



# STATE OF THE PARK REPORT

Valley Forge National Historical Park  
Pennsylvania  
2015

On the cover: National Memorial Arch, Valley Forge NHP. Copyright Friends of Valley Forge Park/MJ Ticcino

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.

# CONTENTS

<b>Executive Summary</b>	<b>1</b>
Summary of the State of Valley Forge NHP Resources	3
Key Issues and Challenges for Consideration in Management Planning	6
<b>Chapter 1. Introduction</b>	<b>7</b>
<b>Chapter 2. State of the Park</b>	<b>10</b>
2.1. Natural Resources	10
Air Quality	10
Geologic Features and Processes	14
Water Quantity and Quality – Valley Creek	17
Water Quality – Schuylkill River	19
Forest, Grassland, and Wetland Communities	20
Wildlife	20
2.2. Cultural Resources	23
Archeological Resources	23
Cultural Anthropology	27
Cultural Landscapes	27
Historic Structures	29
History	33
Museum Collections	35
2.3. Visitor Experience	38
Historical Interpretive and Education Programs	38
Natural Landscape Experience	44
Relevance	45
Interpretive Media	47
Visitor Numbers and Satisfaction	50
Accessibility	50
Safety	52
2.4. Park Infrastructure	53
Facility Condition Index	53
Energy Consumption	57
Water Consumption	58
2.5. Partnerships and Volunteerism	60
Partnerships	60
<b>Chapter 3. Summary of Key Stewardship Activities and Accomplishments</b>	<b>63</b>
<b>Chapter 4. Key Issues and Challenges for Consideration in Management Planning</b>	<b>67</b>
<b>References</b>	<b>71</b>
<b>Glossary</b>	<b>74</b>



# 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 communicate 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.

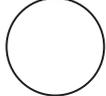
The purpose of Valley Forge National Historical Park is to educate and inform present and future generations about the sacrifices and achievements of General George Washington and the Continental Army at Valley Forge, and the people, events, and legacy of the American Revolution; preserve the cultural and natural resources that embody and commemorate the Valley Forge experience and the American Revolution; and provide opportunities for enhanced understanding.

The park is nationally significant as the location of the 1777–78 winter encampment of the Continental Army under General George Washington. Few places evoke the spirit of patriotism and independence, represent individual and collective sacrifice, or demonstrate the resolve, tenacity and determination of the people of the United States to be free as does Valley Forge. The historic landscapes, structures, objects, and archeological and natural resources at Valley Forge are tangible links to one of the most defining events in our nation’s history. Here the Continental Army under Washington’s leadership emerged as a cohesive and disciplined fighting force. The Valley Forge experience is fundamental to both American history and American myth, and remains a source of inspiration for Americans and the world.

This report provides an overall assessment of the condition of priority resources and values at the park based on scientific and scholarly studies, expert opinion, and professional judgment. The internet version of this report, available at <http://www.nps.gov/stateoftheparks/park/VAFO>, 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” ecosystem

parameters, as well as 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 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

## Summary of the State of Valley Forge NHP Resources

Priority Resource or Value	Condition Status/Trend	Rationale
<b>Natural Resources</b>		<a href="#">web</a>
<b>Air Quality</b>		Based on a synthesis of air quality measurements for Valley Forge during 2005–2009, ozone condition warrants significant concern, sulfur and nitrogen wet deposition conditions warrant significant concern, and visibility condition warrants significant concern. Condition levels are based on <a href="#">NPS Air Resource Division benchmarks</a> and reflect air quality in the region.
<b>Geologic Features and Processes</b>		Pleistocene fossils have been found in a single location in the park; however, the site of the discovery is inaccessible and the current condition is unknown. Karst topography (which has a significant impact on the area's geohydrology) underlies two-thirds of the park, and five caves and more than 100 sinkholes have been documented; however, past quarry operations and other industrial activities in karst locations have impacted the resource. The park lacks a comprehensive cave and karst inventory and does not have adequate information to manage the resource.
<b>Water Quantity and Quality – Valley Creek</b>		Valley Creek is a spring-fed, limestone stream and a designated Pennsylvania Exceptional Value waterway, cold water fishery, and Class A Wild Trout Stream. It flows through a 23 square mile watershed. Only the last two miles of the creek flow within the park. The overall condition of Valley Creek was evaluated as Good with an unchanging trend by Sherwin et al. (2014) based on a synthesis of numerous measures of water quantity, chemistry, macroinvertebrate assemblages, and stream habitat.
<b>Water Quality – Schuylkill River</b>		The 130-mile long Schuylkill River was the first waterway to be designated as a Pennsylvania Scenic River, and is also the core of a national and state heritage area. Approximately 34 miles of the Schuylkill River have been designated impaired by the Pennsylvania Dept. of Environmental Protection, including the three miles that flow through Valley Forge NHP. A number of individual long term water quality metrics contributed to the water quality evaluation; however, additional metrics are recommended including fecal coliform, macroinvertebrate assemblages, and fish communities to provide a more accurate picture of overall water quality (Sherwin et al. 2014). Water quality parameters such as turbidity, nitrate/nitrite, and dissolved oxygen have direct impact on biotic communities and are considered 'good' based on the PA Code for Warm Water fisheries.
<b>Forest, Grassland and Wetland Communities</b>		About two-thirds of the park is covered by native grasslands, forests, and wetland habitats, with the remaining one-third covered by mowed lawns, parking areas, and other developed areas. The condition of forest and grassland habitats warrants concern based on a synthesis of data collected by the Mid-Atlantic I&M network, park staff, and others (Sherwin et al. 2014). A detailed park-wide wetland inventory published in 2012 found 51 individual palustrine wetlands covering 63.96 acres.
<b>Wildlife</b>		Inventories have been conducted to document the species of vertebrates that occur in the park, but park staff and the Mid-Atlantic Network, Inventory and Monitoring (MIDN I&M) are only able to regularly monitor birds and white-tailed deer. Additional monitoring of other vertebrate groups is needed to provide information on trends and current conditions, and basic data for terrestrial invertebrates is needed.
<b>Cultural Resources</b>		<a href="#">web</a>
<b>Archeological Resources</b>		There are 263 archeological sites in the Archeological Sites Management Information System (ASMIS), of which 17 have been determined to be eligible for inclusion on the National Register, and which will be listed when the nomination update is completed. Only approximately 50% of the park has been intensively researched through an Archeological Overview and Assessment (AOA). An AOA that will cover the remaining areas of the park is projected to be funded in 2017.

State of the Park Summary Table continued

Priority Resource or Value	Condition Status/Trend	Rationale
Cultural Anthropology		There are no known cultural anthropological resources in the park. There are three federally recognized Indian Tribes whose ancestral lands include Valley Forge NHP, and with whom the park consults regularly on matters of mutual interest and to fulfill its obligations under the 2008 Nationwide Programmatic Agreement.
Cultural Landscapes		83% (5 of 6) park cultural landscapes have been evaluated. Updated National Register documentation is currently underway; at its completion, 100% of cultural landscapes will have adequate NR documentation.
Historic Structures		A number of historic structures have been restored or rehabilitated in the past decade yet many remain to be treated. All buildings have use and treatment determinations, as outlined in 2007 General Management plan, yet many remain empty and in need of physically and economically sustainable uses. Preservation maintenance of the park's large portfolio of historic structures is an ongoing challenge.
History		The three volume Valley Forge Report serves as the basis for understanding the historic context of the park. All park resources are either listed on the National Register or have Determinations of Eligibility; updated NR documentation is currently underway.
Museum Collections		85% of the history collection is accessioned and catalogued; 15% of the archival collection is fully catalogued. The park does not have adequate storage space for collections.
<b>Visitor Experience</b>		<a href="#">web</a>
Number of Visitors		For 2013, improvements were made to the method of counting visitors, providing a more accurate count. The apparent increase over 2012 (1,442,750 total visitors) reflects the difference in methodology, as well as a possible actual increase. The 2012 total was 4.9% higher than the 5-year average of 1,388,763 visitors for 2007–2011. The majority of visitors to the park come for recreation. Due to multiple park entrances and to visitor use patterns, accurately counting visitation is challenging.
Visitor Satisfaction		Based on the standard visitor satisfaction survey conducted each year, the percentage of visitors satisfied in FY13 was 98.0%, compared to the average of 97.0% for the previous five years and 95.4% for the past ten years. Source: 2013 Visitor Survey Card Data Report
Interpretive and Education Programs – Talks, Tours, and Special Events		Park staff and partners conduct a variety of programs for life-long learners from pre-schoolers to adults. Ranger-led walks focus on the history of the 1777–78 winter encampment, and living history demonstrations by staff and volunteers showcase the lives of continental soldiers and camp followers. Park staff and partners host an expanding and varied calendar of special events. While most programs tend to follow traditional NPS practices and reach traditional audiences, recent years have seen the addition of natural resource programs, programs aimed at bicyclists and photographers, and outreach to underserved audiences. Still, the majority of visitors are not reached by programs.
Interpretive Media – Brochures, Exhibits, Sign, and Website		The park has relatively few waysides for a park of this size, and the quantity and placement of off-site directional signs can make it difficult for visitors to navigate to the park. The exhibits in the Visitor Center are not interactive or particularly engaging, and the park orientation film is outdated both in content and cinematography. Improvements have been made in recent years in the content, navigation, and layout of the park website and the park has established Facebook and Twitter accounts to provide information to visitors and the public.

State of the Park Summary Table continued

Priority Resource or Value	Condition Status/Trend	Rationale
Relevance		The park currently does not have adequate information on the destination and recreation visitors that come to the park and what they expect or want from their park experiences. Approximately 90% of park visitors are recreation users, and park staff would like to provide more engaging opportunities to allow recreation users and new audiences to appreciate the historical significance of the park.
Natural Landscape Experience		The park sits at the highest elevation in the immediate region, has established vegetative screens, and is regularly engaged with neighboring landowners, developers, and local governments to protect the historical setting and natural views from off-site developments. The park is one of the darkest areas in the broader urban area where people can see the night sky, and lighting in the park is being modified to include shields and motion sensors to reduce light pollution. The park is noticeably quieter than the surrounding urbanized area, but only a few valley areas are out of range of direct highway noise.
Accessibility		The visitor center and modern facilities are accessible, but Administration offices and most historical buildings are not. The park orientation film has closed captioning but not assisted listening. A cell phone tour and audio CDs are available for visitors. Two bus routes provide public transportation to the park. Improved trail connections and a pedestrian bridge over the Schuylkill River are being developed to connect the south and north sides of the park and connect to regional trail networks.
Safety		The safety of visitors is a priority, and the park works to quickly identify and mitigate potential hazards. The number of visitor accidents is very low. Safety training is provided to park staff, and regular safety messages are given and distributed to staff members.
<b>Park Infrastructure</b>		<a href="#">web</a>
Overall Facility Condition Index		The overall Facility Condition Index for 357 assets for FY13 is 0.041, which is considered Good based on industry and NPS standards.
Energy Consumption		Energy consumption (BTUs per gross square footage of buildings) at Valley Forge National Historical Park in 2013 was 3% lower than the average for the previous four years.
Water Consumption		Water consumption at Valley Forge National Historical Park in 2013 was 50% lower than the previous year. This was due both to repairs to leaking pipes and also to replacement of old fixtures with water-conserving fixtures.
<b>Partnerships and Volunteerism</b>		<a href="#">web</a>
Partnerships		The park works with a wide variety of partners who are integral to our success and continues to seek opportunities to develop new partnerships. In FY 2013, 3,109 volunteers contributed 52,898 volunteer hours to assist with park stewardship.

## **Key Issues and Challenges for Consideration in Management Planning**

Valley Forge NHP completed a General Management Plan in 2007 which identified many management issues and opportunities, and provides an overarching management framework for the park. In addition, the NPS Call to Action, which looks ahead to the centennial of the National Park Service in 2016, provides guidance for continuing stewardship, relevance, and citizen engagement. A few of the park's more significant management challenges include:

**Continuing the Tradition of Stewardship for a Treasured Place.** The park was founded by citizen stewards, and citizens have come forward at key times throughout the park's history to advocate for it. Ensuring that the tradition of citizen stewardship, partnership, and volunteerism is fostered and enhanced is a park priority and takes ample time from agile and experienced staff.

**Ensuring Relevance / Engaging Communities.** The story of Valley Forge speaks to all Americans but not necessarily in ways and words that all understand. The challenge is to meet all visitors "where they are" in ways that are meaningful to them. The park also benefits from the interest of the densely populated surrounding communities, and needs to ensure that there is a continual conversation about the history, resources, and issues that we share.

**Improving the Condition of Natural and Cultural Resources.** The park's setting in a densely developed edge-city places significant pressure on natural and cultural resources. Partnerships and continuous outreach help to address many of the issues.

**Caring for Aging Facilities.** There is "nothing new" here: many of the park's scores of old buildings, roads, trails, and aging utilities need attention. Better prioritization, hard looks at uses, and taking advantage of new authority to lease buildings offer potential to meet the needs, at least at a minimal level.

**Supporting Organizational Capacity.** In a time of accelerated change, the park's shrinking financial resources must be used for the greatest needs. Remaining staff need the training, support, and skills to operate in a complex environment.

# CHAPTER 1. INTRODUCTION

This State of the Park Report for Valley Forge National Historical Park (VAFO) assesses the overall condition of the park’s priority resources and values, communicates complex park condition information to visitors and the American public in a clear and simple way, and informs 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 report uses a National Park System-standardized approach to focus attention on the priority resources and values of this park based on the park’s purpose and significance. 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 inform park management planning.

Preparing this report involved park staff and partners in identifying priority park resources, assessing their condition, and organizing and synthesizing data and information. The results will continue to inform subsequent park planning processes, including natural and cultural resource condition assessments and a Resource Stewardship Strategy.

The term “priority resources” is used to identify the fundamental and other important resources and values for the park, based on its purpose and significance, as documented in the park’s General Management Plan (2007). This State of the Park report summarizes and communicates the overall condition of priority resources and values based on 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 1777–1778 winter encampment of General George Washington’s Continental Army at Valley Forge is one of the most famous episodes of the American Revolution. The significance of the encampment lies both in its fact-based history and also in its storied myth. The mythical narrative is important in its own right, for it reveals something about our character in the heroic way we wish the Revolution to be remembered. It is an inspiring story of triumph through sacrifice. Valley Forge remains a memorial – a place that is essential to understanding and commemorating the founding principles of the nation, a special place in American history.

When citizens joined together in the 1870s to protect Valley Forge, their common vision was the preservation of a significant and meaningful place that had inspired the Continental Army; a place that continued to inspire Americans a century later. Since the founding of the park, citizens have come together a number of times to advocate for it and to protect its important resources from threats. The tradition of citizen stewardship continues every day, as park volunteers and partners participate in the ongoing work of preservation and interpretation. Each of them shares the vision of the park as a meaningful place of inspiration, refuge, commemoration, recreation, and pleasure.

