



STATE OF THE PARK REPORT

Richmond National Battlefield Park
Virginia
2015

On the cover: A view of the Gaines' Mill Battlefield landscape looking toward the historic Watt House, where the Confederate Army, under General Robert E. Lee, was successful at pushing the Union army, under Brigadier General Fitz John Porter, back toward the Chickahominy river and away from Richmond on June 27, 1862.

Disclaimer. This State of the Park report summarizes the current condition of park resources, visitor experience, and park infrastructure as assessed by a combination of available factual information and the expert opinion and professional judgment of park staff and subject matter experts. The [internet version](#) of this report provides the associated workshop summary report and additional details and sources of information about the findings summarized in the report, including references, accounts on the origin and quality of the data, and the methods and analytic approaches used in data collection and assessments of condition. This report provides evaluations of status and trends based on interpretation by NPS scientists and managers of both quantitative and non-quantitative assessments and observations. Future condition ratings may differ from findings in this report as new data and knowledge become available. The park superintendent approved the publication of this report.

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EXECUTIVE SUMMARY

The mission of the National Park Service (NPS) is to preserve unimpaired the natural and cultural resources and values of national parks for the enjoyment, education, and inspiration of this and future generations. NPS Management Policies (2006) state that “The Service will also strive to ensure that park resources and values are passed on to future generations in a condition that is as good as, or better than, the conditions that exist today.” As part of the stewardship of national parks for the American people, the NPS prepares State of the Park reports to assess the overall status and trends of each park’s resources.

This State of the Park report:

- Provides to visitors and the American public a snapshot of the status and trend in the condition of a park’s priority resources and values;
- Summarizes and communicates complex scientific, scholarly, and park operations factual information and expert opinion using non-technical language and a visual format;
- Highlights park stewardship activities and accomplishments to maintain or improve the state of the park;
- Identifies key issues and challenges facing the park to help inform park management planning;
- Synthesizes information to improve setting park priorities.

The Civil War (1861–1865) remains the central, most defining event in American history. Richmond, Virginia, was at the heart of the conflict. As the industrial and political capital of the Confederacy, Richmond was the physical and psychological prize over which two mighty American armies contended in bloody battle from 1861 to 1865. At stake were some of the founding principles of the United States as the growing nation divided over the existence and expansion of slavery. Only after the new Confederacy fired on a federal fort in Charleston harbor and Lincoln had called for troops to preserve the Union, did Virginia join the Confederacy. As war began, neither side anticipated the brutal clashes and home front destruction that brought death or injury to more than one million Americans and devastation to a broad landscape, much of it in Virginia.

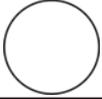
Today, Richmond National Battlefield Park preserves more than 2,500 acres of Civil War resources in 13 units, including the main visitor center at the famous Tredegar Iron Works, a key industrial complex, the Confederacy’s largest hospital, dozens of miles of elaborate original fortifications, and important battlefields that saw armies fighting for control of the Confederate Capital. The park commemorates four major actions of the U.S. Civil War: the 1862 Seven Days Campaign, June 26–July 1, 1862 encompassing Beaver Dam Creek, Gaines’ Mill, Glendale (Frayser’s Farm) and Malvern Hill; a portion of the 1864 Overland Campaign, May 28–June 13, 1864, including Totopotomoy Creek and Cold Harbor; the May 15, 1862 naval action at Drewry’s Bluff; and actions along the Richmond-Petersburg front, September 29, 1864–April 2, 1865, encompassing Fort Harrison, New Market Heights, Deep Bottom and Parker’s Battery.

The Purpose of Richmond National Battlefield Park is to protect the Civil War battlefield resources

associated with the struggle for the capital of the Confederacy and to interpret these resources so as to foster an understanding of their larger significance.

The summary table, below, and the supporting information that follows, provide an overall assessment of the condition of priority resources and values at Richmond National Battlefield Park based on scientific and scholarly studies and expert opinion. The internet version of this report, available at <http://www.nps.gov/stateoftheparks/rich/>, provides additional detail and sources of information about the resources summarized in this report, including references, accounts on the origin and quality of the data, and the methods and analytical approaches used in the assessments. Reference conditions that represent “healthy” resource parameters, and regulatory standards (such as those related to air or water quality) provide the rationale to describe current resource status. In coming years, rapidly evolving information regarding climate change and associated effects will inform our goals for managing park resources, and may alter how we measure the trend in condition of park resources. Thus, reference conditions, regulatory standards, and/or our judgment about resource status or trend may evolve as the rate of climate change accelerates and we respond to novel conditions. In this context, the status and trends documented here provide a useful point-in-time baseline to inform our understanding of emerging change, as well as a synthesis to share as we build broader climate change response strategies with partners.

The Status and Trend symbols used in the summary table below and throughout this report are summarized in the following key. The background color represents the current condition status, the direction of the arrow summarizes the trend in condition, and the thickness of the outside line represents the degree of confidence in the assessment. In some cases, the arrow is omitted because data are not sufficient for calculating a trend (e.g., data from a one-time inventory or insufficient sample size).

Condition Status		Trend in Condition		Confidence in Assessment	
	Warrants Significant Concern		Condition is Improving		High
	Warrants Moderate Concern		Condition is Unchanging		Medium
	Resource is in Good Condition		Condition is Deteriorating		Low

State of the Park Summary Table

Priority Resource or Value	Condition Status/Trend	Rationale
Natural Resources		web
Air Quality		For 2005–2009, estimated values for ozone, sulfur and nitrogen wet deposition, and average visibility warrant significant concern based on NPS Air Resource Division benchmarks .
Water Quality		Measurements of water temperature, pH, and Dissolved Oxygen are within the water quality standards set by the State of Virginia. The CPMI index for benthic macroinvertebrates, which are used as an indicator of stream water quality, was considered Good for 57% of samples.
Forest Vegetation and Soils		Monitoring of forest vegetation and soils was initiated in recent years at the park, and overall condition is of moderate concern based on indicators including occurrence of invasive plant species, forest stand structure, coarse woody debris, and the acid stress and nitrogen saturation of soils. Only 31% of monitoring plots had adequate regeneration of native seedlings based on benchmarks set for the region.
Wetland and Riparian Habitats		The overall condition and integrity of wetland and riparian habitats in the park was assessed as Good based on the extent of wetlands, measures of landscape connectivity, and an index of the overall area and condition of the buffer immediately surrounding the wetland.
Wildlife Communities		The diversity of habitat types within the 13 units of Richmond NBP supports a variety of wildlife including 23 species of amphibians, 24 species of reptiles, 30 species of fish, at least 137 species of birds, and 23 species of mammals. The density of white-tailed deer is very high and deer are having an adverse effect on the regeneration of native plant species.
Cultural Resources		web
Archeological Resources		Intensive archeological surveys and geophysical testing over the past two decades have increased the awareness, breadth, and interpretative potential of archeological resources administered by the Richmond National Battlefield. Archeological surveys cover roughly 10% of the land mass of the park and have identified 87 sites within the park boundaries. Currently, there are roughly 360 acres owned in fee by RICH that have not been subjected to archeological survey or investigation at even the most fundamental level.
Cultural Anthropology		This program has, to date, been of somewhat limited scope. There are no known especially distinctive sites in this category that are within the park. Archeological work occasionally reveals scattered artifacts from the pre-contact era.
Cultural Landscapes		Park planning documents are supportive of cultural landscapes and cultural landscape preservation, as the park General Management Plan identifies cultural landscapes and landscape features such as earthworks as “principal cultural resources” of the park. More work in the form of Cultural Landscapes Reports/Inventories is needed for the majority of the park.
Historic Structures		The general state of the park’s historic structures is good. The List of Classified Structures was thorough and up to date until 2013, though now trending very slightly downward because of the number of as yet uninventoried resources associated with newly acquired lands.
History		In addition to needing park-wide National Register documentation, Richmond NBP also needs a historic resource study which will take into account the full array of relevant historic themes and contexts. Likewise, the park needs an administrative history in order to better understand the early citizen conservation effort and pre-NPS- state park management and NPS management history.

Priority Resource or Value	Condition Status/Trend	Rationale
Museum Collections		An archival survey is needed to assist the park in identifying archival records appropriate for storage in the museum collection or National Archives and Records Administration repository. Baseline documentation such as CMP is old and out of date. CMP has been formulated for FY14, most other baseline documentation is outdated or non-existent.
Visitor Experience		web
Number of Visitors		The total of 156,192 visitors to the park in 2012 was 18.7% higher than the 5-year average of 131,565 visitors for 2007–2011.
Visitor Satisfaction		Based on the standard visitor satisfaction survey conducted each year, the percent of visitors who were satisfied with their visit in FY12 was 94%, compared to the 5-year average of 97.2% for 2007–2011. Source: 2012 Visitor Survey Card Data Report
Interpretive and Education Programs – Talks, Tours, and Special Events		The park's education program served more than 22,000 school aged children per year while the Junior Ranger program engaged roughly 1,500 participants per year. Also over the past five years, new interpretive programs have been researched and developed to reach new audiences and explore new topics.
Interpretive Media – Brochures, Exhibits, and Signs		The park recently replaced all of the exhibits in three Visitor Centers along with a new film at Tredegar VC. Because of the park's successful land preservation program it is difficult for it keep the park brochure up to date; however, it is updated as often as possible. The park has map programs at Tredegar, Cold Harbor and Glendale, all over ten years of age. The exhibits are outstanding for visitor understanding of the different battles; however, the older technology is getting more difficult to fix.
Sense of Place		Today, visitors have a much greater sense of place when touring the battlefields. The visitors are able to walk a greater amount of the battleground at the sites. Conveying the sheer scale and scope of the battlefield areas is still a challenge as large percentages of the battlefields lie outside of the park.
Accessibility		Each visitor center has either a ramp, lift, or elevator to access the building and view the exhibits. The park recently put in ADA trails through the Fort Harrison and Fort Brady sites. Park's films and one exhibit have audio description capability allowing visitors to get an audio description of what's on the screen. The park does not offer any materials in multiple languages. While there is public transportation to the sites in the city, there is not any for touring the battlefields.
Safety		The park works to quickly identify and mitigate potential hazards, and the number of accidents is very low. Operational Leadership Training has been completed by park staff, and CPR, First Aid, and AED training are offered to staff on a space available basis. Job Hazard Analysis is conducted before jobs throughout the park. Regular safety messages are given and distributed to staff members.
Partnerships, Community, and Volunteers		The park had 296 volunteers donate 11,148 hours in FY12. The partnership between the park and the American Civil War Center has created a tremendous visitor experience for the public at Historic Tredegar. Eastern National has been a tremendous asset to Richmond National Battlefield Park. In FY12, Eastern sold more than \$100,000 in merchandise.

Priority Resource or Value	Condition Status/Trend	Rationale
Park Infrastructure		web
Overall Facility Condition Index		The overall Facility Condition Index for 109 assets for FY12 is 0.048, which is Good based on industry and NPS standards.
Energy Consumption		Energy usage (BTUs per gross square footage of buildings) at the park in 2013 was 14% lower than the average for the previous 4 years.
Water Consumption		Water consumption at the park in 2013 was 40% higher than the 4-year average for 2009–2012. However, because the park’s ability to track its water usage became much more effective in 2013, it’s likely that the four years prior were off.

Summary of Stewardship Activities and Key Accomplishments to Maintain or Improve Priority Resource Condition:

The list below provides examples of stewardship activities and accomplishments by park staff and partners to maintain or improve the condition of priority park resources and values for this and future generations:

Natural Resources

- Maintained cultural entities with natural resources in mind through prescribed fire and native grass restoration on earthworks and in battlefield landscapes.
- Completed three baseline biological inventories (vegetation communities, birds and reptiles/amphibians) on 600 acres of newly acquired battlefields in addition to the 12 baseline inventories completed parkwide.
- Worked with the Mid-Atlantic Inventory and Monitoring network and citizen scientists to monitor water quality and breeding birds.
- Completed a Natural Resource Condition Assessment.
- Continued to carry out a Resource Management youth program using the Student Conservation Association and the Youth Conservation Corps.
- Hired a permanent biological science technician to supplement existing natural resource staff.
- Treated approximately 300 acres of invasive species over 5 years through contract, SCA interns, YCC, volunteers and in cooperation with the mid-Atlantic EPMT.

Cultural Resources

- Restored the Malvern Hill battlefield landscape through debris removal and conversion of 35 acres from forest to grassland.
- Worked to understand the parkwide research and planning backlog and began addressing needs.
- Developed a suite of CRM reports to support resource understanding and management at Shelton House and oversaw its ongoing rehabilitation and stabilization.
- Updated the park's Scope of Collections Plan.
- Added approximately 315 acres of core, nationally significant battlefield land to the park.
- Worked to georeference historic maps in order to provide accurate GIS information on the historic landscape condition.
- Acquired Ground-based LiDAR (high resolution 3D surveys) of Drewry's Bluff (the eroding bluff as well as the adjacent fort), Fort Harrison and Fort Brady.

Visitor Experience

- New interpretive waysides written, produced and installed park wide, Creation of orientation film focusing on the Tredegar Iron Works; Exhibits at Cold Harbor Visitor Center were updated and expanded and both the Glendale and Fort Harrison Visitor

Centers had new exhibits written, created and installed improving the visitors' understanding of the battles and their impact on the Civil War.

