



Petersburg National Battlefield

Alternative Transportation Feasibility Study



Clockwise from top left: Grant's cabin (Grant's Headquarters at City Point); earthworks replica (Eastern Front); Five Forks intersection (Five Forks); Fort Wadsworth (Western Front)

Source: Volpe Center photographs (December 2010)

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Report Notes

This report was prepared by the U.S. Department of Transportation John A. Volpe National Transportation Systems Center, in Cambridge, Massachusetts. The Project Team included Anna Biton, Benjamin Cotton, and Charlotte Burger of the Transportation Planning Division, and included Michael Clark of MacroSys.

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Acronyms

U.S. DOT	United States Department of Transportation
U.S. DOI	United States Department of the Interior
PETE	Petersburg National Battlefield
NPS	National Park Service
VDOT	Virginia Department of Transportation
GMP	General Management Plan
CWT	Civil War Trust

Executive Summary

The Petersburg National Battlefield (PETE) Alternative Transportation Feasibility Study investigates alternative solutions to several transportation problems affecting the park today. PETE consists of four jurisdictions: Grant's Headquarters at City Point, Eastern Front, Western Front, and Five Forks Battlefield. Comprising 2,659 acres of land interspersed among two cities and two counties in southeast Virginia, PETE's current transportation problems include site-specific access issues, wayfinding and navigational challenges, and inefficient transportation-based interpretive programs.

Based on site visits, meetings with park staff, and an assessment of existing transportation conditions, the project team identified the key factors that would shape the development of the report:

- Most PETE visits are to the Eastern Front; the park would like to promote visitation to the other sites as well.
- Parking and traffic congestion are not currently major concerns but should be monitored over time.
- The Fort Lee expansion may lead to increased congestion in the area, but also provide opportunities for expanded partnerships.
- Signage and wayfinding are a key concern for accessing all PETE sites.
- There is strong interest in exploring options for improving movement between the sites, which could include signage and wayfinding improvements as well as potential shuttle options.
- PETE will need to consider access to the sites that would be included in a future boundary expansion, including implications for the driving tour, signage, information, and circulation patterns.
- There is not a lot of bicycle activity in the region, though there is some general interest in future expansion and how it might be incorporated into expanding access to the park.

Based on these factors, this report investigates transportation solutions on a variety of levels, ranging from those that are immediately implementable as well as those better suited for consideration over the long term.

Among the solutions able to be implemented immediately is the development of an inventory of existing signs along all local and regional road corridors. The geospatial sign inventory would include state-owned supplemental signs that direct visitors to PETE destinations, as well as those owned by NPS intended to guide visitors along the Battlefield's driving tour. Currently, roadway signage is plentiful, but the overall system of signs does not provide a cohesive system of wayfinding for visitors unfamiliar with the PETE region. Furthermore, signs that are managed and maintained by the Virginia Department of Transportation (VDOT) serve purposes that are not always aligned with PETE's wayfinding needs. In addition to recommending an existing sign inventory, the report provides a series of subsequent actions to be taken that may ultimately result in a new integrated sign plan that merges supplemental-style signs with the PETE driving tour.

Another short term solution is a shuttle system within the Eastern Front, the Battlefield's most heavily visited unit and site of the Battlefield's main visitor center. A shuttle would replace the existing caravan tour, which operates within the Eastern Front along its main artery, Siege Road. Currently operating daily during the summer months, the caravan tour is a program that allows visitors to drive their own vehicles, following a park ranger. The caravan stops at each of the major destinations along Siege Road, where visitors park vehicles and join the ranger for interpretation of the site.

As an alternative to the caravan, a passenger vehicle could carry all visitors together in one multi-passenger van or bus. This solution would not only eliminate the need for visitors to drive and reduce the number of passenger vehicles on Siege Road, but it may also allow for in-vehicle ranger interpretation while en route to Eastern Front destinations. The report recommends implementation of a shuttle program via a limited pilot test program, allowing PETE to understand the demand for this type of service before committing to major capital expenditures. The pilot test would also serve to provide a better understanding of operating cost, an essential concern for new shuttle systems whose operations cannot be financed by Federal funds. In addition to a shuttle within the Eastern Front, the report explores additional shuttle service options, including a route through the Western Front and connections to destinations and other transportation networks in downtown Petersburg.

Additional items investigated as part of this report include opportunities for traveler information technology and bicycle and pedestrian connections. Traveler information technology, which focuses primarily on information disseminated through web-enabled devices such as computers and smartphones, presents several viable considerations for implementation. However, the report also acknowledges that several third party organizations, such as the Civil War Trust, are currently producing these types of applications and may ultimately be better suited to offer these types of services. Bicycle access to PETE is another important component of this report, despite the fact that current visitation to PETE by bicycle is not a focus of NPS at this time. Recognizing that bikes are not a heavily used mode of transportation in the study area, there are still opportunities to improve cycling conditions in and around PETE. Specifically, this chapter examines opportunities for bicycle trail and road connections in areas close to PETE units.

Finally, the PETE Alternative Transportation Feasibility report concludes with several sections discussing general considerations related to all future transportation initiatives. With a proposal in Congress to expand the boundaries of the Battlefield, the document illustrates potential transportation implications as new land holdings are acquired, including signage, parking, wayfinding, and shuttle stop considerations. The report also compiles a list of potential regional partnership suggestions and provides a briefing of relevant federal lands funding programs in the new transportation bill, MAP-21.

Introduction

The Petersburg National Battlefield (PETE), operated by the National Park Service (NPS) is dedicated to preserving sites related to the American Civil War Siege of Petersburg. The Battlefield has its headquarters in Petersburg, Virginia, and also includes sites in Hopewell, Prince George County, and Dinwiddie County. PETE encompasses just over 2,600 acres of the Petersburg Campaign – a Civil War battle that lasted nearly a year and covered over 100,000 acres (176 square miles); the two farthest park sites are approximately 37 miles apart. The park currently protects and interprets General Ulysses S. Grant’s Headquarters at City Point, Eastern Front, Western Front, Five Forks Battlefield, and the Poplar Grove National Cemetery.

The park’s 2004 General Management Plan (GMP) includes a goal to “expand understanding of the Petersburg Campaign through connections to a broader geographic area.” It also recommends a boundary expansion to include 12 additional battle sites – approximately 7,238 acres.

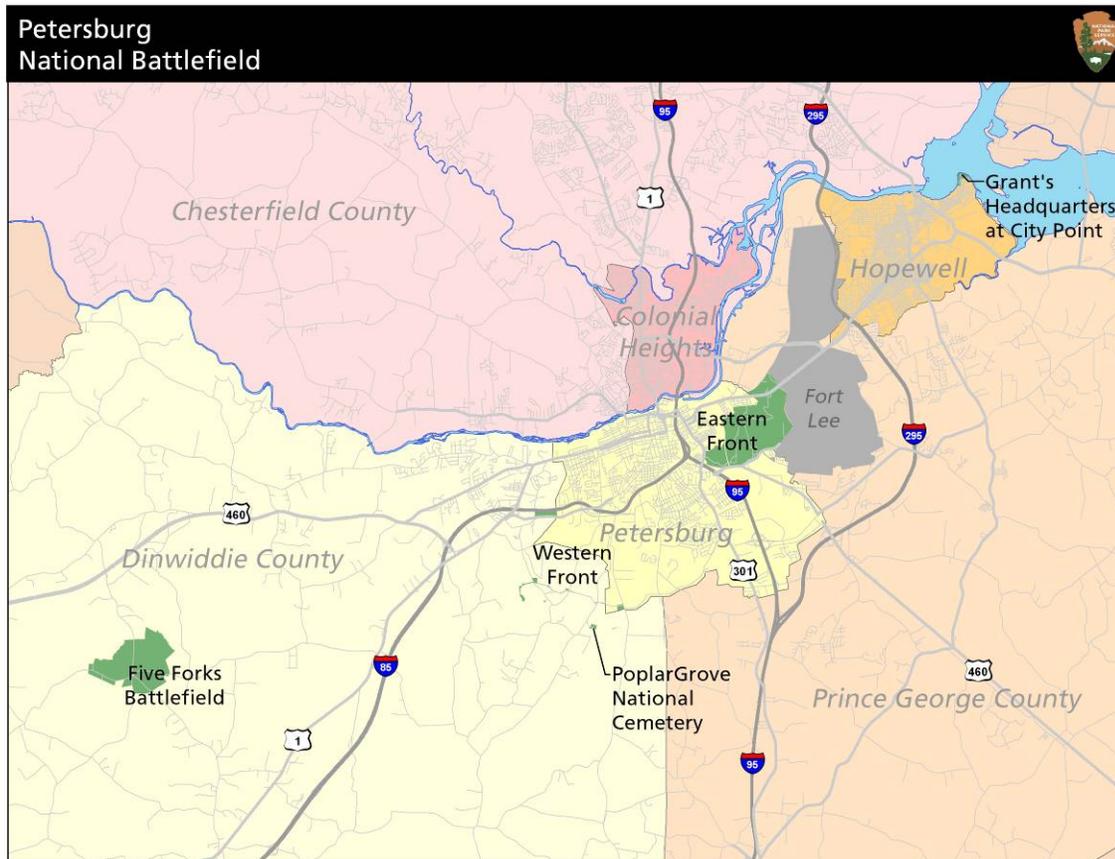
This study will explore ways to improve access to and connectivity between the four existing PETE units, as well as the additional sites identified in the GMP. It will examine issues offer implementation recommendations pertinent to visitor access, wayfinding, circulation, and pre-trip information at PETE. The key transportation and access-related issues discussed in the report include:

- Directional and informational signage for motorists, pedestrians, cyclists, and transit users;
- Potential transportation shuttle service;
- Encouragement of pedestrian and bicycle access by visitors and staff, and connections to regional trail network;
- Improved pre-trip information for visitors; and
- Transportation and visitor experience impacts of adding 12 new sites to PETE.

The report also presents information about Federal alternative transportation funding opportunities related to the new Federal transportation bill, MAP-21, and suggestions for exploring partnerships when implementing new transportation initiatives.

Figure 1
General location and context

Source: Volpe Center



1 Existing Conditions

This chapter discusses existing conditions related to the Petersburg National Battlefield and the multiple jurisdictions it crosses – Petersburg, Hopewell, Prince Georges County, and Dinwiddie County – including sites of local interest, land use patterns, and transportation. The “Tri-Cities” area, named for the cities of Petersburg, Hopewell, and Colonial Heights, is located in the southern portion of the Greater Richmond area.

1.1 Location and Context

Existing Site Management

Petersburg National Battlefield (PETE) currently comprises 2,659 acres in four jurisdictions: Petersburg City, Hopewell City, Dinwiddie County, and Prince George County. The park is divided into four management units: Grant’s Headquarters at City Point, Eastern Front, Western Front, and Five Forks Battlefield. The four sites span a distance of approximately 37 miles, with the municipalities and counties in between, and connected by local, state, or county roads. Each of the units is briefly described in the sections below.

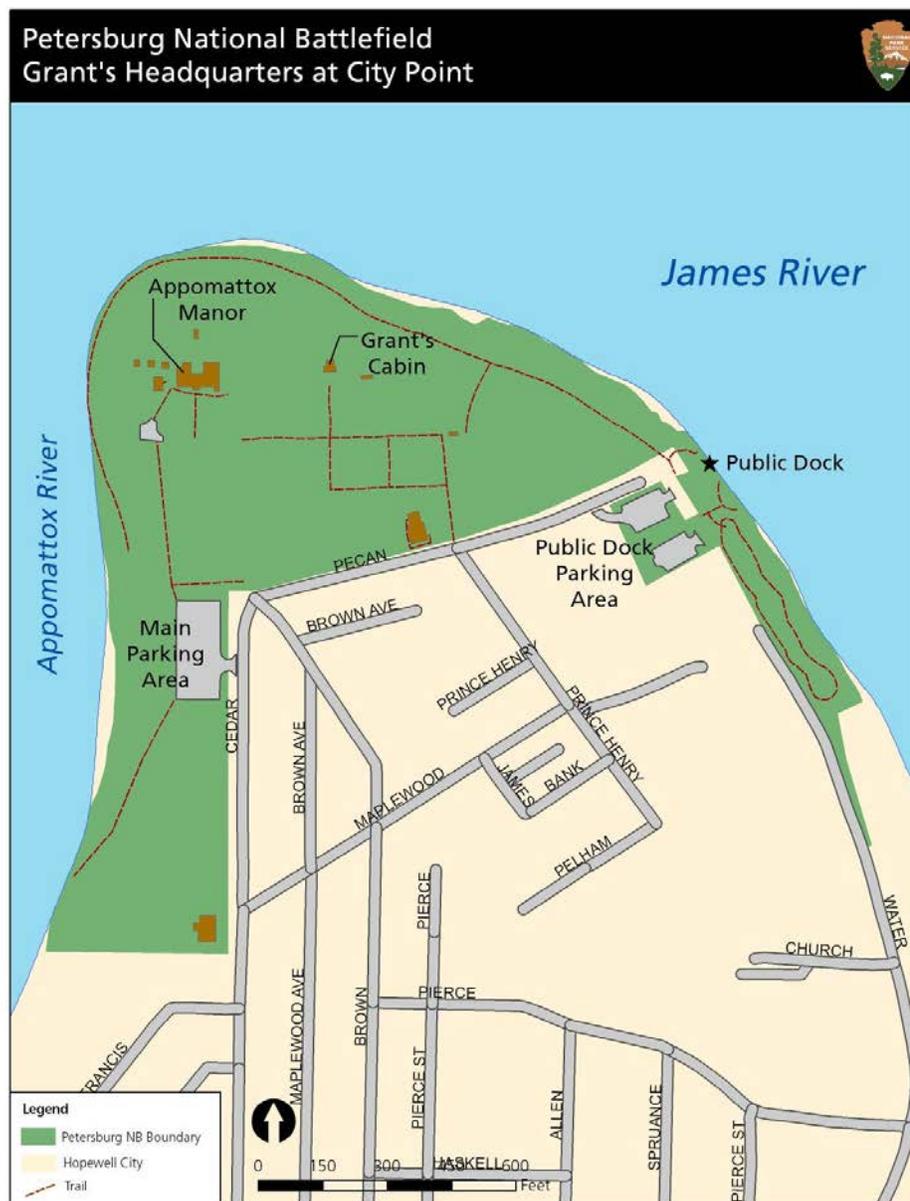
Grant's Headquarters at City Point

Grant's headquarters at City Point is situated on a peninsula overlooking the confluence of the Appomattox and James Rivers in Hopewell, Virginia (Figure 2). The unit is located approximately 6.7 miles northeast of the Eastern Front.

Grant's Headquarters at City Point is the location of Appomattox Manor, which served as the Union Army's center of operations for the nine-month siege of Petersburg. The site was a major hub for rail and water-based transportation at the time. Comprising 27 acres and 4,000 feet of shoreline, City Point is surrounded by water on three sides and by a residential neighborhood to the south.

Figure 2
Grant's Headquarters at City Point

Source: Volpe Center



Today, the manor serves as the unit's headquarters and includes ranger-led interpretation, several small exhibits, a video screening room, and a small gift shop. The original structure was built in the 1700s, with wings added on all sides, completely enclosing the original house. Public restrooms have been added to the structure and staff offices are also housed inside. Several outbuildings situated on the property provide a glimpse into life around the time of the Civil War, including the original cabin in which Grant lived during the siege (Figure 3). The main parking area has marked spaces for 28 cars and six buses.

In addition to the historic structures and landscapes, NPS recently constructed a large public dock on the James River side of the City Point unit (Figure 3). With 40 additional vehicle parking spaces in a nearby parking area, the dock is popular with local residents for picnicking, fishing, and as a general gathering place. An old rail bed that travels along the waterfront is still intact and provides a wide grass and dirt pathway from the dock, continuing along the Appomattox River shoreline into downtown Hopewell.

Figure 3

Appomattox Manor; Grant's Headquarters; James River public dock (left to right)

Source: Volpe Center

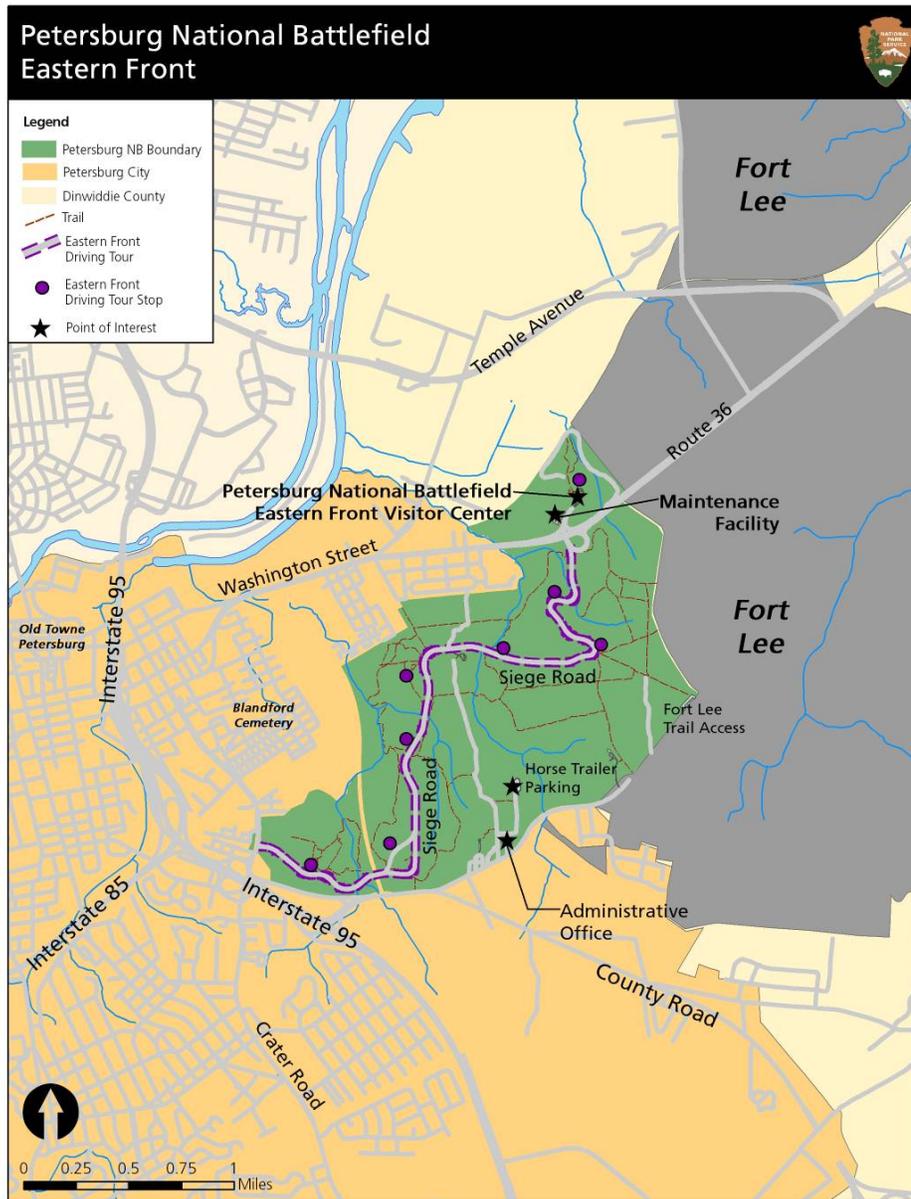


Eastern Front

Located east of downtown Petersburg, the Eastern Front (Figure 4) is the largest and most visited park unit in Petersburg National Battlefield. Much of the Eastern Front lies within the Petersburg city boundary, with a small portion extending into Prince George County. A portion of the Eastern Front's eastern boundary is shared with the U.S. Army's Fort Lee. In addition to the battlefield attractions, the Eastern Front houses the park's main visitor center, maintenance facility, and administrative headquarters.

Figure 4
Eastern Front location and context

Source: Volpe Center



Situated just north of VA Highway 36, which travels through the northern portion of the Eastern Front, the battlefield’s main visitor center is usually the first destination for visitors. The entrance from Hwy 36 is designed such that all vehicles are directed to the main entrance gate. The visitor center houses exhibits, a film screening room, gift shop, ranger offices, an information desk, and restroom facilities. The parking lot can accommodate 75 vehicles and four buses.

The four-mile, two-lane park tour road (Siege Road) travels through the Eastern Front from the visitor center in the northeast to the Crater Battlefield in the southwest. The right lane is designated for one-way motorized vehicle traffic; the left lane is reserved for bicycles, pedestrians, and the occasional Segway tour (Figure 5). Users of the left lane may travel in both directions. In addition to

the main road through the unit, the Eastern Front is served by several multi-use trails. All trails are open to pedestrians, and many others also allow bicycle and equestrian use.

The Eastern Front may also be accessed from a parking area on Fort Lee near the corner of Mahoney Avenue and Adams Avenue. The 80-space parking area is used to access Meade Trail, and an admission fee is paid to an “iron ranger” (Figure 5).

The battlefield’s administrative offices are located on Hickory Hill Road at the southern perimeter of the Eastern Front; nearby is a parking area for horse trailers. The battlefield’s primary maintenance facility is situated between the visitor center and the Highway 36 interchange.

Figure 5
Visitor center; park tour road; “Iron ranger”

Source: Volpe Center



Western Front

The Western Front (Figure 6) is a group of distinct sites spread over a wide area in Dinwiddie County east of Interstate 85 and west of Interstate 95. The landscape is rural and suburban in character and is served by a network state and county roads.

NPS has several holdings in the Western Front, four of which are highlighted on the park map and identified for the park driving tour. A primary focus of this study, the driving tour sites are briefly described below.

- **Fort Wadsworth** (Figure 7) is a 10.5 acre earthen fortification located at the corner of Flank Road and Halifax Road. It is the first stop on Western Front driving tour. The unmarked parking area has space for approximately five vehicles and could potentially accommodate parallel parking for additional vehicles.
- **Poplar Grove National Cemetery** (Figure 7) is burial ground for Union soldiers who died during the siege of Petersburg. The cemetery was established in 1866; approximately 5,000 Union soldiers from nearly 100 separate burial sites around Petersburg were moved to the site. In 1933, responsibility of the cemetery was transferred from the War Department to NPS. Poplar Grove is one of 14 National Cemeteries administered by NPS. It is closed for burials, but visitors are invited to walk the grounds, which are open daily. Poplar Grove is the second stop in the Western Front driving tour, approximately one mile from Fort Wadsworth on Vaughan Road (Rte 675). A visitor contact station and a maintenance facility are on site, with six marked parking spaces. The cemetery parking lot is too small for most large vehicles (typically buses) to turn around, making it difficult for groups to access the site. The driveway is relatively narrow and privately owned; NPS has access to the driveway through an easement. It is not likely that NPS would be able to reconfigure the parking area or driveway to accommodate larger vehicles.
- **Fort Fisher** (Figure 7) is an earthen fortification at the corner of Church Road and Flank Road. There is a small unmarked parking area with space for approximately five vehicles. The fort is one of the most accessible sites in the entire battlefield, with numerous trails and

bridges through the interior of the tract. Fort Fisher is situated at the western end of Long Flank and is the third stop on the Western Front driving tour.

- **Fort Gregg** (Figure 7) is a large open parcel with a Confederate fortification adjacent to the Interstate 85 corridor and a Virginia state hospital. The gravel parking area has space for approximately six cars and one bus. There is also a gravel turnout across the street that could accommodate additional vehicles.

Figure 6
Western Front
 Source: Volpe Center

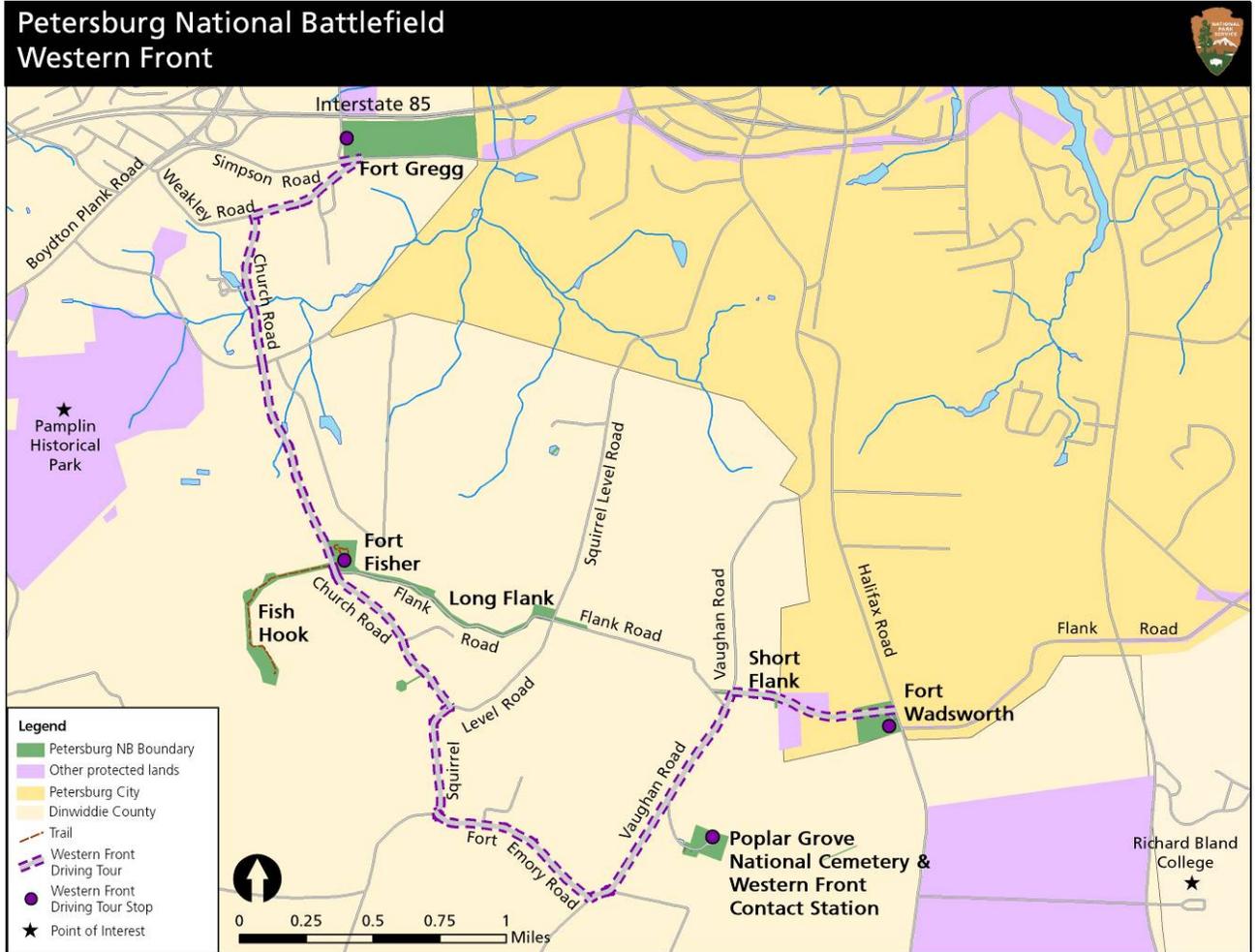
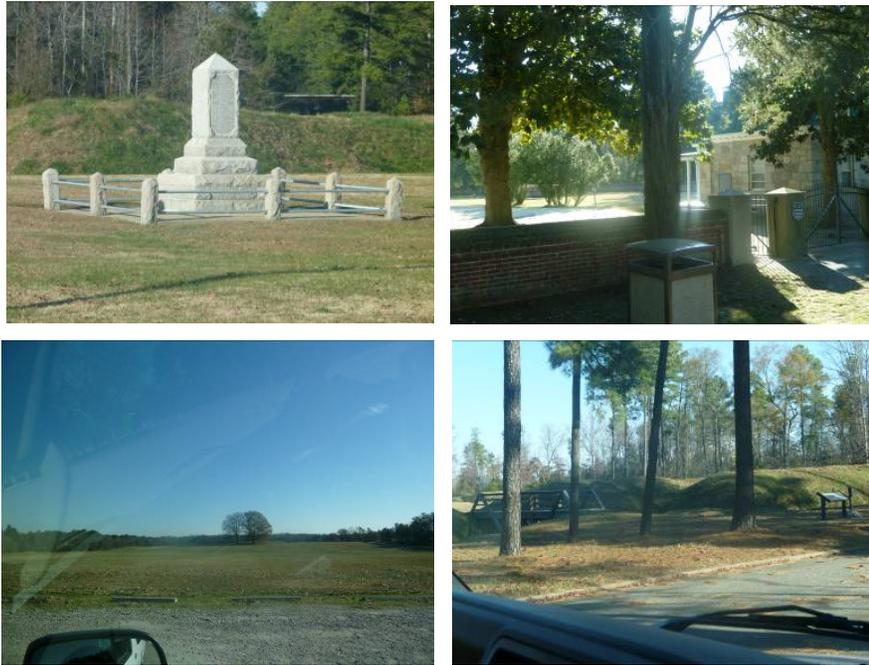


