecosystem. Although State and local statutes are taken into consideration, new regulations may not be initiated to prevent compliance.

Condition 4: Where compliance would not be feasible due to terrain or the prevailing construction practices. If typically a team of volunteers with hand tools does alterations, there is not an expectation of bringing a bulldozer in to establish a new trail. In addition, this condition applies to soils susceptible to erosion, interfering with the natural drainage, and other issues related to the natural terrain.

APPENDIX C: STABILIZATION TECHNIQUES

Aggregate-Topsoil Mixture

An aggregate-topsoil may be suitable for low volume parking areas. The installation of an aggregate-topsoil mixture parking area typically consists of a base layer of engineered aggregate topsoil (EAT) followed by an aggregate-topsoil course layer. The EAT consists of a mixture of 70% crushed stone aggregate (ASTM No. 57) and 30% topsoil, whereas the course layer is comprised of 50% topsoil and 50% crushed stone aggregate. The intent of the stone is to provide greater stability by means of intimate stone on stone contact, while the soil serves as the growing media for turf. To create the highest chance for success for the turf parking area, add a soil amendment such as Axis, a porous diatome product up to ¼ inch in size, to mechanically improve air exchange capacity of the soil. Incorporate the amendment into the soil between 10-20% by volume, to a depth of 10-12", and overseed.

Fiber Reinforced Turf System

In this system, propylene fibers are embedded into topsoil and laid down to a depth of 4 to 6 inches. The soil is then seeded with grass. Once the grass grows, the root system interlocks with the fibers to provide strength and integrity to support traffic. Brands on the market include Fiber Soil Turfgrids (www.fibersoils.com) and StaLok Fiber (http://www.stabilizersolutions.com/product/view/21-stalokr-fiber-3) (Figure 2.4).

Cellular Paving System

For added strength and durability, a cellular paving system, such as geosynthetic cellular confinement system, porous cellular block panel, and porous synthetic ring and grid system, may be appropriate as a base stabilizer for certain parking areas (Figure 2.5). A perforated geosynthetic cellular confinement system, or geocell, is produced from polyethylene and stabilized with carbon black to protect against ultraviolet degradation. Once in place, the geocell is backfilled with engineered aggregate-topsoil, aggregate-topsoil, and seeded for turf establishment. Brands on the market include Geoweb by Presto Products Company (http://www.prestogeo.com/) and VersiWeb (http://www.elmich.com.au/versiweb/about.php)

Porous cellular block panels or geoblocks are approximately 1.5 feet by 3 feet in area with a depth of two inches. They are molded into 3 inch by 3-inch cells with a 2-inchthrough hole in the bottom. The blocks are screwed together and placed over a six inch base course of EAT. The geoblock system itself is backfilled with 2-inches of aggregate-topsoil followed by an application of seed and fertilizer. Geoblock System by Presto Products Company is the recommended brand (http://www.prestogeo.com/).

The porous synthetic ring and grid system is a structure which provides incredible load bearing strength while protecting vegetation root systems from deadly compaction. The system is flexible and includes two inch in diameter rings held together by rings. As with the geoblock, the ring and grid is placed on six inches of EAT and covered with aggregate-topsoil for turf establishment. Grasspave^2 produced by Invisible Structures is the recommended brand (www.invisiblestructures.com/grasspave2.html). (Appendix XX: Stabilization Techniques for Turf Parking).

FIBER REINFORCED TURF SYSTEM

Stabilizer Solutions, Inc.
205 S. 28th St.
Phoenix, AZ 85034
800-336-2468 (Fax) 602-225-5902
Website: stabilizersolutions.com
E-Mail: info@stabilizersolutions.com

SECTION 1

STALOK FIBER FOR TURF PARKING / EVENT STAGING AND FIRE LANES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes material and labor requirements for construction with StaLok Fiber for the following items:

1. Stabilized Sand Base with StaLok Fiber for Turf Parking, Fire lane, Event Staging areas etc.

B. Related Sections:

1. Section 02100 – Site Preparation
2. Section 02200 – Earthwork
3. Section 02230 – Granular Materials

1.2 SUBMITTALS

A. Shop Drawings: Show details of installation, including plans and sections.

1.3 PROJECT/SITE CONDITIONS

A. Field Measurements: Each bidder is required to visit the site of the Work to verify the existing conditions. No adjustments will be made to the Contract Sum for variations in the existing conditions.

1. Where surfacing is indicated to fit with other construction, verify dimensions of other construction by field measurements before proceeding with the work.

B. Environmental Limitations: Do not install StaLok Fiber during rainy or windy conditions.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Installer to provide evidence to indicate successful experience in installing StaLok Fiber.

B. Mock-ups: Install 4 ft. wide x 10 ft. long mock-up of sand mix stabilized with StaLok Fiber at location as directed by owner's representative.

C. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be

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in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

D. Special Warranty: Submit a written warranty executed by the installer agreeing to repair or replace components of stabilized surfacing that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Premature wear and tear, provide the material is maintained in accordance with manufacturer's written maintenance instructions.
2. Failure of system to meet performance requirements.