- In partnership with the Civil War Trust, park staff worked on Malvern Hill battle app for use with smartphones. This allows visitors to tour Malvern Hill while seeing battle maps, hearing firsthand accounts and seeing videos of rangers interpreting the battle.
- Opening the grounds of the recently acquired 124 acres of the Totopotomoy Creek battlefield, including the historic home of the Shelton family, Rural Plains, now has an interpretive trail with accompanying brochure.
- Ranger audio podcasts were created for walking tours of Gaines' Mill, Malvern Hill, Cold Harbor and Lincoln's visit to Richmond.
- The partnership between the National Park Service and the American Civil War Center at Historic Tredegar has created improvements to the site that benefit the visitors' understanding of both the national and local significance of the Civil War.
- Presented a wide variety of programs for the Sesquicentennial of the 1862 and 1864 battles around Richmond looking at many diverse aspects of the campaigns' impacts on the military, social, home front, political and diplomatic fronts of the war.

Park Infrastructure

- Completed in 2012 a complete repair, and reconstruction of all of the park's roads.
- Constructed a new equipment shop to provide a safe environment for our mechanic to work in. This building has a LEEDS self-rating of qualified.
- After adding the Rural Plains house to the park we have completed several critical stabilization projects that preserved the building from serious loss.
- Completed a new trail @ Rural Plains that changed the site from an inaccessible area to a popular recreation site.

Key Issues and Challenges for Consideration in Management Planning

One of the largest challenges to nearly every aspect of management at Richmond NBP is its fragmented nature. As mentioned, it is made up of 13 separate battlefield sites, spread across three counties and the City of Richmond. Not only is this logistically challenging for daily operations, project planning and creating a presence throughout the park, but it also increases the overall complexity of park management. In addition, with so much boundary relative to park acres, the condition of park resources is highly dependent on surrounding land use, ultimately limiting the ability to protect all park lands and resources.

Second, the park has an overwhelmingly successful land preservation program. In the past 14 years, it has had the incredible opportunity to expand its acreage from just over 754 acres to nearly 3,000 and growth continues. This park now protects more intact battlefields and associated resources and is better able to tell the important stories of those battlefields.

With all its benefits, tripling the park's acreage creates challenges over and above the obvious additional lands and resources to understand, protect, and maintain. For example, many of these new

lands are acquired with modern buildings and debris that must be removed as a starting point. The Totopotomoy Creek battlefield tract also conveyed with a house and yard dating back to the early 1700s that was used as a Northern headquarters during the Battle of Totopotomoy Creek in 1864. This has resulted in an enormous amount of research, stabilization and restoration work for which park staff has partnered with regional staff and restoration groups.

Because the park did not receive a fund increase with this increase in lands, it has limited staff and funding and, as a result, plans to keep the majority of these new parcels undeveloped in the near future. However, it must work to provide at least minimal access to visitors. The park and its staff are excited about the new resources and opportunities that these lands bring. They will continue to study and understand these new resources so that once staff and funding is available, they can be adequately protected while they are expanded to provide visitor enjoyment and a better understanding of an important piece of our past.

CHAPTER 1. INTRODUCTION

The purpose of this State of the Park report for Richmond National Battlefield Park is to assess the overall condition of the park’s priority resources and values, to communicate complex park condition information to visitors and the American public in a clear and simple way, and to inform visitors and other stakeholders about stewardship actions being taken by park staff to maintain or improve the condition of priority park resources for future generations. The State of the Park report uses a standardized approach to focus attention on the priority resources and values of the park based on the park’s purpose and significance, as described in the park’s Foundation Document or General Management Plan. The report:

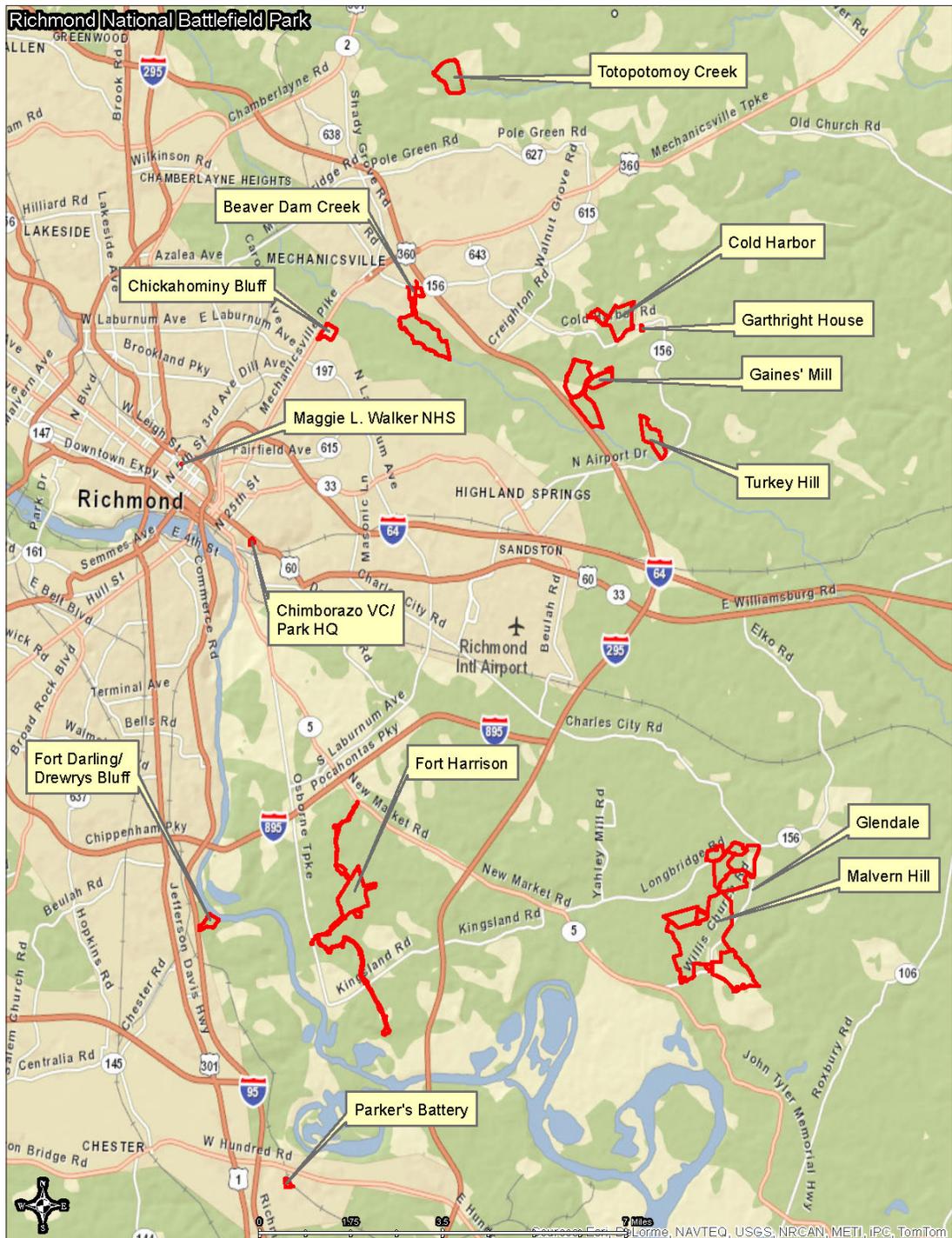
- Provides to visitors and the American public a snapshot of the status and trend in the condition of a park’s priority resources and values;
- Summarizes and communicates complex scientific, scholarly, and park operations factual information and expert opinion using non-technical language and a visual format;
- Highlights park stewardship activities and accomplishments to maintain or improve the state of the park;
- Identifies key issues and challenges facing the park to help inform park management planning;
- Synthesizes information to improve setting park priorities.

The process of identifying priority park resources by park staff and partners, tracking their condition, organizing and synthesizing data and information, and communicating the results will be closely coordinated with the park planning process, including natural and cultural resource condition assessments and Resource Stewardship Strategy development. The term “priority resources” is used to identify the fundamental and other important resources and values for the park, based on a park’s purpose and significance within the National Park System, as documented in the park’s foundation document and other planning documents. This report summarizes and communicates the overall condition of priority park resources and values based on the available scientific and scholarly information and expert opinion, irrespective of the ability of the park superintendent or the National Park Service to influence it.

The Civil War (1861–1865) remains the central, most defining event in American history. Richmond, Virginia, was at the heart of the conflict. As the industrial and political capital of the Confederacy, Richmond was the physical and psychological prize over which two mighty American armies contended in bloody battle from 1861 to 1865. At stake were some of the founding principles of the United States as the growing nation divided over the existence and expansion of slavery. Only after the new Confederacy fired on a federal fort in Charleston harbor and Lincoln had called for troops to preserve the Union, did Virginia join the Confederacy. As war began, neither side anticipated the brutal clashes and home front destruction that brought death or injury to more than one million Americans and devastation to a broad landscape, much of it in Virginia.

Today, Richmond National Battlefield Park preserves more than 2,500 acres of Civil War resources in thirteen units, including the main visitor center at the famous Tredegar Iron Works, a key industrial complex, the Confederacy’s largest hospital, dozens of miles of elaborate original fortifica-

tions, and the evocative spots where determined soldiers stood paces apart and fought with rifles, reaping a staggering human cost. The park commemorates four major actions of the U.S. Civil War: the 1862 Seven Days Campaign, June 26–July 1, 1862 encompassing Beaver Dam Creek, Gaines' Mill, Glendale (Fraser's Farm) and Malvern Hill; a portion of the 1864 Overland Campaign, May 28–June 13, 1864, including Totopotomoy Creek and Cold Harbor; the May 15, 1862 naval action at Drewry's Bluff; and actions along the Richmond-Petersburg front, September 29, 1864–April 2, 1865, encompassing Fort Harrison, New Market Heights, Deep Bottom and Parker's Battery.



Map of the Park

CHAPTER 2. STATE OF THE PARK

The State of the Park is summarized below for four categories—Natural Resources, Cultural Resources, Visitor Experience, and Park Infrastructure—based on a synthesis of the park’s monitoring, evaluation, management, and information programs, and expert opinion. Brief resource summaries are provided below for a selection of the priority resources and values of the park. Clicking on the [web](#) link found in the tables and resource briefs below will take you to the internet site that contains content associated with specific topics in the report.

The scientific and scholarly reports, publications, datasets, methodologies, and other information that were used as the basis for the assessments of resource condition are referenced and linked throughout the report and through the [internet version of this report](#) that is linked to the NPS [IRMA data system](#) (Integrated Resource Management Applications). The internet version of each report, and the associated workshop summary report available from the internet site, provide additional detail and sources of information about the findings summarized in the report, including references, accounts on the origin and quality of the data, and the methods and analytical approaches used in data collection and the assessments of condition. Resource condition assessments reported in this State of the Park report involve expert opinion and the professional judgment of park staff and subject matter experts involved in developing the report. This expert opinion and professional judgment derive from the in-depth knowledge and expertise of park and regional staff gained from their being involved in the day-to-day practice of all aspects of park stewardship and from the professional experience of the participating subject matter experts. This expert opinion and professional judgment utilized available factual information for the analyses and conclusions presented in this report. This State of the Park report was developed in a park-convened workshop.

The status and trends documented in Chapter 2 provide a useful point-in-time baseline measured against reference conditions that represent “healthy” resource parameters, or regulatory standards (such as those related to air or water quality). We also note that climate change adaptation requires us to continue to learn from the past, but attempting to manage for conditions based on our understanding of the historical “natural” range of variation will be increasingly futile in many locations. Thus, these reference conditions, and/or our judgment about resource condition or trend may evolve as the rate of climate change accelerates and we respond to novel conditions. Our management must be even more “forward looking,” to anticipate plausible but unprecedented conditions, also recognizing there will be surprises. In this context, we will incorporate climate considerations in our decision processes and management planning as we consider adaptation options that may deviate from traditional practices.

2.1. Natural Resources

Because the park is made up of thirteen non-contiguous park units, its natural resources are very much dependent on surrounding land use. Park units range widely in size and resource condition. For example, Malvern Hill, over 1,000 acres, is surrounded by agriculture and sporadic rural devel-

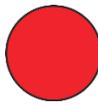
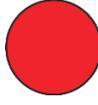
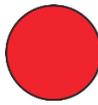
opment, while Chickahominy and Drewry's Bluffs, each less than 40 acres, are both surrounded by fairly intense commercial or industrial development. Malvern Hill contains much of the headwaters and watershed for its two stream systems. While Drewry's and Chickahominy Bluffs each contains shorter than 500 foot sections of small, unnamed tributaries. With all twelve park units combined, nearly 50% is comprised of upland forest (approximately 1,160 acres), 10% is riparian forest (264 acres), 10% is wetland, and 6% is managed meadow (170 acres). The park



Western Run, a large tributary of the James River, which runs almost entirely through the Malvern Hill unit.

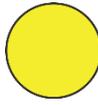
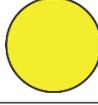
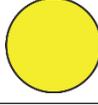
contains eight separate stream/river systems totaling 13 acres (less than 1%). There are three Virginia Natural Heritage exemplary natural communities in that park: Coastal Plain/Piedmont Acidic Seepage Swamp, Mesic Mixed Hardwood Forest and Coastal Plain/Piedmont Swamp Forest.

Despite the level of urbanization and the threats and stressors resulting from it, the natural resources found within the units of the Richmond NBP are considerable. The park's extensive forested land provides benefits such as wildlife habitat, water quality, and erosion control. Encroachment of development, increased traffic, vehicle emissions, and other industrial development near the park are arguably the most important and constant threats and stressors the park must consider. Development may lead to increasing point and non-point source pollution, increased affects to air and water quality. In-park biological integrity may also be increasingly stressed from these outside influences ([Schneider et al. 2012](#)).