Figure 7

Clockwise from top left: Fort Wadsworth; Poplar Grove National Cemetery; Fort Fisher; Fort Gregg

Source: Volpe Center



There are several other NPS holdings in the Western Front that are not highlighted on the driving tour, including:

- Long Flank
- Short Flank
- Fort Conahey
- Fort Urmston
- Fort Wheaten
- Fish Hook
- Gowen Monument
- Pennsylvania Monument

The span of the Western Front area also includes numerous siege-related lands that are held and/or managed by other entities, including:

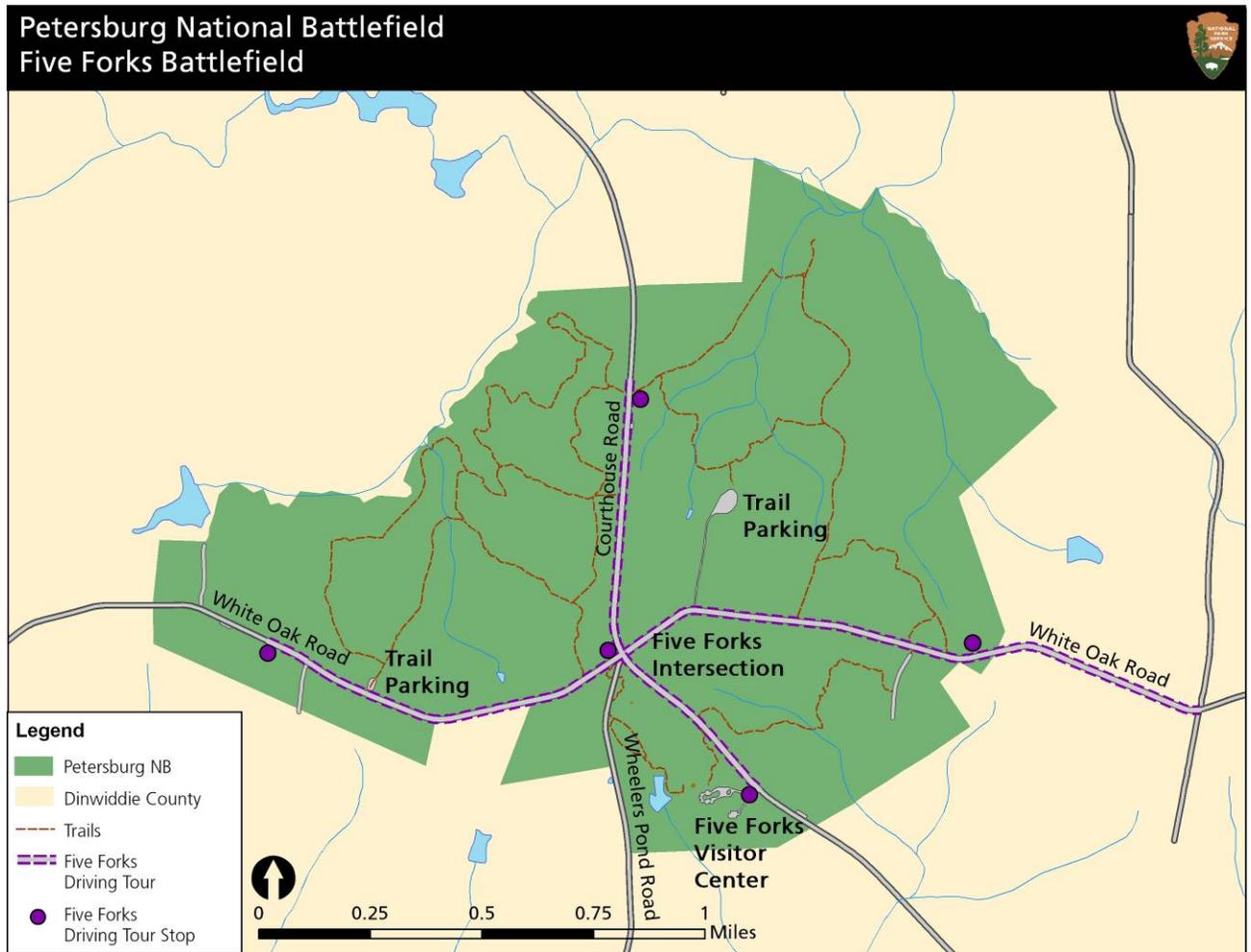
- Fort Davis (City of Petersburg)
- Pamplin Historical Park (Pamplin Foundation)
- Reams' Station (Civil War Trust)
- Hatcher's Run (Civil War Trust)
- White Oak Battlefield (Civil War Trust)
- Richard Bland College (State of Virginia)

Five Forks Battlefield

Five Forks Battlefield, located approximately 17 miles southwest of Petersburg in Dinwiddie County, is the least developed of Petersburg National Battlefield's current holdings. The 900-acre parcel area, shown in Figure 8, is rural in character with a combination of fields and forests. At the center of the unit is the "five forks" junction of local roads (White Oak, Wheelers Pond, and Courthouse Roads) for which the battle is named. The extensive multi-use trail network throughout the unit is popular with hikers, bicyclists, and equestrians.

Figure 8
Five Forks Battlefield

Source: Volpe Center



In 2009, NPS completed a visitor contact station for the Five Forks unit, with a paved parking area for at least 30 cars and five buses. There are also parking areas at the East Trail and West Trail entrances. As shown in Figure 9, the East Trail uses an open field for parking. It can fit over 30 cars as well as several buses or horse trailers in good weather conditions. Because of the grass surface, inclement weather conditions can restrict the ability of the field to accommodate vehicles. The parking area at the Five Forks West Trail consists of a worn gravel surface on an open field. It can accommodate several buses or horse trailers in good weather conditions, as well as over 25 cars. As with the East Trail parking area, poor weather conditions can prohibit safe parking.

Figure 9

Five Forks junction; Five Forks visitor center and parking area; East Trail parking area

Source: Volpe Center



Boundary Expansion and Future Site Management

In December 2004, Petersburg National Battlefield completed its first General Management Plan (GMP). The GMP describes four alternatives for future growth, focusing on issues such as: site management, resource protection, visitor services, enhancing interpretation, and partnership development over a 20-year period. The preferred alternative focuses on the cultural landscape as “the mechanism by which the Civil War stories are told.”¹ As part of this alternative, the GMP also changed the names of each battlefield unit to better reflect strategic positions during the siege and to encourage visitation to all units.

A major component of the selected GMP alternative is the proposed expansion of the park’s boundaries, to include additional sites that would offer more opportunities for telling the complete story of the siege of Petersburg. Many of the sites identified for potential inclusion are located within the Western Front area; most of these lands are already protected by the Civil War Trust (CWT), an organization whose mission is to save battlefields from development by purchasing the land. NPS has a close relationship with CWT, as well as other agencies involved with battlefield preservation.

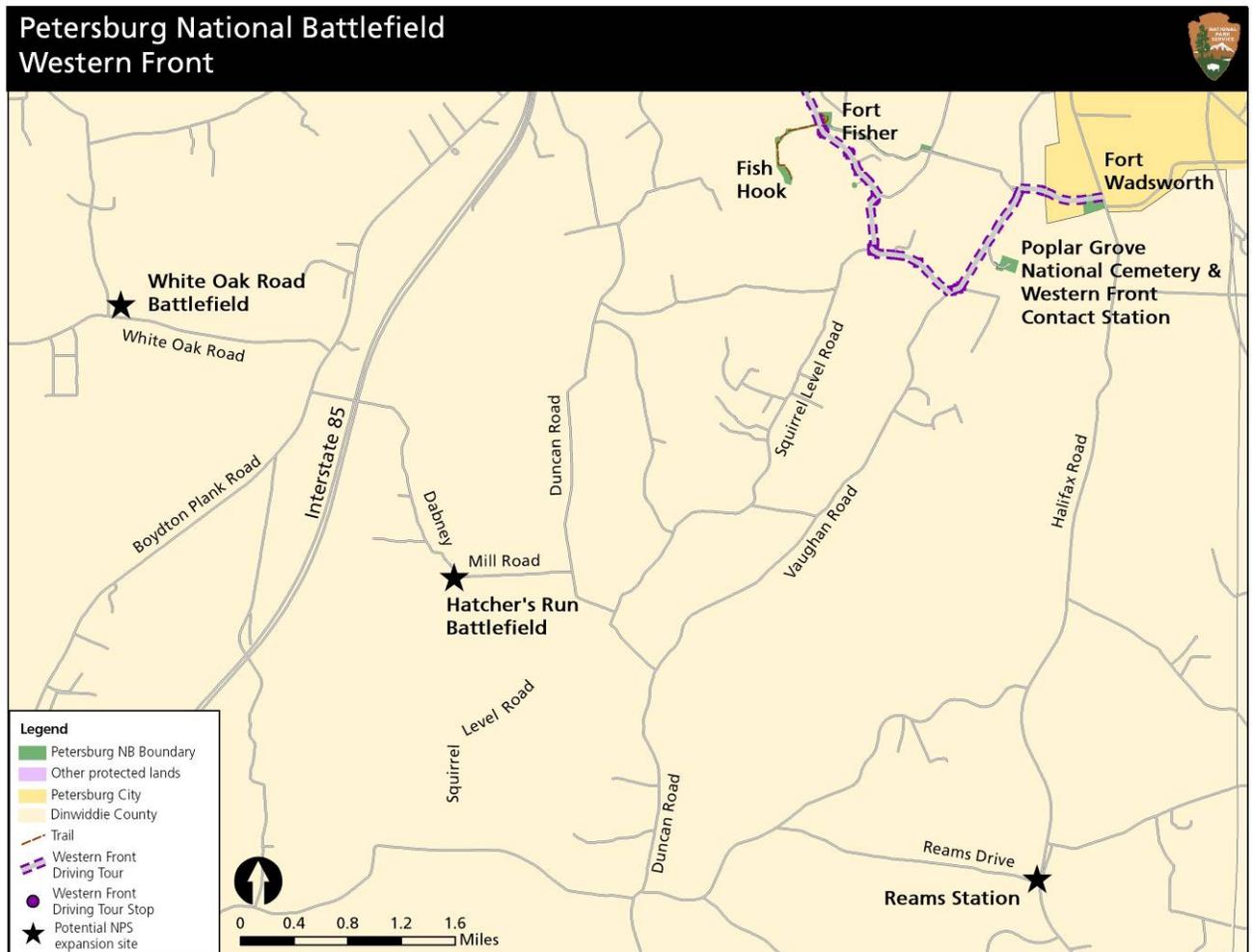
The boundary expansion requires Congressional approval, which is expected to be granted in the near future. After approval is granted, NPS would need to develop agreements with the current site holders, to coordinate on transfer, compensation, etc. It is not likely that all of the sites identified in the GMP would be incorporated into PETE. This study will explore transportation and access-related issues at a broad scale for the expansion in general, and more specifically around the sites thought most likely to be incorporated first, which include Reams Station, Hatcher’s Run Battlefield, and White Oak Battlefield.

These sites are shown with the current NPS Western Front sites in Figure 10.

¹ Petersburg National Battlefield GMP (2004), p. iv

Figure 10
Western Front NPS and other protected sites

Source: Volpe Center



Visitation

In 2009, there were an estimated 162,722 recreational visitors to the Petersburg National Battlefield. The park collects visitor data from several sources, including: sales of annual passes, counts of vehicles entering sites, individuals entering the Eastern Front and Five Forks Battlefield visitor centers, and visitor satisfaction survey card data. Information about the visitors themselves, such as demographics, whether or not they live locally, and how they access and use the park (running, seeing battlefields, picnicking, etc.), is not collected.

The Eastern Front is the only PETE unit that charges an entrance fee. The fees are:

- \$5 per car, for a period of 7 days
- \$3 per individual entry (by foot or bicycle), for a period of 7 days
- \$15 Petersburg NB Annual Pass

The entrance fee can be paid at the main entrance or in self-service “iron ranger” fare boxes located at the trail entrances. Annual passes are available for sale at the Visitor Center as well as on base at

Fort Lee. Visitors are expected to carry passes on their person. In 2010 there were approximately 380 annual passes sold.

Traffic counters are positioned at the following sites: Eastern Front Visitor Center, Fort Wadsworth, Poplar Grove National Cemetery, Long Flank (near Fort Fisher), and the Five Forks Visitor Center. The park also records the number of visitors that enter the house at City Point (but not people who visit the grounds and do not enter the house), as well as the number of visitors that arrive by bus at any of the visitor contact stations. It should be noted that all of these counts are for total vehicles and/or total visitors at each site, and do not necessarily represent unique visitors – if a particular vehicle visits more than one site it would be counted multiple times. For example, a visitor going to City Point, the Eastern Front, and Poplar Grove would be counted three times.

Figure 11 shows recreational visitation from 2000-2009. Though visitation fell in the first half of the decade, it has risen again in recent years. Visitation in 2005 was lower due in part to the six-month Appomattox Manor closure, as well as some inconsistencies with estimation techniques.

A standard estimate of 2.7 passengers per car is applied to each counted vehicle to derive the number of visitors. For Eastern Front counts, the number of vehicles is reduced to account for bus visits, and then the total visitor count is increased by a factor of 1.2 to account for visitors that enter the park but do not cross a traffic counter. Traffic counters on through-roads capture non-recreational traffic counts. For example, the Long Flank traffic count is taken on a road that is maintained by NPS, though use of the road is primarily through-traffic rather than park visitation.

Figure 11
PETE recreational visitation, 2000-2009

Source: NPS Statistics

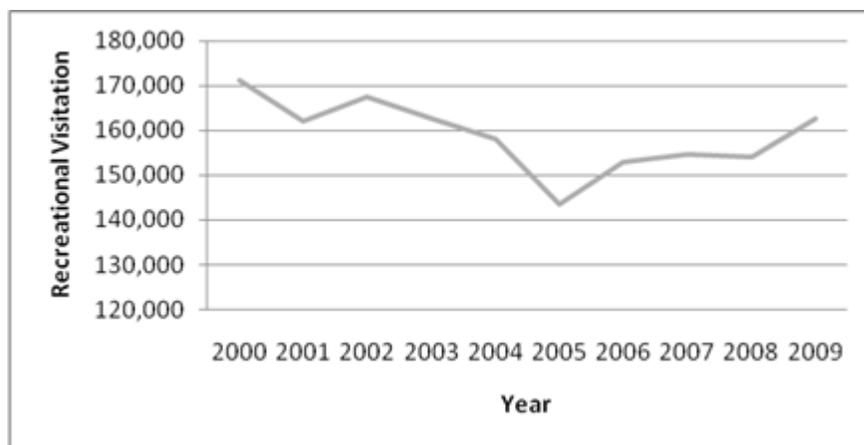


Figure 12 illustrates 2009 PETE traffic counts. Traffic counters at the units indicate seasonal variations in visitation. For example, recreational visitation at the Eastern Front indicates a peak in the month of June, and again in the month of October. The peak in traffic count data seen in the month October at the Five Forks location may be related to the installation of an electronic counter, whereas previous counts were conducted manually.

Figure 12
PETE traffic counts, 2009

Source: NPS Statistics

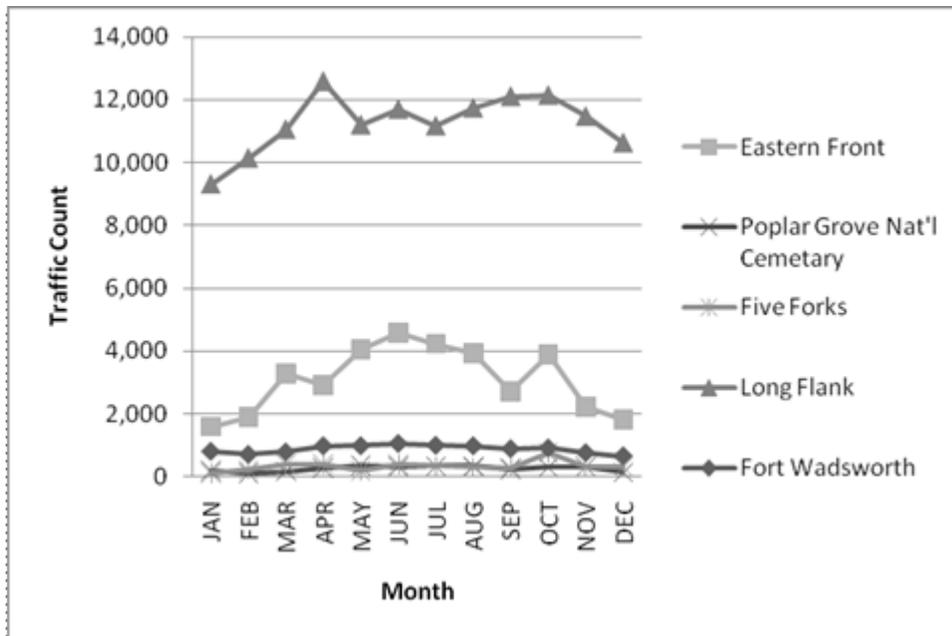


Table 1 provides average annual traffic counts and associated estimated visitation at PETE for a five-year period from 2005-2009. The vast majority of recreational visits are to the Eastern Front.

Table 1
PETE traffic counts, five-year average, 2005-2009

Source: NPS (counts); Volpe Center (estimated visitation)

Unit Name	5- Year Average Traffic Counts	Estimated Visitation
<i>Recreational</i>		
Eastern Front	37,867	95,473
Fort Wadsworth	10,101	27,273
Poplar Grove National Cemetery	4,958	13,387
Five Forks	5,600	15,120
Grant's Headquarters	n/a	6,645
<i>Total Recreational</i>		157,898
<i>Non-Recreational</i>		
Long Flank	145,994	394,184

Visitor Survey Cards

In accordance with the Government Performance and Results Act, PETE participates in annual visitor survey card reporting conducted by all NPS park units. The surveys measure performance in

three categories related to visitor satisfaction: park facilities, visitor services, and recreational opportunities. Though the surveys do not ask transportation specific questions such as where visitors are coming from, or how people travel to the site, it provides a gauge of overall visitor experience. The PETE survey response rates in the fiscal years 2009 and 2010 were 15 and 11 percent respectively. From these responses, the park received an average rating of 98 percent for “park visitors satisfied overall with appropriate facilities, services, and recreational opportunities.”²

Fort Lee

Fort Lee, named for the Confederate General Robert E. Lee is a United States Army post located on 58 acres adjacent to the Eastern Front of the Petersburg National Battlefield. Camp Lee was established in 1917 as a result of the United States declaration of war on Germany. In 1950, Camp Lee was officially and permanently designated as Fort Lee.

Fort Lee is currently the headquarters for several units of the Continental Army Command service school system, including: the U.S. Army Combined Arms Support Command, U.S. Army Quartermaster Center and School, the Army Logistics University, the U.S. Defense Commissary Agency, and the U.S. Ordnance Center and Schools. These four schools train soldiers in various disciplines. New trainees arrive at the base every six to eight weeks³, making the area a temporary home for many military members. Fort Lee also hosts three museums – the U.S. Army Quartermaster Museum, the U.S. Army Women's Museum, and the U.S. Army Ordnance Training and Heritage Center.⁴

There are four access points to Fort Lee: the Lee Avenue Gate, the Sisisky Gate, the A Avenue Gate, and the Mahone Avenue Gate. Vehicles without Department of the Defense decals must use the Lee Avenue Gate, which is open 24 hours a day. Public vehicle access requires a valid driver's license, proof of vehicle insurance, and vehicle registration documentation. Public transportation through the base is limited to one bus route that enters at and has one stop on Lee Avenue.

NPS maintains a cooperative, informal relationship with Fort Lee, with PETE sites providing educational opportunities regarding military training and logistics, as well as access to open areas for recreation and personal fitness. The Grants Headquarters at City Point unit is occasionally used by groups of students from Fort Lee to learn about the historical logistics and staging significance of the area. The entrance to the Meade Station Trail, part of the Eastern Front Recreational Trail System, is located on the base at the intersection of Adams Avenue and Mahone Avenue. Visitors to Fort Lee may also take advantage of historic and recreational opportunities at PETE sites.

Fort Lee's population consists of student soldiers, and permanent personnel, which may include direct military, civilian and contractor personnel and their families.⁵ The 2000 U.S. Census records the permanent personnel population of Fort Lee as 7,269.⁶ As a result of the 2005 U.S. Department of Defense Base Realignment and Closure (BRAC) legislation, several new organizations have been relocated to the Fort. The daily population at Fort Lee, which also includes non-residential military personnel and civilians, increased from 32,000 to approximately 47,000. In addition, approximately 6.5 million square feet of new facilities including offices, barracks, and housing to serve the new operations and service members and their families have been constructed or are underway. In 2007, the four-story Sustainment Center of Excellence (SCoE) headquarters building was completed, and

2 Petersburg National Battlefield. Visitor Service Card Data Report. 2009

3 Fort Lee Growth Management Plan. 2008. Pgs. 7-11

4 U.S. Army Fort Lee, Fort Lee History Accessed November 23, 2010. <http://www.lee.army.mil/pao/history.aspx>

5 Fort Lee Growth Management Plan. 2008. Pg. 1-7

6 U.S. Census Bureau. Accessed November 23, 2010. <<http://factfinder.census.gov>>

in 2009 a 400,000 square foot Army Logistics University opened. The BRAC was completed in September 2011.⁷

Other Partnerships or Local/Regional Relationships

There are a variety of other organizations within and outside of the Petersburg area that may impact visitation to PETE sites. These organizations span cultural, economic, and historical interests, and may attract many of the same visitors. This section introduces the local, regional, and national organizations and begins to describe the nature of their relationships with PETE. A more extensive examination of potential transportation-related partnerships will be conducted later in this study.

Local and Regional Tourism Initiatives

Petersburg Area Regional Tourism

Founded in 2006, the Petersburg Area Regional Tourism (PART) Corporation promotes historic and entertainment attractions in the Petersburg region. In addition to providing educational information about the area's Colonial, African-American and Civil War history, PART provides a resource for visitors by presenting information on local entertainment, shopping, and lodging options. PART membership includes representatives from local tourism departments, visitor centers, chambers of commerce, and economic development organizations; the organization uses these relationships to partner with local tourism and commerce interests.⁸ While PETE is not directly involved with PART, the organizations have a friendly and collaborative relationship. There is a mutual benefit to improving and promoting historical and cultural interpretive experiences in the region.

Petersburg Department of Tourism

The City of Petersburg offers three museums and two visitors' centers, as well as walking tours, special events, and other interpretive exhibits throughout the year. Blandford Cemetery, adjacent to the Eastern Front, is the resting site of thousands of Confederate soldiers killed during the Siege of Petersburg. The City owns and operates the cemetery, which includes a reception center. The Siege Museum, housed in the Exchange Building in downtown Petersburg, profiles civilian life in Petersburg during the Siege.⁹ The City tourism website provides a link to PETE; the City also provides some signage directing visitors to the battlefield.

Hopewell Office of Tourism

The Hopewell Office of Tourism works with PETE to promote historical attractions in the community. Although the city does not own property at City Point, it promotes Grant's Headquarters and the Open Air Museum in its tourist literature and on the city website.¹⁰ The Hopewell Visitor Center, located east of the I-295 interchange on Oaklawn Boulevard, offers local information to visitors.

The City Point Open Air Museum Walking Tour is a self-guided walking tour through the Old Town of City Point and includes 25 points of interest focusing on colonial to early 20th century history. Outdoor storyboards at each location provide information and orientation to visitors. The Grant's Headquarters site is included as one of the walking tour attractions. Walking tour brochures are available at the Grant's Headquarters visitor contact station.

⁷ U.S. Army Fort Lee, Fort Lee History Accessed November 23, 2010. <http://www.lee.army.mil/pao/history.aspx>

⁸ *Petersburg Area Regional Tourism*. Petersburg Area Regional Tourism Corporation. 2011. Retrieved 16 Jan 2011, from <http://www.petersburgarea.org/>.

⁹ *City of Petersburg "Tourism and Museums"*. City of Petersburg, VA. 2011. Retrieved 16 Jan 2011, from <http://www.petersburg-va.org/tourism/>.

¹⁰ http://www.hopewellva.gov/data/publish/hopewell_brochures.shtml

Virginia Tourism Corporation

The Virginia Tourism Corporation (VTC) is the state's primary tourism development agency. The agency operates the "Virginia Is For Lovers" campaign, which promotes recreational, cultural, and historical attractions throughout the state.

Other Civil War Battlefield and Historic Organizations

Pamplin Historical Park

Pamplin Historical Park and the National Museum of the Civil War Soldier are located on Boydton Plank Road in Dinwiddie County, just west of the PETE Western Front sites. Opened in 1994, the museum features educational programs, exhibits, and museums, and a re-creation of antebellum Virginia with a replica Civil War battlefield. Educational programs for school groups are offered, as well as thematic weekend programming for children. It is open year round on Fridays, Saturdays, and Sundays from 9 AM to 5 PM, and every day in the peak season.¹¹ The park draws some of the same visitors as PETE, though the interpretive services provided are somewhat different. The two institutions have no formal relationship.

Civil War Trust

The Civil War Trust (formerly known as the Civil War Preservation Trust) is a non-profit association which seeks to preserve Civil War battlefields, as well as promote educational programs and heritage tourism initiatives. Since its formation in 1987, it has worked to preserve more than 29,000 acres of battlefield land at 110 battlefields across the theater of war. It holds several of the sites identified for potential inclusion in the PETE GMP, including the Petersburg Breakthrough site, the AP Hill Death site, Peebles' Farm, White Oak Road, Hatcher's Run, and Reams' Station.¹²

When possible, CWT seeks to turn the land over to a responsible long-term steward who can properly protect and maintain the land, such as the National Park Service or a state park system. If this is not possible, CWT holds and manages the land in trust, maintaining access to and restoring the landscape to its wartime appearance to provide a valuable interpretive experience. The Civil War Trust also oversees the Civil War Discovery Trail, an initiative to interpretively link hundreds of Civil War-related sites across the country.¹³

Civil War Trails

The Civil War Trails program is a private regional endeavor to create driving routes following major campaigns, install interpretive markers at sites, and provide other forms of interpretive information for visitors of Civil War-era sites. The project is active in Maryland, Virginia, West Virginia, North Carolina, and Tennessee. Two driving tours run through the Petersburg area: The Central Virginia & Overland Campaign Tour of 1864 begins in Orange County in northern Virginia and runs south, crossing the James River and entering Petersburg through Prince George County, ending at the Eastern Front. The Lee's Retreat Tour begins in Petersburg and travels west to Appomattox Court House, replicating Lee's retreat from Petersburg in April 1865. Wayfinding signs leading visitors along these driving tours are posted throughout the area.

Miscellaneous

Numerous other Civil War-related organizations work with PETE on a number of matters. The Sons of Confederate Veterans and Sons of Union Veterans of the Civil War are the two primary heritage organizations representing the armies of the Civil War. Each works to honor the memory of those who fought in the Civil War, chiefly through marking soldiers' graves and conducting

¹¹ *Pamplin Park*. Pamplin Historical Park & The National Museum of the Civil War Soldier. 2011. Retrieved 16 Jan, 2011, from <http://www.pamplinpark.org/>.

¹² *Civil War Trust: Saving America's Battlefields*. Civil War Trust. 2011. Retrieved 16 Jan 2011, from <http://www.civilwar.org/>.

¹³ *Civil War Discovery Trail*. Civil War Trust. 2011. Retrieved 16 Jan 2011, from <http://www.civilwardiscoverytrail.org/>.

battle re-enactments. Such activities are occasionally held on PETE sites, which are accommodated by park management.

Other Formal Relationships

Regional and Statewide Planning

Projects involving the transportation system within and adjacent to PETE are coordinated through the Tri-Cities Area Metropolitan Planning Organization (MPO) and the Virginia Department of Transportation. Examples of coordination between PETE and these agencies include the installation of a sign along a local or state-owned road or the reconfiguration of an intersection of park-owned and local or state-owned roads. PETE has worked with these agencies in the past on such types of work.

Schools and Educational Facilities

PETE regularly hosts school groups for field trips through informal relationships. There are also formal relationships with the Petersburg High School and Prince George High School history and drama clubs, overseen by the PETE education specialist.

Richard Bland College

Richard Bland College is a public junior college in Petersburg, located approximately one mile southeast of Fort Wadsworth. Over 80 percent of the 1,600 students commute to the school.¹⁴ PETE involvement with the college is limited to the use of school parking lots for shuttle bus transport for an annual illuminations event at the Popular Grove National Cemetery. There may be potential for an expanded relationship between PETE and the college in the future.

1.2 Demographics, Land Use, and Development

Land use affects the transportation network, as it dictates the places to and from which people travel. Sites closer to residential and/ or commercial areas may be more appropriate to access by foot or by bicycle as there are other key destinations that are in close proximity. Sites in more isolated environments may be more difficult to access by a variety of modes. This section considers historic and projected demographic, land use, and development issues in the Petersburg area.