E. Warranty Period: Contractor shall provide warranty for performance of product. Contractor shall warranty installation of product for the time of one year from completion.

F. Contractor shall provide, for a period of sixty days, unconditional maintenance and repairs as required.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. StaLok Fiber is provided by the following manufacturer:

1. Stabilizer Solutions, Inc. 33 South 28th St., Phoenix, AZ 85034; phone (602) 225-5900, (800) 336-2468; fax (602) 225-5902; website stabilizersolutions.com; email info@stabilizersolutions.com

2.2 MATERIALS

A. StaLok Fiber G-400

1. Acceptable local supplier list to be provided by Stabilizer Solutions, Inc.

B. Soil Mix

1. Sand must meet the particle size and physical performance criteria as shown in Section C below. Recommended tests include: grain size analysis, percentage of sand, silt and clay constituents, saturated hydraulic conductivity and porosity (including total, air-filled, and capillary pore space), and bulk density. Calculate values for fineness modulus and uniformity coefficient. An approved construction materials testing laboratory should test representative samples from the material source. In addition, samples should be tested for pH. Recommendations should include the need for organic amendments to meet performance criteria. Sand tested should be available in sufficient quantities for project.

2. Quality control testing should be performed for every 500-tons of soil delivered to site. Cost is contractor's responsibility. Soils not meeting requirements must be removed and replaced at contractor's expense.

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3.2 ROOTZONE MEDIUM

A. Install a 10-inch (25.4-cm) minimum of approved rootzone medium with loader or dozer. Avoid leaving ruts in the gravel base.

B. Rootzone medium should be water-settled and fine graded.

C. Rootzone medium should be consolidated with roller to dry density, between 87-lbs and 100-lbs per cubic foot. Maintain moisture content between 8% and 10% during install.

D. Spread soil amendments and fertilizer before spreading fibers.

3.3 FIBER INSTALLATION

A. Place bags of fibers approximately 15-ft by 15-ft grid.

B. Spread fibers by hand or with a modified straw blower at a rate of approximately or 1-lb per 10-sqft for turf paving. (See section 1.2)

C. Mix fiber into rootzone to specified depth (generally 4-inches (12.7-cm) for turf paving using approved rototiller, a reverse tiller is highly recommended. (See section 2.2 MATERIALS). When using Rotodairon or Blecavator, 3 passes in different directions are generally sufficient. Other tillers may require up to 5 passes. Do not exceed 5 passes.

D. Check rate of fibers per square foot during application by placing 1-square yard sheets of plastic at random locations over the area. After spreading, remove sheets and weigh retained fibers to make sure proper weight is achieved. Continuous monitoring should be done to verify spreading rate matches design rate.

E. Strong winds may require wetting area of soil and fibers to reduce fiber displacement.

3.4 WATERING / CONSOLIDATION

A. Thoroughly soak surface after tilling. Soil should be moistened to minimum depth of 9-inches (23cm) and kept moist.

B. Consolidate with vibratory roller to dry density between 87 and 100-lbs per cubic foot. For high or low areas, or irregularities hand-rake to final grade and re-roll.

C. Surface is ready for planting with seed, stolons, or sod. If using sod, match soil type with soil medium.

3.5 MAINTENANCE

A. Maintain same as normally for un-stabilized grass areas.

3.6 REPAIRS

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A. If sand mix with StaLok Fiber is removed and discarded, replace with excess material (see 2.3).

B. Repair grass area same as normally for un-stabilized grass areas.

END OF SECTION 1

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Presto®

GEOSYSTEMS
GLOBAL LEADER • GLOBAL PARTNER

GEOWEB®
porous pavement system

APPLICATION OVERVIEW







AESTHETICS/PERMEABILITY

The Geoweb® system offers options for creating attractive and permeable pavement systems for pedestrian and vehicular traffic requirements:

- grass pavements with an engineered topsoil/aggregate infill
- porous pavements with aggregate infill

THE PERMEABLE GEOWEB® SOLUTION

As communities grow and experience increases in surface runoff from newly constructed buildings and hard parking surfaces, the capacity of existing stormwater runoff systems are often pushed beyond their limits. This problem has led to environmental regulations that require the use of stormwater retention and porous pavement systems.

The Geoweb® system is a polyethylene, three-dimensional, cellular structure that provides structural stability and permeability through confinement of porous infill materials. The Geoweb system provides maximum load support for a variety of loading requirements through aggregate infill or an aggregate-stabilized turf, and is a cost-effective alternative to hard-surface paving.

providing sustainable solutions for permeable surfaces

GEOWEB®

GEOWEB®
POROUS PAVEMENT SYSTEM



Geoweb® porous pavement system

TURF PROTECTION
AESTHETIC ALTERNATIVE TO HARD PAVEMENTS

From fire emergency access lanes to utility roads, trails, walkways, and other occasional-use areas, the Geoweb® grass pavement system is designed to handle the most demanding turf protection and load support requirements, while allowing for vigorous growth of turf grass. Grass-covered pavements constructed with the Geoweb system and native granular soil are an attractive, functional and cost-effective alternative to hard-surface paving.