Air Quality			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Ozone	Annual 4th-Highest 8-Hour Concentration		The estimated ozone level for 2005–2009 at Richmond NBP was 77.7 parts per billion (ppb), therefore, the condition status warrants significant concern based on NPS Air Resource Division benchmarks . For 2000–2009, the trend in ozone concentration at Richmond NBP remained relatively unchanged (no statistically significant trend) (NPS ARD 2013). List of ozone-sensitive plant species .
Deposition	Sulfur Wet Deposition		For 2005–2009, estimated wet sulfur deposition was 4.9 kilograms per hectare per year (kg/ha/yr), therefore, the condition status warrants significant concern based on NPS Air Resource Division benchmarks . Although Richmond NBP receives high levels of sulfur deposition, ecosystems in the park were rated as having low sensitivity to acidification effects relative to all Inventory & Monitoring parks (Sullivan et al. 2011a ; Sullivan et al. 2011b). No trend information is available because there are not sufficient on-site or nearby wet deposition monitor data. (NPS ARD 2013).
	Nitrogen Wet Deposition		For 2005–2009, estimated wet nitrogen deposition was 4.1 kilograms per hectare per year (kg/ha/yr), therefore, the condition status warrants significant concern based on NPS Air Resource Division benchmarks . Although Richmond NBP receives high levels of nitrogen deposition, ecosystems in the park were rated as having low sensitivity to nitrogen-enrichment effects relative to all Inventory & Monitoring parks (Sullivan et al. 2011c ; Sullivan et al. 2011d). No trend information is available because there are not sufficient on-site or nearby wet deposition monitor data (NPS ARD 2013).
Visibility	Haze Index		For 2005–2009, estimated average visibility in Richmond NBP was 12.1 deciviews (dv) above natural conditions, therefore, the condition status warrants significant concern based on NPS Air Resource Division benchmarks . No trend information is available because there are not sufficient on-site or nearby visibility monitor data (NPS ARD 2013).

Water Quality			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Water Chemistry	Water Temperature		Recent measurements of water temperatures in the park by the Mid-Atlantic I&M Network (MIDN) have been within State of Virginia water quality standards VADEQ .
	pH		85% of pH monitoring samples by MIDN were within the 6.0–9.0 range specified by Virginia water quality standards VADEQ .
	Dissolved oxygen		Only 7% of measurements of DO by MIDN were below Virginia’s water quality standards VADEQ .
Benthic Macroinvertebrates	Coastal Plain Macroinvertebrate Index (CPMI)		Benthic macroinvertebrates are used by many State agencies as an indicator of water quality under the Clean Water Act. The CPMI for 56% of monitoring samples at RICH were above 16, the level that indicates a healthy stream system (Schneider et al. 2012).

Forest Vegetation and Soils			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Invasive Plant Species	Average number of key species per plot		The mean number of invasive exotic indicator species per plot was 1.2 (Comiskey and Wakamiya 2011), which is of moderate concern based on established reference conditions (Tierney et al. 2009, 2013).
Canopy Tree Condition	Condition Index		72% of plots are classified as having Good canopy tree condition (Comiskey and Wakamiya 2011). The Condition Index is based on tree and leaf condition, and the presence and type of pests and pathogens (Tierney et al. 2009, 2013).
Forest Regeneration	% plots with adequate regeneration		Only 31% of monitoring plots had adequate regeneration based on reference conditions established for the region (Comiskey and Wakamiya 2011 ; Tierney et al. 2009, 2013).
Stand Structure	% of plots with late successional structure		Late successional forest stand structure was found in only 19% of monitoring plots in the park (Comiskey and Wakamiya 2011).
Coarse Woody Debris	% of live tree volume		The volume of coarse woody debris in monitoring plots was 10% of the volume of live trees volume (Comiskey and Wakamiya 2011). CWD volume should be >15% of live tree volume to be considered good (Tierney et al. 2009, 2013).

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Snags	Snags / ha \geq 30 cm		An average of 5.5 snags / ha \geq 30 cm were documented in monitoring plots (Comiskey and Wakamiya 2011). More than 10 snags / ha \geq 30 cm are needed for snag abundance to be considered good based on natural disturbance in Northeast Region (Tierney et al. 2009, 2013).
Soil Acid Stress	Median Ca:Al ratio		The ratio between Calcium and Aluminum was 1.05 (Comiskey and Wakamiya 2011). A ratio above 4.0 is considered Good based on regional standards (Tierney et al. 2009, 2013).
Soil Nitrogen Saturation	Median C:N ratio		The ration between Carbon and Nitrogen was 22.1 (Comiskey and Wakamiya 2011). A ratio above 25 is considered Good based on regional standards (Tierney et al. 2009, 2013).

Wetland and Riparian Habitats			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Integrity of Wetland and Riparian Habitats	Extent of wetlands Landscape connectivity Buffer Index		Wetlands and riparian areas are highly productive communities that provide habitat and food resources and migration corridors for a wide range of species. Schneider et al. (2012) evaluated the integrity of wetland and riparian resources at Richmond NBP using methods adapted from Faber-Langendoen (2009) and gave an overall condition evaluation of Good to Excellent based on the various measures of resource condition.

Wildlife Communities			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Amphibians and Reptiles	Species composition and diversity		The diversity of habitats found in the 13 units of Richmond NBP supports a variety of animal species. Twenty-three species of amphibians and 24 species of reptiles are present or probably present at RICH (NPSpecies certified list).
Fish	Species composition and diversity		Based upon evaluation of limited inventory data, 30 species of fish are present or probably present at RICH (NPSpecies certified list).
Birds	Species composition and diversity		The park supports a diverse array of birds with a total of 137 species determined to occur or likely to occur in the park (NPSpecies certified list).
	Bird Community Index		Bird populations within forested areas at RICH monitored by the MIDN I&M network received the highest ecological integrity rating of "naturalistic" based on a regionally-developed Bird Community Index (Wakamiya 2012). Five of the 10 most commonly-detected species during bird surveys were identified as "Species of Concern" by Partners In Flight.

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Mammals	Species composition and diversity		Twenty-three species of mammals are present or probably present at RICH (NPSpecies certified list).
	White-tailed deer density		The mean density of deer as determined by park staff has ranged between 20 and 50 deer/mi ² , compared to a reference condition of 3 deer/mi ² chosen for the park (Horsley et al. 2003).

Resource Brief: Youth in Resource Management

Throughout each year, Richmond NBP’s Resource Management Program serves as a career ladder for young people around Richmond and throughout the country. During the spring and fall months, the park hosts four Student Conservation Association interns, funded through Public Land Corp (PLC) grants. For most interns, these positions provide their first post-college work experience, and within 3 months include a vast diversity of resource management projects and experiences. These include: biological monitoring, exotics inventory and control, trail work, meadow management, GIS, native grass planting and monitoring/management of Civil War earthworks. Following their time at the park, Richmond’s Resource Management interns go on to graduate school, additional SCA positions, seasonal work with the National Park Service, or a variety of other endeavors.

For eight weeks during the summer months, the park also hosts a six person Youth Conservation Corp (YCC) Group. These groups consist of high school aged kids from the City of Richmond and surrounding suburbs. They work together with park staff on several resource management projects such as trail work, earthworks repair and exotic vegetation control. However, unlike the resource interns, YCC members typically come to the park with little to no previous work experience or exposure to the outdoors, natural resource concepts or the National Park Service. Therefore, a percentage of their time is spent on workforce training, environmental



A YCC group pulling invasive exotic vegetation along Boat-swain Creek at the Gaines’ Mill unit.



SCA interns traversing a beaver dam during a spring beaver survey at Malvern Hill.

education and exposure to surrounding natural areas and land management groups. Although these kids go back to school after their summer here, we have had several repeat enrollees and one YCC member who worked his way through college as a seasonal employee on our maintenance crew.

For these young people, their time at the park provides life experience in a new place, a source of advice on their future, knowledge about resource management in a National Park, and a fun few months. At the same time, the park is able to accomplish a tremendous amount of resource management work while creating a new generation of advocates for the park and the National Park Service.

Resource Brief: Historical and Projected Changes in Climate at Richmond NBP

Climate change, in conjunction with other stressors, is impacting all aspects of park management from natural and cultural resources to park operations and visitor experience. Effective planning and management must be grounded in our comprehension of past dynamics as well as the realization that future conditions may shift beyond the range of variability observed in historical data. Climate change will manifest itself not only as shifts in mean conditions (e.g., increasing mean annual temperature) but also as changes in climate variability (e.g., more intense storms and droughts). Put another way, land managers are dealing with both rapid directional change and tremendous uncertainty. Understanding climate change projections and associated levels of uncertainty will facilitate planning actions that are robust regardless of the precise magnitude of change experienced in the coming decades.

Historical climate trends (1894–2012)

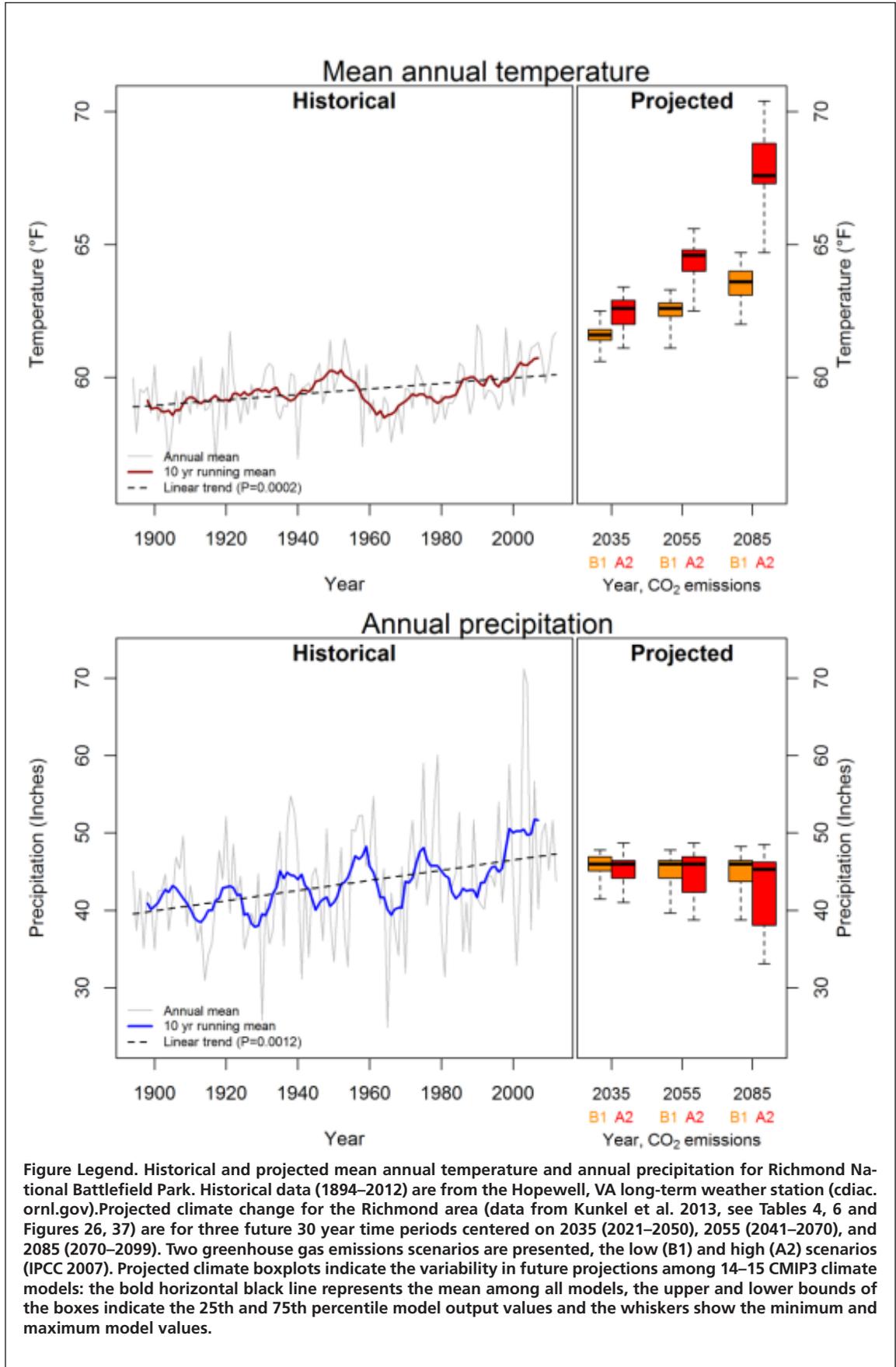
Historical climate trends for Richmond ([Fisichelli 2013](#)) are based on historical climate data from a nearby long-term weather station (Hopewell, VA; cdiac.ornl.gov). Over the entire 119 year instrumental record (1894–2012), mean annual temperature has shown a statistically significant warming trend, +0.1 °F per decade (see graphic below). Warming since 1960 has been more rapid, +0.17 °F per decade. Annual precipitation showed strong interannual variability and a significant increasing linear trend over the entire record, +0.66 inches per decade (see graphic below).

Future climate projections

Future climate projections for the area including Richmond National Battlefield Park are from multi-model averaged data ([Kunkel et al. 2013](#)). Mean annual temperature, compared with the 1971–1999 average, is projected to increase 2–3 °F by mid-century and 4–7 °F by the end of the century, depending on the greenhouse gas emissions scenario (see graphic below). Current greenhouse gas emissions are on a trajectory similar to the highest emissions scenarios (see references in [Fisichelli 2013](#)). Warming by mid-century is projected for all seasons, with the greatest increases likely in summer and fall ([Kunkel et al. 2013](#)). There is wide agreement among individual climate models in the direction and magnitude of warming over the coming decades. Precipitation projections indicate minor to moderate changes in annual totals over the coming century (see graphic below). Precipitation variability is likely to remain large over

the coming decades, and there is greater uncertainty in precipitation than temperature projections ([Kunkel et al. 2013](#)).