Population and Demographics

From 1970-1990, Chesterfield County, north of Prince George and Dinwiddie Counties, and near the City of Richmond experienced high population growth.¹⁵ From 1990-2000, growth slowed in Chesterfield County, and accelerated in Prince George and Dinwiddie Counties. However, during the same period the cities of Colonial Heights, Hopewell and Petersburg experienced no significant growth. Over the last 30 years, the average annual growth rate for the region as a whole was modest, from 1.5 to 2.8 percent, which is consistent with average growth in the state of Virginia. According to the Tri-Cities Area Year 2031 Transportation Plan, by 2031 the regional population is forecasted to increase by about 28 percent, by approximately 54,700, above the 2000 population. While the population is expected to continue to grow, the rate of growth is slowing (this does not include the expected population increase from the Fort Lee BRAC). Population growth in the state is projected to increase by an average of about 12 percent per decade during the same period.¹⁶ Table 2 provides the projected population increase in the Tri-Cities region from 2000 to 2031.

¹⁴ *Richard Bland College*. Richard Bland College. 2011. Retrieved 7 Mar 2011, from <http://www.rbc.edu/>.

¹⁵ The Tri-Cities region is defined as the six jurisdictions that encompass Fort Lee including the counties of Chesterfield, Prince George and Dinwiddie, and the cities of Colonial Heights, Hopewell and Petersburg. Fort Lee GMP, 2008. RKG Associates, P.2-1.

¹⁶ U.S. Census Bureau. Accessed December 20, 2010. <http://www.census.gov/population/projections/SummaryTabA1.pdf>.

Table 2
Tri-Cities existing and projected population (2000-2031)

Source: Table adapted from Tri-Cities Area Year 2031 Transportation Plan (June 2008)

Jurisdiction	2000	2010	2020	2031
Petersburg	34,775	31,410	31,816	32,398
Colonial Heights	16,354	18,240	18,724	19,257
Hopewell	22,256	22,334	22,817	23,350
Prince George*	27,116	43,696	49,699	56,743
Dinwiddie*	10,219	12,896	13,401	13,955
Chesterfield*	29,688	46,230	47,737	49,415
<i>Study area total</i>	<i>140,408</i>	<i>174,806</i>	<i>184,194</i>	<i>195,118</i>

* Only the portion of the county in the transportation study area.

Population trends in Petersburg and nearby Fort Lee may affect visitation to PETE. Population growth at Fort Lee will likely lead to increased recreational use of the Eastern Front, as many Fort Lee residents can easily walk or bicycle to the recreational trails located there. In addition, with an overall increase in soldiers and their family members, there may be increased interest in visiting PETE historic sites throughout the region.

The Fort Lee expansion is expected to bring an additional 10,900 permanent residents to the region by the end of 2013. These estimates do not include the ongoing temporary increase in population at Fort Lee that primarily lives on base and is in the area for a limited period of time. Of this population, the majority will be housed on Fort Lee, with only about one third living off-post during their temporary assignment. Approximately 40 percent of the new permanent population is expected to settle in Chesterfield and Prince George counties, with Fort Lee receiving about 13 percent, and Dinwiddie, Colonial Heights, Petersburg and Hopewell projected to receive between four and six percent of the growth by 2013.¹⁷

Land Use and Development Patterns

The four PETE Units described above are located in the cities of Hopewell, Petersburg, and Dinwiddie and Prince George Counties. The two cities grew from colonial settlements founded between the early and mid-seventeenth century. Both lie partially on the banks of the Appomattox River, a major tributary to the James River.

Development in the area, specifically in Petersburg, is centered along major railroad lines built in the 1830's. The city became a major junction for north-south and east-west railroad traffic; today the CSX transportation company operates freight service through the area.¹⁸

Land use patterns in the Petersburg region are currently characterized by small pockets that include commercial development and low-density residences that transition gradually into more rural surroundings. Both Petersburg and Hopewell have historic downtown districts that help to concentrate some new development and retail, business, and entertainment activity. Residential areas are otherwise typically separate from commercial and business areas.

¹⁷ Fort Lee GMP. 2008, RKG Associates, P. 2-2-2-6.

¹⁸ Virginia Railroads and Railfanning In "The Old Dominion State". Accessed December 20, 2010. <http://www.american-rails.com/virginia-railroads.html>.

Development and land use vary throughout the region. Colonial Heights, a small city north of Petersburg, is the other city in the “Tri-Cities” area. Colonial Heights is largely a residential community, comprised of single family homes, and the Virginia State University campus. Commercial development is located along both sides of the main thoroughfare. The South Park Shopping Center, a major regional commercial attraction, is located off of I-95.

Petersburg and Hopewell are currently undertaking revitalization efforts in their historic downtowns and residential neighborhoods. The Revitalization Plan for Downtown Hopewell (2003) outlines the strategy for redevelopment and conservation of Hopewell neighborhoods, retail districts, and waterfront areas. Major initiatives include: construction of the headquarters for the Appomattox Regional Library System, “mixed-used developments that include retail and residential space,” streetscape, wayfinding and signage improvements, and a “phased restoration of the historic Beacon Theatre.” In addition, Hopewell plans to construct a series of walking or bicycling trails that would connect residential areas with the waterfront.¹⁹

Old Towne Petersburg, the historic downtown area, is also a focus of revitalization efforts. The district includes apartments, shops, museums, and historic sites such as the South Side Depot train station. The NPS boundary adjustment discussed in the PETE GMP includes the possible acquisition of the South Side Depot, a railroad station built in 1854 that played a crucial role in the logistical actions of the Confederate army during the siege of Petersburg in 1864-1865.²⁰ If the PETE boundary is expanded, it is possible that the NPS could become a partner in the future restoration of the building.

Housing

The Fort Lee expansion is expected to create significant needs for short- and long-term housing in the coming years. A 500+ bed hotel on Fort Lee is currently under construction; this development, however, is not expected to meet all projected needs. In recent years there has been an increase in hotel construction in the Petersburg area, which is expected to continue. It is likely that there will also be a need for additional housing construction.

The cities of Colonial Heights, Hopewell, and Petersburg each have different capacities and issues related to new development. Most of the land in Colonial Heights is already built out, leaving little land available to new development.²¹ Given Hopewell’s proximity to Fort Lee, pressures to develop residential and commercial districts in the area may increase. The city is currently experiencing development activity of hotels, and other services. Petersburg is a gateway to Fort Lee, making the city an attractive area for new construction. It remains to be seen how much of the housing needs will be able to be accommodated in any of these three communities. Transportation impacts of the Fort Lee expansion are addressed in the following section.

1.3 Transportation

Automobile Traffic and Circulation

The primary mode of travel around the Petersburg area and through PETE is by personal automobile. This section summarizes some of the key roadway-related issues in and around the PETE units. Information on roadway congestion is based on a 2003 congestion management study conducted by the Tri-Cities MPO, which analyzed current and projected roadway conditions.

¹⁹ Hope for Hopewell; The City Beefs Up the Water. McDonald, S. and Tomko, J. Richmond Magazine. Accessed December 20, 2010. http://www.beacontheatre.org/files/Hopewell_RichMag.pdf.

²⁰ NPS Petersburg National Battlefield. South Side Depot, Boundary Adjustment and Environmental Assessment. (2009) P.1

²¹ Colonial Heights, Comprehensive Land Use Plan. Section VI. P.15

Grant's Headquarters at City Point

Grant's Headquarters at City Point is located in a residential neighborhood approximately one mile from downtown Hopewell. Streets leading to and around the unit are typically two-way, residential roads without lane markings. Principal streets used to reach City Point include Randolph Road (VA-10), a regional arterial running from the northwest to the southeast through downtown Hopewell, as well as Appomattox Street and Cedar Lane in the City Point neighborhood.

Given the residential surroundings, traffic congestion near the unit is minimal. According to park staff, peak traffic activity due to special events does not cause significant congestion in the neighborhood. The MPO analysis and projections show very limited traffic congestion throughout the city, though some segments of East Hundred Road (VA-10) in Chesterfield County leading to Hopewell from I-295 were expected to be congested by 2015.²²

Eastern Front

The primary entry point to the Eastern Front is located off Washington Street (VA-36), where motorists exit the highway via an on-ramp leading to Siege Road and the Eastern Front Visitor Center. A regional thoroughfare operating adjacent to the Eastern Front, the VA-36 corridor (called Washington Street in Petersburg and Oaklawn Boulevard through Fort Lee and Hopewell) connects the communities of Petersburg and Hopewell. The route connects with I-95 in Petersburg approximately 2.5 miles to the west and I-295 in Hopewell approximately 3.5 miles to the east. It is a four-lane, median-separated arterial with relatively high speeds and few or no bicycle and pedestrian facilities. The main entrance to Fort Lee at Lee Avenue off Washington Street is situated less than 0.5 miles east of the entrance to the Eastern Front. The segment of VA-36 adjacent to the Eastern Front and Fort Lee was classified as congested in 2003 and is anticipated to be heavily congested by 2015.²³

Within the battlefield, Siege Road is a four-mile, one-way, park-owned road which serves as the primary interpretive route of travel for visitors. It terminates at US-301/US-460/South Crater Road, a four-lane, median-separated connector with residential, commercial, and industrial buildings.

Two additional entry points to the Eastern Front for recreational users are located along the battlefield's southern border on VA-109. The Mahone Avenue at Mead Trailhead is located on VA-109/Mahone Avenue within Fort Lee. Horse trailer access is located behind the park headquarters off of VA-109/Hickory Hill Road. VA-109 is a two-lane, lightly used connector road between Fort Lee and US-460/County Drive. A project to widen the road near its intersection with US-460/County Drive, adding a left turn lane and sidewalks, began in 2012.²⁴

Fort Lee Expansion

The Fort Lee expansion is expected to significantly increase vehicle trips throughout the region, and specifically in the areas immediately surrounding the base. In 2006, the Tri-Cities MPO and VDOT jointly funded a study to explore the impact of the planned expansion of Fort Lee on existing roadways and intersections leading to base entrances. The traffic study analyzed present and future traffic data, identified system deficiencies, and provided recommendations for phased transportation improvements. The 2031 Long Range Transportation Plan includes assumptions for the number and regional distribution of new off-base households expected as a result of BRAC actions; the distribution throughout the region is based on existing Fort Lee employment by place of residence as documented in the 2000 Census.

²² Congestion Management Systems Operation Plan. Tri-Cities Area Metropolitan Planning Organization. Apr 2003. p. 27. Retrieved 8 Feb 2011, from http://www.craterpdc.org/pdf/cms_operations_plan_2003.pdf.

²³ Congestion Management Systems Operation Plan. Tri-Cities Area Metropolitan Planning Organization. Apr 2003. p. 27. Retrieved 8 Feb 2011, from http://www.craterpdc.org/pdf/cms_operations_plan_2003.pdf.

²⁴ Tri-Cities Area Transportation Improvement Program, Fiscal Years 2012-2015. June 2011. Retrieved 26 Oct 2012, from <http://www.craterpdc.org/transportation/documents/TIP-%20FY12%20-%20FY15.pdf>.

To prepare for and respond to traffic increases due to the BRAC, there are several roadway transportation enhancements planned for the areas surrounding Fort Lee. These include traffic signal modifications, roadway realignments, and intersection improvements. Table 3 shows roadway projects identified in the Tri-Cities Area Year 2031 Transportation Plan²⁵ that are immediately adjacent to PETE. Some of these projects are intended as mitigation for the Fort Lee expansion.

Table 3
City of Petersburg, including Fort Lee roadway projects

Source: Tri-Cities Area Year 2031 Transportation Plan

ID	Project name	From	To	Description	Other notes	Proximity to PETE
28	Rt. 36 E. Washington St.	Amelia St. (Wythe St.)	E. Bank St.	Reconstruction		Northern access road (E. Washington St.) of Eastern Front
27	Rt. 36 E. Washington St.	E. Bank St	Puddledock Rd.	Reconstruction		Northern access road (E. Washington St.) of Eastern Front
26	Rt. 36 E. Washington St.	Puddledock Rd	Petersburg ECL	Reconstruction		Northern access road (E. Washington St.) of Eastern Front
38	Route 36	Washington Street	Puddledock Road	Signal Modification @ Intersection	Fort Lee Expansion	Northern access road (E. Washington St.) of Eastern Front
37	Rt. 36 Fleet St. Bridge	Over Appomattox River	---	Br. Replace & Realignment		Southern boundary road (Hickory Hill Rd.) of Eastern Front
37	Hickory Hill Road Imp.	Rt. 460	Mahone Ave. Gate	Reconstruction & Signal Modification	Military Strategic Response Fund	Southern boundary road (Hickory Hill Rd.) of Eastern Front
24	County Dr. (Rt. 460)	Hickory Hill Rd.	Rt. 106 @ Wagner Rd.	Reconstruction		Access to southern boundary road (Hickory Hill Rd.) of Eastern Front
39	Route 460	County Drive	Baxter Road	Signalize Intersection	Fort Lee Expansion	Access to southern boundary road (Hickory Hill Rd.) of Eastern Front

²⁵ Tri-Cities Area Year 2031 Transportation Plan. June 2008 Tri-Cities Area Metropolitan Planning Organization. P. 61

Western Front

The four primary sites within the Western Front are connected by publicly owned roads, most of which are city or state maintained. The main roads include: Flank Road (park-owned in sections), Vaughan Road (VA-675), Fort Emery Road (VA-741), Squirrel Level Road (VA-613), Church Road (VA-672), Weakley Road (VA-672), and Simpson Road (VA-142). Most of these roadway sections are two-lane; some have lane markings and others do not.

Traffic in this area is light and is primarily comprised of area residents. A large industrial employer is situated off of Church Road near Fort Fisher, but daily automobile movement related to the facility has minimal impact on PETE visitors. Speed limits vary depending on residential density and roadway geometry. There are no dedicated pedestrian or bicycle facilities on any of these roads; widening to include bicycle or pedestrian facilities would not be possible in most locations.

Five Forks Battlefield

The Five Forks Battlefield is accessed via one of three roads that converge at the Five Forks intersection. White Oak Road (VA-613) is the primary route of travel for visitors approaching the site from Petersburg or points to the east. Those approaching from US-460 to the north use Courthouse Road (VA-627). Wheelers Pond Road (VA-645) meets the intersection from the southwest. All routes leading to the Five Forks unit are marked, two-lane, rural roads, with relatively high speed limits. The isolated location of the Five Forks unit permits the smooth flow of traffic along all road segments leading to and within the unit.

Cycling and Pedestrian Activity

As indicated above, bicycling and pedestrian activity in the Petersburg area is limited, both for transportation and recreational purposes. There are no dedicated bicycle facilities, though there have been efforts to identify areas of key interest. While many roadways have sidewalks, there is not a major focus on walking for transportation. Pedestrian and bicycle conditions in the region are described in more detail below.

Local On-Road Bicycle Facilities

The Tri-Cities MPO developed its first regional Bikeway Plan (the Plan) in 1979, and updated it most recently in 2003. The Plan studies existing bicycle, and to a lesser extent pedestrian conditions, focusing on safety, and suggesting placement of bicycle facilities throughout the Petersburg region.²⁶

The Plan proposes the creation of more than 100 miles of bikeways in the region, a portion of which would be located near PETE. The facilities would include defined bicycle lanes on roadways and signed bicycle routes, where bicyclists and motorists share the roadway. Of the 39 proposed routes, four would directly impact PETE sites. They are described briefly below. In addition to these routes, other proposed facilities would connect various PETE sites across all four units.

- Washington Street-Wythe Street—the bicycle lane would serve as Petersburg’s east-west bicycle commuting roadway between Petersburg, the Eastern Front Battlefield, Fort Lee, and Hopewell. The lane would be within the existing right-of-way, removing right-hand side parking where present.
- Hickory Hill-Fort Lee-National Battlefield Park—this route, consisting of bike lanes and signed bike routes, would provide connections between the Eastern Front, Fort Lee, and Hickory Hill Road. The route would utilize and extend existing multi-use lane along Siege Road.

²⁶ *Tri-Cities Bikeway Plan Update*. Tri-Cities Area Metropolitan Planning Organization. 4 Aug 2003. p. 1. Retrieved 16 Dec 2011, from <http://www.craterpdc.org/pdf/BikewayPlan2003.pdf>.

- City Hall-Central Business District-City Point—this loop would connect Grant’s Headquarters at City Point in Hopewell to the downtown area via Appomattox Street, Cedar Lane, Brown Avenue, and East Broadway Avenue.
- Route 672-Route 613-Defense Road—This bicycle route would follow Flank Road between Fort Wadsworth and Fort Gregg. It would bypass Fort Fisher, but would serve the Poplar Grove National Cemetery. This route would encompass a significant portion of the Western Front Driving Tour.

While bicycle-related components are considered in roadway project design, it has not been standard practice to include them in construction. Given fiscal constraints and their relatively low priority, this is not expected to change in the coming years.

Recreational Trails within PETE

In addition to its significance as an historical and cultural institution, PETE is also a recreational destination. Common recreational activities include walking, jogging, bicycling, horseback riding, and fishing. Maintaining the sites to serve both recreational and interpretive services is an ongoing issue, and there are occasional issues with ensuring responsible recreational use and limiting conflicts between bicyclists, joggers, dogwalkers, and horseback riders. Recreational activities at different PETE sites are outlined below.

Grant’s Headquarters at City Point

Grant’s Headquarters at City Point lies at the eastern end of the Lower Appomattox River Trail, Greenway, and Blueway. Although trail infrastructure has not been developed west of the grounds, a multi-use trail along a former railroad right-of-way exists between Pecan Avenue and the confluence of the James and Appomattox Rivers approximately 0.25 miles to the northwest. This trail is not paved and, lying on the banks of the James River, is prone to flooding. It is utilized by local residents for walking and other recreational uses. At the corner of Pecan Avenue and Water Street, PETE and the City of Hopewell worked to construct a wooden boardwalk over the James River in the mid-2000s. The boardwalk features an interactive display detailing the history of City Point. It is popular for sight-seeing and fishing, and used by the city to host an annual youth fishing event.

Eastern Front Battlefield

The four-mile Siege Road, the Eastern Front’s tour road, has one lane for vehicle traffic, and one lane dedicated for pedestrians and bicyclists. The vehicular lane is one-way only, but pedestrians and bicyclists may use their lane in either direction. The lane connects various points of interest along Siege Road, although interpretive trails at sites are closed to joggers and bicyclists. Bicycle racks are located throughout the route, as well as at the Visitor Center, for visitors to lock their bicycles and walk along interpretive trails. PETE staff indicated that these bicycle racks get little use. There are also occasional Segway tours provided by an outside vendor that the park allows to operate along the Siege Road.

The Eastern Front also includes approximately nine miles of unpaved, wooded, recreational trails, as shown in Figure 13.²⁷ Trails are open for walking, bicycling, and horseback riding, although equestrian use is limited to a subset of trails. Discussions with park staff indicate that bicyclists typically drive to the park with their bicycles, and then ride at the park, rather than accessing the park by bicycle. Joggers and dog walkers typically arrive by car or access the park by foot at the Prince George Courthouse Trail, whose entrance is located on-base at Fort Lee. Equestrian users must park their vehicles at a horse trailer parking lot located off of 1539 Hickory Hill Road, behind the park headquarters office. Not all park trails are open for equestrian use, and all trails which

^{27 27} *Tri-Cities Bikeway Plan Update*. Tri-Cities Area Metropolitan Planning Organization. 4 Aug 2003. p. 21. Retrieved 17 Dec 2011, from <http://www.craterpdc.org/pdf/BikewayPlan2003.pdf>.

allow horses are also open to walkers and bicyclists. There are occasional safety concerns related to interactions between horses and other users, as well as maintenance issues related to manure clean-up. Park staff indicate that the Eastern Front Battlefield is a popular regional destination for horseback riding.

Figure 13
Eastern Front trail map

Source: PETE



Western Front

The Western Front sites are dispersed and in most cases connected to one another only by road. Equestrian use is prohibited at all PETE sites in the Western Front. Trail use for bicycling is largely impractical due to inadequate space and restrictions on developing new trails on undeveloped sites. On several of the roadway stretches in the Western Front, especially along Flank Road, the right-

of-way is constrained by earthworks dating back to Civil War combat (as shown in Figure 14), making widening the roadway for bicycle or pedestrian facilities unlikely. Walking and bicycling on the earthworks is prohibited.

The Tri-Cities Area Bikeway Plan proposes bicycle lanes and routes along much of the driving tour and the park-owned portions of Flank Road. It might be possible to provide some on-road accommodations or improvements for bicyclists or pedestrians, though in most cases there would be limited right of way for dedicated facilities. Some improvements to bicycle safety and convenience could be made through additional roadway signage.

Figure 14
VA-672 / Church Road in the Western Front

Source: Volpe Center



Five Forks Battlefield

Most of the 8.5 miles of trails at the Five Forks Battlefield are located on the north side of White Oak Road. They are open for bicycle, pedestrian, and equestrian use. The Five Forks Battlefield trails are primarily used for recreation. The half-mile long Devin Trail, extending from the Visitor Center along Courthouse Road to the Five Forks intersection, is the only trail specifically intended for interpretation. The Winthrop Trail, now under construction, will connect the Visitor Center to the multi-use trail system north of White Oak Road. As with the Eastern Front, there are some concerns regarding resource management and heavy equestrian usage.

Given their somewhat isolated location, almost all users access the battlefield by motor vehicle. Local roads do not include accommodations for bicycling or walking; narrow roads, high speed limits, and few other nearby destinations discourage walking and bicycling.

Statewide Recreational Bicycle Activities and Facilities

Despite limited bicycle activity in the Petersburg area, recent trends indicate that demand for recreational bicycling and walking trails is rising in Virginia. Development of multi-use, off-road trails has grown across the state.²⁸ There are several active and planned multi-use trails that run within or near the study area, including: the Lower Appomattox River Trail Greenway and Blueway, and the East Coast Greenway.

Lower Appomattox River Trail Greenway and Blueway

In 1999, the Crater District Planning Commission and National Park Service developed the Appomattox River Corridor Plan, a proposed greenway and “blueway” that would open access to the Appomattox River via foot, bicycle, or boat along a 22.8 mile stretch between Lake Chesdin in

²⁸ 2007 *Virginia Outdoors Plan*. Virginia Department of Conservation & Recreation. 2007. p. 33. Retrieved 20 Dec 2010, from http://www.dcr.virginia.gov/recreational_planning/documents/vopall.pdf.

Dinwiddie County and the James River in Hopewell.²⁹ Some segments of the greenway and blueway are complete. They include the Appomattox River Heritage Trail, a one-mile segment along the south bank of the River at Pocahontas Island in Petersburg, and a five-mile portion of the Greenway along the south bank of the River north and west of Petersburg.³⁰

The proposed greenway terminates at Grant's Headquarters at City Point in Hopewell, consistent with an earlier tourism development plan in the City Point area.³¹ There are no dedicated funds or timeline, however, to develop the greenway components leading to City Point.

East Coast Greenway

The East Coast Greenway is a proposed 3,000 mile trail system running along the eastern seaboard between Calais, ME and Key West, FL. The trail would consist of a 3,000 mile spine route complemented by 2,000 miles of alternate routes, providing a dedicated nonmotorized trail system connecting major urban areas on the coast. Approximately one quarter of the trail is complete, with the remainder of the route identified and mapped. Efforts are underway to plan, acquire, and construct trails along identified rights-of-way by local, regional, and national interests.³²

In the Petersburg area, the East Coast Greenway would follow the identified high-speed rail corridor (discussed later in this chapter). A short segment of the trail would follow the Lower Appomattox River Trail as well.

Trekking Dinwiddie Trail

The Trekking Dinwiddie Trail, a proposed trail system in Dinwiddie County, would connect various Civil War battlefield sites via inactive railroad rights-of-way, utility corridors, and roads. The system would be open for walking, bicycling, and equestrian uses.³³ If built, this trail system could affect access to PETE, as some of the trails could provide access to sites in the Western Front: Boydton Plank Road, Globe Tavern, Hatchers Run, Reams Station, Pebbles Farm, and White Oak Road.³⁴ Neither Dinwiddie County nor any other entity has moved forward with implementation of the trail system.

Virginia Capital Trail Trails

The Virginia Capital Trail, expected to be complete in 2014, will run approximately 54 miles between Richmond and Williamsburg along the northern stretch of the James River. The trail, parallel to Virginia Route 5, is intended for both pedestrians and bicyclists. The portion of the trail closest to PETE lies approximately 3.5 miles northeast of Grant's Headquarters at City Point, on the other side of the James River. The trail intersects VA-106/156 about 1.25 miles north of the Benjamin Harrison Memorial Bridge, roughly four miles east of Hopewell.³⁵ Only short segments of the trail are currently open; the portions near City Point are not complete.

²⁹ *Appomattox River Corridor Plan Study*. Crater Planning District Commission and Appomattox River Corridor. June 1999. p. 8. Retrieved 21 Dec 2010, from <http://www.craterpdc.org/pdf/CorridorPlan.pdf>.

³⁰ *Friends of the Lower Appomattox River*. Friends of the Lower Appomattox River. 2010. Retrieved 21 Dec 2010, from <http://folar-va.org/>.

³¹ *Appomattox River Corridor Plan Study*. Crater Planning District Commission and Appomattox River Corridor. June 1999. p. 11-12. Retrieved 21 Dec 2010, from <http://www.craterpdc.org/pdf/CorridorPlan.pdf>.

³² *East Coast Greenway*. East Coast Greenway. 2010. Retrieved 21 Dec 2010, from <http://www.greenway.org/index.shtml>.

³³ *Tri-Cities Bikeway Plan Update*. Tri-Cities Area Metropolitan Planning Organization. 4 Aug 2003. p. 27. Retrieved 17 Dec 2011, from <http://www.craterpdc.org/pdf/BikewayPlan2003.pdf>.

³⁴ *Tri-Cities Bikeway Plan Update*. Tri-Cities Area Metropolitan Planning Organization. 4 Aug 2003. p. 27. Retrieved 16 Dec 2011, from <http://www.craterpdc.org/pdf/BikewayPlan2003.pdf>.

³⁵ *Virginia Capital Trail*. Virginia Department of Transportation. 28 June 2010. Retrieved 21 Dec 2010, from http://www.virginiadot.org/projects/newcaptrail_welcome.asp.

Transit

Although there is no transit service directly serving any PETE sites, transit providers in the Petersburg region are described below.

Petersburg Area Transit

Petersburg Area Transit (PAT) is the transit provider in the Petersburg area. PAT is operated by the City of Petersburg Department of Public Works and serves the City of Petersburg, as well as regional destinations such as Fort Lee, Virginia State University, and the Southpark Mall in Colonial Heights. PAT ridership has increased significantly over the past several years, with over 615,000 riders in FY 2009.³⁶ Base fares are \$1.00, with free transfers between routes.

PAT currently operates 12 routes, all of which originate from the recently completed Petersburg Transit Center in downtown Petersburg.³⁷ The Blandford/Hopewell/Fort Lee route runs on Washington Street near the Eastern Front battlefield. This route does not directly serve the Eastern Front Visitor Center or any other battlefield sites. The nearest stops are more than 0.5 miles away from the turnoff for the Visitor Center and there is no easy pedestrian access from the stops to the battlefield. Service runs hourly six days per week with no service on Sundays. Ridership for the former Hopewell/Fort Lee route totaled nearly 35,000 passenger trips in FY 2009 prior to consolidation with the Blandford route.³⁸

The South Crater Road route features stops along US-301/US-460/South Crater Road at its intersection with Siege Road at the end of the park tour road within the Eastern Front. Although it is located near PETE, this route does not serve the Visitor Center and nearby pedestrian access is limited. The route served nearly 70,000 passenger trips in FY 2009, and hours are the same as the Blandford/Hopewell/Fort Lee route.³⁹

Conversations with park staff indicate that PETE visitors do not use local transit to access any of the park sites. While there is service nearby, neither the park layout nor the PAT service model are structured to facilitate transit access to the park. Additionally, in a survey conducted as part of the Tri-Cities Area 2010 Transit Development Plan, none of the 488 respondents indicated interest in expanding service to PETE sites.⁴⁰

Other Transit

Two other transit systems provide regional service to the Petersburg Transit Center. The Greater Richmond Transit Company (GRTC) operates an express route between downtown Richmond and Petersburg via I-95, with service to the John Tyler Community College in Chester. The service operates only on weekdays, primarily during the morning and evening peak commute times. One-way fares are \$2.75, with travel times between the two cities at 30-45 minutes.⁴¹

³⁶ KFH Group, Inc. *The Tri-Cities Area 2010 Transit Development Plan*. Prepared for the Crater PDC. Oct 2010. p. 3-1. Retrieved 15 Dec 2010, from <http://www.kfhgroup.com/2908-Tri-Cities%20Area%202010%20TDP-October%202010.pdf>.

³⁷ *Petersburg Area Transit*. City of Petersburg, VA. 2010. Retrieved 15 Dec 2010, from <http://www.petersburg-va.org/transit/patgrtc.htm>.