PERMEABLE AGGREGATE
NATURAL STORMWATER STORAGE AND DRAINAGE

The Geoweb® system and an aggregate infill with 35-45% void space creates a pavement that functions as a natural on-site water detention/retention basin. The Geoweb system's 98% open-surface area helps to decrease stormwater runoff and promote natural groundwater replacement by allowing stormwater to slowly permeate into the existing ground.

The perforated Geoweb system's 16% open cell-wall area has added benefits:

- facilitates lateral cell-to-cell drainage beneath traffic areas, resulting in better performance in saturated soils.
- reduces the negative effects of cell ponding when the system is over a low permeable base.

EASY INSTALLATION

Geoweb® sections collapse into lightweight, compact bundles for easier shipping and handling. During installation, sections remain flexible and easy to handle. Infill placement may be performed immediately following expansion and connection of the sections.









Features/Benefits of the Geoweb® System

- The system's 98% open-surface area addresses environmental issues; the system maximizes stormwater replenishment and minimizes runoff.
- Perforations allow the passage of water and nutrients from cell to cell, improving lateral drainage.
- The perforated system provides root lock-up with vegetated systems and provides greater cell wall infill lockup with coarse materials.
- Perforations reduce the negative effects of cell ponding.
- Contributes to LEED® green building credits for stormwater management, reduced heat island effect.

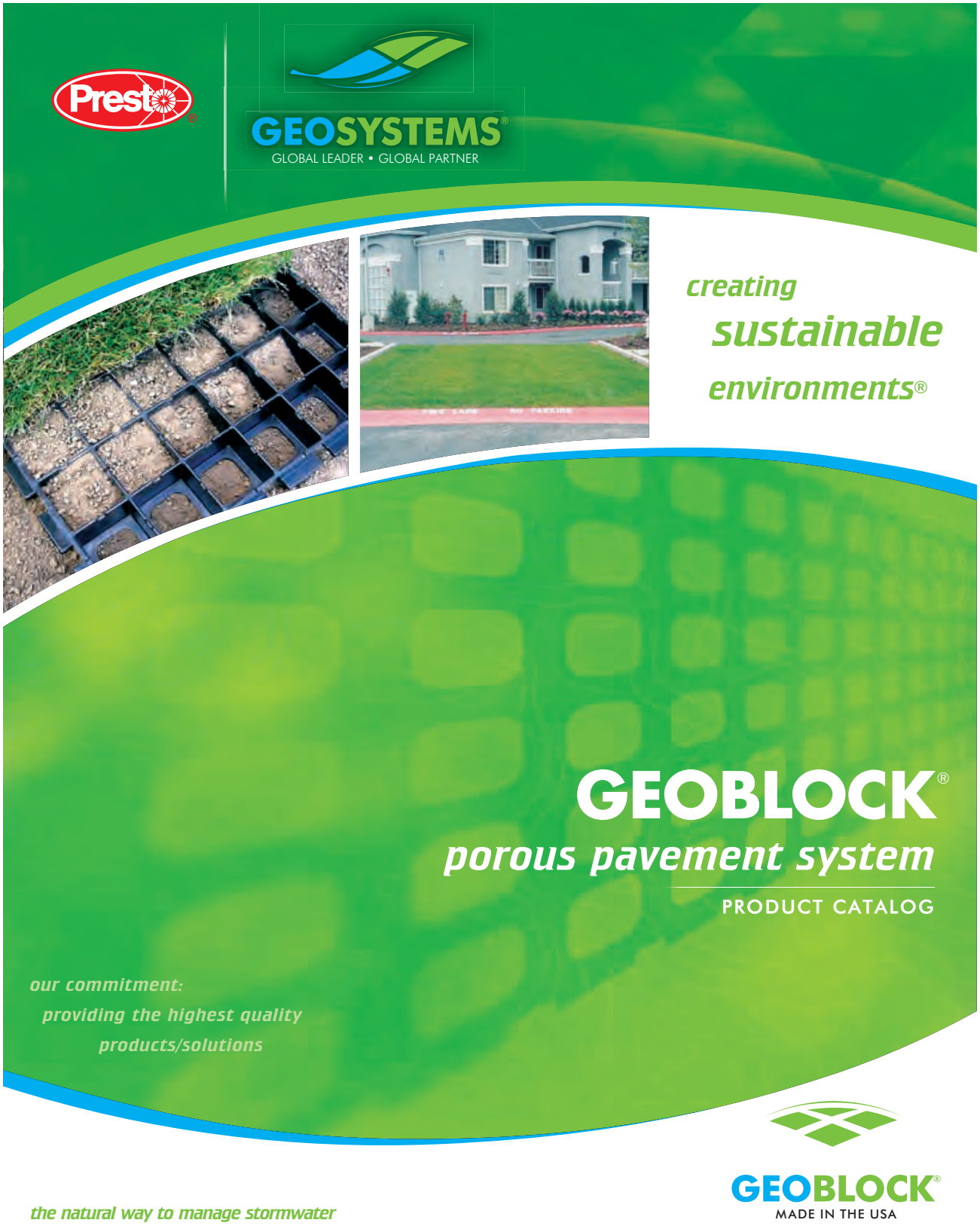
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GW/LS07 OCT 2008
Printed in the U.S.A. 2008
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GEOSYSTEMS®
GLOBAL LEADER • GLOBAL PARTNER
creating
sustainable
environments®
GEOBLOCK®
porous pavement system
PRODUCT CATALOG
our commitment:
providing the highest quality
products/solutions
the natural way to manage stormwater
GEOBLOCK®
MADE IN THE USA