In addition to warmer mean temperatures, climate change will manifest itself in many other ways. This includes more frequent heat waves, droughts, floods, and an extended frost-free season in the Richmond area. The number of days with maximum temperatures > 95 °F is projected to increase by 20–25 days/year while the frost-free season is projected to expand by 25 days and annual number of days with minimum temperatures below freezing to decrease by approximately 20–25 days (high (A2) emissions scenario, 2041–2070 compared with 1980–2000; [Kunkel et al. 2013](#)). Small changes in total annual precipitation may mask large shifts in the precipitation regime and associated impacts to ecosystems. The maximum number of days between rainfall events is likely to increase by a few days while the annual number of days with heavy rainfall (> 1 inch) is projected to increase by 15 to 20 days (high (A2) emissions scenario, 2041–2070 compared with 1980–2000; [Kunkel et al. 2013](#)). Warmer temperatures, heavier rain events, and an increased number of days between rain events will lead to both more frequent droughts and more severe flooding and erosion.



2.2. Cultural Resources

Archeological Resources

Richmond National Battlefield Park consists of dispersed units across the greater Richmond area. Although ancestral Native American, contact period sites, and historic period sites that post-date and predate the Civil War have been identified in these park units, the majority of recorded, registered, and interpreted archeological sites are representative of the Seven Days' Battles in the summer of 1862, Grant's Overland Campaign in 1864, and the Richmond-Petersburg Campaign of 1864–65. These consist of remnant earthen fortifications, earthen artillery batteries, and former house locations that existed during this period of significance.

Intensive archeological surveys and geophysical testing over the past two decades have increased the awareness, breadth, and interpretative potential of archeological resources administered by the Richmond National Battlefield. Archeological surveys cover roughly 10% of the land mass of the park and have identified 87 sites within the park boundaries. Currently, there are roughly 360 acres owned in fee by RICH that have not been subjected to archeological survey or investigation at even the most fundamental level. There are more than 500 acres still in control of the Civil War Trust that are to be conveyed to the park in the near future.

Archeological collections, comprised of roughly 15,000 items from 30 projects, are curated and catalogued at Maggie L. Walker National Historic Site. Approximately 90% of archeological collections are catalogued and curated to National Park Service (NPS) standards and are housed in a facility that provides climate control and security protection and the park and region are working to sort out problem issues. Archeological reports and surveys have been incorporated into the Cultural Resource Bibliography (CRBib). No reports were listed in the Integrated Resource Management Applications (IRMA) system.

Future archeological investigations will be warranted on conveyed lands once they become Park property. Archeological inventories should focus on being investigative rather than responsive. One step in the right direction is the development and potential funding for the completion of an Archeological Overview and Assessment for RICH scheduled for 2014. Geographic Information Systems (GIS) are critical to managing large landscape features such as earthworks and fortifications. Efforts should be made to bring current geographic data into established Cultural Resource Spatial Data Transfer Standards and for incorporation into IRMA.



A century and a half after the Civil War, archeology has become an essential tool in learning about the families that lived on the Richmond battlefields, and the houses they called home.

Archeological Resources			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Percent of sites with known date ranges associated with a research theme		49% of sites registered in ASMIS are associated with the battles and defense of Richmond during the Civil War and include batteries, entrenchments, and historic house sites that existed during the 1862 and 1864 campaigns. There is limited information on Native American use of the area prior to the Civil War, although there are 10 Native American sites registered in ASMIS. RICH has documents describing Mission 66 and CCC era archeological resources but it is unclear what other contexts might be present. Two sites registered in ASMIS reference the CCC era. The universe of archeological resources associated with these periods of significance is not well understood.
Inventory	Percentage of archeological resources with accurate, complete and reliable Archeological Sites Management Information System (ASMIS) data.		100% (87 of 87) of the known archeological sites are listed in ASMIS with complete and reliable data. Archeological sites listed in ASMIS were visited in 2013 and no missing fields were noted in the database. However, geographic locations and National Register status were not up to date.
Documentation	Percentage of known sites with adequate National Register documentation		100% (87 of 87) archeological sites registered in ASMIS are unevaluated for listing in the NRHP. DOEs are done for structures listed in the LCS, but no documentation concerning the eligibility of archeological resources was noted.
	Percentage of records documenting archeological resource conservation, cataloging and storage maintained as a part of the archeological collection.		95% of park archeological materials have proper documentation. One archeological collection was sent to the park without proper documentation (about 5%).

Resource Brief: Earthworks Management

Eleven miles of earthen trenches, batteries and fortifications, collectively known as earthworks, are visible reminders of the battles around Richmond 150 years ago. Richmond National Battlefield Park’s primary resource, the earthworks are spread throughout three counties surrounding Richmond, and are made of different soil types. Built for different purposes across the landscape, the earthworks differ in size, shape and aspect, resulting in the use of a variety of management techniques by the park to allow visitors to view these historic resources while attempting to protect them from damage by erosion.

At Cold Harbor, for example, the majority of the earthworks are maintained in full forest coverage, corresponding to its historically forested state. The park monitors the earthworks for hazard trees and damage from animals and fallen trees, removing and repairing damage when possible. The earthworks at Cold Harbor are well protected by a thick layer of leaf litter and considered to be in good condition.

In other areas of the park, such as at the Fort Harrison unit, the landscape was open at the time of the battle, so the park has attempted to remove successional forest growth to enhance visitor understanding. For smaller earthworks with shorter side slopes, a few trees surrounding them are often enough to keep them free of much vegetative growth and covered with leaf litter. This can also be supplemented as needed with mulch or wood chips.

For taller, steeper fortifications, however, a few surrounding trees does little to protect the soil. In this regard, the park has tried many things over the years, to include hydroseeding and erosion matting with seed. The most successful technique involved planting native grass plugs along the slopes of the earthworks. These grasses are better able to survive on infertile slopes than turf type grasses, and once they fill in, they will provide protection of tall leaf structure and deep roots. Maintenance to these grass covered earthworks consists of the annual removal of brushy growth by burning, trimming or lopping, and continual planting on bare spots.

Although earthworks management is not an exact science, the park continues to research new strategies and work toward a balance between adequate protection of these precious resources, visitor understanding, and sustainable management actions.



Cultural Anthropology			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research exists to understand the relationship of the park's ethnographic resources and the historic contexts		Yes. The park is aware of the relationship of the park's ethnographic resources to associated historic contexts.
	Appropriate studies and consultations document ethnographic resources and uses with regards to the park.		Yes. Consultation has been initiated with traditionally associated groups; no interest has been shown to date by the groups to continue consultation.

Cultural Anthropology

This program has, to date, been of somewhat limited scope. There are no known especially distinctive sites in this category that are within the park. Archeological work occasionally reveals scattered artifacts from the pre-contact era. Given the geography of the park, with land adjoining the Chickahominy River, the James River, and Beaver Dam Creek (among others), the potential is good for the discovery of important sites. The pending parkwide Archeological Overview and Assessment will offer an opportunity to improve the park's knowledge of pre-Civil War cultural sites. The park has consulted with the federally recognized tribes whose traditional lands include Hanover, Henrico, or Chesterfield counties, thus far without any expressed interest from those tribes for coordinated activities.



Because Native American tribes covered the area of the park pre-Civil War and remain involved in the area today, the park remains open to coordinating with these groups on park projects and activities.

Cultural Landscapes

Park landscapes at Richmond consist primarily of battlefield terrain that varies widely based on its period of origin. The Seven Days battlefields, including Beaver Dam Creek, Gaines' Mill, Glendale, and Malvern Hill, saw the armies engaged in stand-up fighting in 1862, without the benefit of fortifications. Ground cover and topography often determined the course of the battles. The park has succeeded over the past two decades in returning the portions of the battlefields within NPS control to their 1862 appearance. All work has been directed by the findings of Cultural Landscape Reports, and is especially complete at Gaines' Mill and Malvern Hill. New acquisitions there and at other 1862 battlefields have created the need for further investigation. Most of the newly-added land is so recent that park staff has not yet been able to prepare projects that will appropriately document those new landscapes.

Cultural Landscapes			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Adequate research exists to document and preserve the cultural landscape's physical attributes, biotic systems and uses when those uses contribute to historical significance.		No. Currently only 3 of 13 CLIs are complete. In addition, CLRs have been prepared for Malvern Hill/Glendale, Gaines Mill, and Totopotomoy. The recent/pending land acquisitions significantly increase the need for more research to guide management.
Inventory	Percentage of landscapes eligible for the National Register with accurate, complete, and reliable Cultural Landscape Inventory (CLI) data.		23% (3 of 13) CLIs are completed; four CLIs are planned for the next three fiscal years. The remaining will be completed FY17 and beyond.
Documentation	Research results are disseminated to park managers, planners, interpreters, and other NPS specialists and incorporated into appropriate park planning documents.		Yes. Research results are disseminated to park planners and interpreters, as well as other NPS staff and incorporated into interpretation for the benefit of the visiting public.

A second major landscape category is associated with the 1864 battles around Richmond, where earthen fortifications shaped the events. At those sites (most notably Cold Harbor and Fort Harrison), the management and protection of the cultural landscapes focus on maintaining the entrenchments.

Generally, the condition of the cultural landscapes at RICH are rated as yellow, owing to only three cultural landscapes being fully documented through the Cultural Landscapes Inventory Program. In further support of this rating, the physical condition of two of the three is indicated in the CLI database as fair with the third, Drewry's Bluff, categorized as being in poor condition. Estimated to require \$11M in stabilization funds due to riverfront erosion of the stream bank and other drainage issues, Drewry's Bluff is likely to have a chronically poor rating due to the prohibitive cost associated with improving its condition. However, beyond consideration of physical condition, a programmatic assessment of RICH cultural landscapes is subject to a mid to long-term uptrend as documentation is forecast to increase to 66% by FY16 due to scheduled CLI projects. Furthermore, park planning documents are supportive of cultural landscapes and cultural landscape preservation, as the park General Management Plan identifies cultural landscapes and landscape features such as earthworks as "principal cultural resources" of the park.

Resource Brief: Achieving Visitor Understanding while Stewarding the Natural Landscape

The forests, fields, streams, and fence lines within a battlefield park enable visitors to stand on the same ground and envision what took place during the battles that shaped the war. It is often quite a challenge to recreate a landscape from hundreds of years ago when conditions have likely changed drastically; this is especially true at Richmond, due to the wide range of landscapes across the park's ten units. In recent years, however, the park has made significant progress toward stabilizing and restoring two of its most intact battlefield landscapes: Gaines' Mill and Malvern Hill. Following the completion of a comprehensive Cultural Landscape Report for each site, in which information was compiled in order to determine how the landscape may have appeared during the historic period, it was confirmed that extensive areas of both sites that had been cleared of trees during the Civil War had been allowed to reforest. However, with wetlands, riparian areas, sloped areas of sensitive soils and other environmental concerns, the park needed to balance the health of the natural environment with the desire to restore the landscape to its historic state. Priority was given to restoring viewsheds that would most enhance visitor understanding of the site while minimizing impact on the natural landscape.

Plans were developed to carefully clear the forest on the priority viewsheds (35 acres at Malvern Hill and over 10 acres at Gaines' Mill), consisting of rolling back existing tree lines and removing patches of trees between open fields. The viewshed restoration included tree clearing, debris removal, shallow stump grinding, light discing and seeding with a park specified seed mix.

Although many of these areas were used for agriculture at the time of the Civil War, the park



This ten acre field at Malvern was cleared of trees, opening up an important historic view, but still serves as important habitat and soil stabilization in the form of warm season native grasses.

chose to plant these particular fields in native grasses, which mimic the appearance of a fallow farm field. Maintained once annually—by either mowing or burning—native grasses are more sustainable than a lawn and protect the soil and waterways from runoff and erosion, while providing needed habitat for several species of declining meadow nesting birds.

In addition to restoring grassland, the park has cleaned up agricultural debris and several large dump sites at Malvern Hill, as well as reconstructing historic fence lines along the road at Gaines Mill.

Historic Structures

The primary historic structures at Richmond NBP (exclusive of the fortifications, which are treated elsewhere) are three antebellum buildings: the Garthright House at Cold Harbor (ca. 1720), the Watt House at Gaines' Mill (ca. 1820), and the Shelton House ("Rural Plains") at Totopotomoy Creek (1723–25).

Each of the three is inextricably connected to the battlefield landscapes and the stories told there, but they also—"Rural Plains" in particular—are significant at other levels. The Garthright House and the Watt House are maintained as exterior exhibits only; both are occupied by park employees. "Rural Plains" came into park possession in 2006 and has been the subject of extensive work since then, much of it aimed at understanding basic historical and architectural details of the building. The completion of a Historic Structures Report in 2012 greatly advanced the park's knowledge. The condition of the building is steadily improving. Once treatment recommendations and the necessary compliance are in place, the house will be well on its way to becoming a leading example of its type in central Virginia, hopefully in time for the tercentennial of its construction.

The general state of the park's historic structures is good. The List of Classified Structures was thorough and up to date until 2013, though now trending very slightly downward because of the number of as yet uninventoried resources associated with newly acquired lands.



The ca. 1820 Watt House is the principal landmark at the Gaines' Mill battlefield.

Historic Structures			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Documentary research and physical examination are sufficient to support treatment.		Yes. Sufficient documentary evidence exists to support appropriate treatments.
Inventory	Percentage of structures eligible for the National Register with accurate, complete and reliable List of Classified Structures (LCS) data.		100% of historic structures have accurate, complete and reliable LCS data. The acquisition of new properties by the parks will result in new structures on the LCS.
Documentation	Research results are disseminated to park managers, planners, interpreters, and other NPS specialists and incorporated into appropriate park planning documents.		Yes. Research results are disseminated to park planners and interpreters, as well as other NPS staff and incorporated into interpretation for the benefit of the visiting public.