³⁸ KFH Group, Inc. *The Tri-Cities Area 2010 Transit Development Plan*. Prepared for the Crater PDC. Oct 2010. p. 1-16. Retrieved 15 Dec 2010, from <http://www.kfhgroup.com/2908-Tri-Cities%20Area%202010%20TDP-October%202010.pdf>.

³⁹ KFH Group, Inc. *The Tri-Cities Area 2010 Transit Development Plan*. Prepared for the Crater PDC. Oct 2010. p. 3-24. Retrieved 1 Feb 2011, from <http://www.kfhgroup.com/2908-Tri-Cities%20Area%202010%20TDP-October%202010.pdf>.

⁴⁰ KFH Group, Inc. *The Tri-Cities Area 2010 Transit Development Plan*. Prepared for the Crater PDC. Oct 2010. p. 3-43. Retrieved 15 Dec 2010, from <http://www.kfhgroup.com/2908-Tri-Cities%20Area%202010%20TDP-October%202010.pdf>.

⁴¹ 95—*Richmond/Petersburg Express*. Greater Richmond Transit Company. 2010. Retrieved 15 Dec 2010, from http://www.ridegrtc.com/FrontEnd/Download_Files/Get_On_Bus_Downloads/Rt95.pdf.

The Blackstone Area Bus System (BABS) features a Dinwiddie Express route, which runs between Blackstone and Petersburg via Boydton Plank Road (US-1) in Dinwiddie County. The bus serves Petersburg three times daily, with a one-way fare costing \$0.50.⁴²

Local Taxi Service

Park staff indicated that visitors without possession of a motor vehicle would best access PETE using a local taxi service. A taxi allows visitors to access PETE and other area attractions at their own convenience, albeit at a higher cost. Staff noted that a typical visitor to the region arriving via Amtrak or an inter-regional bus service would typically consider a taxi service to reach their destinations instead of local transit.

Other Regional Transportation Services

There are several other regional transportation options serving the Petersburg area.

Regional Bus Service

Greyhound operates regional bus service out of the Petersburg Transit Center. Greyhound operates two daily routes which service Petersburg. One route operates between Richmond and Jacksonville, FL, with once-daily southbound and twice-daily northbound stops in Petersburg. Another route runs between Richmond and Atlanta, GA with once-daily stops in Petersburg in each direction.⁴³ Through each service, travelers are able to transfer to bus routes serving other cities. For example, travelers are able to transfer to Washington D.C.-bound buses in Richmond.

Amtrak

The Petersburg Amtrak station is located on South Street in the community of Ettrick in Chesterfield County, approximately two miles northwest of downtown Petersburg. The station is adjacent to the campus of Virginia State University.

Four routes serve Petersburg, once daily in each direction. The “Carolinian” operates between Charlotte, NC and New York, NY. The “Silver Meteor” and “Silver Star” trains, which are both part of the Silver Star route, operate between Miami, FL, Tampa, FL, and New York, NY; each train varies its route south of Petersburg. The “Palmetto” is a shorter version of the “Silver Meteor,” terminating in Savannah, GA.⁴⁴ In FY09, there were 22,148 boardings and alightings from Petersburg.⁴⁵

High Speed Rail

In 1992, the Southeast High Speed Rail Corridor (SEHSR) from Washington D.C. to Charlotte, NC was one of five corridors designated for high speed rail by the U.S. Department of Transportation. The route would maintain average speeds of 85-87 mph, with top speeds approaching 110 mph. Additional cities in South Carolina, Georgia, and Florida have also been discussed as part of the corridor. The goal of the system is to provide a viable alternative to air and motor vehicle travel in the region, as well as reduce congestion and improve air quality, safety, and transportation efficiency. The first phase of a two-part environmental study was completed in 2002, establishing a preferred corridor, which includes a stop in Petersburg.⁴⁶ Passenger service along the preferred route is anticipated to open between 2018 and 2022, dependent on funding availability.

⁴² *Dinwiddie Express*. Blackstone Area Bus System. 2010. Retrieved 15 Dec 2010, from http://www.blackstonebus.com/routes/pdf/dinwiddie_express.pdf.

⁴³ *Greyhound Lines System Timetable*. Greyhound Lines, Inc. 17 August 2010. Retrieved 30 Nov 2010, from <http://extranet.greyhound.com/Revsup/schedules/pageset.html>.

⁴⁴ *Petersburg, VA (PTB)*. Amtrak. 2010. Retrieved 30 Nov 2010 from http://www.amtrak.com/servlet/ContentServer?pagename=am/am2Station/Station_Page&code=PTB.

⁴⁵ *Petersburg, VA (PTB)—Great American Stations*. Amtrak. 2010. Retrieved 30 Nov 2010, from http://www.greatamericanstations.com/Stations/PTB/Station_view.

⁴⁶ *Southeast High-Speed Rail*. Southeast High-Speed Rail. 2010. Retrieved 30 Nov 2010, from <http://www.sehsr.org/>.

The draft report of the study's second phase was completed in May 2010, evaluating the preferred route in more detail by looking at specific segments and their impact on the local setting. In this report, SEHSR recommended that the high speed rail route use the right-of-way of the active CSX freight A-line in the Petersburg region, using a new track constructed east of the current track. This route follows the current passenger rail alignment, running west of Petersburg through Ettrick and intersecting Washington Street in Petersburg approximately 1.5 miles west of downtown Petersburg. South of the city, the track will veer west at Collier Yard for approximately 6.5 miles before crossing I-85. This alignment will take future service through the Western Front area, following tracks directly to the west of Fort Wadsworth, approximately 0.5 miles east of Poplar Grove National Cemetery, and near the proposed Globe Tavern and Hatcher's Run sites.⁴⁷ The study provided four options for station locations: near Dunlop (north of Colonial Heights), the existing Amtrak station in Ettrick, Washington Street in Petersburg, and near Collier south of Petersburg. The final decision regarding the station location will occur at a later date.

Appomattox River

The Appomattox River is partially navigable along an approximately 23 mile stretch between Lake Chesdin and its confluence with the James River. There are several parks and marinas along this route, allowing for recreational activity along portions of the river. The Friends of the Lower Appomattox River (FOLAR) is a local organization working to improve access to the river. The group, comprised of members from local communities, counties, and other stakeholders, has worked to open trailheads along the river for public use and organized a number of river clean-up efforts.⁴⁸

There are no active commuter boat routes utilizing the river, and no efforts to offer tourist-aimed interpretive boat tours along the river. Park staff indicated that previous efforts to operate an interpretive boat tour along the river between Petersburg and City Point have not proven themselves financially viable. The river sees very limited commercial use as well.

1.4 *Signage and Wayfinding*

Signage and wayfinding is a key issue for the park to facilitate travel between multiple, dispersed sites. With the exception of the points of interest located along Siege Road in the Eastern Front, all PETE sites are separated by public roads, maintained by the municipality, county, state, or the park. In many locations there is insufficient or nonexistent signage leading to PETE sites, making them difficult to find, or providing little advanced notice that a visitor is approaching the site. This contributes to visitor frustration and can potentially result in conflicts or safety concerns on some higher speed roadways where visitors may be driving slowly to locate a site or stop suddenly to turn into a site. At the same time, there are valid concerns about "sign clutter" in the region. There are several locations where multiple signs (for roadways, Interstates, other historic sites, construction information, and other important local destinations) can also distract or confuse drivers. The need for improved signage must be balanced with the need to reduce visual clutter and confusion on local roadways. Figure 15 provides an example of sign clutter in a location on Crater Road, just after leaving the Eastern Front, traveling toward the Western Front.

⁴⁷ Michael Baker Engineering, Inc. *Southeast High-Speed Rail Tier II Draft Environmental Impact Statement*. Prepared for North Carolina Department of Transportation—Rail Division and Virginia Department of Rail and Public Transportation. May 2010. p. 2-1. Retrieved 30 Nov 2010, from http://www.sehsr.org/deis/sehsr_deis_download_files/chapo2.pdf.

⁴⁸ *Friends of the Lower Appomattox River*. Friends of the Lower Appomattox River. 2010. Retrieved 30 Nov 2010, from <http://folar-va.org/>.

Figure 15
Multiple signs on Crater Road

Source: Volpe Center



The following subsections discuss various issues related to signage and wayfinding around the Petersburg National Battlefield, including: existing signage leading to and between park units, plans for improved signage, use of online maps and personal geographic positioning system (GPS) units, and park efforts to provide improved traveler information or organized tours.

Existing Signage Leading to Park Units

The presence and extent of existing signage leading to and between park units varies widely. This section discusses each of the units and sites highlighted on the driving tour, starting from Grants Headquarters and moving in the direction of Five Forks.

Grant's Headquarters

Grant's Headquarters is accessed by local roads off of Randolph Road (VA-10). The site is located in a residential area more than one mile off the main road, with limited signage along the way. There are also signs for other Civil War Preservation Battlefield sites in the neighborhood, which are part of the City Point Open Air Museum walking tour. The approach to the site coming in along Route 10 from I-295 can be confusing, as the NPS signs appear rather suddenly and are almost angled for entrance from the opposite direction.

The primary route from Grant's Headquarters toward the Eastern Front runs on Oaklawn Boulevard (VA-156 and VA-36). There are no NPS signs along the nine mile route. There are, however, signs for the Hopewell Visitor Center, which is located in a strip commercial center on Oaklawn Boulevard, a few miles from the Eastern Front Visitor Center. These signs just say "Visitor Center" and do not indicate that it is the Hopewell Visitor Center, as opposed to the PETE (or other) Visitor Center. These signs are potentially confusing for PETE visitors, though anyone accidentally stopping at the Hopewell Visitor Center can be directed to the Eastern Front.

Eastern Front

The main access to the Eastern Front – and to the PETE Visitor Center and Siege Road – comes off Washington Street, near interchanges with I-95 and I-295. There are signs in both directions; the

sign in the eastbound direction is larger, as many visitors are arriving from I-95. Visitors traveling westbound to the Visitor Center drive through and past portions of Fort Lee. The sign for the park is smaller and less obvious in that direction. Leaving the Visitor Center, there are signs directing visitors to the park exits or to Siege Road; once on Siege Road, visitors are guided as they view multiple sites of interest. Visitors exit onto Crater Road (VA-301), close to an I-95 interchange where there are multiple signs for other local points of interest.

There are no signs leading to the Meade Station entrance (accessed through Fort Lee) or the horse trailer parking lot. Access to Meade Station requires the visitor to be “on-post” at Fort Lee, which is open to the public, though may not appear inviting. Due to their “out of the way” locations and lack of signage, both sites are difficult to find.

In addition to the PETE signs, there are also city-owned signs for the Petersburg Tour, as shown in Figure 16. These signs are located at various points around the city, pointing to several local points of interest, including the Battlefield, Blandford Church and Cemetery, and the Siege Museum. There does not, however, appear to be a coordinated City of Petersburg tour map delineating all of the sites or providing driving directions, etc.

Figure 16
Town of Petersburg tour sign

Source: Volpe Center



Western Front

Signage and wayfinding assistance among and to the Western Front sites is limited. Coming from the Eastern Front, the main entry to the Western Front is to turn from Crater Road onto Flank Road. There are street signs at this location, but no other indication of leading toward NPS sites. Existing signage and wayfinding information at key sites on the driving tour and at important intersections is described in Table 4.

Table 4
Signage and wayfinding at key Western Front locations

Location	Site / Intersection	Existing Signage and Wayfinding	Comments
Crater Road and Flank Road	Key intersection	Street signs but no NPS or other historical markers	Key intersection leading to all Western Front sites from Petersburg
Fort Wadsworth	Driving tour site #1	NPS sign and driving tour marker at site but no advanced directional signage	Located on relatively high speed road
Poplar Grove National Cemetery	Driving tour site #2	NPS sign and driving tour marker at site; limited advanced directional signage	No indication that the road and parking area are very narrow and difficult for buses or large vehicles to navigate
Squirrel Level Road and Church Road	Key intersection	Street signs but no NPS or other historical markers	Key intersection leading to Fort Fisher and sites beyond
Fort Fisher	Driving tour site #3	NPS sign indicating that the road is on NPS land, but it does not specifically say "Fort Fisher." There is a driving tour marker at site but no advanced directional signage.	
Fort Gregg	Driving tour site #4	Driving tour marker but no NPS signage at site or in advance.	Monument is located in the middle of a large field and the access point or parking location is not clear. There is one driveway directly across the road, though it leads to an industrial site and there have been conflicts with visitors trying to park there.

Five Forks Battlefield

Signage and wayfinding assistance among and to the sites in the Five Forks Battlefield is limited. There are five marked driving tour sites within Five Forks, as well as Visitor Contact Station and two other parking areas. All of the driving tour sites have markers, but none have large NPS signs or any advanced directional signage. In late 2010, a new sign at the Five Forks intersection was installed, directing visitors to the Visitor Contact Station. As shown in Figure 17, the East and West parking areas both have small NPS-issued signs that say the name of the parking area and indicate allowed uses (walking, bicycling, horses), but neither of them say that they are NPS or Petersburg National Battlefield sites.

Figure 17
Five Forks East and West parking areas

Source: Volpe Center



Petersburg National Battlefield Sign Plan

In 2006, the park completed a sign plan to identify locations that would benefit from additional signage, and select the appropriate signs. The plan identifies locations throughout the region, and suggests signs that would include the names of the park units or individual sites. The signs were all manufactured, but with one or two exceptions, none have been installed. One challenge in moving forward with implementing the sign plan is that many of the signs do not conform to Virginia DOT requirements regarding signage on state maintained roadways. There are issues related to font size, placement, and sight lines. It may be possible however, that some of the municipalities may be willing and able to use the signs on their roads. Chapter 3 considers these issues in more depth.

Online Maps and Personal GPS Units

Many people use online map services or personal GPS to provide directions and assistance in accessing national parks or other destinations. This has proven to be a particular challenge for PETE visitors, given the multiple locations included in the park. Park rangers report considerable confusion related to the Eastern Front, as many visitors inadvertently arrive at the administrative offices when trying to access the Visitor Center. This issue seems to be primarily related to those who receive directions from online maps or personal GPS devices, which often use the mailing address of the administrative offices as the default for Petersburg National Battlefield, rather than the street address of the Visitor Center. There have also been cases in which confusion over directions brings visitors to the wrong unit altogether; for example, a visitor intending to visit the Eastern Front may inadvertently arrive 20 miles away at the Five Forks Battlefield.

The Park has made several efforts to assist visitors, including providing street addresses and GPS coordinates for many of the individual sites online, and posting detailed driving directions to and between various sites. There are maps and printed directions available at the administrative offices, including some posted outside in a weather-proof case, for visitors to take in case they arrive when the administrative offices are not open. Despite these efforts, it may be appropriate to continue to explore ways to better provide advance directions and technology-based information and wayfinding.

Organized Tours

The Park has experimented over the years with various ways to improve interpretation and best serve visitors. One option available to visitors is to purchase a compact disc (CD) at the Visitor Center, which provides driving directions and interpretation along the entire driving tour. The CD, produced by a private company, costs \$13.95; 503 CDs were sold in 2010.

The Park also offers periodic “caravan tours” during the peak season at no charge to participants. On these tours, one ranger leads the visitors to various sites, with all participants (including the leader) driving in their own vehicles. These tours are flexible and primarily depend on the level of visitor interest and park ranger availability. In 2010, caravan tours along the Park Tour Road in the Eastern Front were offered twice daily between June and August. The park provided 140 tours with approximately 1,000 total visitors – an average of seven participants per tour. The tour focused on three stops along the Park Tour Road and lasted approximately 2.5 hours. They were advertised on the website, the summer program calendar, and on the program bulletin boards in each of the four visitor center/visitor contact stations.

The caravan tours are a relatively easy and creative way to provide interpretive services. However, they are limited in their scale and reach. One of the goals of the park has been to raise the profile of the sites beyond the Eastern Front, as many visitors never visit sites beyond the Eastern Front, getting back on the highway directly from Siege Road. There have been past efforts to expand the caravan tours out to the Western Front and the Five Forks Battlefield, but those tours were quite long and had a limited audience. Some of the drawbacks to longer caravan tours also included the significant amount of time that each participant spent driving alone, which was a lost opportunity for additional interpretation and an inefficient contribution to local traffic congestion and air pollution. Chapter 2 explores tour options that could be operated by the park, using existing rangers to operate a van or other small shuttle vehicle to bring passengers to multiple sites. The tours would likely last several hours, and would visit multiple sites and units, but likely not all of the PETE sites in one tour.

1.5 Chapter Summary

The following is a recap of the major transportation-related issues identified in the Existing Conditions chapter. These findings will inform the next phases of the alternative transportation study.

- Most PETE visits are to the Eastern Front; the park would like to promote visitation to the other sites as well.
- Parking and traffic congestion are not currently major concerns but should be monitored over time.
- The Fort Lee expansion may lead to increased congestion in the area, but also provide opportunities for expanded partnerships.
- Signage and wayfinding are a key concern for accessing all PETE sites.
- There is strong interest in exploring options for improving movement between the sites, which could include signage and wayfinding improvements as well as potential shuttle options.
- PETE will need to consider access to the sites that would be included in a future boundary expansion, including implications for the driving tour, signage, information, and circulation patterns.
- There is not a lot of bicycle activity in the region, though there is some general interest in future expansion and how it might be incorporated into expanding access to the park.

2 Shuttle Services

This section examines the potential for initiating a shuttle service at PETE. NPS has indicated interest in replacing the current seasonal caravan tours within the Eastern Front in favor of a shuttle service with an established schedule, a dedicated vehicle for transport, and a more formalized operational plan. This type of service could hold stronger potential for attracting ridership above levels of the caravan tours, particularly through improved marketing efforts.

This chapter is divided into three sections:

- *Service Considerations* details factors which NPS should account for in designing a shuttle service;
- *Potential Routes* outlines possible configurations within PETE where NPS could run services; and
- The *Recommended Option* selects one of these routes and provides preliminary guidance on how NPS should implement a service.

2.1 Service Considerations

There are several issues for NPS to consider regarding the use of a shuttle service to move visitors within and between sites. This section details these matters and provides basic information about operating a shuttle service.

Service Type

NPS should first consider whether a service would focus primarily on transportation, primarily on interpretation, or some combination of both.

Interpretive Tour

An interpretation focused service would provide interpretive information to visitors at two or more sites along a defined route, as well as provide transportation between these sites. Visitors may be able to visit these attractions on their own, but boarding this type of service would greatly enhance the level of interpretation they would otherwise receive. Time spent for a guide, such as a staff member, to provide interpretation would result in this service lasting longer than a simple transportation shuttle between sites.

There are many ways in which NPS may offer interpretive information to visitors on tours. A ranger may remain with the tour group at all times, providing interpretive information en route to and at PETE sites. The ranger may operate the shuttle vehicle as well. The shuttle vehicle may stop and park at sites while a ranger provides interpretation, or it could drop visitors off to explore on their own before returning to pick them up at a later time. Given the sites selected for stops along an interpretive tour, both within and across PETE units, appropriate techniques for providing interpretation may become evident.

Transportation Shuttle

A transportation focused service would transport visitors between two or more sites without providing interpretation along the way. These services provide an alternative to travelling by private vehicle, which may be preferred in settings where wayfinding may be difficult, traffic congestion may be heavy, parking is limited, or visitors may not have access to their own automobile.

Sites included within a transportation-based shuttle route need not be limited to PETE. NPS may wish to provide connections between PETE and local lodging, commercial centers, other tourist destinations, or transportation centers such as bus or train stations.

Service Demand

NPS should carefully consider the demand for a shuttle service before moving forward with system design. A detailed assessment of the demand and potential audience for a shuttle service can strongly influence its characteristics. Although estimating transit service demand can be challenging, NPS can apply usage statistics from its current caravan tours to evaluate the implications of increased demand on a potential service.

In 2010, caravan tours were offered twice daily within the Eastern Front from June through August, elapsing 2.5 hours each trip and attracting an average of seven participants per tour. Using NPS estimations of 1,000 annual caravan tour passengers and an annual visitation figure of 95,473 for the Eastern Front between 2005 and 2009, it can be reasoned that approximately 1 percent of all Eastern Front visitors used the tour in 2010.

Assuming total visitation remains constant and tours continue to be offered 140 times each season, one can see the impact of increased visitor demand for a potential service using the table below. Each increase in the percentage of visitors riding the shuttle will drastically increase demand for services.

Table 5
Projected caravan ridership for given increased visitation amounts

Source: Volpe Center

Percentage Visitors	Total Ridership	Passengers per Tour (assuming 140 tours per season)
2%	1,909	14
4%	3,819	27
6%	5,728	41
8%	7,638	55
10%	9,547	68

A new service may result in higher average ridership totals than those currently seen by the caravan tours due to improvements such as increased shuttle visibility among visitors, enhanced interpretation, and ease of use. As average ridership per trip will fluctuate throughout a service season, these figures under-represent the capacity needed at periods of peak visitation. With higher levels of ridership, NPS may need to offer tours on a more expanded basis or invest in larger shuttle vehicles to transport visitors.

Information and Advertising

NPS should consider accompanying a potential shuttle service with an information or advertising campaign. Caravan tours are currently advertised on the PETE website, the summer program calendar, and on the program bulletin boards in each of the four visitor center/visitor contact stations. A potential shuttle service could continue to utilize these methods; it could also consider expanding to tour groups, guidebook companies, or other groups and local or regional partners.

Vehicle Considerations

Choosing an appropriate service vehicle will depend on a number of factors. Chief among these considerations are passenger capacity, passenger comfort, and handicapped accessibility.

Vehicle Size

Caravan tours within the Eastern Front averaged seven participants per tour in the summer of 2010. Allowing for the possibility that NPS may see an increase in ridership given the formalization of service, NPS should explore vehicles with a seating capacity of at least 12-15 persons. Vehicles with a seating capacity of 16 passengers, including the driver, will require a CDL to operate.

Vehicle Comfort

Some passengers will decide whether to utilize a service based on how comfortable they think they will be in the shuttle vehicle. With a passenger van, it is likely that passengers will be crowded close to one another while the vehicle is in motion. Passengers may also not be able to board and exit the vehicle comfortably. Others may not be able to board and ride a vehicle in this manner due to mobility impairments.

Accessibility

All vehicles for this service should be equipped with a wheelchair lift for mobility-impaired customers in order to comply with the Americans with Disabilities Act (ADA). This will add to the cost of the vehicle, or necessitate the purchase or lease of a more complex or larger vehicle, such as a cutaway bus (Figure 18). Staff will need to be properly trained to assist handicapped passengers in boarding and exiting vehicles.

Figure 18

Example of a diesel-fueled, wheelchair-accessible 15 passenger cutaway bus

Source:<http://www.adpost.com>



Vehicle Acquisition

The most important decision NPS will need to negotiate is whether to lease or purchase a vehicle. Strong arguments can be made for either option, and the decision will likely depend on the shuttle implementation process.

In leasing a vehicle, NPS will be better able to minimize upfront costs. This is usually the preferred option for a pilot program, as it allows NPS to gain a better understanding of passenger demand before deciding to purchase a vehicle. As maintenance costs are usually included in the monthly lease rates for vehicles, NPS would not be financially responsible for regular maintenance requirements.

The Government Services Administration (GSA) leases passenger vehicles and is one potential option for PETE to consider. Costs are generally lower than commercial lease rates, and the foundation for acquisition is already in place (PETE has an existing contract with GSA for its

maintenance vehicles). The downside to leasing a passenger vehicle through GSA is the inability of GSA to guarantee the availability of a vehicle for more than one operating season. PETE may also consider leasing a vehicle from a private company. Depending on the desired make and model, a passenger vehicle suitable for PETE may be available locally.

NPS may consider purchasing a shuttle vehicle if it desires flexibility in service operations. By purchasing a vehicle, NPS will have the option of operating the service as demand allows over the course of the year. While service is not in operation, NPS would also be able to use the vehicle for other park-related purposes. PETE's vehicle maintenance facility may be able to absorb responsibilities for maintaining the vehicle at little additional overhead costs. Although purchasing a vehicle will require a large upfront investment, grant funding may be available to assist in partially or completely purchasing the vehicle.

Finally, PETE may actually be able to borrow a vehicle from a partner such as Fort Lee. While unlikely to be a permanent solution to its vehicle needs, PETE might be able to borrow a vehicle for select days in a season as part of a pilot testing process. For more information about partner vehicle acquisition and partnership opportunities, see Section 2.3 in this chapter and Chapter 8, Partnerships.

Fuel

NPS could examine the possibility of pursuing alternative fuel shuttle vehicles. Such vehicles might be smaller or quieter, and could have lower emissions, thereby improving the visitor experience (both within and outside of the vehicle) and providing environmental benefits. Special needs for storage and maintenance, as well as the availability of fuel⁴⁹, must be considered when deciding whether to pursue alternative fuel vehicles.

Vehicle Storage and Maintenance

NPS would have to consider where to house shuttle vehicles when they are not in use, as well as consider arrangements concerning ongoing vehicle maintenance. Given that NPS possesses an onsite maintenance and storage facility for park-owned vehicles, it may be possible for shuttle vehicles to be housed and maintained onsite. Current and anticipated future storage and maintenance capacity should be considered when selecting vehicles.

Financing

The start-up and ongoing operational and maintenance costs of running a shuttle service can be substantial. These costs, as well as sources for funding, are profiled in more detail below.

Operations

Over time, the costs associated with operating and maintaining a vehicle can accumulate considerably, surpassing the capital expenditure of purchasing a vehicle. These expenses are determined by the service characteristics of the shuttle vehicle. The number of hours and miles that a vehicle is driven will impact operational and maintenance costs. A good rule of thumb estimate is approximately \$60-65 per operating hour for both operations and maintenance.⁵⁰

The overall operating cost includes expenses for drivers and storage and maintenance expenditures. One potential way to reduce costs would be to have a staff member or volunteer drive a shuttle vehicle and, if desired, provide interpretation throughout the tour. This would reduce the operating cost assuming that the responsibilities of the driver are able to be absorbed

⁴⁹ The U.S. Department of Energy maintains the Alternative Fuels Data Center Station Locator, an internet search tool that maintains records for alternative fueling stations around the United States. It currently shows several options in the Petersburg-Richmond area. <http://www.afdc.energy.gov/locator/stations/>

⁵⁰ www.fta.dot.gov/documents/3039_study.pdf. Estimates \$50/hour in 2001, which is equivalent to \$64.88 in 2012.

into current staffing levels, rather than needing to hire additional staff. Vehicles with capacities of 16 passengers, including the driver, require a commercial driver's license (CDL) to operate. PETE would need to balance the benefit of a larger vehicle with the additional cost of the storage and maintenance, as well as spending the time and money for the driver to obtain the CDL.

As mentioned above, NPS possesses an on-site maintenance and storage facility for park-owned vehicles. If this facility is not adequate for the vehicles of a potential shuttle service, other accommodations would be necessary.

Funding Sources

Several funding sources exist for NPS to consider in figuring out how to finance potential shuttle service operations. For more information about specific programs, see Chapter 7 of this report. Federal funding may be used for capital costs associated with a shuttle service, but not for operating and maintenance expenses.

User fees may help offset operating costs, but may negatively impact demand for the shuttle service. Even with charging a fare, the total costs of service operation may not be completely covered.

If NPS does not anticipate possessing the funds necessary to operate a service, they may wish to partner with another entity to assist with funding and potentially attract additional customers. This partnership could be commercially-driven, such as with a business association or another tour operator, or organized thematically, such as with other local historic groups. NPS must take into account how these potential partnerships may affect desired service and operating characteristics.