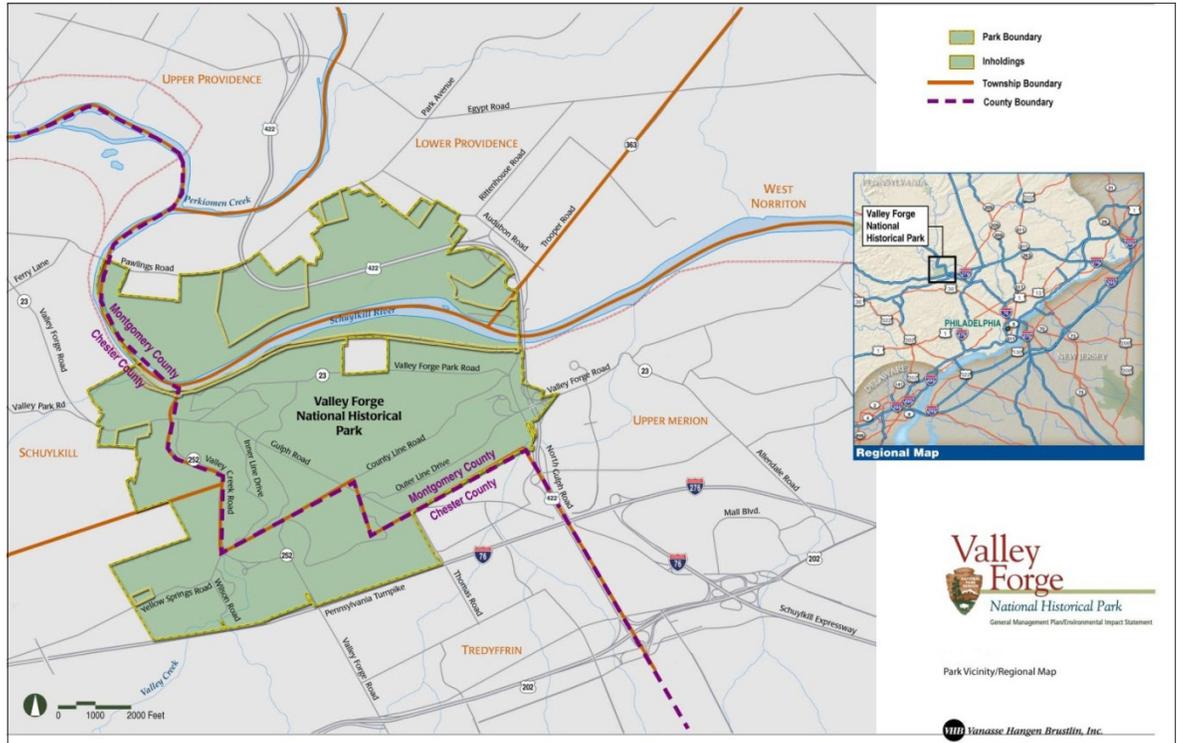
It was citizen interest in this place that inspired the U.S. Congress to establish Valley Forge as a national historical park in 1976. Derived from the common vision for the place, Congress directed that the purpose of the park is to educate and inform present and future generations about the sacrifices and achievements of General George Washington and the Continental Army at Valley Forge, and the people, events, and legacy of the American Revolution; preserve the cultural and natural resources that embody and commemorate the Valley Forge experience and the American Revolution; and provide opportunities for enhanced understanding.

In the four decades since establishment, much progress toward the protection intended by congress has resulted, although challenges continue. Additionally, visitors come for many reasons in addition to making connections to history: they value the park as an increasingly important open space for quiet reflection and recreation and as a natural area that provides a healthy ecosystem for animals and plants and for experiencing nature.

### **The Community's Back Yard**

The region surrounding the park has changed markedly since the Continental Army departed in 1778. It has been fully developed, growing into the most traffic-choked area in the state. The build-out of the region has left the park as one of the few large regional natural areas, heightening its value as open space for suburban Philadelphia. Valley Forge has served as a recreational destination nearly 100 years, dating well before its establishment as a national park. While not its legislated purpose, recreation is the predominant use of the park. Local and regional residents use the park for passive recreation ranging from hiking to sledding, corporate picnics to teaching kids to ride bicycles. Many residents use the park on a daily basis for dog walking, jogging, as a preferred commuting route, or just as a quiet spot to eat lunch while on break from a nearby office park. The park functions as the "back yard" for the community.

Being the community back yard brings both opportunities and challenges. There are large numbers of regional residents with decades of memories and connections who care enormously about the park. Many feel passionate about the national park in their backyard, and translate this passion into stewardship through volunteerism, membership in the friends group, or a desire to learn more about the park's history and national significance. The over one million recreational users represent an important audience for the park. Meeting these visitors "where they are" to provide meaningful historical and natural interpretation at time and in forms that are attractive and convenient is crucial to the park's future relevance. The park has made recent inroads into building connections with this audience, through establishment of a park cell phone tour available 24 hours a day, expansion of special events that welcome the local community such as the 4th of July Community picnic, development of the "Revolutionary Run," a partner-sponsored organized run and walk that benefits the park, expansion of community stewardship and volunteer opportunities, and growth of the park's advocacy and fundraising group, the Friends of Valley Forge Park.



The park lies at the center of a highly developed and populous region.

## 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 for a selection of the priority resources and values of the park. Clicking on the [web ▶](#) symbol 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.

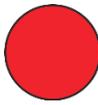
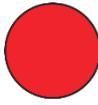
The scientific and scholarly reports, publications, datasets, methodologies, and other information that were used as the basis for the assessments of resource condition are referenced and linked throughout the report and through the [internet version of this report](#) that is linked to the NPS [IRMA 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 used available factual information for the analyses and conclusions presented in this report.

The status and trends documented in Chapter 2 provide a useful point-in-time baseline measured against reference conditions that represent “healthy” ecosystem 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 the future. Thus, these reference conditions may lose relevance, and our judgment about resource conditions or trends 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. 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

#### **Air Quality**

The NPS does not operate an ambient air monitor inside the park; however, representative data collected outside the park are used to describe air quality within the park. The only two air quality measurements recorded within the park boundary are acid and mercury deposition, both of which

Air Quality  <a href="#">web</a>			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Ozone	Annual 4th-Highest 8-Hour Concentration		Estimated ozone concentration at the park was 81.1 parts per billion (ppb) during 2005–2009, which warrants significant concern based on <a href="#">NPS Air Resource Division benchmarks</a> . The park falls within a county designated by the Environmental Protection Agency (EPA) as “nonattainment” (not meeting) for the ground-level ozone standard of an 8-hour average concentration of 75 ppb. A risk assessment concluded that plants at Valley Forge NHP were at high risk for ozone damage ( <a href="#">Kohut 2007</a> ; <a href="#">Kohut 2004</a> ). <a href="#">List of ozone-sensitive plant species</a> . No trend information is available because there are not sufficient on-site or nearby ozone monitor data.
Deposition	Sulfur Wet Deposition		Wet sulfur deposition warrants significant concern based on <a href="#">NPS Air Resource Division benchmarks</a> and the 2005–2009 estimated wet sulfur deposition of 5.7 kilograms per hectare per year (kg/ha/yr). Ecosystems in the park were rated as having moderate sensitivity to acidification effects ( <a href="#">Sullivan et al. 2011a</a> ; <a href="#">Sullivan et al. 2011b</a> ). Plants sensitive to the effects of acidification in the park include <i>Acer saccharum</i> (sugar maple) trees. No trend information is available because there are not sufficient on-site or nearby wet deposition monitor data.
	Nitrogen Wet Deposition		Wet nitrogen deposition warrants significant concern based on <a href="#">NPS Air Resource Division benchmarks</a> and the 2005–2009 estimated wet nitrogen deposition of 5.0 kilograms per hectare per year (kg/ha/yr). Ecosystems in the park were rated as having high sensitivity to nutrient enrichment effects ( <a href="#">Sullivan et al. 2011c</a> ; <a href="#">Sullivan et al. 2011d</a> ). Certain vegetation communities in the park, including wetland, grassland, and meadow plant communities, may be vulnerable to excess nitrogen deposition, which can alter plant communities and reduce biodiversity. No trend information is available because there are not sufficient on-site or nearby wet deposition monitor data.
Visibility	Haze Index		Average visibility warrants significant concern based on <a href="#">NPS Air Resource Division benchmarks</a> and the 2005–2009 estimated average visibility of 11.6 deciviews (dv) above estimated natural conditions. No trend information is available because there are not sufficient on-site or nearby visibility monitor data.

are monitored by the Commonwealth of Pennsylvania. Ozone and particulate matter are the highest pollutants recorded for Chester and Montgomery counties; however, due to the park’s small size and limited contribution, initiatives to improve air quality need to be enacted on a regional scale.

## Resource Brief: Historical and Projected Changes in Climate at Valley Forge National Historical Park

Climate change affects 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 understanding of past dynamics and the realization that future conditions may shift beyond the historical range of variability. Climate change will manifest itself not only as shifts in mean conditions (e.g., increasing mean annual temperature and sea level) but also as changes in climate variability (e.g., more intense storms and flooding). These changes may accelerate weathering, deterioration, and loss of cultural resources. Put another way, we are dealing with both rapid directional change and multiple uncertainties. 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.

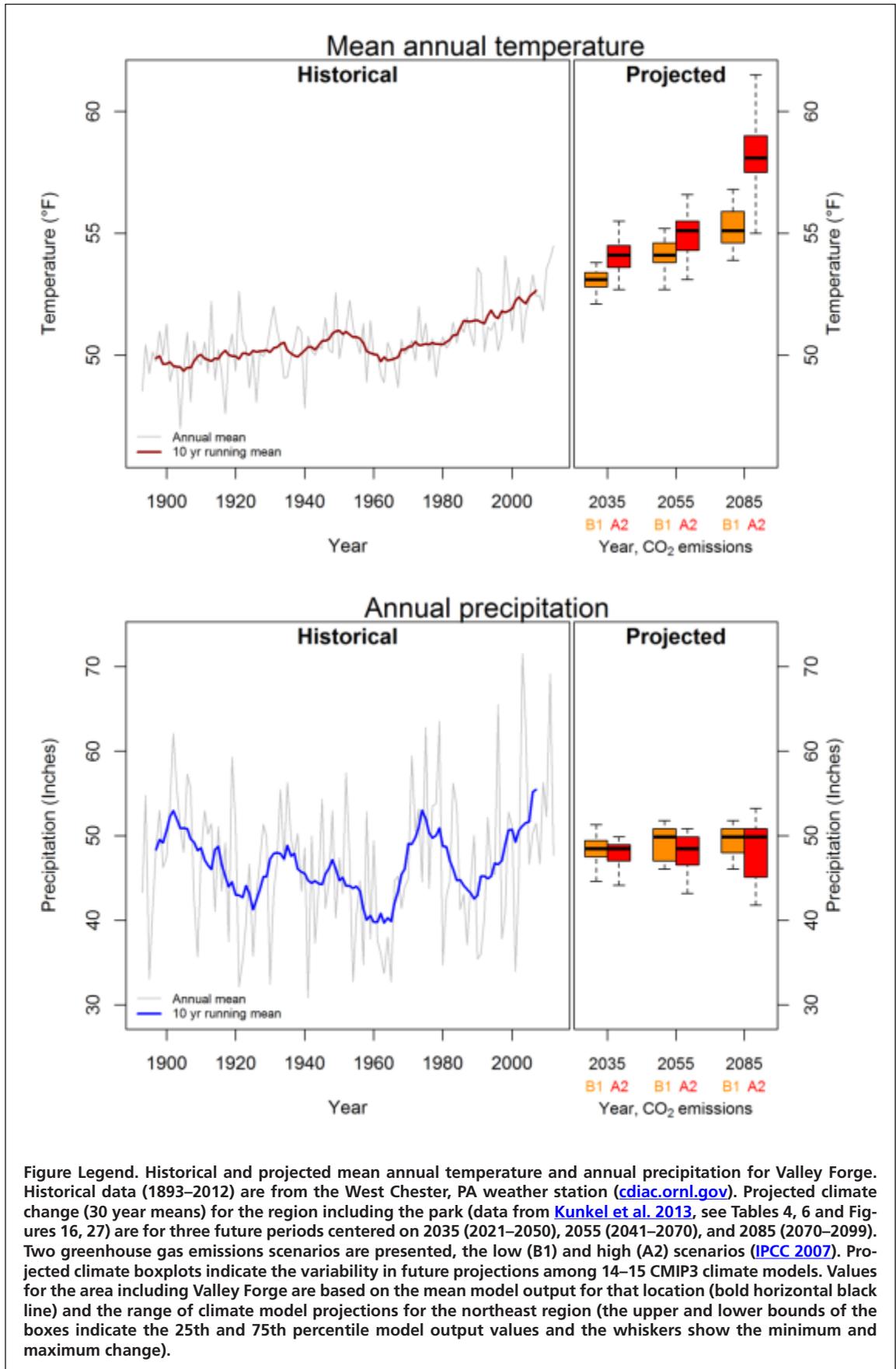
### Historical climate trends (1893–2012)

Historical climate trends for Valley Forge ([Fisichelli 2013](#)) are based on data from a nearby long-term weather station (West Chester, PA; [cdiac.ornl.gov](http://cdiac.ornl.gov)). Over the 120 year instrumental record (1893–2012), mean annual temperature showed an increasing linear trend, +0.2 °F per decade (see Figure below), and this warming trend has accelerated since 1960 (+0.7 °F per decade). Annual precipitation showed strong interannual variability and no significant linear trend across the entire record.

### Future climate projections

Future climate projections for the area including the park are from multi-model averaged data ([Kunkel et al. 2013](#) —see references in [Fisichelli 2013](#)). Mean annual temperature, compared with the 1971–1999 average, is projected to increase 3–4 °F by mid-century and 4–7 °F by the end of the century, depending on the greenhouse gas emissions scenario (see Figure below). Current greenhouse gas emissions are on a trajectory similar to the higher emissions scenarios (see references in [Fisichelli 2013](#)). Warming by mid-century is projected for all seasons, with the greatest increases likely in summer. There is wide agreement among individual climate models in the direction and magnitude of warming over the coming decades. Total annual precipitation may increase slightly by mid-century; however, 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 and changes in annual precipitation, climate change will exhibit itself in many other ways. These include more frequent and extended heat waves, droughts, floods, and an extended frost-free season, some of which already are occurring. The number of days with maximum temperatures > 95 °F is projected to increase 12–15 days/year by mid-century around Valley Forge while the number of days with minimum temperatures below freezing is projected to decrease by approximately 21 days (high [A2] emissions scenario 2041–2070 compared with 1980–2000; [Kunkel et al. 2013](#)). These changes in temperature will lead to loss of plant species native to this region and the resultant loss of the fauna that depend on them. A warmer climate also favors exotic invasive plant species over native species, as well as exotic invasive pest species that attack native plant species.



Small changes in total precipitation may mask large shifts in the precipitation regime and associated impacts to ecosystems. The annual number of days with heavy rainfall (> 1 inch) is projected to increase by 10–15 %, while the maximum number of days between rain events is likely to increase by a few days (high (A2) emissions scenario, 2041–2070 compared with 1980–2000; [Kunkel et al. 2013](#)). Significantly warmer temperatures and a more variable precipitation regime may lead to both more frequent droughts and more severe flooding and erosion, especially along Valley Creek. More intense storms will affect historic structures through a degree of water infiltration that they were not designed to withstand.

A short list of major effects of climate change at Valley Forge NHP could include: increasing flood damage because of more frequent and stronger storm events; difficulty in achieving reforestation because of the soil erosion from stronger storms and soil acidification from air pollution deposition; increased types and densities of exotic invasive plant species which adapt more easily than native species to warming temperatures and acidified soils; adverse impacts to plant species from increased numbers of pathogens and exotic insects; loss of park plant species, such as the sugar maple, that cannot adapt to warmer temperatures; loss of animal species that depend on the plant species that will disappear; deterioration of historic structures from the effects of wind-driven rain and higher humidity; deterioration of monuments from acid rain; and adverse impacts to museum objects from higher humidity levels and more favorable conditions for insect pests.

## **Geologic Features and Processes**

Three basic rock types are found at Valley Forge NHP: dolostone, quartzite, and sandstones and shales. The physical properties of these rock types shaped the topography of the park, creating the hills and valleys that were critical to George Washington’s selection of the site for the winter encampment, as well as influencing landuse in the area both before and following the encampment. Of the three types, dolostone is of most interest to park managers. It covers about two-thirds of the park and underlies a karst landscape that is riddled with sinkholes, caves, and other surface to subsurface connections. Karst features have not been investigated and could contain undiscovered biological, historical, and/or paleontological resources. It was dolostone that enabled the creation and subsequent discovery of one of the most significant ice-age fossil deposits in North America, the Bone Cave (read more about the Bone Cave in the resource brief below).

In addition to the Bone Cave, the park contains one known natural fossil located in an historic quarry wall; however, a comprehensive fossil inventory has not been completed. Two additional fossils are documented in stone used in park buildings, one in the stone used to build a park restroom and another in a forge site along Valley Creek.