Resource Brief: The Shelton House

In 2006 Richmond NBP acquired the historic Shelton House (ca. 1725) at Rural Plains, located in Hanover County. Listed in the National Register of Historic Places on June 5, 1975, the re-



The Shelton House is pictured along with the various restoration projects completed in recent years.

habilitation of the Shelton House is a good example of modern historic preservation practice. Rehabilitation and restoration work on the interior and exterior of the building was undertaken by staff from the park and the Historic Preservation Training Center in Harpers Ferry, West Virginia. Projects included floor stabilization by replacing deteriorated joists and headers, the rehabilitation and restoration of door and window cornices and modillions dating to ca 1785, and the restoration of a kitchen fireplace. Additionally, basement windows were rehabilitated and restored, and the standing seam metal roof was repaired using an elastomeric roofing membrane. These interventions will ensure that the Shelton House is accessible to visitors for years to come.

History

Richmond National Battlefield Park evolved out of a grassroots effort in the early 1920s to preserve and commemorate the 1862 and 1864 battle sites surrounding Richmond, Virginia. The private Richmond Battlefield Parks Corporation began a quiet, systematic effort to purchase significant battlefield acreage related to the 1862 and 1864 campaigns. The organization could not develop or maintain the newly purchased property and arranged to deed parcels totaling 572 acres to the state. By 1934 the Commonwealth realized it did not have the funding to build and maintain a park of this nature, and initiated transfer of all parkland and assets to the Federal government as a national battlefield park.

Although Richmond NBP's official authorization dates from March 2, 1936, the legal process did not conclude until July 14, 1944. During this interim period, the Commonwealth of Virginia maintained the parcels, endeavored to establish access to the discontinuous battle sites, and undertook interpretative and administrative improvements. Much of this work was accomplished by Civilian



Fort Harrison, seen in this wartime photograph, was the keystone of the Confederate defenses south of Richmond. Union soldiers captured it after a fierce battle on September 29, 1864.

History		 web	
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research is conducted to understand significance of site.		No. The park does not have Historic Resource Studies for park sites, however there are four documents that were produced in the late 1980s–early 1990s by Cliff Dickinson that help lend context. They are: <i>Fruit Production in Central Virginia, 1820–1860</i> ; <i>Historic Landscape Study: Terrain of Gaines’ Mill Battlefield</i> ; <i>Historic Landscape Study: Terrain of Cold Harbor Battlefield, June 1, 1864</i> ; and <i>Union and Confederate Engineering Operations at Chaffin’s Bluff/Chaffin’s Farm, June 1862–April 3, 1865</i> .
	Sufficient research is conducted to establish the reasons for park creation and site history.		No. Extant Administrative History “A History of Richmond National Battlefield Park” was written in 1957 and is thus out of date.
Documentation	Percentage of historic properties with adequate Nat’l Register documentation or with Determinations of Eligibility.		Approximately 50% of the park’s cultural resources have sufficient DOEs. No park-wide National Register documentation exists. Recent/upcoming acquisitions need to be evaluated and documented.

Conservation Corps labor under the supervision of the National Park Service (NPS) between 1933 and 1941.

Richmond NBP was administratively listed in the National Register of Historic Places on October 15, 1966 and in the Virginia Landmark Register on January 16, 1973. The Keeper of the National Register rejected park-wide documentation prepared by the park in the early 1970s. Consequently, Richmond NBP is considered an undocumented park.

During the past forty years, the park’s resources have been documented largely through a patchwork of Determinations of Eligibility (DOE) to the National Register as part of CLI and LCS inventory work (2001 and 2009 respectively). Two properties are listed in the National Register: Rural Plains (Shelton House), listed on June 5, 1975, and the Civil War Medical Museum (also known as the Richmond Weather Station), a contributing resource to the Oakwood-Chimborazo Historic District that was listed on March 18, 2005. The majority of these evaluations have been made in the absence of a comprehensive understanding of applicable historic contexts.

In addition to needing park-wide National Register documentation, Richmond NBP also needs a historic resource study which will take into account the full array of relevant historic themes and contexts. Likewise, the park needs an administrative history in order to better understand the early citizen conservation effort and pre-NPS- state park management and NPS management history including, but not limited to, Civilian Conservation Corps and Mission 66 era initiative. Between 1995 and 2013 the park more than tripled in size, another dynamic era that needs documentation and perspective.

Resource Brief: Preserving the Spirit of Early Tourism

On November 6, 1925, the Reverend Giles B. Cooke, once a staff officer for General Robert E. Lee of the Confederate army during the Civil War, stood and delivered a short prayer in the yard of the Walnut Grove Baptist Church. Following the benediction, Cooke unveiled a series of roadside historical markers that were part of the first systematic effort to identify and interpret the Civil War battlefields around Richmond, some eight years before the establishment of Richmond National Battlefield Park. The principal force behind the creation of the markers was Dr. Douglas Southall Freeman, a local historian of great national reputation. With the local Rotary Club sponsoring the project, Freeman and others placed more than 60 markers, today colloquially known as “Freeman markers,” each with a cast iron plaque set into a concrete base, some resting on ashlar granite foundations.

Today the markers are themselves considered historic objects—tangible reminders of the early work done to preserve and make accessible the famous battlefields. 11 of the markers are within the boundary of Richmond NBP and have recently been the focus of rehabilitation work, including cleaning, repainting, repointing of the stone foundations, and some repair to the concrete bases. Today visitors to the park can see well cared for evidence of the early years of tourism at Richmond National Battlefield Park.



One of the Freeman Markers at the Malvern Hill battlefield. Today, a new sign interprets the old sign.

Museum Collections

The museum collection for Richmond National Battlefield Park is comprised of nearly 26,500 individual items consisting of history objects, archival collections, and vast archaeological collections.

The history collection includes an array of items ranging from Civil War-era arms and ammunition, military uniforms and personal accoutrements, medical implements, and 19th-century civilian articles. The park also administers an active loan program and currently displays incoming loans from major private and public Civil War collections including the Museum of the Confederacy, the Virginia Historical Society, the Valentine Richmond History Center, and the Hampton History Cen-

ter. The park also maintains incoming loans from other National Park Sites including Gettysburg and Manassas. Many of the most unique pieces in the collection are displayed in one of Richmond National Battlefield Park's two public museums. The Chimborazo Medical Museum displays nearly 250 medical artifacts to help interpret the medical story of Civil War, in particularly the history of Richmond's Confederate hospital system. The park's main visitor center at the Tredegar Iron Works displays roughly 200 military and civilian articles. A very small selection of artifacts is also displayed in the three battlefield visitor centers at Cold Harbor, Glendale, and Fort Harrison. The history collection also includes bronze and iron cannons which are publicly displayed and interpreted in various battlefield units including Gaines Mill, Malvern Hill, and Drewry's Bluff.

Starting in 2005, Richmond National Battlefield Park began purchasing artifacts from the personal collection (later, from the estate of) William R. Shelton, Jr. The impressive Shelton collection is comprised of furnishings, decorative arts, household items, weapons, books, and archives. The park has plans to restore to the Shelton house—"Rural Plains"—to its mid-19th-century appearance at which point plans will be made to establish a furnished house museum.

In addition to the unprocessed archives of the Shelton family, Richmond National Battlefield Park's archival collection includes NPS administrative records as well as the records of the Richmond Battlefield Parks Corporation which was the first organized body to preserve the battlefields that, in part, comprise the national park today.

The park's 15,000 archaeological artifacts, archives, and those items which are not displayed in the museums, are professionally housed in climate controlled storage facility at the Maggie L. Walker National Historic Site.



Civil War-era artifacts in the historic collections of Richmond National Battlefield Park.

Museum Collections			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Scope of collection statement is prepared, approved, and implemented.		Yes. The 2013 Scope Of Collection statement has been approved.
Inventory	Resources are surveyed to determine their appropriateness for inclusion in the museum/archive collection.		No. An archival survey is needed to assist the park in identifying archival records appropriate for storage in the museum collection or National Archives and Records Administration repository.
Documentation	Furnishings in historic structures are documented in a historic furnishings report.		No. There is an unformulated PMIS statement for a Historic Furnishings Report for Rural Plains (Shelton House) (PMIS#152897), the only building slated for furnishing. However, the park has most of the furnishings.
	Park has current and appropriate baseline documentation (Scope of Collections Statement, Collection Management Plan, Housekeeping Plans(s), IPM Plan(s), EOP, Security and Fire safety plans, Historic Furnishings Plan(s), Conservation survey(s), Collection Storage Plan.)		No. Baseline documentation such as CMP is old and out of date. CMP has been formulated for FY14, most other baseline documentation is outdated or non-existent.
Needs Assessment	Research and development projects include plans and funds for the curation of collected objects and specimens.		Yes. Archeology projects include language and funds for cataloguing artifacts.

Resource Brief: Recovery of Stolen Artifacts

In 1864–5 Civil War battlefield tactics shifted from open, pitched battles to trench warfare. As a result of the shift, both armies used mortars to lob shells at enemy lines with the Union troops making use of a piece of artillery called a Coehorn Mortar. In the 1960s the National Park Service put one of these mortars on display, along with other objects related to the Civil War, helping to tell the story of the battles around Richmond. In 1971, however, the Coehorn Mortar disappeared from its display at Cold Harbor. The FBI investigated the theft, but was unable to determine the parties responsible and the case stagnated. In 2011, however, the case was reopened. The curator at Petersburg National Battlefield Park received a phone call from a collector who saw a Coehorn Mortar for sale in an antique collector’s catalog. The markings on the advertised piece matched those printed in an old, publicly available, artillery catalog, which erroneously attributed the mortar to the Petersburg collection. Examination of the accession records, however, indicated that the piece had been transferred to Richmond NBP in 1968. The Petersburg curator contacted the Richmond curator to inform them of the phone call; the Richmond curator then verified the transfer of the piece and theft report from 1971. Richmond NBP law enforcement rangers opened a new case, directing the subsequent inves-

tigation in close conjunction with the FBI and Investigative Services branch of the regional NPS office. Officers located the mortar nearly 1,000 miles away and successfully returned it to its home in Richmond in early 2012. The recovery of the mortar is due to a combination of citizen action, thorough recordkeeping, and interagency multi-jurisdictional cooperation. The park plans to put the mortar on display at Totopotomoy Creek.



Left: Bronze tube from a Coehorn Mortar in the RICH museum collections. Right: Historic image of Coehorns in use during the Civil War

2.3. Visitor Experience

Visitors to the park in 2012 who may have visited many years earlier found a park that has transformed in many ways. In the last few years, almost every exhibit, sign, and wayside has been updated or replaced. With earlier updates to the park's two primary visitor centers in the city of Richmond, almost all of the park's interpretive facilities are all current and state-of-the-art. Permanent interpretive staff is highly educated and knowledgeable about modern interpretation of the American Civil War, its causes and legacies, and are actively engaged in innovative techniques to deliver meaningful personal interpretive programs for the park's visitors. Indeed, visitor satisfaction with the park's facilities and programs consistently ranks very high.

A key challenge continues to be the discontinuousness of the park's 13 units, scattered across three suburban counties and the city of Richmond. While the challenge stems from the spread-out nature of the park's many battlefield areas, finding their way through suburban areas can often be difficult for visitors. Further, because the battles themselves took place across miles of farm fields and much of that landscape has been developed in the intervening 150 years, conveying the sheer scale and extent of the battlefield landscape is also a challenge.

Visitor Numbers and Visitor Satisfaction

[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Number of Visitors	Number of visitors per year		Visitation has been increasing over the past five years. The total of 156,192 visitors to the park in 2012 was 18.7% higher than the 5-year average of 131,565 visitors for 2007–2011, due in part to special programming for the 150 th anniversary of the 1862 battles around Richmond. Source: RICH Visitation Report
Visitor Satisfaction	Percent of visitors who were satisfied with their visit		Based on the standard visitor satisfaction survey conducted each year, the percent of visitors who were satisfied with their visit over the past five years has been consistently high: in FY12 it was 94%, compared to the 5-year average of 97.2% for 2007–2011. Source: 2012 Visitor Survey Card Data Report

Interpretive and Education Programs – Talks, Tours, and Special Events



[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Education Programs	Number and quality of programs, and number of participants		Education programs have been a critical part of the park's interpretive efforts and have served more than 22,000 school-aged children each of the past five years. Programs link park interpretive themes with Virginia's Standards of Learning and are offered both off-site and on-site. On-site programs are offered at the Tredegar Iron Works, Chimborazo Medical Museum, and several battlefields.
Ranger Programs	Number and quality of programs and attendance		The park conducted more than 80 new programs for the 150 th commemoration of the battles around Richmond in 1862. These covered a wide variety of topics and perspectives. These presentations were well researched and utilized different interpretive techniques such as walking tours, lectures, first person living history accounts, and narrating the role the landscape had on the battle by utilizing living history volunteers. The park has been expanding its interpretive offerings and working with partners to explore stories about and from different perspectives.
Junior Ranger Programs	Number of programs and attendance		Richmond National Battlefield Park has two Junior Ranger programs. One booklet focuses on the Tredegar Iron Works while the other lets children explore the battlefields. Over the last three years the park has averaged roughly 1,500 Junior Ranger participants per year and in 2012 issued 86 Junior Ranger patches and certificates for Junior Ranger Day alone.

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Special Events	Variety and longevity of events, community involvement		The park had a wide variety of special events for the 150 th Anniversary of the battles around Richmond in 2012, which were attended by more than 8,000 visitors—a record number for the park. Many of the events were done in cooperation with the city of Richmond, the surrounding counties, and local museums. The annual Civil War and Emancipation Day included many local museums, churches, and community groups.