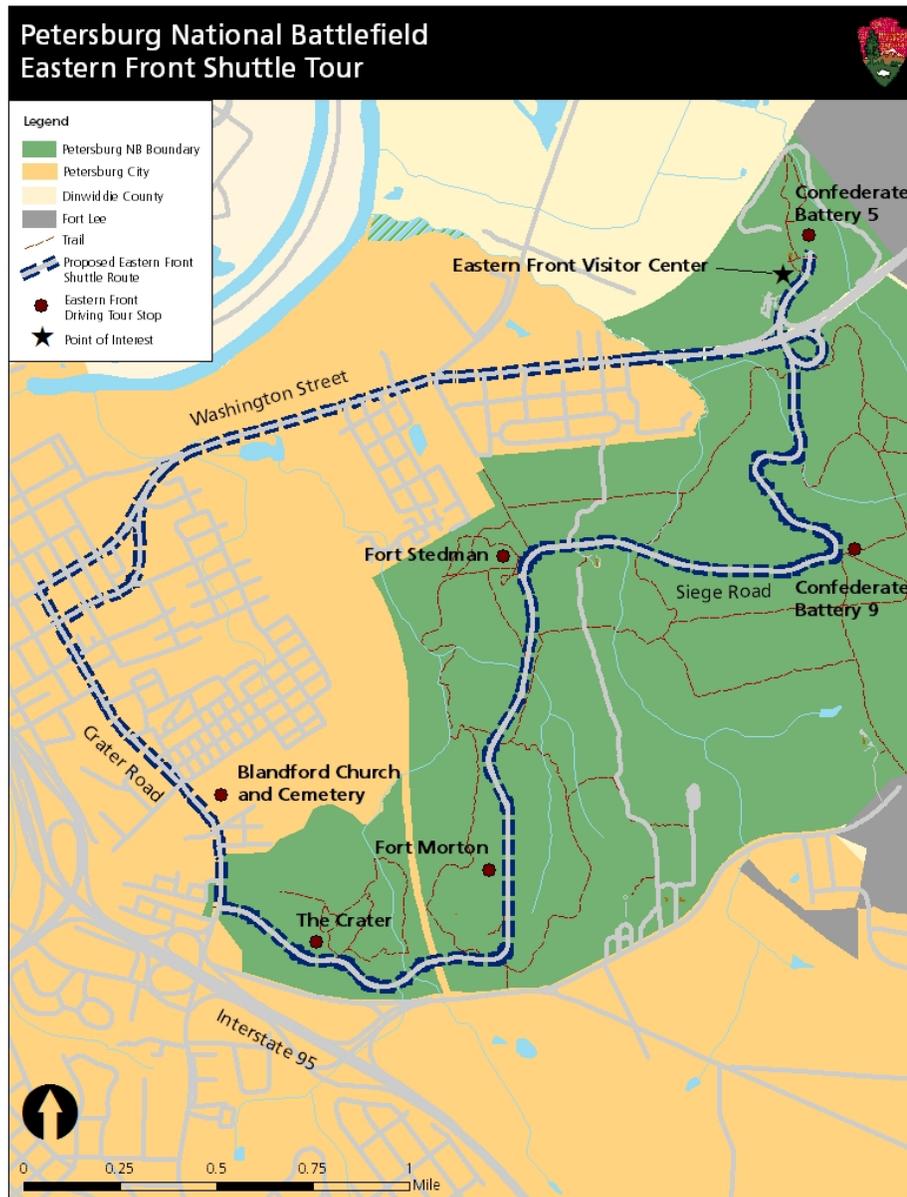
2.2 Potential Routes

This section identifies potential routes for NPS to consider for shuttle service. A range of operating characteristics and visitor demand is discussed for each route.

Eastern Front

Shuttle services through the Eastern Front could replicate the caravan tours currently operated by NPS. Interpretive in nature, this type of service would be designed to provide information to visitors about the campaign in the Eastern Front battle while transporting them between significant sites.

Figure 19
Proposed Eastern Front Shuttle Tour Route
 Source: Volpe Center



Operating Characteristics (Routes and Stops)

The current caravan tours do not feature an established sequence of stops or a set procedure for delivery of information. Instead, the tour offered depends primarily on the level of visitor interest, with stops and tour durations flexible. The introduction of a fixed shuttle may force PETE to determine a set series of stops and conveyance of interpretive information.

All services could follow the same configuration of caravan tours through the Eastern Front. Passengers would collect at the Eastern Front Visitor Center, and vehicles would operate along the length of Siege Road. From there, vehicles would run northward on South Crater Road before

turning eastward along E Wythe/E Washington Street back to the Visitor Center. This configuration offers additional interpretive opportunities at the Blandford Church and Cemetery on South Crater Road less than 0.5 miles from the end of Siege Road.

A shuttle service may not be able to stop at all sites along Siege Road in order to keep a reasonable tour length. The configuration of Siege Road within the Eastern Front highlights eight separate sites, including Confederate Battery 5 behind the Visitor Center. PETE would need to prioritize shuttle stops to provide the highest quality of interpretive information at the greatest convenience to passengers.

Parking capacities at different Eastern Front sites may also dictate whether these sites can be featured in a tour. Only the Fort Stedman site offers bus parking, although various other Eastern Front sites feature unmarked lanes for parallel parking which could be reserved for shuttle use. Parking availability is more challenging if the service would use anything larger than a small transit vehicle (such as a passenger van), although even passenger vans are slightly larger than most parking spaces within the Eastern Front. The road geometry of Siege Road would not restrict the use of larger vehicles, but they may pose a safety hazard to bicyclists and pedestrians using the multi-use lane along the right-hand side of the road.

Service Demand and Potential Users

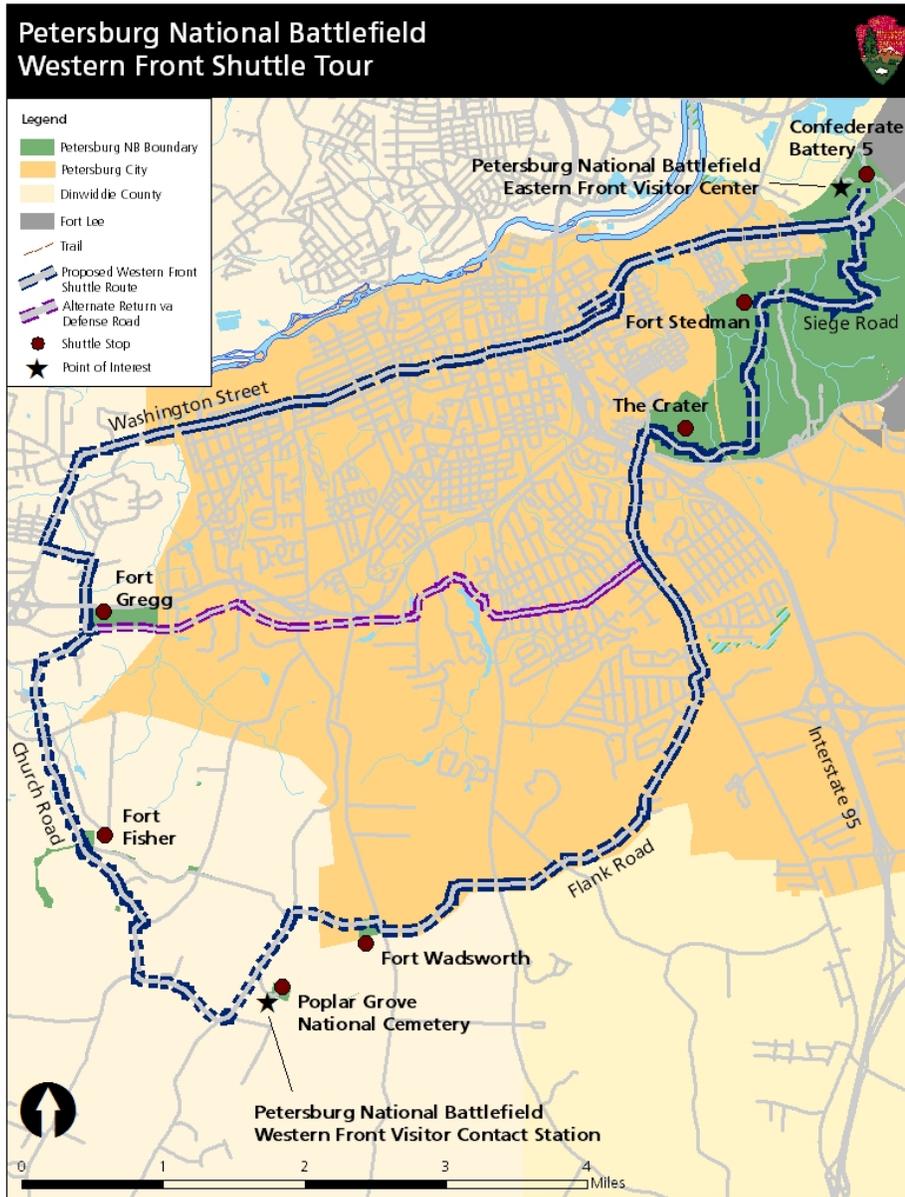
As the Visitor Center serves as an assembly point for the majority of visitors to the Eastern Front, a shuttle service may attract additional passengers if promoted properly. This would entail advertising the service to visitors while they're planning their visit, such as through the PETE website or regional travel literature. In the Visitor Center, visitors can be made aware of the service through signage or staff dispersion of shuttle information, or by positioning the shuttle vehicle in the parking lot to capture visitor attention.

A shuttle service within the Eastern Front may attract more passengers than similar services elsewhere due to the unit's popularity. The target audience would consist of visitors interested in touring the Eastern Front and experiencing more interpretation beyond the posted signage at the driving tour locations.

Eastern and Western Fronts

A shuttle service between the Eastern and Western Fronts offers the opportunity for less-visited Western Front sites to be interpretively and logistically tied with Eastern Front sites. Such a service could also assist Western Front visitors with wayfinding.

Figure 20
Proposed Western Front Shuttle Tour Route
 Source: Volpe Center



Operating Characteristics (Routes and Stops)

Within the Western Front, a shuttle tour would likely visit sites which are currently highlighted on the Western Front Driving Tour. These include Fort Wadsworth, the Poplar Grove National Cemetery (location of the Western Front Visitor Contact Station), Fort Fisher, and Fort Gregg. A number of other battlefield sites are situated throughout the area and could also be included. These include sites currently owned by NPS or that could be incorporated into PETE via boundary expansion.

However, these sites may lack visitor amenities such as parking and posted informational material, and depending on their location, including them may add substantial travel time.

A Western Front shuttle service would likely expand upon an Eastern Front route. NPS may choose to limit the number of sites visited in the Eastern Front to keep the combined service to a reasonable duration. Even if service stops were kept at a low number, the duration of tours through the Eastern and Western Fronts would still be lengthy, given the travel distances.

Without stops, a vehicle following the PETE driving tour directions between the Eastern Front Visitor Center and Fort Gregg would take approximately 40 minutes. The round trip back to the Visitor Center along Wythe St/Washington St through downtown Petersburg (the most direct route) would total 55 minutes, whereas round trips returning along Flank Road east of Fort Fisher would last approximately 75 minutes. These estimates do not include time for stops at sites to provide interpretation and allow visitors time to explore.

The configuration of Western Front roads may also limit the viability of a shuttle service. Many of these roads are narrow and feature tight turning radii, creating safety issues for pedestrians, bicyclists, and other vehicles. Larger transit vehicles may not be able to safely maneuver on some of these roads, as well as at the space-constrained parking area of the Poplar Grove National Cemetery. Parking may also be impractical at the Fort Wadsworth and Fort Fisher sites where spaces are already at a premium.

Service Demand and Potential Users

Due to the longer duration of this service, demand may be considerably lower than for a service entirely within the Eastern Front. Users would likely need to devote half a day to complete the tour, which may not be acceptable for many visitors.

However, a service through the Western Front could appeal to users with a higher level of interest in the Civil War. This user group would likely have planned to visit the Western Front regardless, but may be attracted to a service providing high-quality interpretation of the Siege of Petersburg. Additionally, other visitors planning to sightsee in the Western Front may be attracted to a shuttle service which helps them properly navigate Western Front sites.

Eastern Front and Local Area Attractions

NPS could employ a shuttle service to foster a stronger connection between PETE sites and other local points of interest in the area. This service could provide interpretation linking PETE with associated area attractions, or be exclusively transportation focused.

Interpretation Focused Operating Characteristics (Routes and Stops)

NPS may want to consider a shuttle service with interpretive tie-ins to other nearby attractions, such as those operated by the City of Petersburg. Interpretation along this service would link the history of PETE sites with other historical points of interest in the area. The Petersburg Visitors' Center, situated in Old Towne Petersburg, may serve as a logical connection point. From this location, visitors are within walking distance of Civil War-era attractions such as the Siege Museum and Centre Hill Museum.

For this type of service, NPS and potential service partners would need to agree on how to share operations and split costs. As park rangers do not have institutional knowledge of external tourist attractions, and vice-versa, the training of tour personnel or hiring of staff members to conduct services may be necessary. For this reason, a vendor may be a more efficient means to fulfill operational needs.

Interpretation Focused Service Demand and Potential Users

An interpretive shuttle could serve as a convenient and enjoyable way to experience historical attractions in Petersburg, including those of PETE. It may attract users who had not originally intended to see both city and NPS-owned sites during their visit. NPS should be mindful of the effect partnering with other area attractions to provide an interpretive-based shuttle may have on visitation at PETE. Given that many PETE visitors typically spend no more than half a day in the area, these users would spend less time at PETE when utilizing this service.

Transportation Focused Operating Characteristics (Routes and Stops)

Visitors to PETE may come directly from locations throughout the Petersburg area. These include tourist attractions in downtown Petersburg, nearby hotels, and regional transportation facilities, such as the Petersburg Multi-Modal Transportation Center and Richmond International Airport. NPS could provide transportation services from these locations to the Eastern Front Visitor Center, timing these services to best serve when potential riders will most likely seek transportation. As users of a shuttle will need an additional form of transportation to commute within the Eastern Front, the presence of an intra-park shuttle or other transportation option must be present under this arrangement.

Transportation Focused Service Demand and Potential Users

A transportation-based shuttle service may be most attractive to visitors unable or disinclined to visit PETE in a private vehicle. As the demand for this type of service may be low, NPS may wish to provide a service like this on an irregular basis. Weekends and holidays during the peak visitation season, or during special events, may be the only times when interest in visiting PETE is high enough to merit a shuttle connection with outlying locations.

PETE and Other National Battlefields

Other federally-owned Civil War-era battlefield sites in the area, such as Richmond National Battlefield Park and Appomattox Court House National Historical Park, could partner with PETE to offer interpretively-focused shuttle tours. Due to the long distances between these sites, a potential tour would likely be highly specialized to cater to audiences with a strong interest in the Richmond-Petersburg Campaign and/or the Appomattox Campaign. As a result, it may be most appropriate to offer this service on a limited basis.

The options for route variations and potential stops for a multi-battlefield tour are vast. For example, the shuttle may follow the route of Confederate retreat or Union pursuit during the Appomattox Campaign. However, the distance between Petersburg and Appomattox Court House is considerable; the communities are pitted nearly 100 miles apart if travelling along US-460. Accounting for stops to provide interpretation, as well as the return trip to the original embarking point, tours may have to begin and end before and after each park's daily hours of operation.

2.3 Recommended Option

The project team recommends that NPS consider piloting an interpretive shuttle service in the Eastern Front, employing the operating characteristics defined above, for one summer season. Of all the options explored, this service focuses on those PETE sites which traditionally experience the highest levels of visitation and offer the strongest potential of attracting shuttle service patrons.

By confining the service area to the Eastern Front, the park will be able to keep initial capital and operating costs, as well as staff obligations, at a manageable level. With data collected at the completion of one summer of operation, NPS can gauge the shuttle's popularity and consider the viability of intensifying service within the Eastern Front, or expanding service to other sections of PETE.

Route and Service Characteristics

In operating a service in the Eastern Front, PETE can largely borrow from the service characteristics of the existing caravan tours. Passengers would collect at the Eastern Front Visitor Center and Confederate Battery 5 before embarking along Siege Road, stopping at Confederate Battery 9, Fort Stedman, Fort Morton, The Crater, and Blandford Church and Cemetery. NPS should coordinate with the City of Petersburg regarding arrangements to park shuttle vehicles and provide interpretation at the city-owned Blandford Church and Cemetery.

By defining the time spent at each site, a delivery process can be formalized to ensure that interpretation remains consistent for all tours. This will also give visitors an idea of how much time to allow for tours. The table below outlines the sequencing of shuttle tour stops with rough time estimates for providing interpretation at each site. Depending on the popularity of the service and visitor feedback, service characteristics can be adjusted to better fit visitor specifications.

Table 6
Proposed Eastern Front Shuttle Tour Schedule

Source: Volpe Center

Arrive at Site	Site Name	Duration (driving + time at site)
0:00	Visitor Center and Confederate Battery 5	30 minutes
0:30	Confederate Battery 9	15 minutes
0:45	Fort Stedman	30 minutes
1:15	Fort Morton	15 minutes
1:30	The Crater	30 minutes
2:00	Blandford Church and Cemetery	30 minutes

While the current caravan tours are offered twice daily, they are only run if there is sufficient interest from visitors. This study recommends that PETE begin by offering the tour once daily to reduce operating costs and better take advantage of visitor demand. If that is successful and there appears to be demand for a twice-daily service, NPS can adjust its operating plans to add a second run.

Vehicle Selection and Acquisition

Due to the significantly reduced cost of leasing a vehicle through GSA, NPS should pursue this option for the pilot test. If GSA is unable to provide a vehicle that suits NPS needs, several passenger vehicle rental companies are located in the Richmond region. Until the financial viability of a service is firmly established, it will benefit NPS to refrain from major expenditures and to keep capital costs low.

To acquire a vehicle through GSA, the park must coordinate with the nearest Fleet Management Center (FMC) located at 8000 Jefferson Davis Highway in Richmond, approximately 15 miles north of the park. The FMC will require that the park provide the model of the vehicle it is requesting. Also needed is the anticipated duration of the assignment and projected utilization in miles per month. The park must verify it has the funds to pay for the vehicle assignment, as well as confirmation that NPS headquarters verifies using a leased vehicle.

If the vehicle carries more than 15 passengers, all PETE staff members who anticipate operating the shuttle vehicle over the course of the service season should obtain a CDL. In the state of Virginia, this requires holding a Virginia driver's license, providing a valid Virginia DOT Medical Examiner's Certificate, and completing a driver training school course. Applicants must pass a general and special CDL Knowledge Exam for passenger vehicles, as well as a skills test for the class of vehicle

driven. The applicant must provide the vehicle used to complete this test. This may require that the park acquire a vehicle for the time period in which staff members will take the skills test. There is an annual \$8 licensing fee, and licenses are valid for eight years.

Operation Financials

A number of lift-enabled cutaway vehicles are provided through GSA. A 20-passenger capacity cutaway vehicle would cost \$560 per month using 2012 GSA rates, with a \$0.525 cent charge per mile.⁵¹ Using these rates, NPS can estimate the cost of providing a shuttle service over the course of an operating season. This analysis can determine whether a fare is needed to cover costs.

For a service operating over a 120-day period, the cost of leasing a 20-passenger capacity cutaway vehicle is \$2,240, which includes any maintenance issues. Given the 7.3 mile length of the Eastern Front route operating once daily, gas costs at a conservative \$4/gallon will accumulate to \$501 over the course of the season at a fuel efficiency of seven miles per gallon.

At these rates, costs to operate the shuttle over the course of a 120-day season will amount to \$2,741. With this low cost, NPS may be able to draw from a general fund to operate the service and avoid charging a fare. The waiving of a fare would position the service as more attractive to potential audiences and increase its chances at success. If NPS wishes to impose a fare of \$5 to cover operating costs, 549 passengers would have to pay the fare over the course of the operating season for costs to break even. In charging a fare, NPS may want to consider waiving charges or providing discounts for special populations such as children or seniors.

An important distinction in determining costs lies with the utilization of existing staff to operate the service. It is expected that staff members will be able to absorb the operation of the service into their other responsibilities, at least initially, and that no additional staff will need to be hired to operate the vehicle on a part- or full-time basis. As labor costs associated with operating a service can be significant, minimizing these costs offers significant cost savings.

⁵¹ <http://www.gsa.gov/graphics/fas/2012CONUSRATEBULLETINFINAL20111114.pdf>

3 Directional Signage and Wayfinding

Petersburg National Battlefield consists of four units across multiple jurisdictions, spanning a large geographic area. Each unit varies in setting, size, layout, infrastructure, and facilities (see Chapter 1: Existing Conditions); these configurations lead to unique signage and wayfinding needs for the park as a whole. Visitor needs vary based on desired destinations, programs and activities, and as a visitor moves throughout the park, traveling between the many points of interest, NPS wants to ensure that the experience is enjoyable and trouble-free.

A well-designed motorist signage program uses roadside visibility and information to improve visitor experience, reduce unnecessary vehicle travel, enhance traveler confidence, and possibly increase visitation. The success of a sign program is directly related to logical sign placement, consistent design, clear terminology, and succinct wording and messages.

This chapter discusses the NPS wayfinding and signage program and some of the implementation challenges PETE has faced related to variations in sign regulations between NPS and the Virginia Department of Transportation (VDOT). It reviews the differences between the most common motorist sign programs related to cultural attractions and identifies both short- and long-term actions and solutions for consideration, including creating a database of existing signs; removing out-of-date signs; assigning sign management responsibilities; salvaging existing signs; engaging signage partners and stakeholders; developing a signage needs assessment; and producing a new sign plan.

3.1 *Supplemental guide signs, wayfinding signs, and driving tour signs*

Supplemental sign programs, wayfinding programs, and driving tours all exist to facilitate efficient travel through important cultural regions and to significant cultural destinations. [These signage systems are alike in many ways and the concepts often overlap, but there are also several ways in which they are different.]

Supplemental guide signs are intended to guide motorists from a highly traveled corridor to a specific traveler destination. A supplemental sign system typically begins with a sign on a major highway, followed by additional signs on secondary roads that guide the visitor to the destination. For a supplemental sign system to work, specific destinations are required. A minimal design and familiar brown-and-white color scheme (Figure 21) help to instill driver confidence in the chosen route.

Figure 21
Example of supplemental guide sign on Interstate 95 in Petersburg, VA

Source: AARoads.com



Wayfinding consists of a series of visual and environmental cues that help visitors navigate and experience an environment without confusion and conflict.⁵² Because signs are a frequently used method of communicating with visitors, they are an important tool used in wayfinding programs. Wayfinding signs and sign plans can serve all types of travelers, including those traveling by car, bus, bicycle, or foot, and are especially helpful in areas with multiple traveler destinations.

Wayfinding programs exist independently of supplemental guide signs and are typically located in areas with a significant number of out-of-town visitors. Wayfinding programs can work with many destinations and can be tailored to the community or region that is being served. Unlike with supplemental signs, a wayfinding program does not follow strict regulations with regard to sign location and design. While certain guidelines do often exist, there is generally more flexibility with regard to sign design and placement. Figure 22 shows a wayfinding sign in Leesburg, Virginia.

Figure 22
Wayfinding sign in Leesburg, Virginia

Source: <http://www.leesburgva.gov>



⁵² NPS UniGuide Standard, June 2002. <http://www.nps.gov/hfc/products/uniguide.htm>

A driving tour program uses signs to direct motorists along a specific path of travel. These signs often are regulated by a unique set of design requirements aimed at consistency throughout the tour and clear distinction from other highway signs. To avoid confusion, these signs would likely not be designed with the traditional brown background used for supplemental guide signs. The Civil War Trails program consists of several driving tours throughout the southeastern United States, all of which use the same sign design, shown in Figure 23.

Figure 23
Civil War Trails driving tour sign

Source: <http://www.civilwartrails.org>



One of the significant challenges for all road sign programs is to determine which destinations and/or routes are worthy of signage. Visitation characteristics, accessibility, hours and seasons of operation, and level of cultural significance are important considerations, and each sign program has different requirements that must be met in order to merit a sign or series of signs. Furthermore, in areas with many unique traveler destinations, roadway sign clutter is a concern. Too many signs and/or too much written information can be unsafe for motorists, as well as detrimental to the visual quality of the landscape.

Developed by the U.S. Department of Transportation (U.S. DOT) to provide standardized nationwide guidance on highway signage, the Manual on Uniform Traffic Control Devices (MUTCD) defines the standards used by transportation agencies across the nation to install and maintain traffic control devices, including signs. The MUTCD has been administered by the Federal Highway Administration (FHWA) since 1971 and is updated periodically to serve the nation's changing transportation needs, address new safety technologies, and accommodate the evolution of traffic management techniques. According to FHWA, "uniformity of traffic control devices is critical in highway safety and mobility as well as cutting capital and maintenance costs for public agencies and manufacturers."⁵³

3.2 National Park Service Signage

NPS created its first set of design standards in 1920. The standards were periodically updated, most recently in 2002. The 1998 guidelines, which directly preceded the current guidelines, focused on highway signs and did not address the full range of sign types that parks typically need.⁵⁴ In 2002, NPS introduced the UniGuide sign program, which aimed to establish uniform design guidelines for NPS signage across the country. The UniGuide sign program attempts to address signage needs

⁵³ <http://mutcd.fhwa.dot.gov/kno-overview.htm>

⁵⁴ Ibid.

for motorists as well as interpretation for visitors at park units. According to NPS Harpers Ferry Center Interpretive Design Center Director's Order 52C, signs should:

- Offer clear, concise, and consistent communication to park visitors while not intruding on natural and historic settings.
- Maximize the public's convenience and safety and reduce the Service's liability exposure by ensuring compliance with pertinent federal regulations and principles of sound engineering and communication.
- Build upon, but are not bound by, NPS design traditions.
- Strengthen the NPS public identity and perception as one organization by reflecting NPS graphic design standards.
- Shall be appropriate in appearance, size, and material to a wide range of park environments.
- Allow for changes as park communication needs and other circumstances change.⁵⁵

In response to the new program, FHWA developed a memorandum of understanding (MOU) that provides flexibility for NPS highway signage. The MOU allows for some deviation from MUTCD sign design and materials standards and was most recently amended in 2006 to reflect the NPS UniGuide signage program. The MOU only addresses signs that are located on NPS property.⁵⁶ Currently, the NPS Northeast Region Office is developing a Safety Management Program for which signs play an important role. In addition to typical regulatory signs such as stop signs, yield signs, and pedestrian crossing signs, NPS also regards directional signs as an integral component of their safety program.

3.3 VDOT Signage

PETE is located in Virginia, and therefore must comply with Virginia sign regulations for all signs located in state right-of-way (ROW). As a state, Virginia is unique in that major cities are distinct from counties. This means that cities in Virginia are not located within counties. For example, the City of Petersburg as an entity is not part of a larger county. In most of Virginia, roads within cities are owned and maintained by local departments of transportation, whereas in counties, roads are considered state ROW and are owned and maintained by VDOT.

VDOT maintains the Integrated Directional Signage Program (IDSP) as an umbrella for all standardized highway directional signage in the Commonwealth of Virginia. Housed within IDSP is the Supplemental Guide Sign Program. Supplemental guide signs are brown signs intended to guide motorists to specific cultural, recreational, historical, governmental, educational, and military sites. VDOT regulates the location and design of all signs that fall within state ROW. VDOT is also responsible for maintenance of all signs in state ROW and has stringent standards regarding durability of materials. VDOT supplemental guide sign regulations are aligned with the MUTCD, and the state does not recognize the NPS UniGuide sign program as an acceptable alternative for NPS signs in state ROW.

Virginia Logos is a private contractor that currently operates and manages VDOT's IDSP. The company is responsible for reviewing all sign designs, locations, and installation in state ROW. Virginia Logos will only install signs that have been approved by VDOT. Virginia Logos recently designed a set of supplemental guide signs for NPS' Fredericksburg and Spotsylvania County

⁵⁵ Director's Order 52C: Park Signs. September 29, 2003. <http://www.nps.gov/policy/DOrders/52Cfinal.pdf>

⁵⁶ "Memorandum of Understanding Between FHWA and National Park Service Regarding Traffic Control Devices on Roads in National Parks". Federal Highway Administration, Office of the Administrator. 1973, rev. 2006. <http://mutcd.fhwa.dot.gov/resources/policy/moutcd/index.htm>

Battlefields Memorial. The signs conformed to the MUTCD – not the NPS UniGuide program – and were approved by VDOT for installation.

Driving tour signs in the Virginia state ROW also have to be approved by VDOT and coordinated through Virginia Logos. The process for installing new signs depends on several factors, including number, size, and location of signs. Organizations interested in implementing driving tour signs must coordinate directly with VDOT and Virginia Logos regarding design and materials requirements. As with supplemental motorist guidance signs, driving tour signs located in the cities are not subject to VDOT regulation.

While current VDOT programs address traditional directional signage, VDOT is pilot testing several wayfinding programs across the state. It is unclear how pilot test results will be documented and evaluated, but it is the goal of VDOT that the pilot test efforts will lead to the development of a statewide policy on wayfinding signs and sign plans, and an associated wayfinding signage program. If Virginia chooses to add more wayfinding programs around the state, it is likely that (at least in the short term) the wayfinding signage will fall under the Integrated Directional Signage Program's purview.

3.4 Existing PETE sign plan and sign designs

In 2005, PETE conducted a study of existing and needed signage to help visitors reach key sites and travel along the recommended driving tour. This effort resulted in the completed report *Petersburg National Battlefield: Motorist Guidance Signs* (December 19, 2005; rev. June 29, 2006) by the National Park Service's Harpers Ferry Interpretive Design Center (IDC). The plan identified locations and designs for signs throughout the PETE study area, geared toward assisting visitors in reaching sites in all four units. Given the characteristics of the PETE study area, most of the recommended sign locations are not on NPS property. The sign plan and sign designs followed the NPS UniGuide program guidelines, and upon completion of the sign plan, all 44 recommended signs were manufactured.