low-impact way to help manage stormwater

Environmental regulations that control and limit stormwater runoff, reduce impervious surface, and increase green space have resulted in the growth of permeable pavements for traffic areas. Presto's GEOBLOCK® system offers numerous environmental advantages over hard surface pavements that result in cost savings and aesthetic benefits to property owners. Designed to handle the most demanding load support and turf protection requirements, the system supports a wide variety of loadings while allowing natural groundwater replenishment and reducing the need for detention or retention ponds. From pedestrian trails and walkways to emergency access lanes, to overflow parking, the GEOBLOCK® system provides high environmental benefit with low environmental impact.

environmental and economical benefits

EARN U.S. GREEN BUILDING LEED® CREDITS

The GEOBLOCK® system offers architects and designers achievable LEED® credits in the following categories:

- Reduced Site Disturbance
- Stormwater Management
- Reduced Heat Island Effect
- Recycled Content

HIGH PERMEABILITY

- Increases groundwater recharge and decreases surface runoff associated with stormwater discharge from paved areas.
- Minimizes use of valuable land space and costs associated with requirements for on-site stormwater ponds.

IMPROVES STORMWATER QUALITY

- Increases natural water infiltration and reduces non-point source pollution.

RECYCLED CONTENT

- Manufactured from up to 97% recycled polyethylene.

PROVIDES A COOLER SURFACE

- Reduces the heat island effect related to traditional hard pavements.

IMPROVES AESTHETICS

- Protects a sustainable vegetated surface or other attractive infill material.

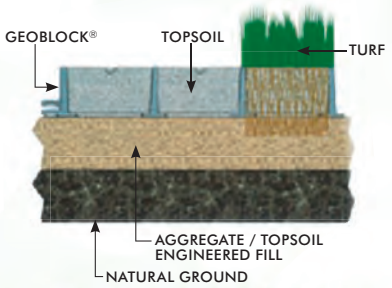
GEOBLOCK® *system components*

The GEOBLOCK® Porous Pavement System is comprised of the following components:

- GEOBLOCK® units
- Selected infill (topsoil/vegetation)
- Engineered base materials (if required)

The GEOBLOCK® system's unit strength and load distribution qualities allow a significant reduction in base requirements when compared to other porous pavement systems. Depending upon the subbase and loading, GEOBLOCK® units may be placed directly on the subgrade without additional base materials. For heavier loads or soft subbases, both the GEOBLOCK® units and engineered base work together to support the loading. The GEOBLOCK® system protexts the topsoil from compaction and vegetative root zone from damaged by encapsulating them within the system's structure.

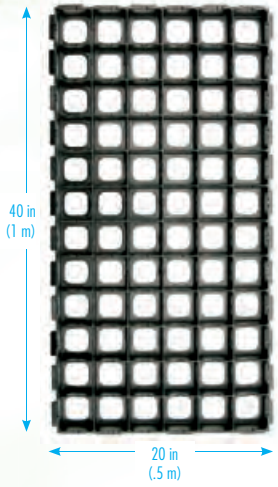
GEOBLOCK® SYSTEM CROSS SECTION:



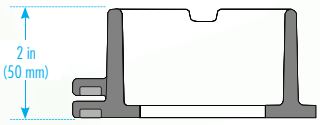
material specification

ITEM	GEOBLOCK®5150	GEOBLOCK®2
Material	Up to 97% Recycled Polyethylene	
Color	Dark shades of gray to black	
Chemical Resistance	Superior	
Carbon Black for Ultraviolet Light Stabilization	1.5% - 2.0%	
Dimensions (width x length)	0.50 m x 1.00 m (20 in x 40 in)	
Nominal Unit Depth	50 mm (2 in)	30 mm (1.2 in)
Coverage Area	.50 m^2 (5.38 ft^2)	
Cells per Unit	72	128
Cell Size	79 mm x 81 mm (3.1in x 3.2 in)	57 mm x 57 mm (2.25 in x 2.25 in)
Top Open Area per Unit	87%	88%
Bottom Open Area per Unit	41%	56%
Interlocking Offset Shear Transfer Tabs	12 tabs per meter (40 in)	
Nominal Weight per Unit	4 kg (9 lb)	2.1 kg (4.7 lb)
Runoff Coefficient at 63.5 mm/hr (2.5 in) Rainfall	.15	
Units per Pallet	50	92