Interpretive Media – Brochures Exhibits, and Signs			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Wayside Signs	Condition and currency of signs		Just prior to the Civil War Sesquicentennial, Richmond National Battlefield Park revamped its wayside program, replacing all of the old signage and installing new ones where necessary—amounting to slightly more than 100 new interpretive waysides throughout the park.
Park Directional Sign (off site)	Usefulness, quantity, and placement		Richmond National Battlefield Park has sites in three counties and the city of Richmond. The suggested driving tour outlined on the park brochure to visit the different units is approximately 80 miles. Because it is spread out over such a wide area, directional signage is critical. Additional signage would greatly help visitors as they travel between sites.
Exhibits	Tredegar Visitor Center		The main visitor center for Richmond National Battlefield Park moved to the Tredegar Iron Works site in 2000. In July 2011, the layout of the visitor center was altered to create a joint orientation area for the NPS and its partner at Historic Tredegar, the American Civil War Center to help visitors explore the site and the area's other Civil War sites and battlefields. Exhibits at Tredegar explore multiple themes and perspectives.
	Cold Harbor Visitor Center		The park replaced all of the exhibits in the Cold Harbor Visitor Center in the spring of 2013. These displays expanded the interpretation in the building and now cover the 1862 battle of Gaines' Mill in addition to the 1864 battle of Cold Harbor. The two battles were fought on some of the same ground.
	Chimborazo Medical Museum		Following the move of the park's main visitor center from Chimborazo to the Tredegar Iron Works in 2000, the Chimborazo site was converted into a medical museum in 2001. The site's exhibits and movie reflect current scholarship on the Civil War medical story.
	Glendale Visitor Center		The park replaced all of the exhibits at the Glendale Visitor Center in the spring of 2012, prior to the 150 th commemoration of the Seven Days. The exhibits focus on the battles of Glendale and Malvern Hill, the last two battles of the Seven Days, and the impact the campaign had on the war, diplomatically, politically, and militarily.

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Exhibits	Fort Harrison Visitor Center		The park replaced all of the exhibits in the Fort Harrison Visitor Center in the spring of 2013. The new exhibits explore not only the story of the 1864 battles of Fort Harrison and New Market Heights, which resulted in Medals of Honor awarded to 14 US Colored Troops, but contrast that story with the construction of fortifications around Richmond in 1862 by slaves and free African Americans, among others.
Print Media	Accuracy and availability of primary park publications		Because of the park's ambitious and successful land preservation program it is difficult for it to illustrate all the park's lands since they are changing yearly. The park brochure is updated as needed to show the new land acquisitions as well as any changes in park operations and to provide the latest historical research and diverse stories. Although many of the park's sites are not staffed, the orientation panels in the parking lots have a brochure box for visitors to pick up a park brochure.
Audio-visual Media	Orientation Films		The park has orientation films at the Tredegar Iron Works, Chimborazo Medical Museum, and the Fort Harrison Visitor Center. A brand new film was just added at the Tredegar site telling the history of the iron works and its role during the Civil War.
	Other AV materials		The park has map programs at Tredegar, Cold Harbor and Glendale, all over ten years of age. The exhibits are outstanding for visitor understanding of the different battles; however, the older technology is getting more difficult to fix. A "Voices" program at Tredegar uses visual images of soldiers and civilians as first person narratives are recited through an audio system. Newly installed "Faces of War" monitors at the Glendale, Fort Harrison and Cold Harbor visitor centers display photographs and brief biographies of soldiers that were either killed or mortally wounded in the battles around Richmond.

Sense of Place			 web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Resource contributes to visitor understanding	Sufficient areas of battlefield landscapes retain historic character and features such that visitor can envision and better understand the events that unfolded there.		The park's efforts to follow the Cultural Landscape Plans for the different battlefield sites, accompanied with the addition of recently preserved land and new interpretive waysides, has given the visitor a much greater chance to feel a sense of place when touring the battlefields. The visitors are able to walk a greater amount of the battleground at sites such as Beaver Dam Creek, Gaines' Mill, Glendale, Malvern Hill, and Cold Harbor. However, conveying the sheer scale and scope of the battlefield areas is still a challenge as large percentages of the battlefields lie outside of the park.

Accessibility  web			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Mobility	ADA compliance		If needed at the site, each visitor center has either a ramp, lift, or elevator to be able to access the building and view the exhibits. The park recently put in ADA trails through the Fort Harrison and Fort Brady sites.
Visual Accommodation	ADA compliance		Park's films have audio description capability allowing staff to distribute head phones to visitors unable to see either film. This allows the visitor to get an audio description of what's on the screen. Also, the new AV monitors showing the "Faces of War" exhibit have head phone plug ins allowing the visitor to hear the text spoken.
Auditory Accommodation	ADA compliance		The park's films are all open captioned. Also, the films have audio assistance transmitters allowing park staff to distribute head phones for those having difficulty hearing the film. The "Voices" program at Tredegar—reading of firsthand accounts from civilians about life in Richmond and from soldiers about the battles fought outside Richmond during the Civil War—has transcript copies of both the Military Front and the Home Front accounts for people to read if they are unable to hear spoken accounts.
Public Transportation	Access to park via public transportation		The park is spread out between the city of Richmond and the surrounding counties of Hanover, Henrico and Chesterfield. While there is public transportation to the sites in the city—Tredegar Iron Works and Chimborazo Medical Museum—there is not any for touring the battlefields.
Multi-lingual Resources	Audio and print materials in multiple languages Bi-lingual staff		The park does not offer any materials in multiple languages. Some L.E. staff is bi-lingual, but interpretive staff is not.

Safety  web			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Visitor Safety	Recordable incidents		The safety of visitors is a park priority. The park works to quickly identify and mitigate potential hazards, and the number of accidents is very low.
Staff Safety and Training	Number of staff trained		Operational Leadership Training has been completed by park staff, and CPR, First Aid, and AED training are offered to staff on a space available basis. Job Hazard Analysis is conducted before jobs throughout the park. Regular safety messages are given and distributed to staff members.

Partnerships, Community and Volunteers  web			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale Comments
Volunteers	Number and hours contributed		Richmond National Battlefield Park had 296 volunteers donate 11,148 hours to the park in FY12. This was the greatest number of hours donated over the past five years. For the Division of Interpretation, volunteers greeted and oriented the public at both the Chimborazo and Tredegar visitor centers, provided living history programs, conducted extended walking tours of the battlefields, provided talks on Chimborazo Hospital and worked with education groups. The volunteer program at Richmond NBP continues to grow as the park begins to work with selected colleges on creating a volunteer intern program.
Partnerships	Number and quality of official and unofficial partnerships.		The partnership between the park and the American Civil War Center has created a tremendous visitor experience for the public at Historic Tredegar. Both the NPS and the ACWC exhibits complement each other very well by telling different parts of the Civil War story. The ACWC focuses its interpretation on the causes of the Civil War, the war itself and the legacy of the war. While Richmond's visitor center touches on those topics, the primary interpretation is on Richmond during the war and the battles fought outside the Confederate capital. We have also partnered with the ACWC in presenting interpretive programs such as a first person account about Harriet Tubman, Civil War and Emancipation Day and examining Richmond's homefront stories. The park has also partnered with the Virginia Historical Society to present lectures during the commemoration of the 150 th , the Library of Virginia on walking tours, the Museum of the Confederacy for a video podcast linking a flag in its collection with the stories of what took place to the men carrying that flag on Richmond's battlefields. Finally, the park has partnered with the city of Richmond and the surrounding counties to create, promote, and present programs for the 150 th Anniversary of the battles fought around Richmond.
Community Relationships	Park maintains positive relationship with communities that surround park units		The park has a good relationship with the communities that surround it. In part because of this relationship, Richmond NBP was able to present programs with Willis Church and Gravel Hill Community Center in which the membership greatly helped. Its partnership with Chesterfield County led to joint programming for the 150 th of the Battle of Drewry's Bluff.
Cooperating Association (EN)	Maintain positive working relationships with cooperating associations		Eastern National has been a tremendous asset to Richmond National Battlefield Park. In FY12, Eastern sold more than \$100,000 in merchandise. This amount was up 26% from the previous year. This increase was in large part because of the important role Eastern played in the park's commemoration of the 150 th Anniversary of 1862 battles around Richmond. The cooperating association has consistently worked with park staff on acquiring new titles and items for the bookstore. Also, following a program, the bookstore is often used by park staff to find books for visitors to learn more about the topic covered.

Resource Brief: Civil War Sesquicentennial

From mid-May through the end of June 2012, more than 8,000 visitors attended events at the park for its commemoration of the 150th anniversary of the Battle of Drewry's Bluff (May 1862) and the Seven Days' Battles (late June 1862). Programs included living history demonstrations, real-time ranger-led tours of the battlefields, and special presentations by rangers and scholars.

More than 75 living history volunteers, representing Union and Confederate infantry, artillery and cavalry, as well as civilians, provided demonstrations of battlefield tactics and discussions of life in and around Civil War Richmond. At the Gaines' Mill battlefield, the displays also included the Union balloon corps of Professor T.C.S. Lowe, which was recreated a short distance from where the Union observation balloon went aloft on the morning of June 27, 1862, to scout the Confederate positions and movements towards the battlefield.

Along with the living history demonstrations, the park conducted a series of real-time tours and programs at each of the sites, designed to coincide with the actual time at which the historic events unfolded a century and a half earlier. A special education day at Drewry's brought hundreds of schoolchildren to the site to explore not only history, but also the engineering involved in the construction of defensive works at the site.

At Historic Tredegar, park staff, in partnership with the American Civil War Center, presented "Voices from the Storm—Richmond, 1862," a special outdoor multimedia program that utilized images and quotations of Union and Confederate soldiers, Richmond civilians and enslaved African Americans to present insight into the struggles, hopes and transformations that occurred in the Confederate capital during the momentous events of the summer of 1862.



Ranger Ashley Luskey leads an interpretive hike through the historic 1862 Gaines' Mill battlefield as part of the 150th Anniversary Commemorative events.

Planning and execution of the anniversary programs were hampered considerably by severe storms that blew through the Richmond area on Monday, downing trees and power lines throughout the area and forcing the closure of both the Beaver Dam Creek and Gaines' Mill park sites just hours ahead of the anniversary programs. However, park staff cleared trees and storm debris from the sites in order to get them open in time for the planned events.

Resource Brief: Replacement of Exhibits and Waysides

From 2010 through 2012, the park undertook three extensive projects to update and replace all of the decades-old waysides throughout the park and exhibits at its three battlefield visitor centers. More than 100 waysides, interpretive markers, and orientation signs at the park's battlefield units were completely redesigned and rewritten, and in some cases new markers were developed. Each battlefield unit has an orientation wayside near the parking area that follows the same graphic tools and includes a topographical map orienting the visitor to the site's position on the battlefield landscape. Located throughout the battlefields along trails and at key vantage points, new waysides use the latest historical research, expanded and diverse themes, improved maps, and some original artwork to greatly increase visitor understanding of each site and the overall meaning of the events that took place there.

At the Glendale, Cold Harbor, and Fort Harrison visitor centers, all of the indoor exhibits—some of which had been developed in the 1960s—were replaced. The new exhibits offer deeper exploration into complex and diverse themes of the Civil War and the battles that took place around Richmond. At Cold Harbor, the exhibits were expanded to include Gaines' Mill, which took place across much of the same ground two years earlier, fostering a comparison of the two battles, which were fought for similar reasons but in very different ways. Glendale's



An example of the new interpretive waysides installed throughout the park.

new exhibits more fully explore the battles of Glendale and Malvern Hill, which took place in the area on successive days. Fort Harrison's exhibits offer interactive ways for visitors to learn about the United States Colored Troops, who fought successfully to take a segment of the city's defenses in the area, defenses that had been constructed in part with slave labor only a couple years earlier. Displays about the work of engineers to construct—and attempt to defeat—military defenses also provides the park an opportunity to bring STEM subjects into its historic interpretation.

New audiovisual displays about individual soldiers who lost their lives on Richmond's battlefields, and a film about the industrial story at the Tredegar Iron Works convey a variety of dimensions of the nation's complex Civil War history.

2.4. Park Infrastructure

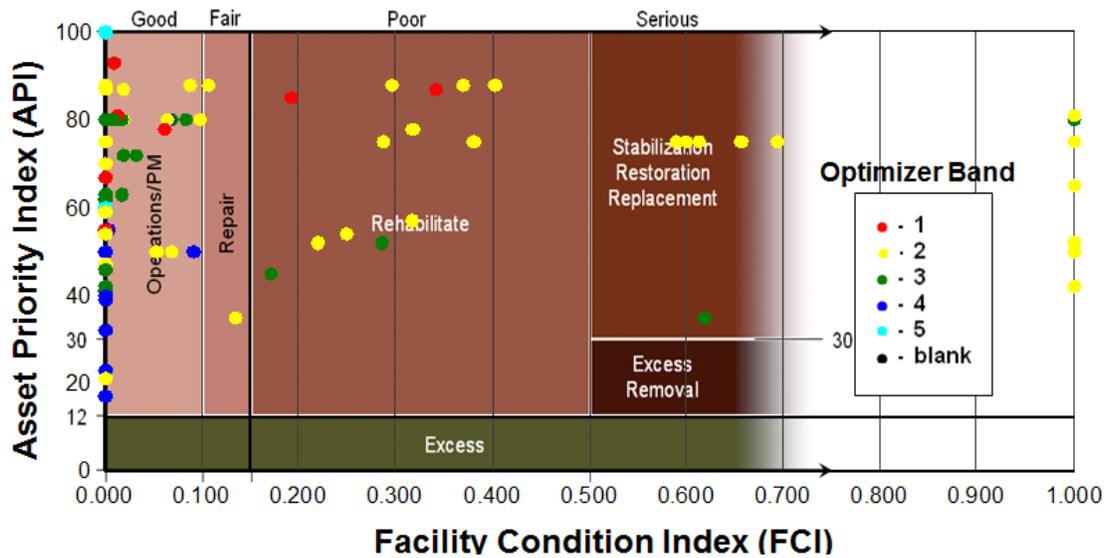
Facility Condition Index

The National Park Service uses a facility condition index (FCI) to indicate the condition of its facilities and infrastructure. FCI is the cost of repairing an asset, such as a building, road, trail, or water system, divided by the cost of replacing it. The lower the FCI number, the better the condition of the asset. The condition of the buildings and other infrastructure assets at each park is determined by regular facility inspections, or "condition assessments", including daily informal inspections and formal yearly inspections. Deficiencies identified from these assessments are documented in the NPS Facility Management Software System and the cost for each repair determined. Repairs that cannot be completed within the year count against the condition of a structure. The total cost of these deferred repairs divided by the total cost to replace the structure results in the FCI, with values between 0 and 1 (the lower the decimal number, the better the condition). The FCI is assigned a condition category of Good, Fair, Poor, or Serious based on industry and NPS standards. Deferred maintenance projects that require additional funding are identified based on FCI. Planned preventive maintenance on critical components occurs during the year, using a park's base budget. For additional information about how park managers use information about the condition of facilities and infrastructure to make decisions about the efficient use of funding for maintenance and restoration activities at the park, [Click Here](#).