Based on conversations with VDOT and Virginia Logos as part of this study, the 44 PETE signs do not comply with VDOT supplemental guide sign standards with regard to sign design, materials, and location; therefore, VDOT will not approve their installation. Specific sign problems include:

- Sign material: The PETE signs are made of alumilite; VDOT requires extruded aluminum.
- Font: VDOT has only approved Clearview font as acceptable. The PETE signs use NPS Rawlinson, which is not approved by VDOT.
- Design: VDOT has not approved the use of the black banner at the top of the signs.
- Sign reflectivity: The colors, fonts, and materials of the new PETE signs do not conform to VDOT requirements regarding providing sufficient reflectivity and visibility at night.

Notwithstanding the fabrication of the signs, the recommended sign locations in the report were not approved by VDOT as part of the planning process. All proposed sign locations in Virginia State ROW must be studied in the field by VDOT before they can be approved for installation. It is possible that if this review were to take place, some of the recommended locations would be deemed appropriate. The purpose of the field review is to answer questions about challenges and opportunities related to the proposed sign location, such as:

- Safety hazards: Will the sign obstruct a driver's line-of-sight for other vehicles, pedestrians, or other signs?
- Traffic pattern: Will the sign work best on the right side of the road, in a median, or overhead?

- Traffic flow: How fast will the traffic be moving? Will the message be large enough to read at those speeds?
- Sign clutter: How many signs are already at this intersection? Will a driver be distracted with too much information to digest? Do the signs detract from the physical character of the location?
- Existing infrastructure: Is there an existing sign post or structure that can be used to support the new sign?
- Conflicting or duplicative signs: Are there any other signs at the location that provide conflicting messages that may confuse a driver?

In addition to considering the sign design, fabrication, and location issues discussed above, the signs manufactured per the *PETE: Motorist Guidance Signs* report were reviewed for content. In many cases, the signs provide clear messages that direct motorists to distinct destinations within PETE. In other cases, however, the intended destinations are not indicated. This is especially true for areas such as the Western Front, which is actually a collection of several distinct destinations. With this particular sign plan, the Western Front signs do not point to specific locations; rather, they direct a motorist *through* the Western Front on what is essentially the PETE driving tour. One can imagine that when a motorist is already in the Western Front, an upcoming sign directing him to the Western Front might be confusing.

The following sections discuss near-term and longer-term steps for moving forward with next and existing signage. Any proposed actions moving forward must consider all of the relevant issues – sign design, materials, location, and content.

3.5 Near Term Actions

There are several signage-related near-term actions and long-term solutions for PETE to consider. Near-term actions focus on smaller, less cost-intensive tasks that could be completed by NPS with few partners and stakeholders. These smaller tasks may assist in establishing a foundation to support the implementation of long-term solutions.

Create database of existing directional and wayfinding signage

To assist in the performance the near- and long-term tasks discussed below, PETE should first collect information to develop a comprehensive database of existing park-related directional signs. This would be best accomplished using a geographic database to organize the information, thereby allowing spatial information (i.e. mile markers or latitudinal/longitudinal coordinates) to be part of the full data record for each sign. Other data attributes might include the sign's age, material, manufacturer, associated structural information, owner, managing organization, maintenance records, and photographs.

The database of existing park-related directional signs should include signs inside the park's boundaries as well as outside. This is an important consideration because PETE will be responsible for funding sign replacement on major state ROW corridors if a sign is destroyed in a storm or by an accident. A portion of this data may already be available from VDOT and/or the various city transportation departments in the region, and the first step will be to request from those agencies any existing geospatial data for signs in the region. It will be important to ensure that the data can be shared across departments and agencies, incorporated into the park's greater geospatial program, and expanded to include all park signs and other transportation asset data as desired.

Remove old and out-of-date signage

Another near-term task for PETE is to remove out-of-date signage, particularly those signs that are old, unclear, duplicative, or no longer in keeping with the park's existing road signs or driving tour design. While in some cases the information may still be appropriate, these signs might confuse visitors who expect to encounter familiar sign styles and consistent messages. In order to accomplish this task, PETE will need to compile a list of all signs recommended for removal. The list will then be submitted to the appropriate ROW manager. VDOT is responsible for removal of all signs within state ROW, while the cities of Petersburg, Hopewell, and Colonial Heights are responsible for removal of signs within their respective borders. PETE is likely to have a minimal role in sign removal from state ROW, and may have a much greater role in the removal of signs located within city limits.

Assign sign management responsibilities

PETE should designate one of the park's geographic information systems (GIS) specialists to be responsible for tracking physical signs and maintaining the sign database discussed above. Working in conjunction with the maintenance department, this person would plan for the design and installation of new signs, coordinate with NPS and FHWA's Eastern Federal Lands Highway Division (EFL), and cultivate and maintain relationships with partner agencies to ensure signage planning and implementation follows legal state and federal procedures.

Make use of manufactured signs (as appropriate)

PETE should consider all possibilities for making use of signs that have been manufactured but are not yet installed. Based on conversations with VDOT and park officials conducted as part of this study, the signs planned for locations within the state ROW are unlikely to be eligible for installation. Several of the signs, however, are located within the jurisdiction of the cities of Hopewell and Petersburg, or on NPS land. In these cases, VDOT sign requirements do not necessarily apply, and there may be more flexibility for the signs to be installed.

Appendix 3 contains the *Petersburg National Battlefield Motorist Guidance Signs* report, and Appendix 1 provides a table accounting for all of the signs identified in the report that have been manufactured but not yet installed. Each sign has been assigned a "priority" based on staff input as well as the project team's analysis of its potential impact on a traveler's ability to find his way. Rows in bold indicate signs that, based on location, may be eligible for installation. Signs that are both bold and high priority represent the best options for installation consideration in the near term.

3.6 Long-term Solutions

Long-term solutions involve planning, implementation, and maintenance of complex signage and wayfinding programs that require extensive coordination with stakeholders, including agencies and organizations at municipal, regional, state, and federal levels.

Identify and engage signage partners and stakeholders

PETE should reach out to potential stakeholders, including land holders, friends and advocacy groups, and government agencies at all levels. Partners and stakeholders will have their own particular signage needs and roles, and by including them in the discussion early in the process, further opportunities for cooperation and collaboration will develop. Partnerships are also important for managing highway sign clutter in the Petersburg region. With so many entities vying for roadside signage, NPS and its partners must seek opportunities to consolidate sign programs while cooperating with local, regional, and Federal bodies to develop a unified vision for signage across the Petersburg region and the Commonwealth of Virginia.

Develop comprehensive needs assessment and action plan

Once near-term actions have been addressed and partners engaged, the park will need to determine what exactly is needed throughout PETE in terms of wayfinding signage, driving tour signage, and supplemental guide signage. The project team believes that all three sign types may play a role in a comprehensive Petersburg National Battlefield signage program, but to move forward the park must confirm needs and document the course of action to achieve a desired outcome.

PETE should be able to preliminarily identify existing sign gaps and conflicts based on a database of existing signs, developed as one of the short-term actions discussed in the previous section. The park's primary interest should be in the existing sign programs, such as the supplemental guide signs. Are the park's visitor centers adequately signed from the region's major corridors? Do follow-up signs provide enough information to direct confident travelers to their desired destinations? Are new sites being developed that will require new signs? If so, with which regional corridors are they associated?

When the park has a grasp on maintenance, management, and potential construction/fabrication costs associated with existing sign programs, it can then begin looking into developing a new sign program, such as a wayfinding system. Throughout this process, transparent meetings with partners and stakeholders will ensure that all parties agree with signage needs, expectations, and a desired course of action.

Develop a new sign plan

Supplemental guide signs should help motorists travel from major regional corridors to the primary visitor center or visitor contact station of each Petersburg National Battlefield Unit. These signs, as manufactured per VDOT standards, are extremely durable and long lasting. They are also quite expensive to manufacture. Fortunately, many conforming supplemental signs already exist on the major corridors, and the brown background and clear wording makes them immediately recognizable by the traveling public.

Once a visitor reaches a visitor center or contact station using supplemental guide signs, a comprehensive wayfinding program would take over. The wayfinding program should serve two primary purposes: (A) to guide motorists between destinations within a specific PETE unit, and (B) to direct motorists to the other PETE units. It will be important to clearly distinguish each purpose with appropriate visual cues so the traveler is able to confidently navigate within a park unit and between park units. Often in wayfinding programs, this is done using color, and PETE has already established color schemes for three of the four park units (Eastern Front [blue], Western Front [red], and Five Forks Battlefield [green]) with the existing driving tour.

Figure 24 illustrates how two wayfinding signs for PETE might look. These examples are to be used only as visual references in discussions with VDOT, NPS, and other stakeholders about wayfinding opportunities for PETE. The sign design is provided only for context and to illustrate possibilities for incorporating the driving tour into the wayfinding signs. It does not necessarily conform to NPS UniGuide sign standards, nor is it approved by VDOT for wayfinding or any other sign program. The example on the left is a sign that travelers might see at the exit to Poplar Grove National Cemetery, and the example on the right is a sign travelers could see at end of the Park Tour Road at its intersection with Crater Road.

Figure 24
Hypothetical examples of wayfinding signs that incorporates the driving tour
Source: Volpe Center



The colored numbers illustrate how the driving tour might be incorporated into the wayfinding program, allowing park visitors to visit battlefield sites chronologically if desired. The same sign also provides more general directions to the nearest park unit, using the color of that unit as a new background.

3.7 Conclusion

The project team recognizes that signage at any NPS unit is an effort that needs continuous support from park leadership and partners. As the battlefield grows and park management objectives evolve, signage will need to change accordingly. While NPS signage in Virginia requires special efforts beyond typical NPS UniGuide signs, the near-term actions defined in this chapter can be implemented immediately and contribute to the foundation of a strong signage program. The long-term solutions involve financial and professional commitment and will be much easier to accomplish once the near-term actions have been completed.

Regardless of the immediate outcomes of VDOT's ongoing wayfinding pilot test, the project team recommends that PETE staff work closely with VDOT, NPS, and the Eastern Federal Lands Highway office of FHWA to establish a clear understanding of the options for NPS UniGuide standards for National Parks in the state of Virginia, including signs on state ROW.

4 Traveler Information Strategies

High quality traveler information assists prospective visitors in making travel decisions such as route, departure time, parking options, and desired destinations. Access to such information supports a positive visitor experience. The PETE website provides driving directions with GPS coordinates to Grant's Headquarters at City Point, Eastern Front, Five Forks Battlefield, and Poplar Grove National Cemetery. Providing additional traveler information for these and other selected PETE sites could help visitors to better understand their travel options.

Strategies to improve traveler information to PETE sites include 1) revising the travel directions on the PETE website; 2) developing mobile device applications; 3) developing quick response (QR) codes for use on mobile devices; and, 4) developing a Regional Trip Planner (RTP). The first strategy offers near-term, low-cost improvements, while the latter strategies include longer-term, more capital intensive methods to disseminate traveler information.

4.1 *PETE website revisions*

One way to improve travel information for visitors to PETE is to revise the website content to provide information on the various ways to access PETE sites. Currently, the website provides driving directions for visitors traveling on I-95 and I-85. PETE may consider also providing bicycling and walking directions to City Point and the Eastern Front Battlefield from nearby areas, such as downtown Hopewell or Fort Lee to raise awareness of these travel options. For example, downtown Hopewell is located approximately one mile from the City Point Unit. Visitors could be encouraged to travel by bicycle or foot along the residential roads connecting these areas. Similarly, Fort Lee is adjacent to the Eastern Front Battlefield. Providing bicycling and walking directions may enhance the visitor experience by improving information about the range of opportunities.

PETE could also consider providing driving directions from the downtown areas or other nearby attractions, assisting visitors coming from other places around the region and not only arriving via Interstate. This also helps provide additional access opportunities, may support more visits from local or regional residents, and could be beneficial to the local tourist economy.

As PETE considers new transportation opportunities for visitors (e.g. a shuttle system), it should market services through its website and potentially other social media outlets.

Sample additional website content for directions to these PETE sites is included below:

City Point

Bicycling/Walking:

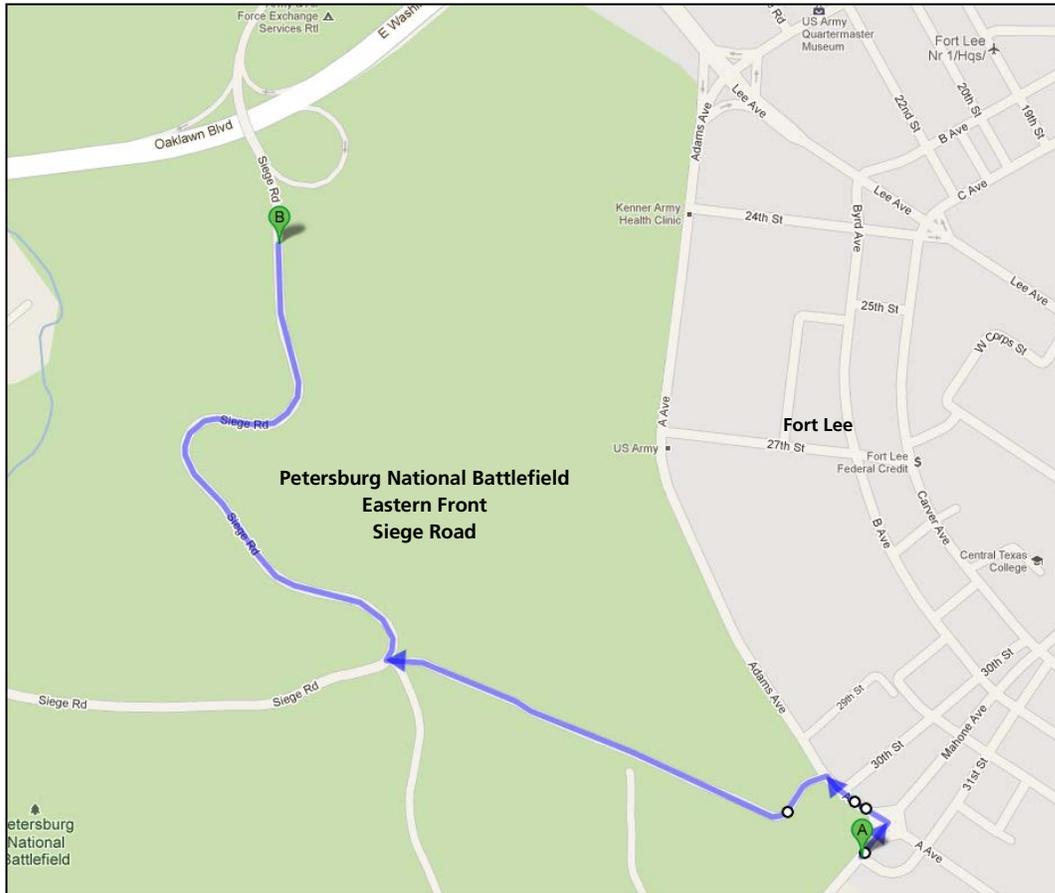
- From downtown Hopewell at North Main Street and East Randolph Road: From North Main Street, turn right onto Appomattox Street. Travel approximately 0.7 miles, turn left at Cedar Lane. Travel approximately 0.3 miles to the City Point entrance at the intersection of Cedar Lane and Pecan Avenue. Sidewalks are available the entire route. However, there are no bicycle lanes.

Figure 25 illustrates walking or biking directions from downtown Hopewell to the City Point Unit.

Figure 26 illustrates walking or biking directions from Fort Lee to Siege Road and trails on the Eastern Front.

Figure 26
Bicycle/walking directions - Fort Lee to Eastern Front

Source: Google Maps 2011



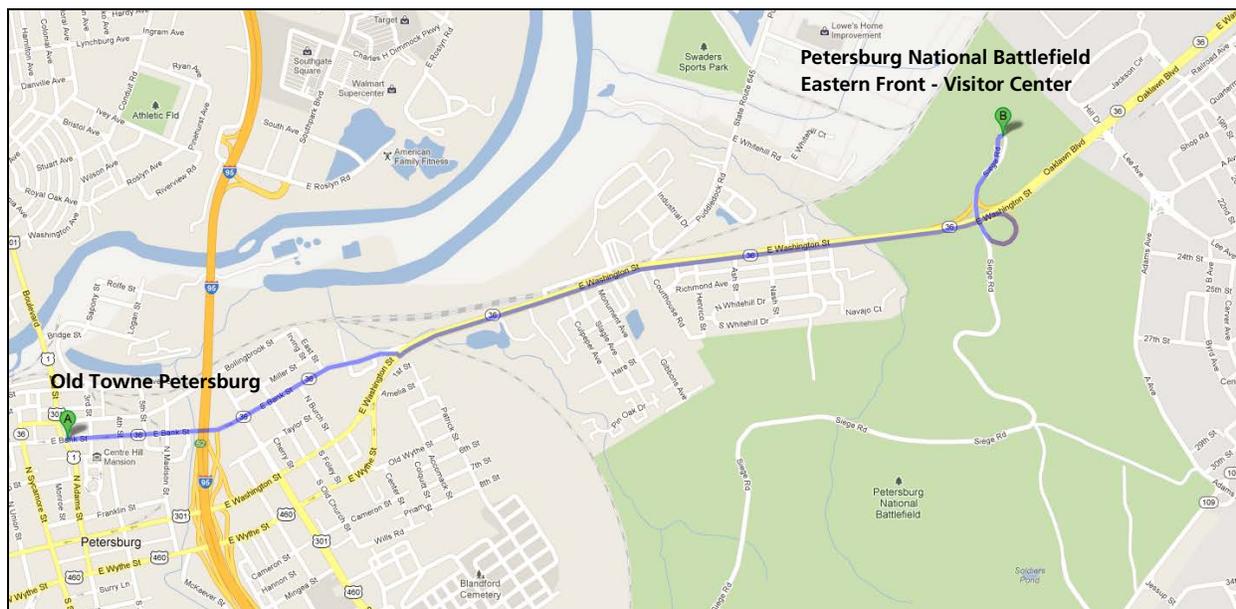
Driving:

- From Old Towne Petersburg: East Bank Street towards 3rd Street, left onto VA 36/E Washington Street for approximately 1.7 mile. Exit onto Siege Road for the Petersburg National Battlefield.

Figure 27 illustrates the driving directions from Old Towne Petersburg to the PETE visitor's center on the Eastern Front.

Figure 27
Driving directions - Old Towne Petersburg to PETE visitors center

Source: Google Maps 2011



4.2 Mobile device applications and Quick Response codes

NPS has long used a variety of media, including telephone recordings, podcasts, audio, and video to provide site interpretation to visitors. The development of mobile device applications (apps) and Quick Response (QR) codes, to provide both interpretation and GPS-enabled wayfinding capabilities presents a new direction in the use of media to access, experience, and travel to and through public lands. An app is a computer software program designed to run on internet, wi-fi, and/or GPS-enabled mobile hand held devices like Smartphones, iPods and iPads. A QR code is a two-dimensional, matrix bar code used to store information that can be decoded at high speeds. QR codes are being used by the NPS mostly for interpretation but can also support wayfinding and site orientation for visitors.

Mobile Device Applications

A growing number of NPS units are developing mobile device apps to disseminate information to visitors. In partnership with the Great Smoky Mountains National Park, the Great Smoky Mountains Association created the nation's first NPS app. The free app provides park guidebooks, road maps (including off-line park road and route maps for use when a cellular signal or wi-fi is not available), and other material.

Apps exist for large park units such as Zion, Grand Tetons, and Gettysburg National Military Park with annual visitation in the millions, as well as smaller units such as the Cane River Creole Historic Site with roughly 25,000 annual visitors. Currently, several apps provide visitors with historical,

cultural, or environmental interpretation at NPS units. In addition, static NPS park map apps are available for use on mobile devices.

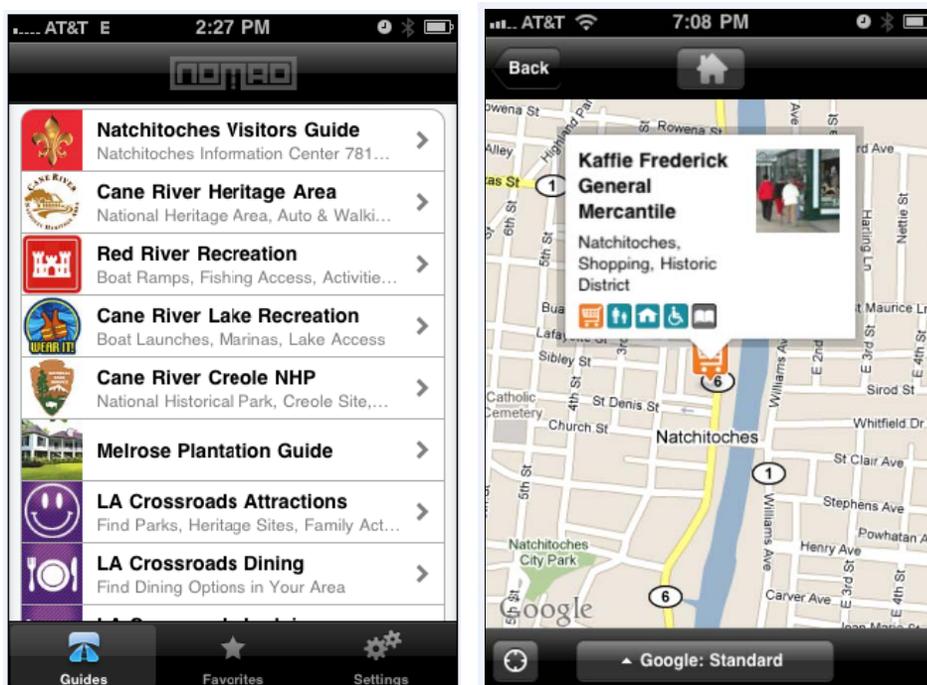
Two examples of recently developed apps are described briefly.

Explore Louisiana Crossroads Visitor Guide

In 2011, the Explore Louisiana Crossroads Visitor Guide (Explore Louisiana) app was released in the central Louisiana region that stretches from the Mississippi River to the Texas border. The area encompasses numerous historic, cultural, commercial, and recreational features, including the Cane River Creole National Historic Park (Cane River Creole). The app, developed by a group of ten partners from federal, regional, local, non-profit and private sector partners⁵⁷ provides pre-trip planning and onsite information for multiple area sites, including historic, natural, and recreational destinations.⁵⁸ The app provides detailed maps, information about recreational sites, facilities information such as locations of restrooms and docks, safety information, and other park specific and regional content. The Explore Louisiana app is available on-line for free. Figure 28 displays the Explore Louisiana Crossroads Visitor Guide app screenshots of menu of locations, and the mapping component.

Figure 28
Explore Louisiana Crossroads Visitor Guide app screenshots

Source: Cane River Creole National Historic Park



⁵⁷ Partners include: US Army Corps of Engineers, Natchitoches Area Convention and Visitors Bureau, City of Natchitoches, Association for Preservation of Historic Natchitoches, Melrose Plantation, Cane River Waterway Commission, Red River Waterway Commission, Cane River Creole National Historical Park, Cane River National Heritage Area, and the Natchitoches Area Chamber of Commerce.

⁵⁸ Cane River Creole National Historic Park. Accessed April 25, 2011. <http://www.nps.gov/cari/parknews/cane-river-creole-nhp-joins-iphone-app.htm>

Gettysburg Battlefield App

In November 2010, the Civil War Trust (CWT) released its first National Battlefield app focused on the Devil's Den and Little Round Top sections of the Gettysburg Battlefield. The Smartphone-based, GPS-enabled app provides driving directions to battlefield locations, as well as on-site interpretation of significant historical features. A GPS enabled map forms the core of the app, displaying tour stops and the visitor's location. A "find it" tab provides a text description of how to drive from place to place.

Figure 29 displays a screenshot of the Gettysburg Battle app.

Figure 29
Gettysburg Battle app screenshot

Source: Civil War Trust



CWT is in the initial stages of developing a Petersburg Battlefield app.⁵⁹ The Petersburg app contains four tour options: the Main Unit, Petersburg National Battlefield; the City of Petersburg; the Petersburg Campaign: August 1864-February 1865; and the Final Offensive. The tours include the existing PETE driving tour and expand upon locations in the Home Front and the Western Front. Each tour provides the user with a GPS-enabled map of the battlefield. The user locates themselves in relation to "Virtual Signs" and "Points of Interest" (POI) displayed in the app. The Virtual Signs and POIs allow the user to access information specific to that location on the battlefield. The GPS based mapping feature is a highlight of the apps capacity to provide reliable wayfinding throughout the area.

The Virginia Department of Transportation (VDOT) is the principal underwriter for the development of the Petersburg app. CWT is coordinating with the NPS and other stakeholders who have provided assistance with subject matter experts, historical photography, and on camera talent for video production. CWT expects to release the Petersburg app in summer, 2012.

⁵⁹ The CWT Petersburg Battlefield App was released in September, 2012.

Given that CWT is already developing a Petersburg app, PETE may consider exploring a formal partnership with CWT, especially with regard to any future iterations of the program. PETE might be able to officially sponsor the app in return for including NPS branding details such as the NPS logo and information for prominent stop locations like PETE visitor contact stations. PETE could also promote the CWT Petersburg app on its website and at visitor contact stations, while continuing to provide its own driving tour maps and other materials. Eventually, if the CWT Petersburg app grows in use and popularity, PETE may consider a further shift to the CWT Petersburg app for visitor driving tours.

PETE could also consider amending the existing driving tour materials to follow one of the tours available on the CWT Petersburg app. A consolidation, or at the least similarity between routes, for the driving tour options may reduce visitor confusion.

The CWT Petersburg app provides interpretation and GPS-based mapping that supports the visitor experience and may reduce frustration associated with getting lost. A PETE partnership CWT on the Petersburg app and promotion of the tool may provide greater access to PETE resources for visitors who do not attend seasonally sponsored tours or programming.

Quick Response Codes

QR codes are similar to bar-codes and have been used in the United States for several years to track auto parts and overseas for commercial purposes.⁶⁰ They are embedded with universal resource locators (URLs) that link to existing content such as websites, videos, audio recordings, etc. QR codes are read by smartphone cameras using QR reader software. They can be developed quickly using readily available free software using a computer and standard printer, and have numerous uses for commercial and educational purposes. They may link to advertisements and are used for interpretive purposes at museums across the country including New York's Museum of Modern Art, the Smithsonian National Museum of Natural History, and within the NPS to provide visitor information.

Several NPS sites use QR codes primarily for interpretation (e.g. linking to podcasts, videos, etc.), yet if linked to websites that provide mapping, they could support wayfinding. Interpretive uses of QR codes include Fort Smith National Historic Site, Pictured Rocks National Lakeshore, and Fort Vancouver National Historic Site. For example, Fort Smith uses a QR code on the entry signage to provide visitors with a brief orientation video about the site layout.⁶¹ Pictured Rocks uses QR codes to supplement the audio tour, and Fort Vancouver uses them to facilitate interactive storytelling.

Figure 30 illustrates the use of a QR code on an audio tour poster at Pictured Rocks National Lakeshore, MI.

⁶⁰ HuffPost Tech. In a Nutshell: What Are QR Codes? Accessed December 29, 2011. <http://www.switched.com/2010/06/21/in-a-nutshell-what-are-qr-codes/>

⁶¹ Arkansas Department of Parks and Tourism. QR Codes Debut at Fort Smith National Historic Site. Accessed December 29, 2011. <http://www.visitmyarkansas.com/dena-woerner/default.aspx?id=622>

Figure 30
Pictured Rocks National Lakeshore poster featuring a QR Code
Source: Pictured Rocks National Lakeshore



Fort Vancouver Mobile Pilot Program

Began in 2008, the Fort Vancouver Mobile (FVM) pilot program is a partnership with several sponsors, primarily between Fort Vancouver and the Creative Media and Digital Culture (CMD) Department at Washington State University-Vancouver. The project has developed a free smartphone app that utilizes QR codes at locations throughout the park to connect visitors to the significance of the park's natural, cultural, and historic resources. The app features an interactive video and partial gaming experience for the Fort Vancouver site. The FVM app incorporates QR codes for marketing purposes (e.g. to send visitors to the website where the FVM app can be downloaded) and is triggered by GPS location, so that when people arrive in a particular spot, video and audio information are pushed to the user to provide interpretations and re-enactments significant to the site.⁶² The purpose of FVM is to provide interpretation. It does not assist in wayfinding.

Figure 31 provides an early screenshot of the FVM App and QR code reader feature.

⁶² Personal communication with Brett Oppergaard, FVM Project Manager, January 13, 2012.

Figure 31
Fort Vancouver Mobile App Screenshot

Source: YouTube



The use of QR codes should be bound by a clearly defined purpose of when, how, and what information they provide. It can be tempting to over-use QR codes, because of their low cost and easy production. However, visitors may be reluctant to use the codes if they are over-featured or ineffectual, such as QR codes that lead to obvious, outdated, or incorrect information. While the codes themselves are easy to produce and maintain, the underlying websites and information to which they point must also be regularly maintained. QR codes require careful onsite placement so as not to detract from the historic, cultural, and natural resources being preserved and interpreted onsite.