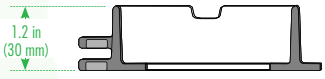
FULL SIZE GEOBLOCK® UNIT:



GEOBLOCK® CELL AND INTERLOCKING OFFSET TAB:



GEOBLOCK®5150



GEOBLOCK®2



usage guideline

LOAD DESCRIPTION					DEPTH OF ENGINEERED BASE			
Description	Maximum Tire Pressure	Single Axle Loading	Tandem Axle Loading	Gross Vehicle Loading	GEOBLOCK®5150 (2 in depth)		GEOBLOCK®2 (1.2 in depth)	
					CBR 2-4	CBR >4	CBR 2-4	CBR >4
Heavy Fire Truck Access & H-20 Loading (infrequent passes)	Typical 110 psi (758 kPa)	32 kip (145 kN)	48 kip (220 kN)	80,000 lb (36.3 tonne)	6 in (150 mm)	4 in (100 mm)	Consult Manufacturer	Consult Manufacturer
Light Fire Truck Access & H-15 loading (infrequent passes)	Typical 85 psi (586 kPa)	24 kip (110 kN)		60,000 lb (27.2 tonne)	4 in (100 mm)	2 in (50 mm)	Consult Manufacturer	Consult Manufacturer
Utility & Delivery Truck Access & H-10 loading (occasional passes)	Typical 60 psi (414 kPa)	16 kip (75 kN)		40,000 lb (18.1 tonne)	2 in (50 mm)	2 in (50 mm)	Consult Manufacturer	Consult Manufacturer
Car & Pick-up Truck Access (occasional passes)	Typical 45 psi (310 kPa)	4 kip (18 kN)		8,000 lb (3.6 tonne)	None	None	4-8 in (100–200 mm)	2-4 in (50–100 mm)
Trail Use[1] (loading for pedestrian, wheelchair, bicycle, motorcycle and ATV traffic)	Low	Low		Low	None	None	0–2 in (0–50 mm)	None

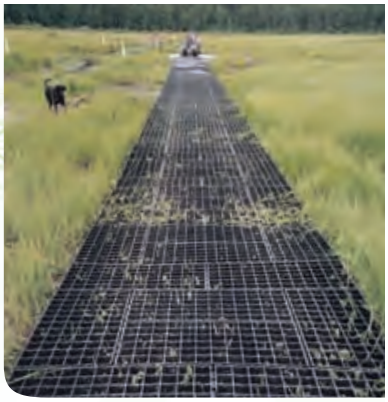
(1) If trail is non-vegetated, refer to the GEOBLOCK® design and construction document for more details.

NOTE: CBR refers to California Bearing Ratio. As the CBR increases, the depth of the engineered base recommendation decreases.

RECOMMENDED TOPSOIL:
Suitable topsoil should be a good quality, drainable soil and not be compacted within the GEOBLOCK® unit. The topsoil should be pulverized prior to filling the GEOBLOCK® cells and contain sufficient organic content to support vegetative growth. Topsoil such as sandy loam is recommended. Clay and clay loam material are not recommended.

RECOMMENDED ENGINEERED BASE:
A recommended 'engineered base' is a homogenous mixture consisting of 1) a clear-stone/crushed rock having an AASHTO # 5 or similar designation blended with 2) pulverized topsoil and 3) a void component generally containing air and/or water. This homogenous mixture will promote vegetative growth and provide required structural support.

The aggregate portion shall have a particle range from 9.5 to 25 mm (0.375 to 1.0 in) with a D_{50} of 13 mm (0.5 in). The percentage void-space of the aggregate portion when compacted shall be at least 30%. The pulverized topsoil portion shall equal 25% +/- of the total volume and be added and blended to produce a homogenous mixture prior to placement. Once placed, the mixture shall be compacted to 95% Standard Proctor Density.



GEOBLOCK® *features/advantages*

- Quality product manufactured to ISO 9001:2008 standards.
- Available in two types to most economically handle light to heavy load requirements.
- Large rigid surface area and strong interlocking connections maximizes load transfer and distribution of wheel loads to 80,000 lbs. and higher.
- Requires far less depth of base than rolled pavement systems, reducing overall installation costs.
- Effectively handles vehicle turning stresses and torsional loads.
- Deeper cells protect topsoil and vegetative root zone from damage caused by repeated loadings.
- Manufactured from up to 97% recycled plastic; offers credits with USGBC LEED® program.



typical applications

GEOBLOCK®5150 SYSTEM

HEAVY-DUTY

Access Roads: Maintenance, Utility, Fire and Emergency Vehicles

MEDIUM-DUTY

Parking Areas: Parks, Churches, Commercial Buildings, Sports Facilities, Residential

Trails: Pedestrian Greenways, Barrier-Free Access, Bicycles, Motorcycles and ATVs