## Geologic Features and Processes



[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Paleontological Resources	Number of sites in good condition		<p>A significant Pleistocene epoch fossil deposit was found in the park that contained species not found anywhere else in the world (see Resource Brief below); however this site is currently inaccessible and the current condition is unknown. Additionally, one naturally occurring fossil is known from an historic quarry wall. The park is underlain by several formations known to contain fossils regionally. Without a detailed inventory of resources or a monitoring plan for known sites, the park does not have adequate information to assess or manage the resource. See <a href="#">Kenworthy et al. 2006</a> and <a href="#">Santucci et al. 2001</a>.</p>
Cave and Karst Resources	Cave and karst inventory completed for park and ground water monitoring plan put in place		<p>Karst topography underlies two-thirds of the park, and five caves and more than 100 sinkholes have been documented in the park; however a comprehensive inventory has not been completed (<a href="#">Thornberry-Ehrlich 2010</a>). Many more likely exist. Quarry operations in the 1800s mined through some sections of limestone; however, outside of the quarries, karst topography in the park remains relatively intact and is protected. Karst has a significant impact on the area's geohydrology and as such needs careful monitoring. Sinkhole development poses potential threats to park infrastructure and visitor safety. The moderate condition reflects the likely relatively intact karst; however the park does not have adequate information to understand and manage the resource. Without a complete cave and karst inventory and associated groundwater monitoring, the confidence in the assessment is low and no trend can be determined.</p>

## Resource Brief: Discovery of the Bone Cave

One of the most important North American fossil deposits of the Great Ice Age was discovered at Valley Forge. In 1870, the Port Kennedy Cave or Bone Cave was discovered during limestone quarry operations that occurred in Valley Forge before it was protected as park land. The Bone Cave is not a true “cave,” but rather a sinkhole that was briefly open to the surface during the Pleistocene epoch, approximately 750,000 years ago. While it was open, scores of creatures slid into it and met their deaths. Because it was only briefly open to the surface, this rare fossil deposit provides scientists with information about the climate and wildlife community present at one particular time.

Over 1,200 fossils representing 14 plant and 48 animal species were collected during excavations that occurred between 1870 and 1896, including several species that have not been found anywhere else on the planet. Reflecting the biases of the time, only a few insects and plants were collected, and many fragmentary specimens went uncollected. The most abundant large mammal fossils were from lesser short-faced bears, Hays’ tapirs and striped skunks; however, the deposit also yielded fossils from mastodons, a saber-toothed cat species, a North American horse, and a new species of cheetah-like cat. The diversity of species found in the sinkhole provides evidence that the climate was warm or temperate and the landscape thickly wooded by oaks, beech, and hickory trees. Scientists suggest the animals may have come together in the forest to feed or drink, where some fell into the sinkhole and became trapped.

Infiltration of groundwater in the quarry slowed early fossil recovery efforts and the deposit was never fully excavated.

Many water-damaged specimens also were lost during the early collection efforts. The quarry itself was filled in during the early 1900s with waste from the nearby Ehret Magnesium Manufacturing Company, burying the remaining fossils under some 40 feet of asbestos-containing materials. Today, most of the excavated fossils are housed at the Academy of Natural Sciences of Drexel University in Philadelphia but some of the original fossils are also on display in the park Visitor Center. In addition, casts have been made of a few select fossils and are used for education programs.

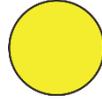


Partial skull of *Smilodon gracilis* from the Port Kennedy Cave, Valley Forge National Historical Park, Montgomery County, Pennsylvania. This gracile saber-toothed cat was first described by paleontologist Edward Drinker Cope from material collected at the Port Kennedy Cave. The reconstructed skull length is about 12 inches.

## Water Quantity and Quality Valley Creek



[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Water Quantity	Mean Annual Discharge cfs		Mean annual discharge for Valley Creek was evaluated as Good by Sherwin et al. (2014) based on monitoring of base flow rates augmented by quarry water; however, there is considerable variation in the data.
Water Chemistry	Multiple measures of water chemistry		The park's Natural Resource Condition Assessment (Sherwin et al. 2014) rated the overall water chemistry for Valley as Good with a decreasing trend based on a synthesis of a suite of water chemistry measurements; dissolved oxygen, pH, temperature, alkalinity, specific conductivity, phosphorous, nitrate/nitrite, sulfate, ammonia, and chloride. Current development activities within the Valley Creek watershed are likely impacting water chemistry in the park
Aquatic Macroinvertebrates	Multiple measures of species composition, evenness, integrity		Macroinvertebrate communities have been monitored by numerous agencies as an indicator of stream water quality. Sherwin et al. (2014) summarized a series of measurements and indices of integrity and gave an overall evaluation of Moderate Condition for Valley Creek with unchanging trend. Measures used in this summary are Index of Biotic Integrity, Brillouin's Diversity Index, Hilsenhoff Biotic Index, Shannon Diversity Index, Evenness, Percent and total Ephemeroptera, Plecoptera, and Trichoptera (EPT) Taxa, Percent Dominant Taxa, and Total Taxa.
Stream Habitat	EPA/DEP/RBP agg Environmental Protection Agency/ Department of Environmental Protection/ Rapid Bioassessment Protocol aggregate		The average aggregate score for Valley Creek in 2002 based on a measure of stream habitat used by federal and state agencies was 124.8, which was considered to be in Moderate Condition. No trend can be determined based on available data.

### Water Quantity and Quality – Valley Creek

Valley Creek is a state-designated Exceptional Value Waterway and Class A Wild Trout Fishery. Of 34 stream miles (including tributaries), the last two miles of the creek flow through the park before joining the Schuylkill River near Washington's Headquarters. The condition of this essential natural resource mostly depends on activities that occur upstream beyond the park boundary, making partnerships essential in managing the quality of the stream. The biggest threat to the integrity of the stream is the addition of impervious surface area within the watershed and uncontrolled stormwater. The park currently contributes to the collection and analysis of water quality monitoring data and supports watershed-wide education efforts through partnerships and its own programming.

## Resource Brief: Crayfish Corps

The park actively manages Valley Creek to promote high water quality and native biodiversity. One of the greatest threats worldwide to native biodiversity is the introduction of invasive species. In Valley Creek an invasion of the rusty crayfish (*Orconectes rusticus*), first discovered in 2008, threatens to reduce or eliminate native species throughout the foodchain, including two native crayfish, *Cambarus bartonii* and a crayfish in the *Cambarus acuminatus* complex. The latter may be a new species to science. The rusty crayfish is native to parts of the Ohio River drainage, and is spread as fish bait and through the pet and school trade. In other places where it has invaded, it has eliminated all other crayfish by competition for food and space. It also provides poorer nutrition to adult trout, as it has a tougher exoskeleton than the native crayfish and is harder to digest.



The Crayfish Corps Logo

After the rusty crayfish was discovered in Valley Creek, the park responded by creating the “Crayfish Corps,” a volunteer program. Volunteers and staff enter Valley Creek to capture all native and invasive crayfish. Native crayfish are counted and returned to the stream, and the invasive rusty crayfish are removed. At the time the initial invasion was discovered, there was one invasive crayfish for every four native crayfish in Valley Creek from the dam upstream to the park boundary. The Crayfish Corps successfully meets the park goal to maintain this ratio.

The volunteer program is the park’s most popular and more than half of the volunteers are youth under the age of 18. The volunteers come from many backgrounds, and range from age 3 to 70. Since its inception in 2009, volunteers and staff have removed over 10,000 invasive crayfish. All volunteers receive a button bearing the Crayfish Corps logo, and after participating in three events receive a Crayfish Corps T-shirt.



Volunteers of the Student Conservation Association Community Crew from Philadelphia capturing native and invasive crayfish in Valley Creek.

## **Water Quality – Schuylkill River**

The Schuylkill River was Pennsylvania's first Scenic River and is the spine of a state- and nationally designated heritage area. The 1,916 square mile Schuylkill River watershed is mostly located upstream of Valley Forge and, similar to Valley Creek, water quality depends on activities not controlled by the NPS. Land use patterns within the watershed vary among forested, agricultural, and urban, becoming increasingly urbanized downstream of the park. The three miles of riverbank within the park are largely forested.

Overall water chemistry was rated as Good for the Schuylkill River based on a suite of water quality measurements significant to warm water fisheries, even though the three-mile stretch through the park is considered impaired (on the 303d list) under the Clean Water Act from industrial runoff including polychlorinated biphenyl (PCB) and chlordane contamination. Additional metrics are recommended to provide a more complete picture of resource condition, including fecal coliform, fish community, and benthic macroinvertebrate data (Sherwin et al. 2014).

## **Forest, Grassland, and Wetland Communities**

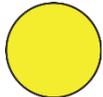
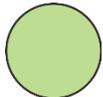
Forests, grasslands, and wetlands cover about 2/3 of Valley Forge and comprise the park's major terrestrial ecosystems, providing foraging opportunities, breeding habitat, and shelter for a variety of native wildlife species. Increasingly recognized for regional ecological significance, the diversity these ecosystems support is impressive for a small park and is the result of goals to maximize biodiversity while maintaining the historic landscape. Non-native, invasive species, disease, and over-browsing by white-tailed deer represent the major threats to these ecosystems and have been the primary focus of resource management activities.

## **Wildlife**

The diversity of habitats in the park supports a wide variety of wildlife species, including over 320 vertebrate species and 20 special status species. Species like the white-tailed deer, red fox, woodchuck, and red-tailed hawk are among the most commonly observed; but sightings of meadow larks, bald eagles, and flying squirrels are also reported. Recent additions to park wildlife, such as mink and short eared owl represent an increase in richness and diversity associated with improving habitat quality. Baseline vertebrate inventories are complete and monitoring programs for forest and grassland birds, white-tailed deer, and terrestrial salamanders are on-going.

Water Quality Schuylkill River			<a href="#">web</a>
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Water Chemistry	Dissolved oxygen, turbidity/total suspended solids, Nitrate/Nitrogen, Phosphorous		Overall water chemistry was rated as Good for the Schuylkill River based on a suite of measurements evaluated by Sherwin et al. (2014); however, additional metrics are recommended including fecal coliform. The entire 3-mile stretch of the Schuylkill River through the park is considered impaired (on the 303d list) due to industrial pollution and storm water runoff that carries pollutants. There is a need for additional fish community and benthic macroinvertebrate data for the Schuylkill River (Sherwin et al. 2014).

Forest, Grassland and Wetland Communities			<a href="#">web</a>
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Wetlands	Extent of Wetlands Total Area		A detailed park-wide wetland inventory published in 2012 found 51 individual palustrine wetlands covering 63.96 acres (Sharpe et. al. 2012).
Forest Health	Forest regeneration, invasive species, coarse woody debris, snags, stand structure, canopy tree condition, soil acid stress, soil nitrogen saturation		The forest at Valley Forge NHP is beginning to recover from decades of over-browsing by white-tailed deer. Forest health measurements warrant moderate concern but with an improving trend based on monitoring of a suite of measures by the Mid-Atlantic Inventory and Monitoring Network (Comiskey 2013, Comiskey and Wakamiya 2011) and results from Sherwin et al. (2014).
Grasslands	Patch size, % cover, native species occurrence		Approximately 60% of the fields within Valley Forge NHP are greater than 100 acres in size, which is optimal for many species of obligate grassland birds. However, park grassland communities are generally deficient regarding the abundance of native plant species (Sherwin et al. 2014).

Wildlife  <a href="#">web</a>			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Fish	Brown Trout Biomass		Biomass of brown trout in Valley Creek in 2002 was above the threshold value established by the Pennsylvania Fish and Boat Commission for Class A Wild Trout Fishery, but the estimates were much lower than those from 1990. It is unknown if similar sampling methods were used or if a true downward trend exists, and additional data are needed. Valley Creek has been designated as a Class A Wild Trout Fishery because of the presence of brown trout, even though they are not a native species.
	Index of Biotic Integrity		The IBI for Valley Creek reported by Sherwin et al. (2014) warrants moderate concern, but there is low confidence in the results because of the age of the data and discrepancies in sampling methods that precluded reliable trend analysis.
Amphibians	Species Richness		Eight species of frogs and toads, and seven species of salamanders have been documented from amphibian inventories at Valley Forge NHS ( <a href="#">NPSpecies database</a> ). Trends cannot be determined because there is no consistent approach to repeat the inventories or conduct routine monitoring of amphibians in the park.
Reptiles	Species Richness		Eight species of snakes and seven species of turtles have been documented from reptile inventories at Valley Forge NHS ( <a href="#">NPSpecies database</a> ). Trends cannot be determined because there is no consistent approach to repeat the inventories or conduct routine monitoring of reptiles in the park.
Mammals	Species Richness		Twenty-seven species of mammals have been documented as present based on inventory studies at the park ( <a href="#">NPSpecies database</a> ), including four species of bats, six species of carnivores, and eleven species of rodents.
Forest Birds	Bird Community Index Forest Habitat		Bird populations within forested areas at VAFO monitored by the MIDN I&M network received the second-highest ecological integrity rating of “largely intact” based on a regionally-developed <a href="#">Bird Community Index (Wakamiya 2012)</a> . Twenty-four species identified as “Species of Concern” by Partners In Flight were detected during recent bird surveys. Mean Bird Community Index Score was just under the threshold value and within the standard error for a “Good” condition score.
Grassland Birds	Bird Community Index Grassland Habitat		Valley Forge NHS had a relatively high grassland bird <a href="#">Bird Community Index</a> value of 47.8, which may be a result of the relatively large areas of grassland within the park ( <a href="#">Wakamiya 2012</a> , Sherwin et al. 2014).
White-tailed Deer	Deer Density		Estimated deer density in 2014 was 49 deer per square mile, which is a marked improvement from the estimated 241 deer per square mile reported in 2009 before the deer management plan was implemented ( <a href="#">NPS 2013</a> ). The plan’s target is 30–35 deer per square mile.

## Resource Brief: Deer and Forests: Bringing Back the Balance

In Valley Forge NHP the cultural landscape is managed to preserve scenic views and historic patterns of open and wooded areas. This results in a mixture of fields and forests that constitutes ideal habitat for white-tailed deer. Since monitoring began in the 1980s, the deer population steadily increased inside the park: the result of reduced mortality rates from a lack of predators and recreational hunting, loss of habitat outside of the park, and the availability of ideal habitat inside the park.

The impact of deer on park vegetation was initially investigated in 1983–1985. At that time, the deer population was estimated at 165–185 individuals in the park and researchers found no evidence to suggest deer were negatively affecting forest plant communities. Forest health was described as “excellent” and scientists generally concluded “an overpopulation of deer does not exist.”

Continued monitoring of both deer and forest communities documented an average 8% annual growth in the deer population, with a maximum population of 1,643 individuals in 2008. As the deer population increased, forest monitoring plots documented deterioration in forest conditions including a reduction in plant species richness and density, lack of adequate regeneration, and the loss of vertical structure. The loss of plant species and vertical structure, as well as reduced vegetation available for browsing, have implications for the health of the deer in the park as well as the ecosystem as a whole, negatively affecting animal species that depend on forest structure and increasing the spread of non-native, invasive plant species. Forest monitoring concluded that the overabundant deer population was causing unacceptable changes in the park forests and that without action, the forests and surrounding landscape in Valley Forge would experience irreversible impacts, including the loss of native species.

The park completed a White-tailed Deer Management Plan/Environmental Impact Statement in 2009 and in 2010 began implementation to reduce and maintain the deer population at a



level that also will allow for sustainable, healthy forests. The initial target deer density is 31 to 35 deer/square mile (165 to 185 individuals) based on the 1983–1985 study when forests were in “excellent” condition. Following four years of deer reduction activities, the estimated deer density in the park is 49 deer per square mile (260 deer), down from 241 deer per square mile (1,277 deer) in 2009. Monitoring by staff indicates that the forests are beginning to recover. A variety of native tree seedlings that had not been present just a few years ago have been documented in unfenced locations, including maple, ash, oak, black gum, hickory, cherry, and sassafras. These sightings indicate that the park is beginning to achieve its objective of allowing the native forest to grow and mature in order to provide habitat for a range of native wildlife species

## 2.2. Cultural Resources

### Archeological Resources

The archeological heritage of Valley Forge NHP is vast and significant. The park’s archeological resources document every major period of its occupation and are essential to a full appreciation and interpretation of the site’s rich history. Park archeological sites range over 8,500 years of human history.

Between 1948 and 2013, over 85 archeological investigations were conducted in the park. The majority of these projects were completed to meet compliance obligations under Section 106 and Section 110 of the National Historic Preservation Act (NHPA) and have included salvage excavations, identification surveys, site evaluations, construction monitoring, geophysical surveys, and archeological overviews and assessments. There are 262 archeological



Artifacts recovered from the Washington’s Headquarters project drying after being washed by volunteers. (NPS, C. Bloom)

There are 262 archeological sites listed in the Archeological Sites Management and Information System (ASMIS), of which 17 have been determined to be eligible for inclusion on the National Register, and which will be listed when the nomination is completed. Only approximately 50% of the park has been intensively researched through an Archeological Overview and Assessment (AOA). Funds to complete an AOA that will cover the remaining areas of the park are programmed for Fiscal Year 2017.