More appropriate uses of QR codes include as a marketing tool where signage is not available (e.g., to direct visitors to download a more comprehensive application), or to enhance existing interpretation by providing information not covered by static signage. They may also be used as part of a video/audio tour or to supplement interpretive elements that depend on timing or the environmental context for conveying an experience to the visitor. For example, Fort Vancouver displays a historic cannon that due to age is only fired twice a year. A QR code on nearby signage links to a video of the cannon in action, providing an opportunity for visitors to experience the site at other times of year.

There may be opportunities for PETE to use QR codes in both of these ways – to provide directions or other specific visitor services information, in addition to expanded interpretation at some sites, especially those in the Western Front, where there is less opportunity for interaction with park rangers. As one example, PETE could provide a QR code at the Eastern Front and Five Forks sites that links to existing trail maps. The PETE website currently provides downloadable PDFs of these maps. However, most mobile devices cannot view PDFs without PDF viewer software. However, if

PETE converted the PDF files to image files (JPEG, TIFF, etc.) available on the website, a QR code could be developed to link to them, making the maps viewable on mobile devices.

Mobile Device Applications and QR Code Implementation

There are advantages and challenges to implementing mobile apps and QR codes, some of which are common to both approaches.

Mobile Device Applications Advantages

Developing a mobile app would provide PETE with advantages such as enhancing interpretation and providing visitors with convenient site information. The CWT Petersburg app, as described above, will provide traveler information and interpretation to educate visitors of the unique history and context of the site, at any time. Further involvement and partnering with CWT to enhance the app could be a good opportunity for PETE to enhance the availability of interpretive and wayfinding information.

Use of mobile device applications may also provide an opportunity to connect to a new and younger visitor demographic. For example, the America's Great Outdoors (AGO)⁶³ Youth Report outlines ways to make the outdoors more relevant to youth. These include using innovative tools, such as nature-based mobile phone applications, as a means to bridge the gap between technology and the outdoors.⁶⁴ Ultimately, the main advantages of mobile applications both for PETE and potential visitors are the efficient and convenient delivery of information. The ability to use apps most anywhere at anytime is a key reason to adopt the technology.

QR Code Advantages

Advantages to using QR codes include their low cost, durability, and potential to add value to site interpretation. QR codes are generated using free software and can be printed or displayed on nearly any surface that can be read by a smartphone. Once they are generated, the codes themselves need no updating unless the embedded URL changes. Using QR codes can add value to the interpretive experience by providing flexibility for visitors to learn at their own pace or outside of a regularly scheduled event. QR codes also have the potential to provide information in a variety of formats, by linking to websites that provide video or audio. This expands interpretation opportunities beyond just a static sign.

Mobile Device Applications and QR Code Challenges

There are some technological challenges for deploying and using mobile apps and QR codes. Using QR codes and many apps⁶⁵ requires a reliable and robust cell phone or wireless internet connection, which may be more challenging for park units located in rural areas without a strong signal.

Another challenge for using QR codes is that the webpage to which the QR code points must be designed to be viewed on a range of devices (e.g. smartphones, iPads, etc.). This may increase web-design costs for the park units to develop new websites (or re-design existing websites) that are designed to be viewable on both large desktop monitor screens and small mobile device screens.

When considering mobile apps or QR codes, PETE must consider that they only work on smart phones, which may not be used widely by all visitors. In order to provide broader access to all visitors, PETE might consider renting or lending mobile devices for visitors to use while at the park. Given the potentially significant investment involved with developing mobile applications or

⁶³ In 2010, President Barack Obama initiated the America's Great Outdoors Initiative to promote and support innovative community-level efforts to conserve outdoor spaces and to reconnect Americans to the outdoors. The initiative calls on several federal agencies including the Department of the Interior to fulfill the goals of the program. For more information see: <http://americasgreatoutdoors.gov/>

⁶⁴ America's Great Outdoors: A Promise to Future Generations. February 2011. Youth Report P. 8, accessed January 19, 2012. <http://americasgreatoutdoors.gov/files/2011/02/AGO-Youth-Report-2-7-11.pdf>

⁶⁵ Apps can be designed to function with or without a connection to cell phone or wireless internet signal.

enhanced websites using QR codes, PETE should also consider the rapidly shifting market and the life span of the technology when evaluating the costs and benefits of implementation.

4.3 Regional Trip Planner

A Regional Trip Planner (RTP) is a visitor-oriented website that provides travel directions, travel options, area amenities, and region specific destinations and attractions. It can also provide opportunities for joint marketing or “branding” to support regional identity. An RTP for the Petersburg area could promote the significant recreational, cultural, and historic opportunities at PETE and within the region. RTPs have been developed for other NPS units, often in conjunction with local partners.

Figure 32 demonstrates an example of an RTP developed in partnership with the National Park Service for the Schuylkill River National and State Heritage Area in Pennsylvania. The website allows users to input preferences regarding which region to visit, individual interests (e.g. nature, history, etc.), and desired activities or areas. The RTP provides a customized itinerary based on user input with driving directions provided by Google maps. It also recommends the order in which to visit multiple destinations.

Figure 32
Schuylkill River National and State Heritage Area Online Trip Planner

Source: Schuylkill River National and State Historic Area



Regional Trip Planner Implementation

PETE and area partners could consider jointly developing an RTP to provide advanced information to visitors about the PETE sites and other nearby attractions. Potential partners

include the Petersburg Area Regional Tourism or the Petersburg Chamber of Commerce. An RTP could benefit PETE and area partners by providing directions and Civil War related thematic information on area sites such as the Battle of the Crater, South Side Depot, and Poplar Grove National Cemetery.

The cost of developing an RTP ranges widely, depending on the overall site structure, graphic design, database development, programming specifications, software requirements, and deployment. Development of a standalone, visitor-oriented website could range from \$50,000 to \$200,000, depending on the functionality and level of interaction that the site provides. For example, a website that processes user transactions (e.g. purchases) or provides user outputs (e.g. tailored itineraries) would be more expensive. In addition to development costs, an RTP requires regular maintenance and updating. The cost of basic maintenance is estimated at \$10,000 per year but may vary depending on the site design.

An RTP should meet the communication needs of PETE and should not significantly add to existing staff workload. Partnering with another entity that already provides recreation and destination based information might be an opportunity for the partner to manage and maintain the site with updates from PETE staff as needed.

There are many benefits to partnering with other agencies in the development of an RTP, such as shared costs and maintenance and enhancing regional character. However, partnerships require close coordination to make sure all member needs are met. As such, traveler information should relate to the operating context of PETE and the needs of area partners. For example, PETE may want to promote shuttle tours, while a partner may want to highlight available commercial establishments. The methods of providing traveler information under a partnership model should be flexible enough to accommodate the needs of PETE while promoting the overall Petersburg region.

Additional information about potential funding sources for traveler information strategies (as well as other strategies discussed in this study) is provided in Chapter 7.

5 Bicycle Access to PETE

This chapter discusses strategies to improve bicycle roadway safety, signage, and access to PETE sites. While bicycling is not currently a heavily used mode of transportation in the study area, there are opportunities to improve cycling conditions in and around PETE. The area around PETE includes both urban and suburban contexts; in general, the urban areas provide more opportunities for bicycling due to the shorter distances among destinations. PETE sites at City Point and the Eastern Front are near residential and commercial areas in Hopewell and Petersburg, compared to the rural character of sites on the Western Front.

Overall, there are few existing bicycle amenities, (i.e. bicycle lanes, signage, and parking) around the region or within the immediate surroundings of PETE sites. Speed limits and roadway widths on the surrounding roadways vary, making bicycling safer in some locations than others. On PETE property, Siege Road and portions of Flank Road within the park boundary have a posted speed limit of 25 miles per hour (mph). On roadways outside of PETE boundaries, posted speed limits range from 25 MPH to 35 MPH; however, actual travel speeds may be higher.

In general, perceptions of roadway safety affect decisions of whether to bicycle for recreation or transportation. Many people feel safer and more comfortable riding on a dedicated facility (such as a bicycle lane)⁶⁶ on streets with low traffic speeds, and for relatively short distances (two miles or less).⁶⁷ The strategies described in this section represent small steps that take these criteria into consideration and may help to encourage bicycle travel to and through PETE. For example, improving on-road bicycle facilities and signage may increase bicycle use and can improve safety for both motorists and bicyclists. Promoting bicycle infrastructure could represent cost-effective ways for PETE to improve visitor experience to the Eastern Front and Western Front from nearby destinations in Hopewell and Petersburg.

The strategies build from the recommendations contained in the 2003 Tri-Cities Area Bikeway Plan (Bikeway Plan).⁶⁸ Proposals in the bikeway plan have undergone some regional analysis and have some buy-in, and therefore, represent a starting point for local bicycle project planning considerations. PETE could partner with the cities of Hopewell and/or Petersburg to advocate for the mutually beneficial design and construction of on-road facilities;⁶⁹ the partnership between the park unit and the municipalities may open up more opportunities for leveraging funding sources to finance project planning or construction.

Any of the on-road bicycle infrastructure options discussed in this chapter will require further analysis and design, as well as identification of appropriate funding sources. This chapter introduces several bicycle related options and provides some basic information about funding and working with local, regional, and state governments to advance project implementation. Note that the signage options discussed in this chapter refer specifically to signs that would improve roadway safety and provide information to bicyclists, as opposed to more general strategies for informational and directional signage for access to PETE sites, which are discussed in Chapter 3.

66 City of Chicago's Bicycle Ambassadors Program. Accessed January 24, 2012. http://bicyclingambassadors.org/pdf/flyers/bike_lanes_faq_en.pdf

67 Alliance for Biking and Walking. Bicycling and Walking in the United States 2012 Benchmarking Report. P. 23 Accessed January 24, 2012. <http://peoplepoweredmovement.org/site/images/uploads/2012%20Benchmarking%20Report%20%20-%20Final%20Draft%20-%20WEB.pdf>

68 *Tri-Cities Area Bikeway Plan Update (2003)*. Accessed June 20, 2011 <http://www.craterpdc.org/pdf/BikewayPlan2003.pdf>. (For more information see Section 1.3 Transportation, P.23)

69 For a description of bicycle infrastructure facilities see the National Association of City Transportation Officials Urban Bikeway Design Guide <http://nacto.org/cities-for-cycling/design-guide/>

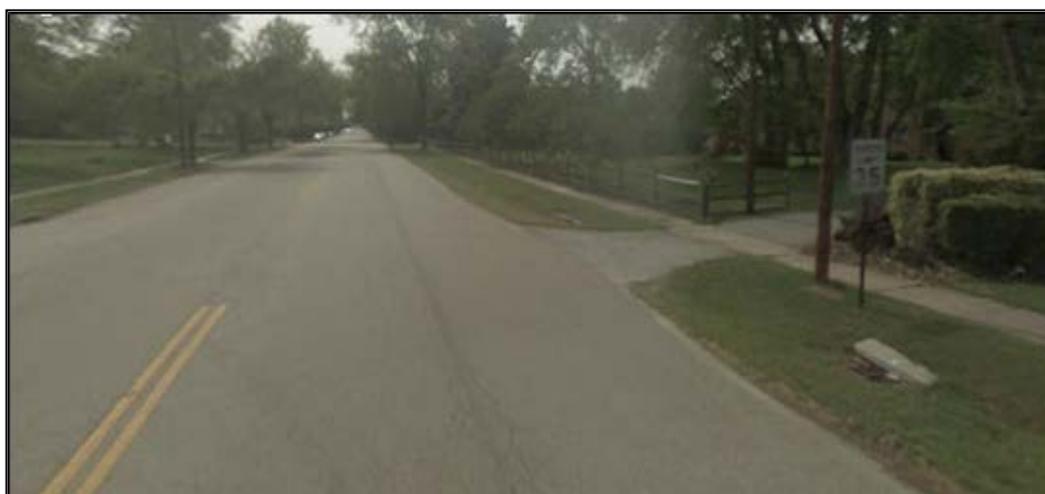
5.1 Bicycle Access Strategies

Promote developing bicycle connections to City Point

There may be opportunities to develop bicycle connections between the Hopewell downtown area and Grant's Headquarters at City Point. With proximity to downtown Hopewell, City Point represents one of the relatively urban settings for PETE sites. The roads approaching City Point are relatively low speed (35 mph on Appomattox Street), and primarily residential, making them suitable for bicycle travel, and the distances are relatively close at approximately 1.2 miles to downtown Hopewell. City Point is also not far from other bicycling destinations such as the riverfront trails in Hopewell.

Figure 33 illustrates a typical roadway section on Appomattox Street approaching City Point.

Figure 33
Bicycle connections to City Point – Appomattox Street at Fort Street, Hopewell, VA
Source: Google Maps (2009)



The Bikeway Plan recommends a bicycle lane from South Mesa Drive into the downtown area, at which point a signed bicycle route takes cyclists along Appomattox Street to Cedar Lane to City Point, along Brown Avenue and back to the East Broadway area.⁷⁰ A portion of this loop route would have a dedicated bicycle lane, while the rest would have identified signage but no other dedicated facilities or infrastructure. This route intersects with the City Point Open Air Museum Walking Tour⁷¹ through Old Town of City Point. The route could also be expanded to connect with the NPS public dock on the James River, continuing along the old railroad alignment along the Appomattox River shoreline into downtown Hopewell.

To encourage visitation to City Point by bicycle, PETE could work with Hopewell to pursue bicycle lanes and shared lane markings where appropriate, bicycle route and “share the road” signs along Appomattox Street and Cedar Lane to City Point, and bicycle parking at City Point and throughout the downtown area to accommodate visitors. Feasibility and implementation considerations

⁷⁰Tri-Cities Area Bikeway Plan Update (2003). Accessed June 20, 2011 <http://www.craterpdc.org/pdf/BikewayPlan2003.pdf> P.25-26

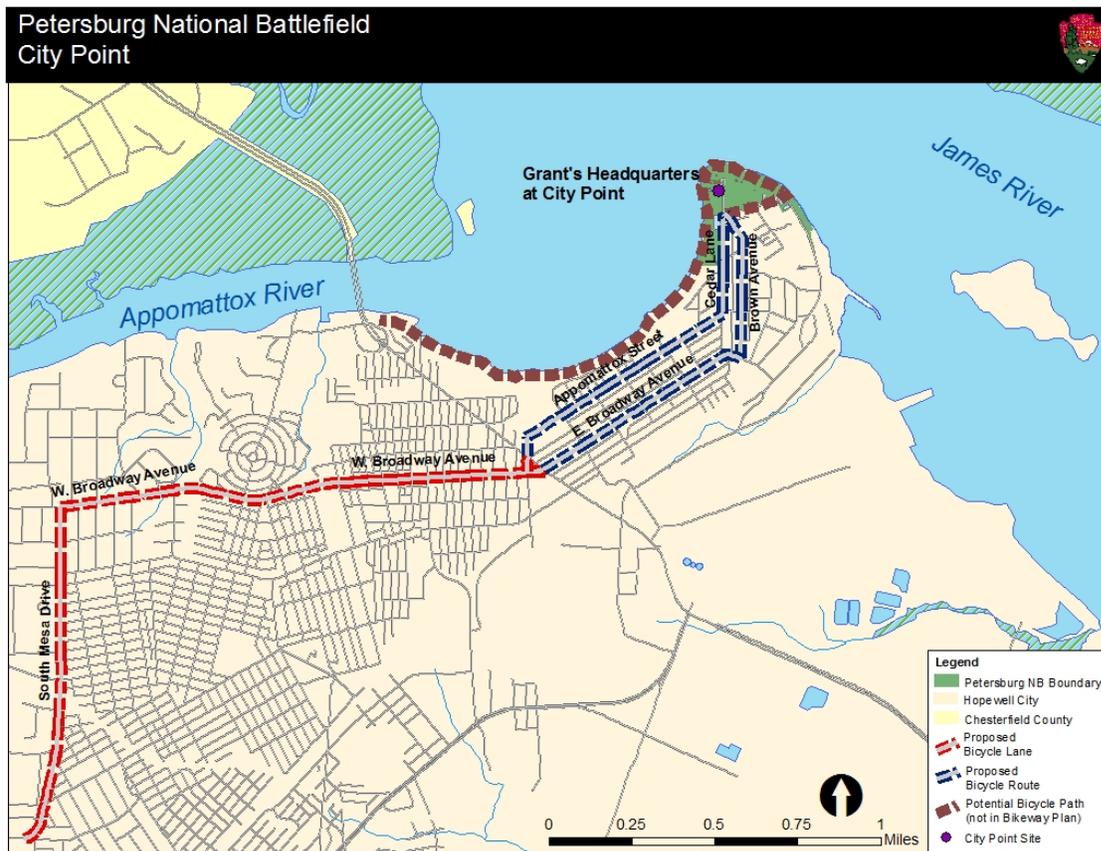
⁷¹ The City Point Open Air Museum Walking Tour is a self-guided walking tour that passes through 25 sites, including Grant's Headquarters at City Point. For more information see the Petersburg Area Regional Tourism website at: <http://www.petersburgarea.org/index.aspx?page=43>

include determining the exact route and appropriate bicycle facilities; obtaining, locating, and installing potential bicycle parking and signage; painting the markings and/or striping bicycle lanes; and identifying, obtaining, and installing bicycle parking.

Figure 34 illustrates potential bicycle connections to City Point.

Figure 34
Bicycle connections to City Point

Source: Volpe Center and the Tri Cities Bikeway Plan (2003)



Integrate Eastern Front recreational trails with the Siege Road tour

In order to combine the recreational and interpretive experiences and promote bicycle visitation, PETE could consider integrating the Siege Road tour with the Eastern Front multi-use trails and hike/bike trails. One option would be to add interpretation points along the trails either through static signage or electronic maps containing interpretive content, available for download and printing. Another option, either in addition to, or instead of, interpretation along the trails, would be to add signs along Siege Road and some trails that assist users in moving between the trails and the interpretive sites along Siege Road. Signage along Siege Road could be designed in a context sensitive manner, and at the scale of pedestrians and cyclists to blend with the natural surroundings.

PETE could implement this strategy alone.

Promote bicycle connections between the Eastern Front and Fort Lee

Two proposed routes in the Bikeways Plan provide direct connections to the Eastern Front with commercial districts and residential populations in Petersburg and Fort Lee. The area is relatively urban; however, there are few bicycle amenities (e.g. bicycle lanes, bicycle parking). Roadway widths and ability to accommodate bicycle facilities vary, with some areas having: no shoulders or additional travel lane width; some existing shoulders; or wide travel lanes that might be able to accommodate a five-foot bicycle lane. Speed limits range from 25 mph (Wythe Street and South Crater Road) to 35 mph (Washington Street and Hickory Hill Road). In locations where travel lanes are relatively wide but are insufficient to accommodate dedicated bicycle facilities (e.g., bicycle lanes), “share the road” signs or shared lane markings (e.g. sharrows) could be appropriate.

The implementation of these routes would provide valuable connections among the densely populated and growing Fort Lee, trails on the Eastern Front (e.g. Prince George Courthouse Trail), and the visitor center. These routes could serve multiple travel needs for local residents, PETE visitors, and Fort Lee residents, employees, and visitors, seeking recreational or commuter routes.

The first related project is a proposed bicycle lane traveling west on Washington Street and east along Wythe Street.⁷² The bicycle lane would run along the northern border of the Eastern Front past the entrance to the PETE visitor center. The road network in this area has one-way traffic circulation, going west along Washington Street and east along Wythe Street. The bicycle lane would run from the beginning of the one-way system in both directions. Providing access to Fort Lee, Hopewell and Central State Hospital, this would be the City’s primary east-west bicycle commuting corridor.⁷³ If traffic, roadway width, or existing travel speeds on Washington Street make this route impractical, a route on South Crater Road could connect to Siege Road and may provide more favorable roadway characteristics and traffic conditions (i.e. lower speed limit and less traffic).

Figure 35 illustrates typical roadway section on Washington Street approaching the northern intersection of Siege Road, with no shoulder (left), and South Crater Road approaching the south intersection with Siege Road, with some shoulder and a sidewalk (right).

Figure 35
Bicycle connections to Eastern Front and Fort Lee – Washington Street (left) and South Crater Road (right), Petersburg, VA

Source: Google Maps (2009)



⁷² *Ibid.* P. 21

⁷³ *Ibid.*

The second related project proposed in the Bikeway Plan includes a bicycle route along the southern border of the Eastern Front, connecting Fort Lee and PETE along Hickory Hill Road.⁷⁴ The Bikeways Plan designates this roadway as a valuable connecting thoroughfare between the National Battlefield, Fort Lee, and Prince George County.⁷⁵ This route passes the southern end of Siege Road, connecting to the Attack Road Trail, the Prince George Courthouse Trail, and to Fort Lee at the Mahone Avenue gate. The Bikeway Plan recommends a bicycle route (i.e. designated only by signage); however, a bicycle lane on the route may be more effective at encouraging use, if additional analysis determines it is feasible. Figure 36 illustrates potential bicycle connections between the Eastern Front and Fort Lee.

PETE could work with Petersburg Public Works Department and Fort Lee to develop these projects. Feasibility and implementation considerations include determining the route and appropriate bicycle facility type, locating and installing potential bicycle parking and signage, and constructing the bicycle facility.

There may also be opportunities for PETE to partner with Fort Lee's Family and Morale, Welfare and Recreation (MWR) program. The MWR program offers a variety of community, entertainment, youth, and recreation services to soldiers and their families.⁷⁶ The Fort Lee MWR offers recreational mountain bike tours (with bike rentals) of Battlefield Park. Though these tours are not replacing motorized vehicle travel, they may represent some interest in providing bicycle rental or share opportunities to Fort Lee soldiers and families.

⁷⁴ *Ibid.* P. 22

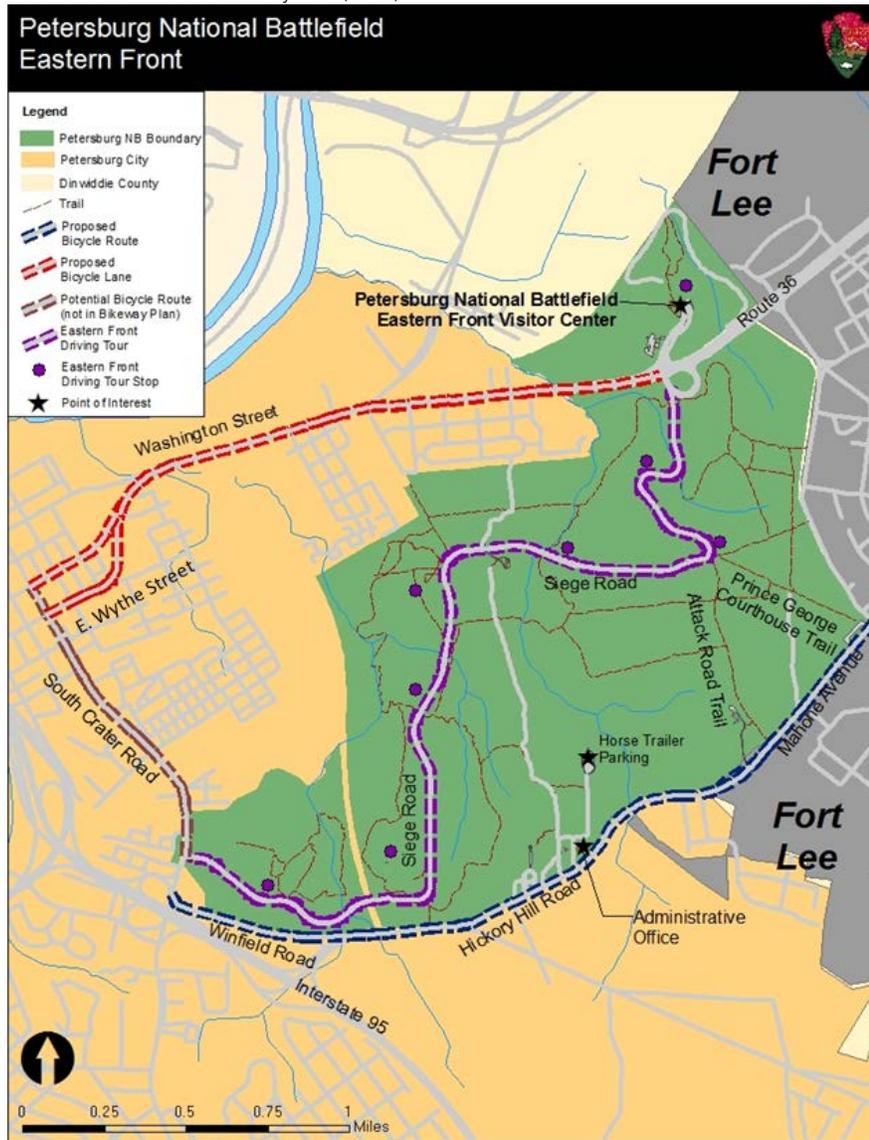
⁷⁵ *Ibid.*

⁷⁶ Fort Lee, Family and Morale, Welfare and Recreation Program. Accessed February 6, 2012. <http://www.leemwr.com>

Figure 36

Potential bicycle connections between the Eastern Front and Fort Lee

Source: Volpe Center and the Tri Cities Bikeway Plan (2003)



Develop a bicycle tour for Western Front

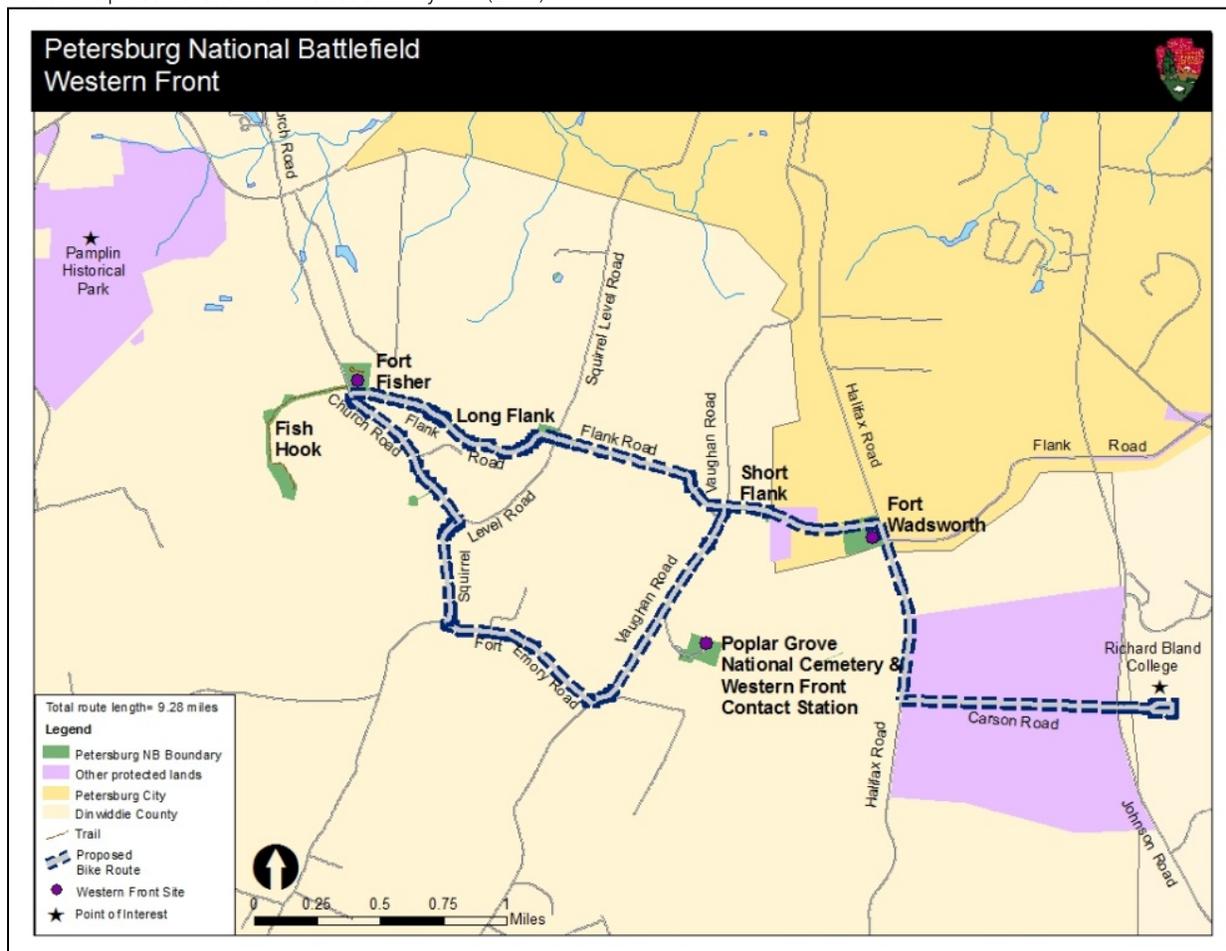
As a way of expanding and continuing to integrate recreation and interpretation, PETE could consider developing a bicycle tour through the Western Front sites. The tour route is located in a more rural and suburban environment and would be geared toward recreational cyclists who may be willing to drive to a “park and ride” location to ride the tour loop and visit battlefield sites. The route builds from existing proposals in the Bikeways Plan and would promote bicycle visitation to Fort Wadsworth, Poplar Grove National Cemetery, and Fort Fisher, using Richard Bland College as an origin point, or “park and ride” location. Developing a shared parking agreement between PETE and Richard Bland College could provide community partnership benefits for expanding interpretation at PETE and represent ongoing educational opportunities for Richard Bland students.