GEOBLOCK®2 SYSTEM

MEDIUM-DUTY

Parking Areas: Parks, Churches, Commercial Buildings, Sports Facilities

Access Lanes: Passenger and Light-weight Utility Vehicles

LIGHT-DUTY

Trails: Pedestrian Greenways, Barrier-Free Access, Bicycles, Motorcycles and ATVs

Golf Courses: Edging, Pathways and Tee Areas

Residential: Driveways, Parking Areas, Campers and Boats

General: Event areas, Pedestrian Malls and Educational Campuses

In order to measure performance and evaluate the GEOBLOCK® system's capabilities, fire departments have performed rigorous tests on worst-case scenarios with exceptional results. Typical application areas include apartments, office and sports complexes, commercial/industrial buildings, shopping centers, and educational institutes.





easy installation

The GEOBLOCK® system is designed for easy installation, requiring less site preparation, less subgrade improvement, less excavation and less structural base than other porous pavement systems.

The GEOBLOCK® units are easily installed around obstructions and contours, and can be cut with ordinary hand or power tools. Irrigation systems can be easily integrated in the system. The units' large, easy-to-handle size minimizes the quantity of blocks required on a given job, reducing labor and installation costs.

The GEOBLOCK® system is an ideal paving solution in traffic areas where sustainable vegetation or permeable infill is desired.

To find out which GEOBLOCK® system is most suitable for your application, contact Presto Geosystems or their authorized distributor or representative.

PRESTO GEOSYSTEMS'® COMMITMENT — *To provide the highest quality products and solutions.*

Presto GEOSYSTEMS® is committed to helping you apply the best solution to your porous pavement requirements. Rely on the leaders in the industry when you need a solution that is right for your application. Contact Presto GEOSYSTEMS® or their network of knowledgeable distributors/representatives for assistance with your permeable pavement needs.

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GB/0 MAR 2010
Printed in the U.S.A.
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AP-4944 R2

CELLULAR PAVING SYSTEMS-POROUS RING AND GRID SYSTEM

TECHNICAL SPECIFICATION - Grasspave2 with 92% Void Space and Hydrogrow Mixture
CSI Master Format 32 12 43 Flexible Porous Pavement (Section 02795 Porous Pavement)

PART 1 - GENERAL
1.01 General Provisions
A. The Conditions of the Contract and all Sections of Division 1 are hereby made a part of this Section.

1.02 Description of Work
A. Work Included:
1. Provide and install sandy gravel road base as per Geotechnical Engineer's recommendations and/or as shown on drawings, to provide adequate support for project design loads. See 2.02 Materials.
2. Provide Grasspave2 Paving System products including Grasspave2 units, Hydrogrow soil polymer, and installation per the manufacturer's instructions furnished under this section.
3. Provide and install clean sharp sand to fill the Grasspave2 units, when needed.
4. Provide and install grass by using sod or hydroseeding.
B. Related Work:
1. Subgrade preparation under Section 31 20 00 Earth Moving (02200 – Earthwork).
2. Utilities and subsurface drainage - Section 33 40 00 Storm Drainage Utilities (02700 – Subsurface Drainage and Structures), as needed.
3. Irrigation installation - Section 32 80 00 Irrigation (02810 Irrigation), when needed.

1.03 Quality Assurance
A. Follow Section 01 33 23 Shop Drawings, Product Data, and Samples (01340 Shop Drawings, Product Data, and Samples) requirements.
B. Installation: Performed only by skilled workpeople with satisfactory record of performance on landscaping or paving projects of comparable size and quality.

1.04 Submittals
A. Submit manufacturer's product data and installation instructions.
B. Submit a 10" x 10" section of Grasspave2 material for review. Reviewed and accepted samples will be returned to the contractor.
C. Submit material certificates for base course and sand fill materials.

1.05 Delivery, Storage, and Handling
A. Protect Grasspave2 units from damage during delivery and store under tarp to protect from sunlight, when time from delivery to installation exceeds one week. Keep Hydrogrow in a dark and dry location.

1.06 Project Conditions
A. Review installation procedures and coordinate Grasspave2 work with other work affected. Generally, Grasspave2 is installed at the same time as project grass installation, nearly the last site construction activity.
B. All hard surface paving adjacent to Grasspave2 areas, including concrete walks and asphalt paving must be completed prior to installation of Grasspave2.
C. Gradients for grass porous paving surfaces can vary from flat to 20%, depending upon vehicle types to use the surface. Please note that fire lanes, or other emergency vehicles, will generally require a gradient that is less than 6%. If there are any questions regarding existing gradients on this project, please contact the Project Designer, or Invisible Structures, Inc.
D. Cold weather:
1. Do not use frozen materials or materials mixed or coated with ice or frost. Be careful in handling rolls of Grasspave2 in temperatures below 50 degrees F, as product connectors

become stiff and can separate, and the individual units will retain the roll curl until warmed to room temperature (aided by placement in sun for 15 to 20 minutes). If cold weather is anticipated, Grasspave2 can be shipped in flat sheets that measure 1-meter (40") square.