# Archeological Resources



[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
<p><b>Knowledge</b></p>	<p>Sufficient research is conducted to understand the relationship of the park's archeological resources to the historic context(s) for the park.</p>		<p>AOAs exist for the western half of the park and north of the Schuylkill River, which have put known sites as of 2001 into park contexts. The upcoming National Register Nomination update also discusses historic contexts for the entire park.</p>
<p><b>Inventory</b></p>	<p>Information about archeological resources and completed surveys is compiled and maintained in an appropriate electronic system with a filed and or archived copy. Paper and electronic records are maintained nationally and at parks, support offices, and centers.</p>		<p>100% of sites and surveys are mapped in the park's GIS. Park is in the process of adopting the current CRGIS standards.</p>
<p><b>Documentation</b></p>	<p>Park base maps are prepared showing the location and distribution of archeological resources, the nature and extent of archeological identification activities, and the types and degree of threats and damages.</p>		<p>All sites in ASMIS have been assessed, but assessments are older than 5 years. Base maps as described do not exist, but all known sites are in park GIS. An Archeological Overview and Assessment for the central portion of the park is formulated to take place in 2017.</p>
<p><b>Condition</b></p>	<p>Percentage of archeological resources in good condition</p>		<p>96% of sites are in good condition.</p>

## Resource Brief: Washington's Headquarters Excavations

Archaeological excavations conducted at Washington's Headquarters (36Mg31) during the summers of 2009 to 2011 yielded significant information on the use of the site from precontact times until the present. The features which date to the encampment period are particularly interesting. Among these were two refuse pits securely dated to the last quarter of the 18th century, at least one of which was almost certainly in use during General Washington's occupation of the house. Excavations also identified a linear feature which is believed to represent the sill trench for a dining cabin built for the general during his occupation of the house. At least five different occupations during the precontact period were also indicated, spanning from the Late Archaic (ca. 3000 – 1000 B.C.) through Late Woodland (ca. A.D. 1000 – European contact) periods. The precontact components identified at the site, particularly those from the Late Woodland period, have great potential to inform interpretations of Native American settlement and lifeways in the Schuylkill River valley, an area for which such data is currently lacking. The presence of the early ground surface represented by a buried 18th century plow zone suggests great potential for additional undisturbed archaeological deposits and features, both historic and precontact, to be preserved in other areas of the site which have yet to be excavated



Encampment-era artifacts recovered from an 18th century trash pit at Washington's Headquarters. Clockwise from the top, these include a lead-glazed red earthenware sherd, a pistol-grip bone knife handle, a brass "double D" buckle and sherd of Whieldon ware. (NPS, J Blondino)

References: Blondino and West-Rosenthal, 2011; Blondino, Rosenthal and Kalos, 2012

## **Resource Brief: Geophysical Surveys at the Muhlenberg and Woodford Brigades**

In 2012, we began a series of geophysical surveys aimed at identifying possible encampment-era buried resources in two historic brigade areas. Staff from the NPS Northeast Regional archeology program, volunteers and archeological contractors worked to complete the surveys. The benefit of using geophysical techniques is that archeologists can quickly survey relatively large areas without any ground disturbance. For these surveys, four geophysical instruments were used: ground-penetrating radar (GPR), a magnetometer, a resistivity meter, and a conductivity meter. Each of the instruments can detect objects that have different physical properties than their surroundings, whether it be differences in density, electrical conductivity, or moisture content. The results of the surveys showed possible buried features in both brigade areas. During the summer of 2013, excavations were conducted with the help of the park public archeology program to ground truth the results.



Park volunteers use an electrical resistivity meter to look for buried encampment-era resources at the Muhlenberg Brigade area (NPS, L. Rupp)

<b>Cultural Anthropology</b>  <a href="#">web</a>			
<b>Indicators of Condition</b>	<b>Specific Measures</b>	<b>Condition Status/Trend</b>	<b>Rationale</b>
<b>Knowledge</b>	Sufficient research exists to understand the relationship of the park's ethnographic resources and the historic contexts		The park consults with three affiliated tribes as necessary.

<b>Cultural Landscapes</b>  <a href="#">web</a>			
<b>Indicators of Condition</b>	<b>Specific Measures</b>	<b>Condition Status/Trend</b>	<b>Rationale</b>
<b>Knowledge</b>	Sufficient research exists to understand the relationship of the park cultural landscapes to the historic contexts of the park.		CLIs and CLRs were prepared for the park, and the Valley Forge Report describes cultural landscapes. New contexts have been identified in new National Register documentation, currently underway.
<b>Inventory</b>	The scope of cultural landscapes in the park is understood and a determination has been made whether or not they are a fundamental resource.		Park does not have a foundation plan but GMP and National Register documentation address the significance of cultural landscapes.
<b>Condition</b>	Condition of cultural landscapes is adequately documented in Cultural Landscapes Inventory (CLI) and Facility Management Software System (FMSS).		Of the 5 landscapes evaluated in CLIs, 20% are in good condition, 40% are in fair condition, and 40% are in poor condition.

## Cultural Anthropology

There are no known cultural anthropological resources in the park. There are three federally recognized Indian Tribes whose ancestral lands include Valley Forge NHP, and with whom the park consults regularly on matters of mutual interest and to fulfill its obligations under the 2008 Nationwide Programmatic Agreement. The tribes are the Delaware Nation, the Delaware Tribe of Indians and the Stockbridge Munsee. Given the tribes' distance from the park, these consultations are conducted through written letters, email and phone calls.

## Cultural Landscapes

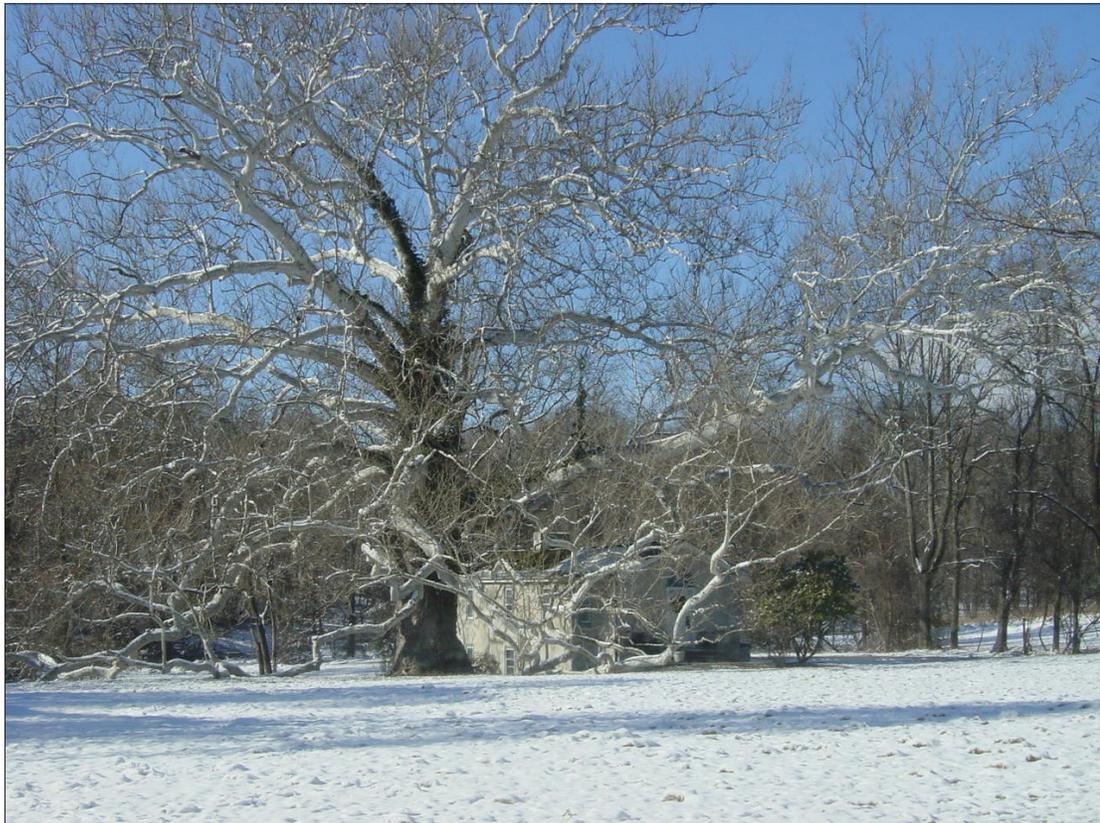
The park preserves cultural landscape resources from a series of overlapping historic periods spanning almost three centuries. The encampment was expressed as a temporary military overlay on an existing agricultural and industrial landscape that in turn had been built on a web of natural features. The subsequent development of the site as a commemorative park is the most prominent feature in the site's cultural landscape history.

## Resource Brief: Rehabilitating the Cultural Landscape

By the time the Continental Army left Valley Forge in June 1778, no standing tree was left within miles, and the land remained open for another century while it was farmed. The long views from the high points within the park were not unlike what the soldiers might have seen.

Around 1900, the Valley Forge State Park Commission began to develop a commemorative landscape by planting miles of tree allées along new tour roads, establishing memorial groves, and reforesting the steeper hills. Magnificent trees were the primary element in the peacefulness and scenic beauty of the cultural landscape that was created to honor the achievements of the Continental Army. By 2000, many of the trees planted by the Commission had succumbed to disease, insects, deer browsing, and storms. Large-scale planting had stopped around 1950, and the plantings were increasingly gap-toothed. As well, the region surrounding the park is no longer agricultural, and comprises intense urban development including highways, high-rises, signs, and lights. The long views had become severely compromised.

To rehabilitate the trees that are such a strong characteristic of the cultural landscape, park staff and hundreds of volunteers have planted over 2500 trees since 2008. The allées are completely restored. All necessary screens are in place and growing, with new trees sited to redirect views to particular features that aren't compromised by modern development, or to subtly screen or completely block adverse views off-site. Specimen trees such as the Pawling Sycamore and Knox Black Walnut, a state-champion tree, receive regular care.



The stately Pawling Sycamore, an essential element of the Walnut Hill component cultural landscape, receives specialized care including cabling and removal of invasive vines. (NPS)

## Historic Structures

Valley Forge National Historical Park contains 81 historic buildings and numerous individual structures (40 historic monuments and memorials, markers, statues, earthworks, roads, walls, ruins, and other man made features). Together they reflect the park's history and contribute to its significance. The 81 historic buildings were constructed between the mid-18<sup>th</sup> century and the mid-20<sup>th</sup> century. Of these, 12 are identified as ones that were standing, in whole or in part, at the time of the encampment. Two of these: Washington's Headquarters and the Steuben house, are individually designated as National Historic Landmarks. The twelve encampment-era structures are primarily domestic with a few associated outbuildings.

The 40 historic monuments and memorials commemorate an individual, group, event, or idea associated with the encampment of Washington's army. The monuments receive regular preservation treatments and are in good condition. Several of the major monuments, including the National Memorial Arch, have been recently restored.

Many of the 69 post-encampment historic buildings have state and local significance in their own right. For example, the Philander Chase Knox residence is significant as an example of the Pennsylvania farmhouse type of the Colonial Revival style of the early 20<sup>th</sup> century. The Walnut Hill (Wetherill) barn is an outstanding example of the buildings used in state-of-the-art, large-scale farming practices that developed in the mid-19<sup>th</sup> century.

While many of the historic buildings have value as interpretive sites or as components of the historic landscape, some are not suitable candidates for public interpretation because they represent duplicative interpretive stories (e.g., numerous officers' quarters), because it is not feasible to staff so many different buildings, and/or because they are located in isolated areas of the park.



Washington's Headquarters is a National Historical Landmark. Photo copyright Friends of Valley Forge Park / MJ Ticcino

Historic Structures			<a href="#">web</a>
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research is conducted to understand the relationship of the park's historic structures to the historic context(s) for the park.		National Register documentation addresses historic context of structures.
Documentation	All historic structures have been recorded commensurate with their significance and mandated purposes.		Many of the extant HSRs are limited in scope; further documentation is needed.
Condition	Percentage of historic structures in good condition		Both ongoing maintenance work and also preservation projects always are underway on the park's large portfolio of historic structures. 59% (94 of 160) are in good condition, 22% (34 of 160) in fair condition, and 19% (31 of 160) in poor condition. In the LCS shadow, 55% (20 of 36) are in good condition, 22% (8 of 36) are in fair condition, and 22% (8 of 36) are in poor condition.

Some of the 69 post-encampment buildings are used for park and partner offices and storage, or as quarters for park staff. While these uses keep the buildings heated and prevent vandalism, the maintenance costs are not fully covered in available budget, resulting in buildings that are not optimally maintained, as well as challenges for the park budget.

One promising opportunity is NPS' authority to lease buildings, provided that certain criteria are met. The law recognizes that many parks are responsible for maintaining a large portfolio of both historic and modern buildings, and that some of these buildings are not necessary or suitable for visitor services or park operations. Exercise of the authority enables a park to work with a community to rehabilitate and keep these buildings in good condition, allowing the community to have responsible and managed access to a historic structure. Leasing may in some cases provide revenue to the park, after extensive rehabilitation is amortized.

In some cases, post-encampment buildings which were in poor condition and had no potential for compatible re-use have been demolished, for example, twentieth-century housing.

## Resource Brief: Stabilizing Knox's Quarters

The original section of the structure we call "Knox's Quarters" was used by General Henry Knox during the encampment. By the late 20<sup>th</sup> century, the structure was deteriorated, and a first step in determining how to treat it was to understand its history and condition. The University of Pennsylvania's Masters Program in Historic Preservation was invited to use it as a case study for understanding the approach required for composing a Historic Structure Report (HSR). The class's findings generated both interest and concern for the structure, prompting a formal HSR and a structural evaluation by a team of architectural and engineering firms. Fortuitously, during the HSR process, a *Save America's Treasures* grant was received that permitted a much needed re-roofing of the structure. Drawings and specifications then were completed for structural reinforcement of the original wood beams and joists. Because we don't yet know how the structure will be used in the future, work focused on stabilization and maintaining flexibility. Reinforcement of the first and second floors brought the live load capacity up to one that would permit office occupancy. The flooring and ceilings that were removed to permit the structural work to proceed were left open to permit future retrofit of code-compliant and up-to-date electric service, plumbing, and HVAC specifically required for any type of tenancy.



Knox' Quarters has been stabilized and is ready for a new use.

## Resource Brief: Stabilizing the Maurice Stephens House

The Maurice Stephens house is sited prominently at the edge of the Grand Parade ground of the Continental Army. Built in 1816, the structure had been used as a farm house, and later as offices and a nature center. Its prime location means that it could play a strong role in interpretation of both the historic uses and also the environmental resources of the Grand Parade, but it needed stabilization and rehabilitation. Through a *Save America's Treasures* grant the building was re-roofed with historically correct wood shingles. An archeological investigation was completed and the grade around the house was returned to original levels. A Historic Structure Report was completed and funding was obtained for structural stabilization, exterior restoration and interior improvements, including rebuilding a failing masonry façade, historically accurate re-pointing, and replacement of windows and entry doors with ones more in keeping with its original date of construction. Interior work and exhibits to open it for visitors are still to come.



Rebuilding the failing masonry wall and replacing windows at the Maurice Stephens house. (NPS/Tim Long)

## History

Valley Forge NHP encompasses much of the site of the 1777–78 winter encampment of General George Washington’s Continental Army. Often called the “most celebrated encampment,” the story of Valley Forge was first celebrated and interpreted in the early 19th century, when what might have been an otherwise dreary recounting of suffering and survival was transformed into an inspiring story of triumph through sacrifice. The story has appealed to successive generations of Americans ever since.

Valley Forge was established as Pennsylvania’s first state park in 1893. In 1975, the Commonwealth of Pennsylvania authorized the transfer of the park (by now a National Historic Landmark) to the federal government. On July 4, 1976, President Gerald Ford signed Public Law 94-337, establishing Valley Forge National Historical Park with a mandate to “preserve and commemorate . . . the heroic suffering, hardship, and determination and resolve of . . . Washington’s Continental Army.”

Using park resources and documents gathered from around the world, Wayne K. Bodle and Jacqueline Thibaut created the definitive three-volume work about the Valley Forge encampment. *The Valley Forge Report* serves as the basis for understanding the historical context of the park. Research continues to better understand the role of women, African Americans and Native Americans during the encampment. In addition, through research conducted by local university students, we are gaining insight into the impact war and the encampment had on the local civilian population.