The Bikeways Plan recommends a signed bicycle-route along Route 677/Carson Road to connect Richard Bland College with South Johnson Road. This route could be expanded west to create a loop tour of PETE sites. It would continue west on Route 677/Carson Road turning right on Route 604/Halifax Road; left on Route 676/Flank Road to Fort Wadsworth; left on Route 675/Vaughan Road to Poplar Grove National Cemetery; right on Route 741/ Fort Emory Road to Fort Fisher; and returning Flank Road to Route 676 to Halifax Road to Route 677/Carson Road to Richard Bland College. The total route length is 9.28 miles.

Figure 37 illustrates the Western Front bicycle tour route.

Figure 37
Bicycle tour for Western Front

Source: Volpe Center and the Tri Cities Bikeway Plan (2003)



This effort would require developing several partnerships. First, PETE would need to work with Richard Bland College to establish conditions under which visitors could use the college parking lot as a starting destination for the tour. PETE would also need to work with the Tri-Cities MPO and Virginia Department of Transportation (VDOT), which has jurisdiction over all of the roadways located in Dinwiddie County. PETE, the MPO, and VDOT would work together to determine the route and appropriate bicycle facility type, locate and install any bicycle parking and signage, and construct the bicycle facility.

To further support this effort, PETE could consider developing an on-line bicycle route map, identifying interpretation locations (either through GPS based coordinates or landmarks) and make the information available for download and printing by prospective touring cyclists. This would reduce some of the need for wayside signage approval, installation, and maintenance.

5.2 *Coordination with local, regional, and state governments*

The bicycle projects proposed above – with the exception of the integrated Eastern Front recreational trails and Siege Road tour – require PETE to work with the cities of Petersburg, Hopewell, the Tri-Cities MPO, and VDOT.

The Bikeways Plan provides a guide for the development of a regional bikeways network and recommends that each local government develop a plan to prioritize and construct projects. While the cities of Petersburg and Hopewell do not have bicycle-specific plans, they may independently construct bicycle facilities within city limits.

For projects located within the City of Petersburg, such as bicycle connections between Fort Lee and the Eastern front, PETE would work with the Planning, Engineering, and Public Works departments on project-specific proposals. The City of Petersburg is in the process of completing a Comprehensive Plan update that discusses the expansion of pedestrian and bicycle opportunities within Petersburg to improve connectivity between neighborhoods. This could provide a basis for promoting and implementing future bicycle projects. For projects located in the City of Hopewell, such as bicycle connections between downtown Hopewell and City Point, PETE could work with the city's Public Works Department and the City Engineer to further scope and implement bicycle projects.

VDOT is responsible for maintaining roadways within the counties, covering potential projects like the Western Front bicycle tour route and some urbanized areas (depending on the specific roadway). In the study area, it has jurisdiction over roadways in Dinwiddie County. For projects under VDOT jurisdiction, roadway bicycle projects using highway construction funds must first be included in the Virginia Transportation Development Plan. To do this, PETE would first need to contact the local government in which the proposed project would be located to solicit support and identify a project sponsor. Upon identifying sources of project funding and local government and public support, the financially constrained regional Transportation Development Plan could then be amended to include recommendations for bikeway facilities.⁷⁷

VDOT bicycle project criteria require the following:⁷⁸

- The local government, where bicycle facility is located must request the bicycle facility.
- The bicycle facility is located or designed pursuant to a bicycle plan that has been adopted by the local jurisdiction or MPO.
- The bicycle facility design must be coordinated with the local government where the bicycle facility is located.
- The bicycle facility is designed to meet current VDOT guidelines.
- The bicycle facility will have sufficient use in relation to cost to justify expenditure of public funds, or it is a significant link in a bicycle system that is needed for route continuity.
- The construction of the bicycle facility must be concurrent with highway construction.

⁷⁷ Personal communication with Tri-Cities Area Metropolitan Planning Organization (MPO), Director of Transportation. December 14, 2011.

⁷⁸ Tri-Cities Area Bikeway Plan Update (2003). Accessed June 20, 2011 <http://www.craterpdc.org/pdf/BikewayPlan2003.pdf> P.33-34

Additional information about potential funding sources for roadway bicycle projects (as well as other strategies discussed in this study) is provided in Chapter 7.

6 PETE Boundary Expansion

The PETE 2004 General Management Plan (GMP) identifies 12 potential boundary expansion sites totaling approximately 7,238 acres on properties adjacent to and surrounding PETE. The approval of some or all of the expansion would designate the lands as suitable for federal protection, providing the NPS with federal land acquisition authority to preserve and maintain the areas.⁷⁹ Expansion of PETE's boundary and acquisition of any of these sites would require multiple decisions to be made regarding the management of the sites. This section provides information for NPS consideration, on several transportation-related implications of boundary expansion, as it relates to traveler information, signage and wayfinding, site access and parking, and shuttle service.

6.1 *Boundary assessment criteria*

The PETE GMP documents criteria to determine the appropriate sites for boundary expansion. Sites were evaluated based on compliance with the park's authorizing legislation; battle classifications established by the Civil War Sites Advisory Commission (CWSAC); and by the *Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields*.⁸⁰ In addition, each property was assessed for its national significance, integrity, and interpretability. National significance of a site was determined using CWSAC battle classifications. Integrity was determined by the ability of the property to convey significance in terms of location, setting, feeling, and association. Interpretability was determined by a site's "importance of events and the ability to provide visitor access to the site."⁸¹ For all potential sites, PETE concluded each had sufficient interpretability, and thus was considered accessible to visitors.

In addition, the GMP states, "parcels that protect current park resources would be the priority for future acquisition. Development of visitor services and interpretation at these new battlefields would be minimal and include small parking areas, wayside exhibits, trails, and other enhancements to the site."⁸² As stated, it is expected that improvements such as new parking areas at future sites will be minimal, though there will be a need for traveler information and wayfinding signage to new sites, as well as the potential for interpretive signage and recreational trails. For proposed expansion sites that are not adjacent to existing PETE sites – Picket Line Attack, Hatchers Run, Boydton Plank Road, Reams' Station, and White Oak Road – traveler information, signage and wayfinding, and parking and site access considerations will be important considerations.

6.2 *Traveler information, signage, and wayfinding*

The expansion of PETE sites will be accompanied by a need for new directional and wayfinding signage, as well as other forms of traveler information. In addition to understanding how new sites relate to the Petersburg region and historic battle campaign, visitors will also want to know the level of interpretation associated with the site, as well as facilities, access constraints, and travel directions. The PETE website should provide traveler, educational, and interpretative information about each new location, including address, hours of operation, GPS coordinates, things to do, nearby attractions, and what can be found at the site. Information on special events, tours, lectures, and other activities at new locations should also be provided on-line and in printed or other promotional materials. If new wayfinding tools like the Petersburg driving tour application, or other improvements to the driving tour are considered, they should be detailed on the website for visitor use.

79 Petersburg National Battlefield GMP (2004), p. 36

80 Ibid. p. 23

81 Ibid. p.25

82 Ibid. p.35

To assist visitors arriving by car and reduce uncertainty, additional directional roadside signage is recommended at expansion locations. Roadway signage considerations for existing PETE sites are discussed in Chapter 3 and provide a distinction between signage used for motorist guidance to destinations (supplemental signs) and signage specific to driving tours on PETE. The principles and criteria under which signage needs are considered in this section should be applied to future PETE site expansions.

As PETE looks to incorporate new properties, it will need to consider whether any new sites should be included in the recommended driving tour. If it chooses to do so, appropriate materials will need to be updated, such as roadside signage, maps, mobile applications, CDs, and the PETE website.

6.3 *Parking and site access*

Parking and site access issues refer to visitors arriving and exiting a site, parking, and the potential for safety and circulation issues (e.g. congestion, user conflicts among vehicle types or pedestrians and vehicles). Most visitors will continue to arrive to any new PETE site by automobile; further into the future arrival by shuttle service may be possible (see Chapter 2). It is useful for NPS to consider general parking and site access issues for planning purposes, keeping in mind that each site will have specific needs and further analysis will be needed if and when new sites are acquired.

A major component of site accessibility is parking area design, where physical planning, user needs, safety, and natural/cultural resource protection are all important considerations. Physical planning relates to the size, configuration, and orientation of the parking area. Understanding user needs is essential to providing the appropriate number and type of parking spaces in addition to related access facilities (e.g. crosswalks, bicycle racks, shelters, and restrooms). Safety issues include conflicts between users (vehicles, pedestrians, cyclists, equestrians) or other hazardous conditions such as blind spots, inadequately sized pull off areas, turn lanes, and difficult approaches or exits that may result from site context (e.g. existing vegetation or winding roadways leading to safety concerns). Cultural and natural resource considerations also factor into parking and site access considerations – for example, viewshed protection, landscape preservation, or sensitive areas such as wetlands that are unsuitable for development.

The following questions provide a general sense of potential parking development and site access considerations for future PETE sites for design, safety, and resource issues.

Physical planning

- Does the location of the parking facilities on the site support visitor experience relating to interpretation and education of the historic, cultural, and natural resources at the site?
- Does a parking area impact a viewshed?
- What is the minimum or maximum number of vehicles accommodated at a site, including passenger sedans, recreational vehicles, horse trailers, motor homes, motorcycles, bicycles, or other vehicles? Are there limitations to the types of vehicles that can be accommodated?
- What is the most appropriate parking stall configuration at the site: head-in, angled, or parallel parking?
- What parking lot surface materials will be used: asphalt, pervious pavers, crushed stone, grass, etc.? What are the maintenance needs of the materials and lifecycle costs?
- Does the parking area accommodate a variety of vehicle types (including potential shuttles) entering and exiting?

User needs

- Will parking spaces, access ramps, and pathways be provided for travelers with special mobility needs?

- Does the parking area accommodate pedestrian circulation to site resources or amenities for individuals and large groups (if shuttles or tours serve the site) after parking?
- Are pedestrian walkways or signage to be included to guide people to the sites interpretive displays or other amenities?
- Does the parking area accommodate passenger boarding and alighting, and turn-around or pull-through space if a shuttle serves the site?
- What types of vehicles are most likely to use the area? Recreational vehicles? Vehicles with trailers? Others?

Safety

- What volume of vehicles is expected to be entering and exiting the site? Will this number of visitors accessing the area create any safety hazards?
- Does activity at the site create congested roadway conditions or parking in undesignated areas?
- Will turn lanes and/or directional signage be needed to ensure the safety of travelers to and by the site?
- Are safety issues created by pedestrians or cyclists crossings travel lanes for viewing or accessing site resources or amenities?
- Will desired traffic flow conditions be maintained on adjacent roadways?
- Does excessive vehicle speeding happen on the adjacent roadways?
- What blind spots exist approaching or exiting the site?
- Will park maintenance workers, law enforcement officials, and other potential work zone users on the site be safely accommodated?

Cultural and Natural Resources

- Does the placement and aesthetics of parking facilities maintain the integrity and intention of the historical and cultural site resources?
- Are alternative parking surface materials appropriate for use at the site to mitigate potential natural resource concerns (e.g. permeable or semi-permeable materials like gravel, cobble, concrete, wood mulch, brick or other materials that reduce the negative impacts of impervious surfaces)?
- Does parking lot development on the site create storm water management/run-off issues?
- Are wildlife crossing (seasonal or year-round) at or near the site needed to protect wildlife resources?

Shuttle service

As discussed in Chapter 2, PETE may consider providing an interpretive or transportation-based shuttle to provide a tour option, or assist visitors in moving among sites. In terms of possible expansion sites, PETE may consider those that intersect with a chosen shuttle service route (if a service is developed). In such a case, PETE should complete an evaluation similar to that in Chapter 2 to consider shuttle operation characteristics such as route location, duration of tour, number of stops, and the total costs and revenues associated with the service. In addition to these feasibility issues and the design and safety considerations described above, PETE should consider site capacity issues that could result in negative impacts to as a result of a large number of visitors to a site at one time.

7 Funding Opportunities

The following section describes some of the transportation programs and other funding opportunities that may be available to PETE. Recently passed legislation by the U.S. Department of Transportation (MAP-21) sought to consolidate many of the transportation programs that have, in years past, served as a conduit to the NPS alternative transportation programs. The result of the two-year authorization is a simplified collection of funding options for consideration and reduced specificity with regard to the types of transportation systems that may be eligible. In particular, the Federal Transit Administration's (FTA) Paul S. Sarbanes Transit in Parks (TRIP) Program is eliminated, along with Scenic Byways and other discretionary programs.

Most significantly for PETE and the NPS, MAP-21 abolished the Federal Highway Administration's (FHWA) Federal Lands Highway Program (FLHP), which currently provides funding to NPS through both the Park Roads and Parkways Program and the Public Lands Highway Discretionary (PLH-D) Program. In place of FLHP will be both a Federal Lands Transportation Program (FLTP) and a Federal Lands Access Program (FLAP). The application process for FLTP and FLAP has not been defined as of September 2012.

7.1 Federal Lands Transportation Program

The FLTP is a \$300 million discretionary program, of which \$240 million will be allocated to NPS. Projects eligible under FLTP are:

- Program administration, transportation planning, research, preventive maintenance, engineering, rehabilitation, restoration, construction, and reconstruction of Federal lands transportation facilities;
- Adjacent vehicular parking areas;
- Acquisition of necessary scenic easements and scenic or historic sites;
- Provision for pedestrians and bicycles;
- Environmental mitigation in or adjacent to Federal lands open to the public;
- Construction and reconstruction of roadside rest areas, including sanitary and water facilities;
- Congestion mitigation;
- Operation and maintenance of transit facilities;
- Other appropriate public road facilities as determined by the Secretary;
- Any other transportation project eligible under [FLTP] that is within or adjacent to, or that provides access to publicly accessible Federal lands.

7.2 The Federal Lands Access Program

The FLAP provides funds for projects that improve access to federal lands on infrastructure owned by states, counties, and local governments. The bill allocates \$250 million for the FLAP for each year, which is divided by formula to the states based on visitation, federal land area, federal public road miles, and federal public bridges. This formula will result in 80 percent of the funds going to twelve western states, leaving only 20 percent to parks on the eastern side of the country.

The role of the federal land management agencies in decisionmaking under FLAP is limited, as programming decisions will be made by a committee comprised of FHWA, a representative of the state DOT, and a representative of any appropriate political subdivision of the state, such as a county. Still, this type of program may be of interest to PETE due to its multi-unit configuration, particularly where state and county transportation facilities are crucial to public access to federal land holdings. Signage, trails, bike lanes, and transit partnerships all may be considered under the FLAP program.

7.3 *Transportation Alternatives*

MAP-21 converts “Transportation Enhancements” to “Transportation Alternatives,” and bundles this program with two other programs being eliminated by the bill (Complete Streets and Safe Routes to Schools). Total funding for all of these programs is approximately \$800 million per year, reduced 33 percent from the \$1.2 billion per year under SAFETEA-LU.

Projects eligible for funding under Transportation Alternatives include:

- On-road and off-road trail facilities
- Safe routes for non-drivers
- Abandoned railroad corridors for trails
- Turnouts, overlooks, and viewing areas
- Community improvement activities
- Environmental mitigation

7.4 *Recreational Trails Program*

FHWA’s Recreational Trails Program (RTP) was reauthorized under MAP-21 at the current funding levels (\$85 million a year) through the end of fiscal year 2014. RTP is a matching reimbursement grant program that provides for the creation and maintenance of trails and trail facilities. In Virginia, the program is administered by the Virginia Department of Conservation and Recreation (DCR).⁸³

RTP grants may go to registered nonprofit organizations, city governments, county governments or other government entities. Based on this language, PETE is unlikely to be a direct recipient of RTP funding; however, opportunities may exist for PETE to partner with local governments to construct trails that provide access to public lands.

The RTP requires that 30 percent of trail program funds be used for motorized (ATV, OHV, dirt-bikes, etc.) recreational trail uses, 30 percent for non-motorized recreational trails uses, and 40 percent for proposals with the greatest number of compatible recreational purposes and/or those that provide for innovative recreational trail corridor sharing (multiple-use trails). RTP is a matching reimbursement program, meaning the sponsoring entity must be able to finance the project while requesting periodic reimbursements. All projects must have at least a 20 percent match. Proposals for planning, gap analysis, feasibility studies or any combination thereof are ineligible.

⁸³ http://www.dcr.virginia.gov/recreational_planning/trailfnd.shtml

7.5 *Congestion Mitigation and Air Quality*

The Congestion Mitigation and Air Quality (CMAQ) program provides funding eligibility for a range of projects that may include bicycle and pedestrian improvements. As established under ISTEA, the purpose of the CMAQ Program is to fund transportation projects that reduce traffic congestion and mobile air emissions and help with the attainment/maintenance of National Ambient Air Quality Standards (NAAQS). Colonial Heights, Hopewell, Petersburg, Chesterfield and Prince George are among the local governments and transportation agencies in the Richmond Ozone Maintenance Area currently eligible to receive CMAQ funds for eligible projects. The Tri-Cities MPO administers the CMAQ Program in the Tri-Cities with oversight provided by the Richmond District Commissioner from the Commonwealth Transportation Board.

Bicycle and pedestrian projects may be eligible for CMAQ funding, but the proposed project must demonstrate a decrease in harmful mobile source emissions. According to the Tri-Cities MPO, projects in the Tri-Cities Area must show a decrease in hydrocarbon (HC) and nitrous oxide (NO_x) emissions.⁸⁴

7.6 *Wallop-Breaux Sport Fishing Program*

The Wallop-Breaux Sport Fishing Program is still funded under MAP-21, and in the past communities and States have received funding for trails along streams, lakes, and other water features where fishing access is a key benefit. This program may be of interest to PETE if trail or water access improvements are sought at the City Point Unit.

⁸⁴ <http://www.craterpdc.org/>

8 Partnerships

Partnerships are an essential way for NPS units to fulfill their mission and support the shared stewardship of parks. Partnership agreements often extend beyond park boundaries to surrounding communities and are mutually beneficial arrangements that allow for leveraging resources and accomplishing goals and objectives that no one group could accomplish alone. Often transportation solutions, and other park needs such as operations, maintenance, and visitor interpretation and education issues are met through partnering with local gateway communities, user groups, and business.

PETE may use the information in this report to explore partnering opportunities to implement transit or shuttle service, and/or enhance bicycle access, and signage, wayfinding, and traveler information. A key element in establishing successful partnerships is early planning with all interested parties. A framework for establishing relationships involves determining the objectives of the partnership and the mechanism in which to carry out the partnership. The NPS Interpretive Development Program⁸⁵ offers the following questions to guide developing partnerships:

- What is the desired product or service the partnership will provide or enhance?
- What are the benefits of the partnership?
- What are the goals of the partnership?
- What are the obstacles to implementation?
- What resources are available?
- Who will be responsible for implementation?
- What is the time frame for the partnership?
- How will the partnership be recognized?

Additionally, understanding the common types of partnership agreements can help to determine the appropriate partnership agreement needed to implement a project or program. In general, agreements can fall into the categories of formal and informal partnerships. Formal agreements comprise a written agreement, customarily used where money is exchanged or NPS has a large involvement, while informal agreements have no written consent and generally NPS involvement is minimal.⁸⁶

For PETE, partnering could prove a valuable means to realizing some of the alternative transportation options described herein or could even reveal new ways of meeting its mission, unrelated to transportation. The exact nature of any potential PETE partnership can be determined as needed in subsequent steps of the implementation process.

Table 7 below provides a summary matrix of potential partner organizations and the opportunity area(s) that may apply. Section 1.1 of this provides a descriptive overview of organizations that PETE could approach to develop the strategies in this report. Finally, Appendix 2 provides more detailed information on formal partnership agreement types available to PETE when considering alternative transportation planning or implementation partnerships.

⁸⁵ National Park Service. Interpretive Development Program. Choosing the Right Partnership Format. <http://www.nps.gov/ido/interp/320/choosing.htm>. Accessed October 2012.

⁸⁶ *Ibid.*

Table 7
Potential PETE Partnership Opportunities

Source: Volpe Center

Local, Regional, & State Organization	Partnership Opportunity Area			
	Transit	Signage	Traveler Info	Bicycle Access
Petersburg Area Regional Tourism	X	X	X	
Petersburg Department of Tourism			X	
Hopewell Office of Tourism			X	
Virginia Tourism Corporation			X	
Fort Lee	X	X	X	X
Pamplin Historical Park	X		X	
Civil War Trust			X	
Civil War Trails		X	X	X
Tri-Cities Area Metropolitan Planning Organization	X	X	X	X
Virginia Department of Transportation	X	X	X	X
Richard Bland College	X			

9 Conclusion and Next Steps

The Petersburg National Battlefield Alternative Transportation Feasibility Study investigates ways to improve access to and connectivity between the four existing PETE units using alternative transportation solutions. Based on an assessment of existing conditions, the project team developed a plan to address the key transportation and access-related issues through a series of chapters focusing on shuttle service opportunities, signage and wayfinding, traveler information strategies, and bicycle access. Significant conclusions related to each of these topics are highlighted below.

Shuttle Service

The project team recommends that NPS consider piloting an interpretive shuttle service in the Eastern Front for one summer season. Of all the options explored, this service focuses on those PETE sites which traditionally experience the highest levels of visitation and offer the strongest potential of attracting shuttle service patrons. By confining the service area to the Eastern Front, the park will be able to keep initial capital and operating costs, as well as staff obligations, at a manageable level. With data collected at the completion of one summer of operation, NPS can gauge the shuttle's popularity and consider the viability of continuing and/or increasing service within the Eastern Front, and potentially expanding service to other sections of PETE.

Signage and Wayfinding

The report details a series of near-term actions and long-term solutions for PETE's sign system. Near-term actions focus on smaller tasks that could be completed by NPS with few partners and stakeholders. These tasks may assist in establishing a foundation to support the implementation of long-term solutions, and include developing a sign inventory, removing out-of-date signage, assigning sign management responsibilities, and making use of existing signs that have been manufactured but not installed. Long-term solutions include identifying and engaging signage partners and stakeholders, developing a comprehensive needs assessment, and creating a new sign plan. The report offers a hypothetical example of a new sign design that incorporates site-specific directional signs with driving tour information.

Traveler Information Strategies

The report identifies strategies to improve traveler information. Some are quite simple, such as revising the travel directions on the PETE website. Other, more capital intensive options may include developing mobile device applications; developing quick response (QR) codes for use on mobile devices; and developing a Regional Trip Planner (RTP). While traveler information technology offers several unique opportunities for disseminating information to the public, there is an understanding that NPS may not be best suited for developing these types of services. Partnerships are especially important with technological endeavors come into play. An example is the Civil War Trust's new Petersburg Battlefield App for smart phones, which uses virtual signage and a GPS-based mapping feature to provide reliable wayfinding and interpretation throughout the Petersburg area.

Bicycle Access

The report discusses strategies to improve safety, signage, and access to PETE for bicyclists. Despite a perceived low level of interest, the area around PETE units include urban, suburban, and rural environments that are often conducive to bicycling. With better infrastructure and attention to access, PETE could improve its ability to be reached by bicycle, which functions both as a source of recreation and transportation for PETE visitors.

Appendix 1 Sign Plan Analysis

This appendix provides analysis of the signs included in the 2006 sign plan – a listing of each proposed sign, its identifying number, jurisdiction in which it is located, and the project team’s assessment of its priority for installation. Bold type indicates signs that may be able to be installed due to location within NPS boundaries or city rights-of-way.

Table 8
2006 Sign Plan Analysis

Source: Petersburg National Battlefield

Sign Plan Page #	Sign Number	Jurisdiction	Priority
EASTERN FRONT			
1.0	001-EF	Petersburg City	High
2.0	002-EF	Petersburg City	High
3.0	003-EF	Petersburg City	High
4.0	004-EF	Petersburg City	Medium
5.0	005-EF	Petersburg City	Low
6.0	006-EF	Petersburg City	Medium
7.0	007-EF	Petersburg City	Low
7.1	007.1-EF	Petersburg City	Low
8.0	008-EF	Petersburg City	Low
9.0	009-EF	Petersburg City	Low
WESTERN FRONT			
10.0	001-WF	Petersburg City	High
11.0	002-WF	Petersburg City	Low
12.0	003-WF	Petersburg City	Low
13.0	004-WF	Petersburg City	Low
14.0	005-WF	Petersburg City	Low
15.0	006-WF	Petersburg City	High
16.0	007-WF	Dinwiddie County	High
17.0	008-WF	Dinwiddie County	High
18.0	009-WF	Dinwiddie County	High
18.1	009.1-WF	Dinwiddie County	High
19.0	010-WF	Dinwiddie County	High
20.0	011-WF	Dinwiddie County	High
21.0	012-WF	Dinwiddie County	High
22.0	013-WF	Dinwiddie County	High
23.0	014-WF	Dinwiddie County	High
24.0	015-WF	Dinwiddie County	High
25.0	016-WF	Dinwiddie County	High

26.0	017-WF	Dinwiddie County	High
27.0	018-WF	Dinwiddie County	High
28.0	019-WF	Dinwiddie County	Medium
29.0	020-WF	Dinwiddie County	Medium
FIVE FORKS BATTLEFIELD			
34.0	001-FF	Dinwiddie County	High
35.0	002-FF	Dinwiddie County	High
36.0	003-FF	Dinwiddie County	High
37.0	004-FF	Dinwiddie County	High
38.0	005-FF	Dinwiddie County	High
39.0	006-FF	Dinwiddie County	High
40.0	007-FF - 010-FF	Dinwiddie County	High
41.0	011-FF - 014-FF	Dinwiddie County	High
41.1	016-FF	Dinwiddie County	High
41.2	017-FF	Dinwiddie County	High
42.0	015-FF	Dinwiddie County	High
GRANT'S HQ			
43.0	001-CP	Hopewell City	High
44.0	002-CP	Hopewell City	High
45.0	003-CP	Hopewell City	High
46.0	004-CP	Hopewell City	High
47.0	005-CP	Hopewell City	High
48.0	006-CP	Hopewell City	High
49.0	007-CP	Hopewell City	High
50.0	008-CP	Hopewell City	High
51.0	009-CP	Hopewell City	High
52.0	010-CP	Hopewell City	High

Appendix 2 Types of Formal Partnership Agreements

Appendix 2 details various types of formal partnership agreements that PETE might consider in working with local, regional, and state partners.

Table 9
Formal Partnership Agreement Types

Source: Adapted from the National Park Service, Interpretive Development Program, Choosing the Right Partnership Format.

Agreement Type	Description
Cooperative Agreement (CA)	<ul style="list-style-type: none"> - Used when NPS involvement (monetary or non-monetary involvement) is substantial. - Scope of Work and Terms of Agreement sections describe the responsibilities and level of involvement of each partner.
Memorandum of Agreement (MOA)	<ul style="list-style-type: none"> - Used when the NPS is to receive funds from a non-federal partner. Example - a Cooperating Association would have a MOA with each park. - Scope of Work and Terms of Agreement sections describe the responsibilities and level of involvement of each partner.
Memorandum of Understanding (MOU)	<ul style="list-style-type: none"> - Used when there is no transfer of funds. The policies and procedures established are of mutual interest and concern for either federal or non-federal partners. - Scope of Work and Terms of Agreement sections describe the responsibilities and level of involvement of each partner.
Volunteers in Parks (VIP)	<ul style="list-style-type: none"> - Volunteers assist with interpretive programs and completion of projects throughout the park. - Volunteers must have a signed Volunteer Agreement Form on file with the park. - Complete a Job Description that accurately outlines the volunteer's responsibilities.
Special Use Permits (SUP)	<ul style="list-style-type: none"> - A Special Use Permit is required for activities that provide a benefit to an individual, group, or organization, rather than the public at large and for activities that require some degree of management by the National Park Service in order to protect park resources and the public interest.
Financial Assistance Agreement	<ul style="list-style-type: none"> - NPS provides financial assistance to another organization such as a municipality for road repair.
Interagency Agreement (IA)	<ul style="list-style-type: none"> - Used to acquire a product or service from or bestow upon another Federal agency.
Intra-agency Agreement	<ul style="list-style-type: none"> - Similar to an IA, however, the services or products are acquired from other bureaus and offices within DOI.
Concessionaire Agreement	<ul style="list-style-type: none"> - Provides commercial services and facilities deemed necessary and appropriate for public use and enjoyment of that unit.

Supplemental Agreements	- Used to implement additional activities that are not outlined by the standard agreement. Frequently used in conjunction with MOAs as they pertain to cooperating associations.
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