Another important facilities management planning tool used at a park is the Asset Priority Index (API). It identifies the importance of the various infrastructure components at a park. The API is determined using five criteria, and is calculated out of 100 possible points. The criteria are weighted based on their importance to NPS core priorities. They are distinct to ensure that each aspect of the asset is measured independently. As a result, most assets will not rate high in every category.

The scatterplot (below) for 2012 shows the FCI for each of the infrastructure asset types at Richmond National Battlefield Park. It plots buildings, trails, roads, parking areas, and other infrastructure assets against its Asset Priority Index (API). Park managers and maintenance staff use the FCI and API data for each park asset to focus on preventive maintenance and repairs to facilities that are most critical to their parks.

Overall Facility Condition Index				web	
					
Asset Category	Number of Assets 2008 / 2012	FCI 2008 / 2012	Condition Status/Trend	Rationale	
Buildings	13 / 13	0.069 / 0.133		Nine of the park's 13 buildings are in good condition. The West House at Malvern Hill, Rural Plains House, and Watt House at Gaine's Mill are all in poor condition.	
Trails	11 / 11	0.244 / 0.013		The park's trails are in Good condition and the park has increased the use of volunteers to help maintain them.	
Waste Water Systems	1 / 1	0.000 / 0.000		The park has septic tanks and city sewer as its waste water disposal methods. All are in good condition.	
Water Systems	2 / 2	0.343 / 0.000		The park uses both wells and city water to supply its drinking water. There are no defenses with these systems.	
Unpaved Roads	5 / 4	0.037 / 0.010		These roads are all for administrative use and are in good condition.	
Paved Roads, Parking Areas, Bridges, Tunnels	34 / 34	0.122 / 0.291		The park's road projects in 2012 were not completed. Now all of the park's paved roads have had a complete surface treatment and are all in Good Condition.	
All Others	44 / 44	0.002 / 0.033		The 44 assets in the All Others category include the park's radio system and fuel system, as well as earthworks, fortifications, cultural landscapes, wayside exhibits, and stone monuments. Overall they are in good condition.	



Optimizer bands—the color of the dots in the scatterplot—are assigned to each facility or asset as a tool to prioritize use of limited funding to maintain park infrastructure. Optimizer Band 1 includes those assets with the highest maintenance priorities. These assets are most important to the park—often linked to the park’s enabling legislation or have high visitor use—and usually are in the best condition. Band 1 assets receive the highest percentage of base funding for routine operations, preventive maintenance, and recurring maintenance to keep them in good condition with proactive, planned maintenance. These assets are important to park operations, but because fewer park base dollars are available after maintaining Band 1 assets, Band 2 assets receive a lesser percentage of remaining funds. Assets in the lower priority bands may only receive preventive maintenance for the most critical components or may require special projects or partner funding to maintain them. For additional information about optimizer bands and how park managers use them to make decisions about the efficient use of funding for maintenance and restoration activities at the park, [Click Here](#).

Energy Consumption

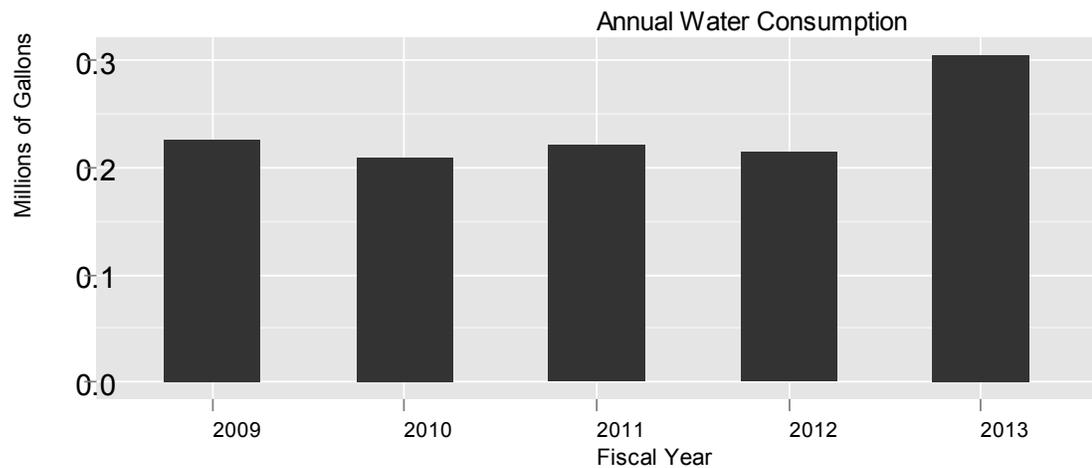
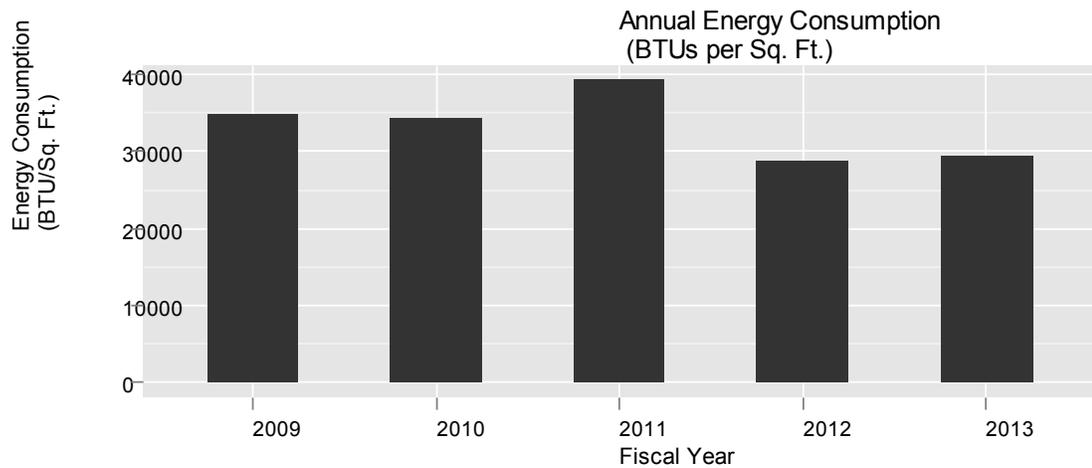
The production of energy to heat, cool, and illuminate buildings and to operate water utility systems is one of the largest contributors to greenhouse gas emissions in the United States. The National Park Service is committed to improving facility energy performance and increasing its reliance on renewable energy sources. The National Park Service has a goal to reduce Servicewide building energy consumption per square foot of building space by 35% by 2016 from the baseline set in 2003 ([NPS Green Parks Plan 2012](#)).

Water Consumption

The national and global supply of fresh water has diminished in recent decades, and this trend is likely to continue due to drought and other climatic changes. To contribute to the responsible use of freshwater supplies, encourage groundwater recharge, and protect water quality, the National Park Service is improving its efforts to conserve water, reuse gray water, and capture rainwater, and has set a goal to reduce non-irrigation potable water use intensity by 30% by 2020 from the baseline set in 2007 ([NPS Green Parks Plan 2012](#)).

Energy Consumption			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Energy Consumption	BTUs per gross square footage of buildings		Energy usage (BTUs per gross square footage of buildings) at the park in 2013 was 14% lower than the average for the previous 4 years (Source: NPS Annual Energy Report).

Water Consumption			web
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Water Consumption	Millions of gallons		Water consumption at the park in 2013 was 40% higher than the 4-year average for 2009–2012 (Source: NPS Annual Energy Report). However, because the park's ability to track its water usage became much more effective in 2013, it's likely that the four years prior were off.



CHAPTER 3. SUMMARY OF KEY STEWARDSHIP ACTIVITIES AND ACCOMPLISHMENTS

Activities and Accomplishments

The list below provides examples of stewardship activities and accomplishments by park staff and partners to maintain or improve the condition of priority park resources and values for this and future generations:

Natural Resources

- Developed a volunteer breeding bird monitoring program with use of volunteers and in cooperation with the Mid-Atlantic Inventory and Monitoring Program.
- Developed a relationship with a Chickahominy River Interest group and instituted a volunteer *E. coli* monitoring program in park streams.
- Designation of Crewes Channel as an Important Bird Area by Audubon.
- Maintaining cultural entities with natural resources in mind through prescribed fire, native grass restoration on earthworks, etc.
- Completion of three baseline biological inventories (vegetation communities, birds and reptiles/amphibians) on 600 acres of newly acquired battlefields in addition to the 12 baseline inventories completed parkwide.
- Worked with the Mid-Atlantic Inventory and Monitoring network to monitor water quality using benthic macroinvertebrates and physical parameters.
- Completed a Natural Resource Condition Assessment.
- Continued to carry out a Resource Management youth program using the Student Conservation Association and the Youth Conservation Corps.
- Hired a permanent biological science technician to supplement existing natural resource staff.
- Conducted multiple prescribed burns safely in order to maintain cultural landscapes as well as foster native vegetation communities in forest and meadows.
- Monitored invasive species and developed a parkwide GIS database of infestation location, density and species.
- Treated approximately 300 acres of invasive species over 5 years through contract, SCA interns, YCC, volunteers and in cooperation with the mid-Atlantic EPMT.

Cultural Resources

- Restored the Malvern Hill battlefield landscape through debris removal and conversion of 35 acres from forest to grassland.
- Worked to understand the parkwide research and planning backlog and began ad-

dressing needs.

- Partnership between NPS and private institutions to create exhibits.
- Developed a suite of CRM reports to support resource understanding and management at Shelton House to include a Cultural Landscape Report part 1, an Archeological Overview & Assessment and a Historic Structures Report.
- Prepared a Vegetation Management Plan for earthworks management as well as cultural landscapes and developed a Storm Damage SOP for earthwork.
- Restructured park management creating a new Resource Management Division that includes natural and cultural resources staff.
- Updated the park's Scope of Collections Plan.
- Worked to update records in ASMIS and LCS.
- Added approximately 315 acres of core, nationally significant battlefield land to the park.
- Oversaw the ongoing rehabilitation and stabilization of the Shelton House.
- Developed a GIS utilities layer in the park.
- Worked to georeference historic maps in order to provide accurate GIS information on the historic landscape condition.
- Acquired Ground-based LiDAR (high resolution 3D surveys) of Drewry's Bluff (the eroding bluff as well as the adjacent fort), Fort Harrison and Fort Brady.

Visitor Experience

- New interpretive waysides written, produced and installed park wide.
- Creation of orientation film focusing on the Tredegar Iron Works.
- Exhibits at Cold Harbor Visitor Center were updated and expanded to cover the 1862 battle of Gaines' Mill as well as the 1864 battle of Cold Harbor. Both battles were fought in the same area.
- Both the Glendale and Fort Harrison Visitor Centers had new exhibits written, created and installed improving the visitors' understanding of the battles and their impact on the Civil War.
- In partnership with the Civil War Trust, park staff worked on Malvern Hill battle app for use with smartphones. This allows visitors to tour Malvern Hill while seeing battle maps, hearing firsthand accounts and seeing videos of rangers interpreting the battle.
- Opening the grounds of the recently acquired 124 acres of the Totopotomoy Creek battlefield, including the historic home of the Shelton family, Rural Plains, now has an interpretive trail with accompanying brochure.
- Ranger audio podcasts were created for walking tours of Gaines' Mill, Malvern Hill, Cold Harbor and Lincoln's visit to Richmond.
- The partnership between the National Park Service and the American Civil War Cen-

ter at Historic Tredegar has created improvements to the site that benefit the visitors' understanding of both the national and local significance of the Civil War.

- Presented a wide variety of programs for the Sesquicentennial of the 1862 battles around Richmond looking at many diverse aspects of the campaigns' impacts on the military, social, home front, political and diplomatic fronts of the war.
- During the summer months in 2012, RNBP and the Richmond Police Athletic League (PALS) teamed up to provide hands-on educational programming in the park for at-risk-youth during the summer months.
- In early 2013, the superintendent and the park curator filmed the visit of a Junior Ranger and her parents to the park. She proudly wore a vest covered with Junior Ranger patches from dozens of parks and the video highlighted her enthusiasm and commitment to visiting and enjoying as many national parks as she could.