History			<a href="#">web</a>
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Sufficient research is conducted to understand the national significance and historical contexts for the park.		The three volume Valley Forge Report serves as the basis for understanding the historic context of the park.
	Sufficient research is conducted to establish the reasons for park creation and site history.		An Administrative History was completed in 1984 and needs to be updated.
Documentation	National Register documentation is complete and accurate; in the absence of complete and accurate National Register documentation, sufficient Determinations of Eligibility (DOE) exist for the park resources to assess Section 106 Compliance.		All resources are documented in the draft National Register documentation currently underway.

In 1984 an *Administrative History* was prepared by Harlan D. Unrau. Although it provides a good foundation for an understanding of the beginning efforts to preserve Valley Forge, there is a need to add the subsequent years of growth and history during the National Park Service administration.

The park is in the process of updating the National Register documentation. All park resources are listed on the current National Register or have the State Historic Preservation Office (SHPO) Determinations of Eligibility (DOE).

## Museum Collections

Park museum collections are fundamental to understanding the encampment and its role in the American Revolution. The core of historic objects is the George C. Neumann Collection of American Revolutionary War militaria (see resource brief, below). This 1500-item collection focuses on the military and everyday needs of the common soldier during the War for Independence. This collection is stored in the vaults of the Visitor Center, where there are good environmental controls, good security and fire suppression.

Park archival collections contain rare and unique items, many of which are specific to the encampment at Valley Forge. The most significant archival collection at the park is the John F. Reed Manuscript Collection, which contains rare 18th century manuscripts, broadsides, pamphlets, books, and artifacts. In this collection is the well known letter written at Valley Forge by General George Washington to the Continental Congress on December 23, 1777, in which he writes that unless they receive the necessary provisions, the army will starve, dissolve, or disperse.

Archival records produced in the day-to-day management of Valley Forge by the Centennial and Memorial Association of Valley Forge (1878–1893), the Commonwealth of Pennsylvania (1893–1977), and NPS (1977–present) are invaluable in today’s management of park cultural and natural resources. Papers from private individuals and other assembled collections also are present in the collections. The archival collections number approximately 164,100 items. A portion of the archives is stored in the vault, but the architectural drawings are stored in a basement, where they are threatened by the lack of environmental controls to maintain temperature and humidity within suitable conservation ranges. Surveys and partial inventories/finding aids exist for a portion of the archival collections; however, 90% of the archival collection requires processing and cataloging. Public access is minimal to the collections that are not on display.

The largest number of archeology items in the park collections dates from the 19<sup>th</sup> and early 20<sup>th</sup> centuries. In total, there are approximately 175,000 archeological items from this period. Most of



Museum Collections			<a href="#">web</a>
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Knowledge	Scope of Collection statement is prepared, approved, and implemented.		The collection is managed in accordance with the Scope of Collections Statement completed in 2011 and meets current standards.
Inventory	Objects are accessioned and cataloged; archival and manuscript collections are surveyed, appraised, accessioned, cataloged, arranged, and described, and finding aids are produced.		85% of the history collection (which includes archeological artifacts) is accessioned and cataloged; 15% of the archival collection is fully catalogued.
Documentation	Park has current and appropriate baseline documentation (Scope of Collections Statement, Collection Management Plan, Housekeeping Plans(s), Integrated Pest Management Plan, Emergency Operations Plan, Security and Fire safety plans, Historic Furnishings Plans, Conservation survey(s), Collection Storage Plan.)		All documents are completed and implemented, except for Emergency Operations Plan, and Security and Fire Safety plans.
Public Access	Availability of collections to the general public and researchers.		Exhibits that include collections as well as images and information about individual objects and documents are posted to the park and NPS websites and more are posted periodically. Collections not on display at the Visitor Center, Washington's HQ, or Varnum's Quarters are available to researchers by appointment.

the archeological collection is stored on the mezzanine of the Visitor Center where there are no environmental controls.

The Horace Willcox Memorial Library serves a resource for staff and outside researchers. The library contains more than 7,500 books and periodicals on the American Revolutionary War with an emphasis on the Valley Forge encampment. Materials also are available on the political, social, and industrial history of the area. The library contains numerous NPS studies and reports on the resources, administration, and history of the park. In addition there are 744 rare books covering the same topics. The range and depth of the library collection is considerable and would be difficult to recreate today. The library collection is one of the largest in the NPS. The library is currently housed in three rooms in the Philander Chase Knox house. The library is open by appointment only and is only lightly used. The building also serves as the storage area for unused 18<sup>th</sup> and 19<sup>th</sup> century furniture. This structure contains no environmental controls.

## Resource Brief: George C. Neumann Collection

The Neumann Collection of Revolutionary War militaria was acquired for Valley Forge NHP so that present and future generations of Americans can gain a better understanding of the lives of those soldiers who were encamped here. Assembled by George C. Neumann, it is the largest publicly owned collection of Revolutionary War artifacts known in the world that was designed to create an accurate awareness of the American soldier's pledge for freedom.

Many historians of the Revolutionary War have emphasized the roles played by American statesmen and military leaders. Yet the grand strategy set forth by the leaders was based on the capabilities of the common soldier and the weapons he carried. The Neumann Collection is an integral part of the park's interpretive effort and illuminates the everyday life of the soldier. A portion of the collection is part of the *Determined to Persevere* exhibit in the Visitor Center. A select portion is used for temporary exhibits and web exhibits, while the balance is available to scholars and students.

The 1500-item Neumann Collection comprises four parts: firearms, edged weapons, military accouterments, and accessories. There are 80 shoulder weapons. These muskets and rifles are of British, French, Dutch, Spanish, German, and American manufacture. They span a variety of designs from that of the legendary Pennsylvania Rifle to the mass-produced smooth bore musket: the standard shoulder arm of 18th century armies. Several models of the famous British "Brown Bess" also are present in the collection.

Swords comprise the largest single grouping within the collection. Some 350 of these decorative yet functional weapons represent American, British, French, Dutch, German, and Spanish patterns. Depending on the design, swords met a variety of needs. They were symbolic of military rank and civilian position, as well as being formidable weapons when yielded by



Objects from the George C. Neumann Collection (NPS)

trained soldiers in the hand-to-hand combat common during the Revolutionary period. Present in the collection are fine examples of 18<sup>th</sup> century hunting swords, short sabers, infantry hangers, horseman sabers, and naval cutlasses.

Auxiliary edged weapons in the collection consist of halberds, pikes and spontoons. These polearms served various functions including personal defense and the delineation of rank. Other weapons in this group include bayonets, belt axes, and knives. The common soldiers of all armies fighting in North America during the 18th century used these edged weapons extensively. Some 330 items from the U.S. and Europe are found in this group.

The fourth category includes accouterments and accessories, made up of over 680 pieces. This general grouping assists the viewer in understanding the wartime role of the individual soldier by illustrating the tools and equipment of his daily life. A camp cot, bottles, bullet molds, canteens, cooking utensils, playing cards and musical instruments were essential to the general effectiveness of soldiers in the 18th century.

## 2.3. Visitor Experience

### **Historical Interpretive and Education Programs**

The interpretation and education programs at Valley Forge invite visitors, students and park neighbors to explore the history and significance of natural and cultural resources. The introductory movie, museum exhibits, ranger-led walks, informal interpretation at historic sites and houses, and living history demonstrations of soldier life, musket, and cannon help visitors go back in time to experience the environment of the encampment. Visitors learn about the camp life of enlisted soldiers, officers, and the families who followed soldiers into the encampment. Interpretive programs contribute details to the broader picture of the war by incorporating historical uniforms, accouterments, artifacts, artillery, documents and portraits that illustrate the story. Visitors learn to look past the current beautiful meadows of the park and imagine the muddy winter landscape that was the result of the influx of the army.

Education programs bring school groups to the park so children can see the historic landscape, homes, monuments, and memorials. Children practice drills and marches as continental soldiers in “army musters” during which children register, train and pass inspection by senior officers, sometimes a General Washington re-enactor. Park staff and partners coordinate six major interpretive special events annually, and multi-media living history reenactments commemorate the legacy of the Revolutionary War and heritage of the nation.

Programs like “The Changing Landscape” sketching program and the “Landscapes and Architecture Photography” series highlight the history of the land and its uses. The “Voices of Valley Forge” experiential workshops in visual and performing arts help visitors and park neighbors uncover the untold stories of women and children and the diversity of Valley Forge inhabitants, past and present.

Children find meaning and fun during summer literacy and science camps held in partnership with West Chester University and the Franklin Institute. Forums for discussion about history and contemporary park topics like climate change and sustainability of park resources are offered through

# Interpretive and Education Programs



[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Education Programs	Variety and quality of programs		266 education programs were conducted in 2013. Park staff conducts a variety of programs for life-long learners from pre-schoolers at Montessori School to adult learners in the annual Teacher Institute. Visiting school groups participate in simulated musket drills to learn about General Washington and his continental soldiers. Video conference programs connect rangers and students in virtual tours of the park and explorations of Washington's leadership. Summer learning camps include The Pennsylvania Writing and Literature Project and Discovery Camp. Two annual Home School Days cater to the needs of home school families. The Park for Every Classroom project prepares teachers to effectively teach about park resources in the park and in their classrooms.
	Number of participants		6,566. The number has dropped because schools are increasingly unable to fund the cost of buses for field trips.
Ranger Programs	Variety and quality of programs		1,202 programs were conducted in 2013. Ranger-led walks focus on the history of the 1777-78 winter encampment. Living history demonstrations by staff and volunteers showcase the lives of continental soldiers and camp followers. Informal interpretation is offered at historic sites including Washington's Headquarters. Ranger Rove and interpretation on the River Trail were expanded to include more locations.
	Attendance		144,722. The most recent year indicates lower visitor participation. Park staff would like to conduct research and training in order to incorporate themes of multiple-perspectives, diversity and natural resources.
Junior Ranger Programs	Variety and quality of programs		Eighty Junior Ranger programs were conducted in 2013. Junior Ranger booklets are distributed at the Visitor Center. Children take the Junior Ranger Oath and receive a badge when completed activities are reviewed by a park ranger. Junior Ranger Day is held annually with learning stations hosted by staff from several park divisions. In order to cater to drop-in visitors, Kids' Exploration Areas were designed to offer interactive hands-on programs programs: Kids as Colonials, Kids as Cartographers, Kids as Calligraphers, and Kids as Hut Builders.
	Attendance		1,223 children completed the program.

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Special Events	Variety and longevity of events, community involvement		<p>Nine special events are coordinated throughout the year by park staff and partners. In 2013 over 6,000 people attended events. Living history programs and walks recreate the army's entrance and departure from Valley Forge. Washington's Birthday Weekend features a community birthday party with historical reenactors and the annual Boy Scout Pilgrimage and Encampment. A Veteran's Day program brings community and military groups together in a public tribute to veterans. Public Lands Day, National Trails Day and Martin Luther King Day are days of service and stewardship as hundreds of volunteers complete maintenance and conservation projects. The Fourth of July Community picnic offers historically themed children's activities and a picnic. The annual Revolutionary Run is a major community effort, bringing together runners over a three mile course.</p>

the Park for Every Classroom program, the annual Teacher Institute, staff training workshops and ongoing presentations like “Lunch and Learn” and “The Friends Speaker Series” hosted by park partners. The Encampment Store provides guided Trolley Tours, guided biking and hiking tours and a step-on tour guide service. Information about interpretive opportunities and special events is managed through the park web site and discussion is ongoing through social media.

The renovation of an earthen fort as an active interpretive site is in design. An outdoor education pavilion and surrounding events lawn were completed in 2014. Teachers and students are becoming part of the park planning and teaching network. The park is looking to new ways to enlist the community at large in planning and delivering experiences from multiple perspectives, inviting individuals that represent our diversity\* to find relevance in the National Park Service and its mission.

**Resource Brief: A Park for Every Classroom and Teachers’ Institutes**

**Park for Every Classroom**

As part of an educational initiative across the Northeast Region to engage teachers and provide them with the tools to teach about content represented by national parks, Valley Forge NHP became a pilot “Park For Every Classroom (PEC) site. In fall 2013 we hosted a three-day regional PEC workshop.

NPS staff from seven national parks attended with teachers and community partners to experience how the implementation of the PEC program at Valley Forge empowers educators to effectively teach about park history and significance with place-based learning activities and teacher-generated curriculum projects and lesson plans. Workshop discussions, guest speakers and field-based activities helped participants understand how experiential service-learning fits with the Common Core and Next Generation Science Standards.

Attendees from participating PEC parks shared promising practices with incoming PEC participants who are new to the program. Presentations from educators at all levels provided a deeper understanding of teacher professional development. The workshop included a learning journey around the park, allowing participants to experience outdoor education, as well as a variety of multi-media presentations. Participants returned to their home parks informed and inspired with proven practices, powerful partnerships and a renewed vision for professional development, youth engagement and service learning.

### Teachers' Institutes

Valley Forge National Historical Park and Independence National Historical Park annually co-host a Teachers' Institute, a professional development workshop offered to educators of history and language arts. Teachers spend a week engaging in presentations by content experts, demonstration lessons, behind-the-scenes tours of park sites, investigations of museum collections, and hands-on experience with a variety of research strategies and classroom techniques that use multiple park resources.

Teachers learn how to analyze primary source documents and interpret historic paintings. In recent institutes, teachers were able to step back in time and visit with a George Washington re-enactor at the David Potts house at Valley Forge and witness a lively debate between Thomas Jefferson and John Adams re-enactors at the Second Bank portrait gallery at Independence.



Teachers hopped aboard the trolley for a private tour of the park grounds. (NPS/Rhonda Schier)

### Resource Brief: Special Events and Commemorative Programs

Valley Forge hosts nine special and commemorative events each year to honor the actions that occurred on this hallowed ground over 200 years ago, to commemorate our nation's heroes, to educate and engage youth and our community, and to give back to the park through stewardship. Such events include the Washington's Birthday celebration, Veterans' Day, the March-In of the Continental Army commemoration, National Junior Ranger Day, National Public Lands Day, and more.

Each year during Presidents' Day weekend the park co-hosts the annual Boy Scout Pilgrimage and Encampment at Valley Forge with the scouts' Cradle of Liberty Council. 2014 marked the 102<sup>nd</sup> consecutive year that scouts have encamped at the park. Hundreds of scouts apply what they learn about winter camping, often in deep snow. Learning stations are set up throughout

the park. The weekend also includes musket and cannon demonstration, historical reenactments, ranger talks, song and dance, extensive children's activities open to the public, and a birthday party with special guests George and Martha.

Veterans' Day brings a multi-part commemorative event. Veterans, family members, and visitors meet at the National Memorial Arch for a commemoration ceremony.

Military and military support organizations provide drill and music. In 2013 a park guide and retired U.S. Army Staff Sergeant shared a vision of service for 22 new recruits who were administered the Oath of Enlistment for active military and National Guard by the presiding officer of the United States Army. The 78th Army Band performed the "Armed Forces Medley" to honor all four branches. Following the program at the Memorial Arch, memories were revived and friendships renewed at a reception at the Education Center hosted by the Valley Forge Tourism and Convention Bureau.



Living history reenactors and military veterans showcased American conflicts from the Revolution, Civil War, French and Indian War, WWI, WWII, and Vietnam on Veterans Day. (NPS)



Denise Valentine portrays Phillis Wheatley during the Voices of Valley Forge workshop. (NPS/Rhonda Schier)

### Voices of Valley Forge Workshop

The Voices of Valley Forge workshop series showcases the untold stories of African Americans in our nation's foundation and our contemporary communities. Scholars, historians, artists and performers hold participatory workshops for children and their families to bring history alive through re-enactments, learning simulations, spoken-word poetry, storytelling, music and dance. Community presenters bring continental attire and accoutrements, books and drums to engage their

audiences in explorations of the contributions of enlisted Africans and a celebration of the heritage of African culture in the American colonies and the Valley Forge encampment.

In 2014 historian Noah Lewis portrayed Edward "Ned" Hector, teamster and bombardier so that families could learn about his role as an African American soldier in the Revolutionary War and a hero at the Battle of Brandywine. Children were assembled into a cannon crew and learned their crucial roles in the team in a modern day simulation of the loading and firing of the artillery. Storyteller Denise Valentine portrayed African American poet Phillis Wheatley,

who published her first story at age 12 and was the first African American to publish a book of poems. Ms. Valentine facilitated poetry writing exercises with the workshop participants as children and adults created free verse using vocabulary from Phillis Wheatley's poems.