2. Do not build on frozen work or wet, saturated or muddy subgrade.

E. Protect partially completed paving against damage from other construction traffic when work is in progress, and until grass root system has matured (about 3 to 4 weeks). Any barricades constructed must still be accessible by emergency and fire equipment during and after installation.

F. Protect adjacent work from damage during Grasspave2 installation.

PART 2 - PRODUCTS

2.01 Availability

A. Manufacturer: (Grasspave2, Hydrogrow) Invisible Structures, Inc., 1600 Jackson Street., Suite 310, Golden, Colorado 80401. Call from USA and Canada 800-233-1510 toll free, International 303-233-8383, Fax 303-233-8282.

B. Local Sales Representative: (Contact Manufacturer)

2.02 Materials

A. Base Course: Sandy gravel material from local sources commonly used for road base construction, passing the following sieve analysis.

Sieve	%Passing
1"	100
3/4"	90-100
3/8"	70-80
#4	55-70
#10	45-55
#40	25-35
#200	3-8

1. Sources of the material can include either "pit run" or "crusher run." Crusher run material will generally require sharp sand to be added to mixture (33% by volume) to ensure long-term porosity. If there is difficulty in finding local sources to meet this sieve analysis, and alternative mixture can be created by mixing 2/3 crushed drainage rock (0.75" dia) with 1/3 course, well-draining sand (AASHTO M6 or ASTM C-33).
2. Selected materials should be nearly neutral in pH (range from 6.5 to 7.2) to provide adequate root zone development for turf.
3. Alternative materials such as crushed shell, limerock, and/or crushed lava may be considered for base course use, provided they are mixed with sharp sand (33%), and brought to proper compaction.
(Crushed shell and limerock alone can set up like concrete without sand added.)

B. Hydrogrow Mix: A proprietary soil amendment manufactured by Invisible Structures, Inc., provided with Grasspave2.

C. Grasspave2 Grass Paving Units:

1. Lightweight injection-molded plastic units 0.5x0.5x0.025m (20"x20"x1" high, 2.7 ft2 each) with hollow rings rising from a strong open grid allowing maximum grass root penetration and growth.
2. Unit weight = 510 g (18 oz.), volume = 8% solid.
3. The plastic shall be 100% pre-consumer recycled HDPE plastic resin, with minimum 3% carbon black concentrate added for UV protection.
4. Loading capability is equal to 402 kg/cm2 (5721 psi, 823,824 psf, 7.4 million psy, 39,273 kPA, 3707 tons/sq.yd.) when filled with sand, over an appropriate depth of base.
5. Grasspave2 is shipped in pre-assembled rolls that vary from 10 square meters (108 sf) to 50 square meters (1345 sf).
6. Male/Female Fastener Tensile Strength (from a Pull Test) is equal to 80,208 N/m (450 lbsf/in.)
7. Standard color is black.

Any products failing to meet these standards will be rejected.

D. Sand: To fill the 25 mm (one inch) high rings and spaces between the rings when seeding or using 13 mm (half inch) thick sod (soil thickness):

(Choose one of the following paragraphs to suit project requirements.)

1. Coarse, well-draining sand (washed concrete sand- AASHTO M6 or ASTM C-33).
2. United States Golf Association (USGA) greens (section) sand mix – "The Root Zone Mixture."

E. Grass: Use species resistant to wear by traffic generally a Blue/Rye/Fescue mix used for athletic fields in northern climates, and Zoysia, Fescue, or Bermuda types in southern climates. (Check with local sod and seed suppliers for preferred mixtures.) (Dedicated fire lanes can use same grass species used on surrounding turf.) (Parking applications require greatest wear-resistant species possible, generally available only by seed or sprigging.)

(Choose one of the following paragraphs to suit project requirements.)

1. Sod: Use 13 mm (0.5") thick (soil thickness) rolled sod from a reputable local grower. Species should be wear resistant, free from disease, and in excellent condition. Sod shall be grown in sand or sandy loam soils only. Sod grown in soils of clay, silt, or high organic materials such as peat, will not be accepted.
2. Seed: Use seed materials, of the preferred species for local environmental and projected traffic conditions, from certified sources. Seed shall be provided in containers clearly labeled to show seed name, lot number, net weight, % weed seed content, and guaranteed % of purity and germination. Pure Live Seed types and amount shall be as shown on plans.

F. Mulch: (Needed only for seeding.) Shall be of wood or paper cellulose types of commercial mulch materials often used in conjunction with hydroseeding operations. Mulches of straw, pine needles, etc. will not be acceptable because of their low moisture holding capacity.

G. Fertilizer: A commercial "starter" fertilizer, with Guaranteed Analysis of 17-23-6, or as recommended by local grass supplier, for rapid germination and root development.

H. Grasspave2 Sign: A sign to identify the presence of Grasspave2 paving, stating that special maintenance is required, with the Manufacturer's phone number, and made of durable materials for outdoor exposure shall be provided and installed.