Park Infrastructure

- Completed in 2012 a complete repair, and reconstruction of all of the park's roads.
- Constructed a new equipment shop to provide a safe environment for our mechanic to work in. This building has a LEEDS self-rating of qualified.
- After adding the Rural Plains house to the park we have completed several critical stabilization projects that preserved the building from serious loss.
- Completed a new trail @ Rural Plains that changed the site from an inaccessible area to a popular recreation site.

CHAPTER 4. KEY ISSUES AND CHALLENGES FOR CONSIDERATION IN MANAGEMENT PLANNING

Management of Natural and Cultural Landscapes on Non-Contiguous Battlefield Sites

One of the largest challenges to nearly every aspect of management at Richmond NBP is its fragmented nature. As mentioned, it is made up of 13 separate battlefield sites, spread across three counties and the City of Richmond. Not only is this logistically challenging for daily operations, project planning and creating a presence throughout the park, but it also increases the overall complexity of park management. For example, instead of large reaches of one or two streams, the park manages segments of nine separate streams, all with various sizes, management issues and watershed characteristics such as land use. Instead of one or two Cultural Landscapes to study and restore, the park manages ten, each requiring research and planning documents. Each park site is different with respect to size, soil type, plant and animal communities and level of surrounding development. This increased complexity presents several primary challenges.

With so many variables between units, parkwide resource data is not as useful for management and so each park unit could ideally have its own suite of condition assessment and inventory and monitoring documents. However, most park units, when analyzed separately, don't provide a large enough sample size to make data reliable. Therefore unit specific data will be useful in looking at trends over time; however, unit specific resource condition at any one time can only be established somewhat anecdotally.

In addition, with so much boundary relative to park acres, the condition of park resources is highly dependent on surrounding land use. This includes historic viewsheds as well as the quality of water, air and natural habitats. This makes monitoring for encroachments and resource effects from surrounding land owners extremely important, and at the same time difficult to keep up with. This ultimately limits the ability to protect all park lands and resources. As a result, many aspects of park management must be done using a prioritization approach. For example, natural and cultural landscapes that are most intact tend to be prioritized for management so that they stay that way.

Outreach and Urban Interface

One important benefit to the non-contiguous nature of the park is that it provides outreach opportunities in communities within three counties and the City of Richmond. In addition to staffing five Visitor Centers throughout the Richmond metropolitan area and regular battlefield tours, the interpretive staff has been working to get out into the Community. This has been especially true within the city, where rangers have offered highly popular tours along city streets exploring stories such as the visit by President Lincoln to Richmond after its occupation by Union forces, as well as the tragic explosion of the Confederate munitions factory on Brown's Island, prisons and prisoner-of-war camps in the city, and the seedier impacts of rapid population growth brought about with the designation of Richmond as the Confederate capital.

The park has also strengthened its partnership with the historic community of Gravel Hill, descendants of a group of African Americans who were freed decades before the Civil War. Gravel Hill is situated on the Glendale battlefield and the families there, like countless others across the South,

saw their livelihoods destroyed as their farm fields became battlegrounds, but their recuperation was much more challenging. The park is working closely with the Gravel Hill Community Center to share this story with visitors.

In addition, in recent years the park has been working hard to engage the local communities through internships, volunteer service projects and the Youth Conservation Corps. During just the last year, the park has worked with over 300 volunteers from military groups, service fraternities, summer camps, Boy Scouts and local families on trail repair, earthworks preservation, invasive vegetation control and work in cultural viewsheds. Each volunteer day starts with an interpretive talk about the history of the site as well as education on park management themes relevant to the project. Likewise over the past five years, the park has engaged 25 local youth for eight weeks during the summer, educating them on environmental park management themes while they completed various outdoor projects throughout the park.

Coordinating volunteers and youth does have its challenges. For example, they often have minimal training on many of these tasks and in the case of many of our YCC enrollees, very little experience with being outside in a natural landscape. In addition, the park generally does not allow volunteers to use mechanized equipment and lastly, recruiting and managing volunteers and youth often takes quite a lot of staff time. However, with all its challenges, the park still sees volunteers/youth groups as an important way to get things done in the park. In addition to providing more hands to complete work, it educates the local community and youth on the park and its many management issues as well as the National Park Service as a whole. It is hoped that in this way, we create advocates for the future.

Preservation of New Lands

The park has an overwhelmingly successful land preservation program. In the past 14 years, it has had the incredible opportunity to expand its acreage from 754 acres to nearly 3,000 and growth continues. This park now protects more intact battlefields and associated resources and is better able to tell the important stories of those battlefields. This added acreage also makes it easier to protect park ecosystems and landscapes by creating larger buffers to surrounding land uses. For example, at its Malvern Hill/Glendale unit the park now owns the majority of two battlefields as well as the entire Western Run watershed and now will be less likely to have to deal negative impacts of any incompatible surrounding land uses.

With all its benefits, tripling the park's acreage creates challenges over and above the obvious additional lands and resources to understand, protect, and maintain. For example, many of these new lands are acquired with modern buildings and debris that must be removed as a starting point. For some parcels this has been accomplished through fund requests during the Servicewide Combined Call, the use of volunteer groups and park staff when it was available. After the acquisition of a large new parcel at the Malvern Hill battlefield, the park was able to remove two large silos and numerous dump sites using project funding and a local debris clean-up contractor, while park staff removed a modern pole barn in house. More recently, the park removed numerous truckloads of household and agricultural debris at the recently acquired Totopotomoy Creek battlefield with the help of boy scouts and multiple military volunteer groups. The Totopotomoy Creek battlefield tract

also conveyed with a house dating back to the early 1700s that was used as a Northern headquarters during the Battle of Totopotomoy Creek in 1864. This has resulted in an enormous amount of research, stabilization and restoration work for which park staff has partnered with regional staff and restoration groups.

Beyond clean-up and stabilization work, the park is hoping that additional grounds maintenance will be limited on many of these new parcels. Much of the acreage is either wooded or in agriculture, and since much of the landscape was in agriculture at the time of the battles, the park plans to manage these fields by leasing them to local farmers. Although this will require park oversight to ensure that the farms are managed in a manner that does not damage park resources, it will be a benefit to the local farm industry as well as to the park. It will help maintain the cultural landscape with minimal effort from the park and provide rent for the park to put toward park management.

Because the park did not receive a fund increase with this increase in lands, it has limited staff and funding and, as a result, plans to keep the majority of these new parcels undeveloped in the near future. However, it is eager to provide at least minimal access to visitors. The park has been successful at developing new trails using park staff as available, volunteer groups, SCA interns, eagle scouts and its summer YCC crew. However, this process can be somewhat slow, often cannot incorporate accessibility standards, and cannot accommodate the creation of car access or any access that requires some level of engineering.

The park and its staff are excited about the new resources and opportunities that these lands bring. They will continue to study and understand these new resources so that once staff and funding is available, they can be adequately protected while they are expanded to provide visitor enjoyment and a better understanding of an important piece of our past.

REFERENCES

See the [State of the Park Report for the Park website](#) for a more complete list of references to documents and data sets upon which the assessments in this State of the Park report are based. References for several of the key documents cited in this report are as follows:

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See Also:

[Collection of Natural Resource-Related References](#)

[Collection of Cultural Resource-Related References](#)

[Collection of Visitor Experience-Related References](#)

GLOSSARY

See the [State of the Parks home page](#) for a link to a complete glossary of terms used in State of the Park reports. Definitions of key terms used in this report are as follows:

Americans with Disabilities Act (ADA)	Law enacted by the federal government that includes provisions to remove barriers that limit a disabled person's ability to engage in normal daily activity in the physical, public environment.
Archeological Sites Management Information System (ASMIS)	The National Park Service's standardized database for the basic registration and management of park prehistoric and historical archeological resources. ASMIS site records contain data on condition, threats and disturbances, site location, date of site discovery and documentation, description, proposed treatments, and management actions for known park archeological sites. It serves as a tool to support improved archeological resources preservation, protection, planning, and decision-making by parks, centers, regional offices, and the national program offices.
Baseline Documentation	Baseline documentation records the physical condition of a structure, object, or landscape at a specific point in time. A baseline provides a starting point against which future changes can be measured.
Carbon Footprint	Carbon footprint is generally defined as the total set of greenhouse gas emissions caused by an organization, event, product or person.
Climate Friendly Park	The NPS Climate Friendly Park designation requires meeting three milestones: completing an application; completing a comprehensive greenhouse gas (GHG) inventory; and completing a Climate Action Plan, which is the actions, policies, programs, and measures a park will put into place to reduce its GHG emissions.
Cultural Landscape Inventory (CLI)	A Cultural Landscapes Inventory describes historically significant landscapes within a park. The inventory identifies and documents each landscape's location, size, physical development, condition, characteristics, and features, as well as other information useful to park management.
Curation	National parks are the stewards of numerous types of objects, field notes, publications, maps, artifacts, photographs, and more. The assemblage of these materials comprises a museum collection. Curation is the process of managing, preserving, and safeguarding a collection according to professional museum and archival practices.

Exotic Plant Management Team (EPMT)	One of the ways the NPS is combating invasive plants is through the Exotic Plant Management Program. The program supports 16 Exotic Plant Management Teams working in more than 225 park units. EPMTs are led by individuals with specialized knowledge and experience in invasive plant management and control. Each field-based team operates over a wide geographic area and serves multiple parks.
Facility Condition Index (FCI)	FCI is the cost of repairing an asset (e.g., a building, road, bridge, or trail) divided by the cost of replacing it. The lower the FCI number, the better the condition of the resource.
Foundation Document	A park Foundation Document summarizes a park's purpose, significance, resources and values, primary interpretive themes, and special mandates. The document identifies a park's unique characteristics and what is most important about a park. The Foundation Document is fundamental to guiding park management and is an important component of a park's General Management Plan.
Fundamental and Other Important Resources and Values	Fundamental resources and values are the particular systems, processes, experiences, scenery, sounds, and other features that are key to achieving the park's purposes and maintaining its significance. Other important resources and values are those attributes that are determined to be particularly important to park management and planning, although they are not central to the park's purpose and significance. These priority resources are identified in the Park Foundation Document and/or General Management Plan. The short-cut name that will be used for this will be Priority Resources.
Historic Integrity	Historic Integrity is the assemblage of physical values of a site, building, structure or object and is a key element in assessing historical value and significance. The assessment of integrity is required to determine the eligibility of a property for listing in the National Register.
Indicator of Condition	A selected subset of components or elements of a Priority Resource that are particularly "information rich" and that represent or "indicate" the overall condition of the Priority Resource. There may be one or several Indicators of Condition for a particular Priority Resource.
Interpretation	Interpretation is the explanation of the major features and significance of a park to visitors. Interpretation can include field trips, presentations, exhibits, and publications, as well as informal conversations with park visitors. A key feature of successful interpretation is allowing a person to form his or her own personal connection with the meaning and significance inherent in a resource.

Invasive Species	Invasive species are non-indigenous (or non-native) plants or animals that can spread widely and cause harm to an area, habitat or bioregion. Invasive species can dominate a region or habitat, out-compete native or beneficial species, and threaten biological diversity.
List of Classified Structures (LCS)	LCS is an inventory system that records and tracks the condition of the approximately 27,000 historic structures listed in the National Register of Historic Places that are the responsibility of NPS.
Mid-Atlantic Inventory and Monitoring Network (MIDN)	One of 32 I&M networks established as part of the NPS Inventory and Monitoring Program . The Mid-Atlantic I&M Network provides scientific data and expertise for natural resources in 10 national parks located in Virginia and Pennsylvania.
Museum Collection	NPS is the steward of the largest network of museums in the United States. NPS museum collections document American, tribal, and ethnic histories; park cultural and natural resources; park histories; and other aspects of human experience. Collections are managed by professionally-trained NPS staff, who ensures long-term maintenance of collections in specialized facilities.
Native American Graves Protection and Repatriation Act (NAGPRA)	A federal law passed in 1990. NAGPRA provides a process for museums and federal agencies to return certain Native American cultural items (e.g., human remains, funerary objects, sacred objects, objects of cultural patrimony) to lineal descendants and culturally-affiliated Indian tribes and Native Hawaiian organizations.
Natural Resource Condition Assessment (NRCA)	A synthesis of existing scientific data and knowledge, from multiple sources, that helps answer the question: what are current conditions of important park natural resources? NRCAs provide a mix of new insights and useful scientific data about current park resource conditions and factors influencing those conditions. NRCAs have practical value to park managers and help them conduct formal planning and develop strategies on how to best protect or restore park resources.
Priority Resource or Value	This term refers to the Fundamental and Other Important Resources and Values of a park. These can include natural, cultural, and historic resources as well as opportunities for learning, discovery and enjoyment. Priority Resources or Values include features that have been identified in park Foundation Documents, as well as other park assets or values that have been developed or recognized over the course of park operations. Priority Resources or Values warrant primary consideration during park planning and management because they are critical to a park's purpose and significance.

Project Management Information System (PMIS)	A servicewide intranet application within the National Park Service to manage information about requests for project funding. It enables parks and NPS offices to submit project proposals to be reviewed, approved and prioritized at park units, regional directorates, and the Washington Office.
Resource Management	The term “resources” in NPS encompasses the many natural, cultural, historical, or sociological features and assets associated with parks. Resource management includes the knowledge, understanding, and long-term stewardship and preservation of these resources.
Specific Measure of Condition	One or more specific measurements used to quantify or qualitatively evaluate the condition of an Indicator at a particular place and time. There may be one or more Specific Measures of Condition for each Indicator of Condition.
Visitor and Resource Protection (VRP)	VRP includes, among other responsibilities, protecting and preserving park natural and cultural resources, enforcing laws that protect people and the parks, fire management, search and rescue, managing large-scale incidents, and on-the-ground customer service.