Dr. Marion Lane, historian and author, shared her experiences conducting historical research and oral history as she uncovered stories of her ancestor's contributions to the War for Independence. Participants also met dancer, choreographer and storyteller, Mafalda Thomas-Bouzy who led the participants in explorations and interpretation of African history through dance and drum. Mafalda performed for the participants and led them in circle dances celebrating the African experience.

The workshops are supported by the Valley Forge Alumnae Chapter, Delta Sigma Theta Sorority, Inc., and coordinated by a Valley Forge Teacher-Ranger-Teacher. It is the foundation for a new Parks for Every Classroom lesson plan, available on the park website and through the NPS Education Portal, which launched in autumn 2014.

### **Resource Brief: Pennsylvania Writing and Literature Program**

The park hosts the Pennsylvania Writing and Literacy Program children's writing camp in partnership with West Chester University of Pennsylvania. To inspire daily writing about national history, children build table-top log huts, hold flag raising ceremonies, march and drill as continental soldiers, explore the museum collection, learn from historical re-enactors, tour historic sites, and research primary source documents. They wrote narratives, recipes, paragraphs, poetry and letters among their daily creative tasks.

The children earn Junior Ranger badges in recognition of their two weeks as park historians, scientists, curators, archivists, artists and litterateurs. On the final day of camp, the children's parents participate in guided reading and writing activities and in the Junior Range pinning ceremony. In 2013 the main measure of success was a published anthology—evidence of the children's skill development, mastery of history and literacy, and increased positive attitudes about reading and writing.



Photo caption: General Washington dances the minuet with a young student from the Pennsylvania Writing and Literature Program. (NPS/Rhonda Schier)

## Natural Landscape Experience

Valley Forge NHP showcases the story of a changing natural and human landscape. The park's 3,500 acres include warm-season grasslands, forested hillsides, a running river and a flowing creek that all are visible and accessible to the public. The interpretive story includes the prehistoric era, with scientific fossils found in sink holes, to early human inhabitations, to the pre-encampment period when the land was filled with small family farms as part of the fertile, Pennsylvania bread basket. The expanse of land became the training ground for General Washington's Continental Army as the soldiers took over the farmers' fields, became tenants of the farmers' stone houses, and cut down the trees for miles around to build huts for winter housing. There are remnants on-site of the post-encampment industrial era including evidence of quarries and factories. In the late 19<sup>th</sup> century, local citizens saw the importance of preserving the land and the stories for future generations. Their work led to the establishment of Pennsylvania's first state park, with the preservation of historic structures, establishment of memorial drives and monuments, and creation of a place of scenic beauty and contemplation about the area's significance in national history. Today, surrounded by an edge city, the park is growing in importance as a regional bio-refuge. Visitors enjoy the park's 26 miles of trails, wildlife watching and photography, fishing, botanizing, and participating in numerous volunteer projects that include hands-on learning about all aspects of the natural environment.



As natural habitat improves, wildlife watching and photography of species such as this bluebird become more popular. (Bob Moses)

### Resource Brief: Photography Workshop Series

"Landscapes, Structures, Waterways and Bridges," a photography program co-hosted by Valley Forge National Historical Park and the Freedom Valley YMCA, launched in summer 2013 with Saturday morning workshops in the park. Participants learn the basics of camera technique and pointers in photo composition. They take part in behind-the-scenes tours throughout the park to photograph natural and man-made scenery. From this program staff and partners created an art gallery in the Visitor Center to display a number of the photos taken by program participants. The program also hosts Facebook and Flickr accounts where participants can share and view photos from the programs. This workshop has grown through social media and word of mouth, and single-day events have seen upwards of 40 participants. The program engages a new audience in the park's resources and stories.



Program participant lines up the perfect shot behind the Philander Chase Knox Estate. (NPS/Rhonda Schier)

Natural Landscape Experience			<a href="#">web</a>
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Views and Vistas	Effective screening of off-site development		The park sits at the highest elevation in the immediate region and long views beyond the boundary can be compromised by large-scale development. Vegetative screens have been established that soften or block adverse views. Park managers are regularly engaged with neighboring landowners, developers, and local governments regarding effects of potential development.
	Rehabilitation of historic internal views		Historic views among the forts have been obscured by trees, which also serve to screen adverse off-site views. Screens of off-site views have been established and now the remaining trees that block internal views can be removed.
Night Skies	Limitation of light pollution		The park is one of the darkest areas in the broader urban area and good views of the night sky are possible even though the surrounding area is bright.. Lighting in the park is being modified to include shields and motion sensors to reduce light pollution. Park managers are regularly engaged with neighboring landowners, developers, and local governments regarding effects of potential development.
Quiet	Natural sound levels		The park is noticeably quieter than the surrounding urbanized area. Traffic sounds are audible from most areas within the park, however, and only a few valley areas are out of range of direct highway noise. As new trails are sited, the presence or absence of noise will be used as a criterion.

## Relevance

The park is distinctive in many ways including where it is situated, the history it represents, and how visitors and neighbors use it. It is a significant landmark in American history and historians love to visit and learn the story of the tenacity and determination of the Continental Army. As a beautiful oasis of open space surrounded by commercial and residential development, the park's trails are ideal for park neighbors who run, hike, and walk with babies in strollers and dogs on leashes. With a wide variety of volunteer opportunities, the park is relevant to park neighbors who work at the Visitor Center information desk, assist with living history demonstrations, patrol the park on foot or horseback, or serve on crews helping with a variety of resource projects and maintenance. As the site of a variety of youth camps and education programs, the park is the answer for youth leaders, teachers and students.

Yet many people do not see relevance in the park's history, resources, and opportunities to their own lives and experience. As part of a service-wide initiative, park staff are now looking for ways to invite and encourage other populations and park neighbors to give the park a try and find a personal connection that might not be currently evident. The staff are inviting urban youth for first-time visits to the park as part of education and service learning activities. The Urban Blazers from Philadelphia, the Philadelphia Work Crew, SCA teams, and Buddy Bison field trips are examples

Relevance  <a href="#">web</a>			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Understanding our Visitors	Adequacy of information needed to understand and best serve the needs of visitors		The park does not have adequate information on the number of destination visitors, their motivations for visiting, and what they expect from their park experiences. In order to better serve park visitors, we need solid information.
	Adequacy of information needed to understand and best serve the needs of recreation visitors		We estimate that 90% of park visitors are recreation users. Public involvement processes during the last decade provided a great deal of anecdotal information about these visitors and their expectations. We need more information, however, on means to engage them in understanding and appreciating the park's cultural and natural significance, and engaging in stewardship.
Reaching New Park Users	Research that supports interpretive and experiential programming to promote diversity, inclusivity and multiple perspectives.		Some research has been completed to support new interpretive programming to illustrate the diversity of the encampment including nationality, ethnicity, gender and special populations but much more is needed.
External Communication	Research into how best to communicate to local and regional residents through media and other outlets		Social media and a partnership with the Valley Forge CVB have led to much wider promotion of opportunities and events and progress continues. We need a better understanding of how to reach non-traditional audiences, however.

of programs that reach out to young people who might not otherwise have a chance to visit the park. When city kids wade in Valley Creek looking for the invasive rusty crawfish, or run along a mown trail at full speed on the Grand Parade, or sketch pictures of scenes from nature, they have a chance to find personal relevance in the open space and may become active stewards of parks in the future.

When adults from the local community are invited to use the park as the venue in which to share stories of culture and heritage, as during an African dancing and drumming workshop, they connect with the park for the first time and talk to others about the park experience. Park staff are forming partnerships with ethnic and cultural groups to consult on curriculum projects and partner with special events like the annual commemoration of the Patriots of African Descent monument. As staff positions open, recruiting includes reaching out to candidates of diversity in order to create a staff family that more accurately reflects the demographics of the surrounding region. Work is underway to develop and include interpretive and education activities that help individuals find relevance in the park as Citizen Scientists who gather data on species in the park, and as Citizen Historians who examine historic documents and illustrations in the museum gallery in preparation to serve as park guides for families and friends.

We have started down the path but understand that there is much work to be done to ensure that we work with educational institutions, communities, and others so our programs, parks, and visitors reflect the diversity of America.

## **Interpretive Media**

Interpretive media pieces at Valley Forge are overall in good shape, though much of it could use, and will receive an upgrade. Park staff worked with the Harpers Ferry Center to reevaluate and write a new park brochure, which includes a beautifully designed commissioned piece of artwork depicting the encampment site as it would have looked (based on primary source research) during 1778. The brochure also contains updates to content, a historical map of the encampment, and updated wayfinding information. The brochure is available for digital download from the park's website. Through a commitment to creating a park identity and also to ease navigation for visitors, information and directional signs continue to be replaced throughout the park. Several projects are underway to upgrade outdated or missing waysides.

At the Muhlenberg Brigade site and adjacent Fort John Moore, exhibits are under design that will convey the stories and challenges of the enlisted men and officers encamped there, as well as the military strategy behind the layout of the camp. New huts and exhibits will be fabricated beginning in 2015.

The park continues to work on redesign of the Visitor Center exhibits. Staff and exhibit professionals are designing a balance of static and dynamic exhibits including text panels, artifact space, and interactive technology that will prepare visitors for a meaningful experience in the park. The team is incorporating new standards for ADA compliance, including audio descriptions, to meet the needs of more visitors.

A social media team is working to adapt the park's strategy, develop content, and review best practices in order to reach and engage users on the park's social media platforms. The team is made up of a cross-section of the park's divisions in order to provide users with a comprehensive picture of the park, from interpretive historical and archival information to construction updates and from natural resource projects to safety information. The park's website is a continual work in process. As the content management system is upgraded so is the park-specific information throughout the site, particularly in the "Plan Your Visit" section. A mobile website was launched in 2014 to make information and navigation and interaction easily available on mobile devices.

## Interpretive Media – Brochures, Exhibits, Signs, and Website



[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Wayside Signs	Condition and currency of signs		The park has relatively few waysides for a park of this size. Some are excellent and some are in poor condition and need to be replaced. The park staff will evaluate the number and condition and formulate a plan and a vision for the replacement and installation of wayside exhibits.
Park Directional Signs (off-site)	Usefulness, quantity, and placement		The park is surrounded by complex, fast-moving highways, and some visitors comment often that they have difficulty finding it. Park staff work in partnership with highway officials for improved signage, which is now as complete as possible.
Exhibits	Visitor Center		Though visitors spend time in the exhibit area, the exhibits are not interactive or particularly engaging. Park staff are seeking ways to upgrade and redesign exhibits to make them more engaging.
	Train Station		The train station exhibits are a fairly new installation and include quality text panels, illustrations and video segments. They are not very interactive.
Print Media	Accuracy and availability of primary park publications		The park brochure has been recently updated with new artwork, content and design and will be available in Spring 2014. Limited additional site bulletins are available to inform visitors about topics such as natural resources including trees and birds.
Audio-visual Media	Orientation Film		The park orientation film is outdated both in content and cinematography. It is time for a new movie that is technically superior and demonstrates a wider thematic approach to the significance of the Valley Forge encampment.
Websites	Currency and scope of website; number of website visitors		Improvements have been made in recent years in the content, navigation, and layout of the park website to make information more available to visitors.
	Social media: Facebook updates and "likes," overall activity		The park is using Facebook and Twitter to provide current information to visitors and the public. These social media outlets have great potential for improving communication, but there is a lot of room for improvement in the content and frequency of messages being provided by park staff.

## Resource Brief: *Cobblestone Magazine* features Valley Forge

“Valley Forge: The Real Story” is the title of the October 2013 issue of *Cobblestone*, the American history magazine for children ages 9–14. The special Valley Forge issue was a collaboration between Cobblestone Publishing and the park. Featured are stories of encampment challenges and triumphs, the diversity of the men and women of the Continental Army and the transformation of a military camp into a national park. The Chief of Interpretation and Education served as the consulting editor for the issue and park staff contributed articles, photos and illustrations.

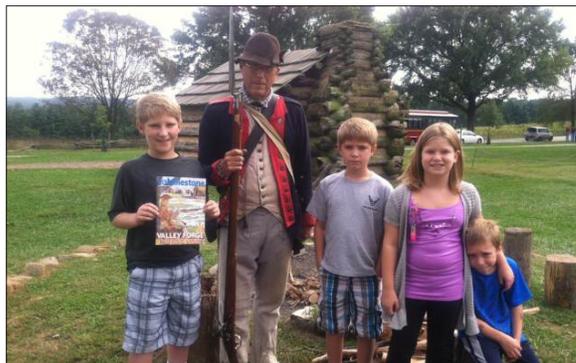


Photo Caption: A park ranger stands with four of the first park visitors to receive the Valley Forge issue of *Cobblestone Magazine*. (NPS/Rhonda Schier)

*Cobblestone* has been published for more than 30 years and has a circulation of 20,000. It is delivered to most schools in the nation and abroad in addition to individual subscribers. Along with the print edition, digital versions of the issue are also available with embedded videos from the Valley Forge YouTube collection to engage today’s learners.

## Resource Brief: Valley Forge Embraces Distance Learning

Part of our work to expand the park audience is to use modern technology, such as video conferencing, or distance learning. In 2013 the park partnered with the George Bush Presidential Library to co-host an interactive video conference, “George to George: Presidential Leadership.” Students explored the question: “What are the leadership values found in two primary sources that George Washington and George H. W. Bush wrote in preparation for their terms of office as the 1st and the 41st presidents of the United States of America?” The interactive video conference linked the George Bush Presidential Library and Museum in College Station, Texas, the park, and the students in Texas. A total of 1,781 students participated live or viewed the recorded program in their classroom. A live audience of 10 cadets from Valley Forge Military Academy & College in Wayne was in the Valley Forge studio.



Living History Volunteer, Bruce Hustis (left) and George Washington historical reenactor, Dean Malissa (right) join park staff to present on Washington’s leadership to over 1,000 students nationwide. (NPS/Rhonda Schier)

Park staff have trained with the park’s IT and VTC specialists to learn how to set up and host additional video conference sessions to reach classrooms across the country. The park will offer distance learning opportunities during the 2014–2015 academic year.

## Visitor Numbers and Satisfaction

In 2013 Valley Forge National Historical Park estimated a total of 1,962,889 million visitors. Of that number, 90% are estimated to be local users while the other 10% are recorded visitors to the Visitor Center and are generally non-local visitors to the park.

Our Government Performance and Results Act surveys report 98% approval by park visitors. Most responders very much enjoyed park programming and park opportunities. Visitors also had a chance to respond with what they thought the park's significance was as well as any other comments about their visit:

- “Having this wonderful unspoiled recreational space is so important to this region.”
- “Thanks for all you do, I have great respect for the NPS!”
- “You should have a category for ‘Exceptional’ in your survey!”
- “Everything I experienced at Valley Forge was par excellence. Keep up the great job. As a descendent of a patriot who survived Valley Forges, Thanks!”
- “Soldier Life Program was excellent.”
- “Excellent audio tour.”
- “Good trails for bikes and hikes.”
- “Beautiful park.”
- “Good historical interpretation.”
- “Suggestion to update the movie.”
- “The docent tours were outstanding.”
- “The staff was very helpful.”
- “While I am not handicapped, getting to some sites was exhausting for me.”
- “Please improve (highway) signage.”
- “Lovely facilities.”
- “It is a fabulous preservation of a historical site which increases appreciation of our heritage and patriotism.”
- “In this area George Washington was able to weather the winter, regroup and march out a stronger army ready to fight for our independence.”
- “Valley Forge reunited the Continental army into one strong force. The entire physical landscape, you can feel and see the importance of what went on here.”

## Accessibility

Valley Forge National Historical Park offers accessibility variations to the visitor experience and implements compliance into ongoing planning of interpretive and educational exhibits. A typical visit to the park for a cultural visitor includes watching the 18-minute orientation film, exploring the exhibits in the Visitor Center, and completing the self-guided driving tour, stopping to visit sites along the way. All facilities built or renovated within the last five years are physically accessible, and as capital improvements and interpretive facilities continue to be renovated accessibility is provided. Older facilities vary greatly in the degree of accessibility. Detailed information is available at the Visitor Center.