I. Fire lane Signage & Delineation: Fire lanes must be identified regarding their entrance and physical location with the placement of signs, gates, curbs, bollards, etc. Specific signage wording and other details must be coordinated with and approved by local fire authorities.

PART 3 - EXECUTION

3.01 Inspection

(It is recommended that Fire Department inspectors be scheduled to inspect installation of Grasspave2 during preparation of the subbase, installation of the base course, and installation of Grasspave2 units. Most small projects can accommodate these inspections all on the same day. Verify with Fire Department if certificates of inspection are required.)

A. Examine subgrade and base course installed conditions. Do not start Grasspave2 installation until unsatisfactory conditions are corrected. Check for improperly compacted trenches, debris, and improper gradients.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Project Manager for resolution.

3.02 Preparation

(Ensure that subbase materials are structurally adequate to receive designed base course, wearing course, and designed loads. Generally, excavation into undisturbed normal strength soils will require no additional modification. Fill soils and otherwise structurally weak soils may require modifications, such as geotextiles, geogrids, and/or compaction (not to exceed 90%). Ensure that grading and soil porosity of the subbase will provide adequate subsurface drainage.)

A. Place base course material over prepared subbase to grades shown on plans, in lifts not to exceed 150 mm (6"), compacting each lift separately to 95% Modified Proctor. Leave minimum 25 mm (1") to 35 mm (1.5") for Grasspave2 unit and sand/sod fill to Final Grade.

B. Spread all Hydrogrow mix provided (spreader rate = 4.53 kg per 100 m2 (10 lbs per 1076 ft2) evenly over the surface of the base course with a hand-held, or wheeled, rotary spreader. The Hydrogrow mix should be placed immediately before installing the Grasspave2 units to assure that the polymer does not become wet and expanded when installing the units.

3.03 Installation of Grasspave2 Units

A. Install the Grasspave2 units by placing units with rings facing up, and using pegs and holes provided to maintain proper spacing and interlock the units. Units can be easily shaped with pruning shears or knife. Units placed on curves and slopes shall be anchored to the base course, using 16d Common nails with fender washer, as required to secure units in place. Tops of rings shall be between 6 mm to 13 mm (0.25" to 0.5") below the surface of adjacent hard-surface pavements.

B. Install sand in rings as they are laid in sections by "back-dumping" directly from a dump truck, or from buckets mounted on tractors, which then exit the site by driving over rings already filled with sand. The sand is then spread laterally from the pile using flat bottomed shovels and/or wide "asphalt rakes" to fill the rings. A stiff bristled broom should be used for final "finishing" of the sand. The sand must be "compacted" by using water from hose, irrigation heads, or rainfall, with the finish grade no less than the top of rings and no more than 6 mm (0.25") above top of rings.

3.04 Installation of Grass

(Choose one paragraph below to meet grass installation method desired.)

A. (Preferred method) Hydroseeding/hydro-mulching - A combination of water, seed and fertilizer are homogeneously mixed in a purpose-built, truck-mounted tank. The seed mixture is sprayed onto the site at rates shown on plans and per hydroseeding manufacturer's recommendations. Coverage must be uniform and complete. Following germination of the seed, areas lacking germination larger than 20 cm x 20 cm (8" x 8") must be reseeded immediately. Seeded areas must be fertilized and kept moist during development of the turf plants.

B. Install thin sod directly over sand filled rings, filled no higher than the top of the rings. Sod strips should be placed with very tight joints. Sodded areas must be fertilized and kept moist during root establishment (minimum of 3 weeks). Sodded areas must be protected from any traffic, other than emergency vehicles, for a period of 3 to 4 weeks, or until the root system has penetrated and established well below the Grasspave2 units.

C. Install grass seed at rates per grass type. A light “dusting” of commercial topsoil mix, not to exceed 1/2” (25 mm) can be placed above the rings and seed mix to aid germination rates. Seeded areas must be fertilized and kept moist during development of the turf plants.

3.05 Protection

(Choose one paragraph below to match grass installation method.)

A. Seeded areas must be protected from any traffic, other than emergency vehicles, for a period of 4 to 8 weeks, or until the grass is mature to handle traffic.

B. Sodded areas must be protected from any traffic, other than emergency vehicles, for a period of 3 to 4 weeks, or until the root system has penetrated below the Grasspave2 units.

3.06 Cleaning

A. Remove and replace segments of Grasspave2 units where three or more adjacent rings are broken or damaged, reinstalling as specified, so no evidence of replacement is apparent.

B. Perform cleaning during the installation of work and upon completion of the work. Remove all excess materials, debris, and equipment from site. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

END OF SECTION

If you have any questions regarding this specification, please call Invisible Structures, Inc. 1-800-233-1510, overseas call 303-233-8383. *Version 09/2010*

National Park Service
U.S. Department of the Interior

Monocacy National Battlefield
4632 Araby Church Rd.
Frederick, MD 21704

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