## Visitor Numbers and Visitor Satisfaction

[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Number of Visitors	Number of visitors per year		For 2013, improvements were made to the method of counting visitors, providing a more accurate count. The apparent increase over 2012 (1,442,750) reflects the difference in methodology, as well as a possible actual increase. The 2012 total was 4.9% higher than the 5-year average of 1,388,763 visitors for 2007–2011. The majority of visitors to the park come for recreation. Due to multiple park entrances and to visitor use patterns, accurately counting visitation is challenging.
Visitor Satisfaction	Percent of visitors who were satisfied with their visit		Based on the standard visitor satisfaction survey conducted each year, the percentage of visitors satisfied in FY13 was 98.0%, compared to the average of 97.0% for the previous five years and 95.4% for the past ten years. Source: 2013 Visitor Survey Card Data Report

## Accessibility



[web](#)

Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Mobility	ADA compliance		The Visitor Center and modern facilities are accessible, but Administration offices and the historical buildings such as Washington Headquarters and Varnum's Quarters are not. Print books are available about building interiors and QR code videos are available to provide film clips and facility tours. Wheelchairs are available at the Visitor Center. The newly completed Yellow Springs Trail and the under-construction Sullivan's Trail are accessible. An evaluation of the accessibility of existing paved trails and some structures is needed.
Visual Accommodation	ADA compliance		The park film has closed captioning. The existing and new park brochures are available in Braille. A cell phone tour and Audio CDs are available for visitors. New exhibits under design now will be accessible.
Auditory Accommodation	ADA compliance		The park orientation film has closed captioning but not assisted listening. Transcripts are not available for park audio-visual and on-line resources. Ranger staff has used an assisted listening device during children's camps as needed. Print books are available about building interiors. QR code videos are available to provide film clips and facility tours.
Public Transportation	Access to park via public transportation		Two bus routes provide public transportation to the park. Improved trail connections will be available with new trail connections and a pedestrian bridge under construction over the Schuylkill, which will connect the south and north sides of the park. The vehicle used for the park Trolley Tour is accessible for wheelchair use.

<b>Safety</b>  <span style="float: right;"><a href="#">web</a></span>			
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. Park staff use the GAR and SPE methods to analyze and mitigate risk for daily operations and special events.
Staff Safety	Recordable incidents		Overall numbers for recordable injuries and days away decreased over ten years. Overall recordable injuries have remained relatively static for the past five years with some decrease in reported days away from work. In 2013 the park had an increase in the number of tick/insect related injuries, which amount to 23% of the recordable incidents.
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. Regular safety messages are given to staff members and the park has an active Safety Committee that meets monthly. The park has made numerous strides in updating Safety SOPs and offering initial training.

## Safety

Education about and implementation of safety methods and measures is fundamental to everything the park does. An active Safety Committee meets regularly to discuss risk management, evaluate a variety of working situations, take suggestions from other staff, and brainstorm and implement procedures to identify, assess and mitigate risk, put safeguards in place, and promote the wellbeing of workers and visitors. All park staff complete Operational Leadership (Risk Management) training to learn how to incorporate safety awareness in decisions about equipment, environment and personnel in every park process. Staff members in all divisions have learned how to use risk management strategies including GARs (Green, Amber and Red) that represent “Go or No Go, or Proceed with Caution” with a park situation or event, and SPEs (severity, probability and exposure evaluations to predict potential hazards and consequences in daily operations, special events, and throughout the park’s buildings and grounds, parking lots and trails. The park is committed to doing its part to meet the agency’s commitment to safe operations and prevent any risk that is not necessary.

## 2.4. Park Infrastructure

### Facility Condition Index

The NPS 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 the park is the Asset Priority Index (API). It identifies the importance of the various infrastructure components. 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.

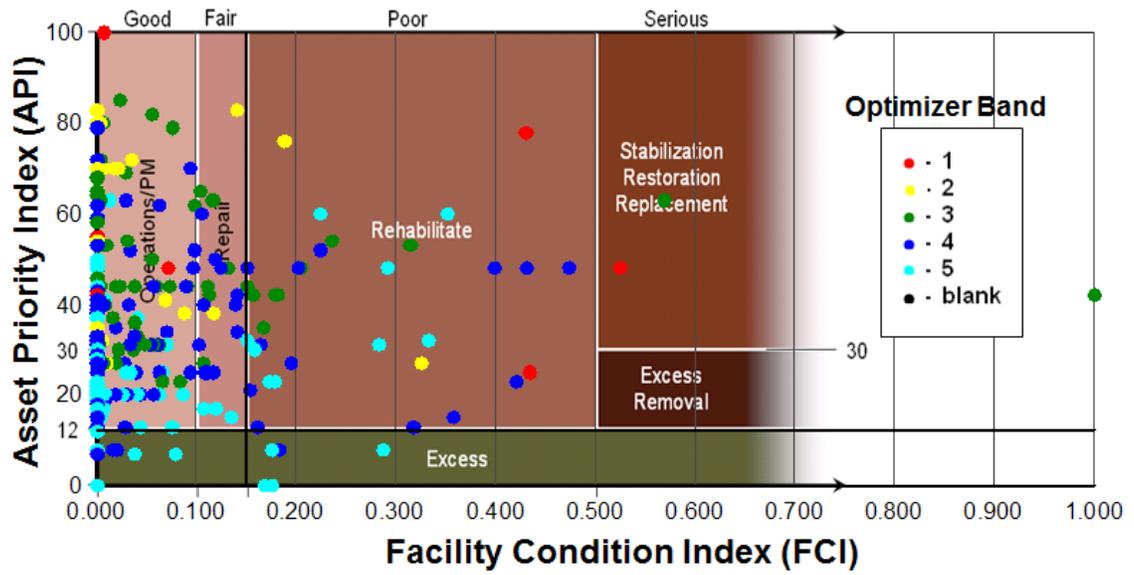
The scatterplot for 2013 shows the FCI for each of the infrastructure asset types at Valley Forge NHP. It plots buildings, trails, roads, parking areas, and other infrastructure assets against its API. Park managers and maintenance staff use the FCI and API data for each park asset to focus on preventive maintenance and repairs to facilities that are most critical to their parks.

# Overall Facility Condition Index



[web](#)

Asset Category	Number of Assets 2008 / 2013	FCI 2008 / 2013	Condition Status/Trend	Rationale
Buildings	145 / 107	0.094 / 0.117		Both ongoing maintenance work and also preservation projects always are underway on the park's large portfolio of buildings. The park recently updated the Priority Assets Management Plan and Optimizer bands to better manage the buildings and other structures. Fifteen of the 107 buildings are in poor condition, and funding has been requested to rehabilitate certain buildings and to remove or lease others. Nine buildings that were not operationally functional were demolished in recent years to reduce costs. The condition of the encampment-era buildings has improved over the past five years, although some have yet to be stabilized or rehabilitated.
Trails	18 / 20	0.127 / 0.032		Volunteers and Student Conservation Society groups assist with the maintenance of the park's trails.
Waste Water Systems	3 / 3	0.002 / 0.002		Waste water systems are in good condition overall. The pumps in one of the three lift stations had surpassed their life expectancy and were replaced in 2014.
Water Systems	1 / 1	0.000 / 0.000		The park has installed new water lines from the well to the restrooms and installed a UV filter disinfectant system.
Unpaved Roads	8 / 11	0.005 / 0.000		Unpaved roads are routinely maintained and are in good condition.
Paved Roads, Parking Areas, Bridges, Tunnels	65 / 57	0.124 / 0.099		The park removed three little-used paved parking lots and has consolidated paved roads as part of the Federal Lands Highway Program.
All Others	176 / 158	0.018 / 0.003		The "All Others" category includes the National Memorial Arch, statues and stone monuments, huts, and the park's computer and telephone systems. All small and medium monuments have recently been cleaned and polished, and large monuments are scheduled to be cleaned in 2014. Huts have been adopted by a volunteer group for maintenance and care.



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 receive only preventive maintenance for the most critical components or may require special projects, partner funding, or leasing 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](#).

### Resource Brief: Preparing the Philander Chase Knox Estate for Leasing

The park takes its historic preservation mission seriously. It owns and is responsible for maintaining scores of historic buildings. While many of them have high value as interpretive sites, some are not suitable for public interpretation because they represent duplicative interpretive stories (e.g., officers’ quarters), because it is not feasible to staff so many different buildings, and/or because they are located in isolated areas of the park. Most of the park’s historic buildings were built after the encampment and do not relate to the park’s principle theme, yet the responsibility for their care and ongoing maintenance remains. Some of these are used for park offices and storage, or as quarters for park staff. While these uses keep the buildings heated and prevent vandalism, the maintenance costs are not fully covered in available budget, resulting in buildings that are not optimally maintained, as well as challenges for the park budget.

The NPS has the authority to lease buildings that are not necessary or suitable for visitor

services or park operations. Leasing enables a park to work with a community to rehabilitate and keep these buildings in good condition, and may in some cases provide revenue to the park. The Philander Chase Knox House is such a building and the park now proposes to lease, through a request-for-proposals process, the house and surrounding grounds to an entity that would manage private event there.

The earliest section of what became the P.C. Knox House was constructed in 1785 and enlarged several times by a succession of owners. The house and surrounding lands were purchased by Knox in 1903 as a country estate to serve as a weekend retreat a reasonable distance from Washington, D. C. and where his son's love of horse breeding and stock raising could be indulged. Originally a Pittsburgh, Pennsylvania attorney, Knox was appointed United States Attorney General at the start of President William McKinley's second term in 1901 and remained in the position through Theodore Roosevelt's administration. In 1904 he was appointed the U.S. Senator for Pennsylvania by the governor. Knox served as the Secretary of State under President William Howard Taft from 1909–1913. He again served as a U.S. Senator from 1916 until his death in 1921.

Extensive alterations by architect Brognard Okie transformed this large house into the expansive Colonial Revival structure that is seen today. After Knox' death in 1921, it remained in the family until it was sold in 1965 to the Commonwealth of Pennsylvania to become part of Valley Forge State Park, and in 1976 Valley Forge NHP.

The house is suitable for leasing but needed basic rehabilitation to bring it to good condition. Over a two-year period the park used a variety of sources of funds and labor to accomplish this. Park staff completed the window re-glazing, shutter repairs and refurbishing, wood trim, fascia and porch repairs, and painting. They removed the failing wall paper, repaired the cracks and failures in the plaster walls, and painted the interior. American Recovery and Reinvestment Act funding enabled repair of the stucco exterior, which then was whitewashed by an AmeriCorps Crew. The park completed an environmental assessment and has advertised the building for a lease opportunity with an event planner.



Photo Caption: The Philander Chase Knox house will be leased to return it to public access and provide revenue for its maintenance. (NPS)

<b>Energy Consumption</b>			<a href="#">web</a>
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 3% lower than the previous year (Source: NPS Annual Energy Report).

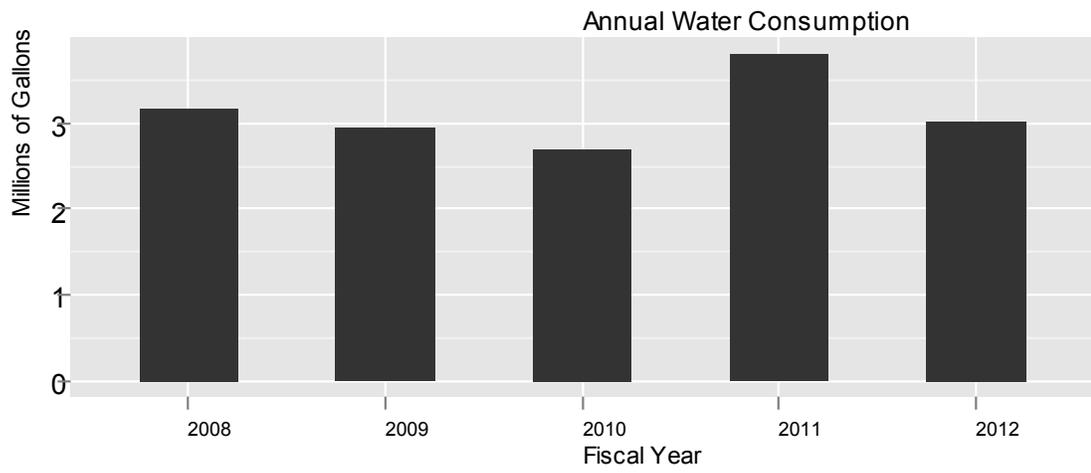
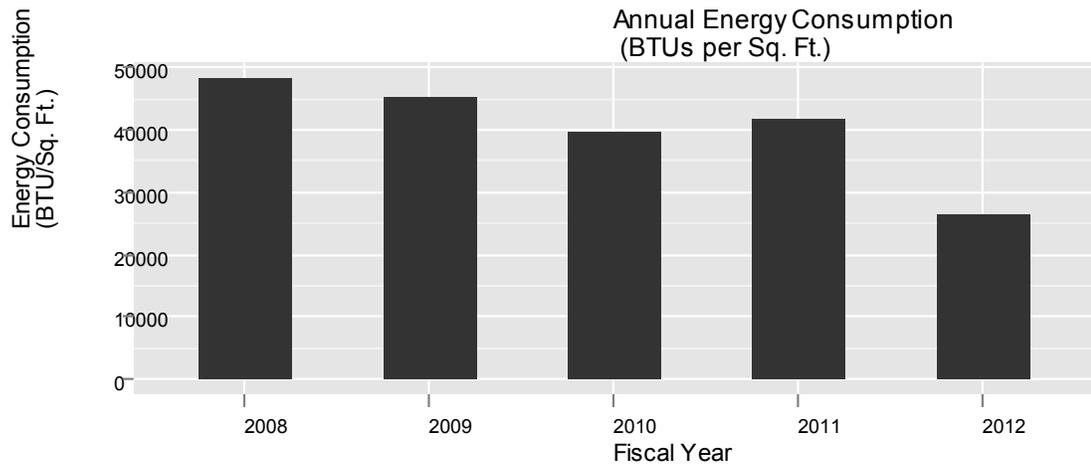
<b>Water Consumption</b>			<a href="#">web</a>
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale
Water Consumption	Millions of gallons		Water consumption at the park in 2013 was 1.52 million gallons, which represented a 50% reduction from the previous year (Source: utility bill). There has been little progress in overall reduction, however.

### 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 NPS has a goal to reduce service-wide 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](#)). In 2013 the park reduced water consumption both as a result of repairs to leaking pipes and also through replacement of old fixtures with water-conserving fixtures.



## Resource Brief: Climate-Friendly Parks Actions

The park has made a commitment to sustainability by adopting a goal to reduce greenhouse gas emissions by 15% by 2017. In 2013, staff and partners joined local and national experts during a two-day workshop to explore ways to make park operations more sustainable. To minimize the impact of the workshop itself, a webinar link was used to allow us to share and learn from parks like Point Reyes National Seashore, Marsh-Billings-Rockefeller, and San Antonio Mission without the emissions associated with travel. Local experts in sustainability, including Liberty Property Trust, also presented information to park staff.

Five major areas of park operations were targeted: Fleet and Transportation, Energy Use, Landscape Management, Water Use, and Purchasing and Waste. These topics represent the largest sources of park greenhouse gas emissions, according to a park emissions inventory that was completed earlier in the year. The workshop also considered how interpretive and educational programming can be modified to carry the sustainability message to the public.

As well, the workshop was the inaugural event for the park's new Green Team, which organized all the ideas generated into an action plan with both short- and long-term initiatives. These actions also were entered into a standard emissions planning tool. After evaluating various reduction scenarios, the park established its *15% by 2017* emissions reduction goal and empowered the Green Team to pursue strategies to achieve the goal.

To date, the Green Team has completed numerous smaller actions, like color coding keys by fuel efficiency and setting printers to default to double-sided printing, as well as more substantial reduction measures like developing a park-wide no-idling policy. This policy was incorporated into the 2014 superintendent's compendium and Valley Forge became one of the few national parks to establish vehicle idling limits for both visitors and staff. Progress toward the emission reduction goal is tracked through periodic emissions inventories and the Energy Star® utilities tracking tool that will be completed by the Green Team on a semi-annual basis.



The park's Climate-Friendly Parks Plans details actions that will reduce emissions generated by park operations and visitors. (Bill Moses)

## 2.5. Partnerships and Volunteerism

### Partnerships

Valley Forge NHP embraces the belief that our mission is maximized and our message is amplified through the collaborative efforts of many park partners. The foundation of many visitor experiences and park initiatives is the result of work with our three formal partners: friends and colleagues from The Encampment Store, the Friends of Valley Forge Park, and the Valley Forge Tourism and Convention Bureau.

The Encampment Store (TES) is the park's cooperating association and bookstore. TES works with park staff to select merchandise that extends and enriches the park experience and creates visitor opportunities with a park Trolley Tour, hiking, biking and step-on bus and auto tours, and guided bicycle tours.

The Friends of Valley Forge is a strong park advocate and conducts membership and fundraising drives for education, facilities, publicity and promotion. The Friends were instrumental in the installation of the Education Pavilion as a hub of children's exploration activities and for funding the rehabilitation and expansion of education destinations in the park. They provide groups of talented volunteers for school programs, living history demonstrations, and to serve as leaders for events for children.

The Valley Forge Tourism and Convention Bureau (TCB) provides staff to manage the park's information center and recruits, schedules and trains the front desk visitor service volunteers. The TCB is the lead in producing the annual "Revolutionary Run" and contributes proceeds from this five-mile race to support a variety of visitor facility initiatives.

All three partners came together to support a much needed renovation of the park's Visitor Center front entranceway which included repaving the walkway, repair and painting exterior walls, installing a new flagpole, and planting dozens of new trees and shrubs

The Friends and the TCB are vital to community outreach and promotions through their eNewsletters (over 3,000 contacts), fundraising, and media sponsorship.

Our partners' contributions to the park experience include special events such as the very popular Fourth of July Community Picnic and Washington's Birthday Celebration. Park partners collaborate on projects that contribute to a positive visitor experience



Park partners pitch in to put on the park's annual Revolutionary Run, which raises funds for trails and other visitor facilities. (Valley Forge Tourism and Convention Bureau)

rience, such as supporting the newly installed Valley Forge Gallery Café, which showcases art and photography created during workshops in the park.

The park enjoys vital working relationships with a team of other partners including local schools and universities, youth groups, neighboring national and state parks, cultural and natural resource agencies, public health and safety groups, and commercial businesses in order to support summer camps, special education events, reach a wide and diverse audience and inspire visitors and neighbors to find meaning in the park.

These essential partnerships have furthered the breadth and depth of park programming, improved visitor services, and provided for park infrastructure and improvement projects. Together, the park and its partners coordinate nine annual special events and programs such as the July 4th Community Picnic in the Park, which was attended by almost 2,000 visitors in 2014.

### Volunteers

The Volunteers-In-Parks program is extremely popular and has grown every year since 2004 when the program was completely re-organized. By 2010, however, we were beginning to bump up against internal challenges and limits, and we turned our focus into smart and strategic growth. We expanded partnerships to support volunteering itself.

- The Friends of Valley Forge Park added the support of the VIP program to their mission
- The Young Friends of Valley Forge Park was founded to reach out to young adults who had been missing from the VIP corps
- The Valley Forge Tourism & Convention Bureau took over management of volunteers staffing the Visitor Center desk
- We expanded partnerships with other organizations to support volunteering

We also implemented a continuum of hands-on volunteer opportunities that now reaches all ages, diverse communities, and interests. We initiated or redesigned programs to achieve a broader reach into the community, made much greater use of community service programs, and initiated several well received new opportunities.

- We established robust new volunteer programs for young people, resulting in double-digit increases in youth volunteers each year. Youth volunteers assist with natural resource-related projects, education and living history programs, and maintenance and cultural resources related projects.
- We made strategic investments of park funds and staff time in youth development programs including the Youth in Parks program, Student Conservation Association National High School Crew, the SCA Philadelphia Community Crew, and AmeriCorps NCCC.
- We developed and/or expanded attractive and popular new volunteer program opportunities, including the Schuylkill River Trail Ambassadors, Crayfish Corps, annual volunteer archaeology programs and a volunteer-based living history program

Partnerships  <a href="#">web</a>			
Indicators of Condition	Specific Measures	Condition Status/Trend	Rationale Comments
Volunteers	Number and hours contributed		In FY 2013, 3,109 volunteers contributed 52,898 volunteer hours to assist with park stewardship and visitor engagement. Volunteers contribute to living history, education programming, natural resource stewardship, maintenance, and Park Watch patrols on horseback and on foot. Visitor service volunteers provide visitor information at the visitor center desk in partnership with our TCB staff. Public service days bring hundreds of volunteers to the park.
Partnerships	Number of official and unofficial partnerships		The park works with a wide variety of partners and continues to seek opportunities to develop new partnerships. Key partnerships include the Valley Forge Tourism and Convention Bureau, The Encampment Store which is a cooperating association, and The Friends of Valley Forge, advocates for the park. Other partnerships allow many programs and services to thrive in the park for a number of stewardship and education programs and services.

### Resource Brief: Living History Volunteer Training Program

Interpretation Volunteers-in-Parks at Valley Forge annually complete training for living history interpretation. Workshop sessions vary from year to year but often include “Meet Pete” for the Peter Muhlenberg Brigade, “Washington Slept Here” for Washington’s Headquarters, “A Landlord and a Boarder” for Varnum’s Quarters, “Pulse of the Park” on customer service and the visitor center desk, “Walk the Walk and Talk the Talk” on the art of informal interpretation, “Dress for Success in the 18th Century” for living history volunteers, and a behind-the-scenes vault tour of artifacts, historical documents and photos.

In 2012, 33 veteran and newer volunteers came together with a renewed commitment to actively support the park’s living history program and one another by sharing historical knowledge, personal experiences, and best practices. The park encourages all Interpretation VIPs to participate in at least one training session that supports their area of concentration, whether it is working at the visitor center or interpreting at the historical sites.

Three veteran VIPs began serving as VIP liaisons in 2012, assisting the division of interpretation and education with communications and operations at the park’s historic sites. The liaisons serve as leaders on the front line while continuing their living history duties and assisting NPS staff and partners with training sessions.



Park staff and living history volunteers pose together at the completion of the 2012 annual training. NPS

# CHAPTER 3. SUMMARY OF KEY STEWARDSHIP 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

- Development and implementation of the white-tailed deer management plan has resulted in a decrease in density from 241 deer/square mile to 49. The first four years of reduction activities have been characterized as a consistently safe, humane, and successful operation. Recent monitoring indicates that the forest is beginning to recover due to the reduction in deer browsing.
- A robust volunteer program has been established and maintained. In 2013, over 8100 volunteer hours were contributed, up from 688 hours in 2005. The majority of our volunteer hours now are contributed by youth under age 26. A youth career ladder was developed that includes stewardship opportunities for ages from six through post-college and includes volunteer, intern, and seasonal paid positions.
- New volunteer programs include the Crayfish Corps, a group of park staff and volunteers that help suppress the invasion of the Rusty Crayfish in Valley Creek, maintaining the balance in the aquatic ecosystem, and the *Stewards of Native Diversity* program, which engages volunteers in meaningful resource management activities. A long term breeding bird monitoring program uses skilled volunteers to collect and enter data. Natural resource management goals would not be achieved without the contributions from these volunteers.
- 348 acres of invasive plants were treated since 2009. Invasive purple loosestrife is maintained at trace levels park-wide. Invasive Japanese knotweed and wisteria have been reduced to trace levels in several previously infested areas. Targeted invasive plant species are prioritized and mapped to support control.
- The park is an active partner and advisor to the Valley Creek Restoration Partnership, comprising local, state, and federal agencies and non-profit organizations that promote the protection and restoration of the Valley Creek watershed. Within the park, we established riparian buffers along Valley Creek in 2000 and they are now well established and effective in reducing erosion. With partners, we established a stream-watch program and water temperature monitoring program throughout the watershed.
- Over 1500 acres of habitat-rich warm-season grass meadows have been established in areas previously maintained as mown lawns. Meadows comprise 44% of the park.
- All 12 of the basic natural resource inventories funded by the NPS Inventory and Monitoring Program and the Mid-Atlantic I&M Network have been completed and monitoring continues on a regular basis.

- The park has begun remediation of 112 acres of asbestos- and other toxics-contaminated lands. Once completed, these previously closed areas will be reopened to the public.

### Cultural Resources

- Over three summers, park archeologists excavated behind Washington's Headquarters where they uncovered the remains of the large log hut commissioned by George Washington in the winter of 1778. The hut's existence had previously only been known from a single reference in a letter by Martha Washington. The hut served as a meeting place for the general and his officers. The excavations also revealed 18<sup>th</sup> century trash pits, 19<sup>th</sup> century foundations, and evidence of extensive Native American occupation of the site.
- Working with regional archeologists, volunteers, and contractors, the park conducted geophysical surveys at the Muhlenberg and Woodford brigade areas. These surveys are intended to identify the remains of encampment-era features. In 2013 limited sub-surface testing confirmed the results of the surveys, with excavation in 2014.
- Since 2009, 345 members of the public have participated in the park's public archeology program. These volunteers have contributed nearly 2275 hours of service and have been involved in all aspects of archeological work at the park including compliance testing, geophysical surveys, research excavations, and lab work.
- During the encampment, soldiers constructed several miles of defensive earthen entrenchments. The entrenchments located on the lower slopes of Mt. Joy are still visible and park archeologists undertook a GPS mapping project to document them. We use this data to manage and preserve this resource.
- To rehabilitate the plantings that are such a strong characteristic of the cultural landscape, park staff and hundreds of volunteers have planted over 2500 trees since 2008. The historic allées are completely restored. All necessary screens are in place and growing, with new trees sited to redirect views to particular features that aren't compromised by modern development, or to subtly screen or completely block adverse views off-site. Specimen trees such as the Pawling Sycamore and Knox Black Walnut, a state-champion tree, receive regular care.
- Modern quarries that impair the cultural landscape of the historic Grand Parade are being rehabilitated by the placement of clean fill from highway projects in the region. Once filled, the areas will be regraded to their historic contours.
- Encampment-era buildings such as Lord Stirling's Quarters and the Knox house have been stabilized.
- An extensive update to the park's National Register Nomination was completed in draft and submitted to the Keeper of the National Register of Historic Places for review.
- Ten of the park's twelve encampment-era buildings have been restored, rehabilitated, or stabilized. The remaining two will be treated within the next several years.

### Visitor Experience

- Education programs have been revamped and expanded since 2011 and now include

a new series of field trips and classroom visit programs, a speaker series, Home-School days, and a writing and literature summer camp. Teacher-Ranger-Teachers—participating in a professional development program—collaborate with park staff to design curriculum plans. Valley Forge served as a pilot park for Parks for Every Classroom, an education initiative to empower teachers for effective park lessons. The Independence/Valley Forge Teacher Institute is held annually to provide teachers field study opportunities.

- Park partners also offer meaningful interpretive and educational experiences. The Encampment Store now offers step-on guide service for guests in their automobiles. The Friends of Valley Forge Park present an evening speaker series and a summer brown-bag lunch speaker series on Valley Forge and related historical topics.
- New interpretive programs include “The Voices of Valley Forge” workshop series which brings park neighbors together to share stories of the patriots of African descent and the heritage of African culture and “Washington’s Leadership.” Military Staff Rides are provided in order to compare encampment engineering, communications and logistics with contemporary military history.
- The Washington’s Headquarters area was completely transformed with restoration of the train station and installation of exhibits, the removal of an eyesore parking area and roads, a new landscaped entrance, accessible restrooms, new circulation throughout the village, and new waysides.
- With park operational funds and funds from the Friends, a Student Pavilion was erected and an oversized bus parking area was turned into a landscaped green space for events and programs. Children’s hands-on activities such as “Kids as Colonials,” “Kids as Cartographers,” and “Join the Continental Army,” which gets kids outdoors on winter weekends, take place there. It also serves as a focal point for park events including the Revolutionary Run.
- With park operational funds and funds from The Encampment Store and the Valley Forge Tourism and Convention Bureau, the deteriorating Visitor Center entrance plaza was replaced with a seating area, flag ceremony area, and native garden.
- Improved trail connectors to regional trails are being constructed to increase access for walkers, runners, bicyclists and horses.
- There are more guided outdoor experiences. The Friends sponsor year-round, volunteer-led bird walks. There are numerous natural resource volunteer programs that provide opportunities for hand-on learning. The Encampment Store sponsors guided bike tours. A new landscape photography program is popular. 2014 saw the park’s first BioBlitz, focusing on insects.
- With our partners, we are increasing and improving special events such as the Washington’s Birthday weekend, the Fourth of July, Veterans’ Day, and the March-In.
- “Old” media and social media have been revamped. The park brochure was completely redesigned with new art work and content to more accurately reflect the park’s story and interpretive themes. The park’s Facebook page has over 26,000 Likes. We live-Tweet from park events. We use YouTube and Flickr to make videos and still photos widely available. In 2014 a mobile-website was launched for visitors to use in the park or anywhere in the world on their personal devices. Through distance-learning

technology park staff reaches students around the country.

- The Volunteers-in-Park Program was revised to provide a series of formal training opportunities with incentives so that volunteers attain higher levels of certification.
- Park staff has completed training in the Incident Command System and are implementing the organizational principles to effectively manage special events and emergencies.

### **Park Infrastructure**

- The Washington Headquarters area was completely rehabilitated. Wear and tear on the Headquarters building was remediated. The historic Train Station and platform was restored and new exhibits were installed. Modern roads and parking lots were removed. An accessible restroom and accessible walkways with interpretive waysides were installed.
- The Maurice Stephens House and Stirling's Quarters (encampment era) were rehabilitated and stabilized, including rebuilding and repointing exterior masonry and installation of new replicated windows.
- The exterior of the Philander Chase Knox building, which is now being offered for leasing, was rehabilitated with repairs made to windows and shutters, repairs to the wood porch and molding, and stucco and white washing work. The interior of the building was plastered and painted.
- The park completed Greenhouse Gas inventory and hosted a Climate Friendly Parks workshop as part of the Climate Friendly Parks program. The park's new emissions control plan is under implementation.
- The Student Conservation Corps worked with park staff to whitewash the exterior of the Mordecai Moore house and paint the garage.
- Ten outdated boilers in park buildings, including housing units, were replaced with energy efficient units.
- Waterless urinals were installed in the four picnic area restrooms saving over 10,000 gallons of water per year per restroom.
- Backflow preventers were installed on 90% of the water meters in the park.
- T12 bulbs and ballasts were replaced with T8 bulbs and ballast in the administration and visitor center buildings.
- The crumbling 35-year-old brick walkway in front of the visitor center was with a stamped concrete walk and new planting areas.
- All six miles of the Joseph Plumb Martin Trail were repaved.
- Roofs were replaced on two historic housing units, and the interior of four units were painted and repaired.
- All 14.8 miles of the park's authorized boundary were professionally surveyed in 2010–11. The surveyors placed boundary markers and documented encroachments, enabling us to work with neighbors and visitors more accurately on boundary issues.

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

Valley Forge NHP completed a General Management Plan in 2007 which identified many management issues and opportunities, and provides an overarching management framework for the park. In addition, the NPS Call to Action, which looks ahead to the centennial of the National Park Service in 2016, provides guidance for continuing stewardship, relevance, and citizen engagement. A few of the park's more significant management challenges are described here.

### A Tradition of Stewardship for a Treasured Place

When citizens first convened in the 1870s to protect Valley Forge, their common vision was the preservation of a significant and meaningful place that had inspired the Continental Army a century earlier. Because of the foresight and work of those citizens, Valley Forge still inspires Americans more than a century later. Since the park's founding, citizens have come together many times to advocate for it and to protect its important resources from threats. The tradition of citizen stewardship continues today as park partners and volunteers participate in the ongoing work of preservation and interpretation. Each of them shares the vision of the park as a beautiful place of inspiration, refuge, commemoration, and pleasure.

The park's General Management Plan focuses on promoting continuing citizen stewardship, preserving historic resources, restoring natural resources, and providing an excellent visitor experience. A comprehensive array of work is planned to meet these objectives, and although this is a 20-year plan, much of the work already is underway. A great deal of it is being undertaken with volunteers and partners, who are part of a community dedicated to conserving the park for the future.

The community supports education, sponsors historical and scientific research about park resources, restores native habitats, rehabilitates historic structures, and creates exhibits and publications. Most importantly, the community provides insight and understanding of the context in which the park is operated.

To meet the increasing challenges of managing this precious resource in the 21<sup>st</sup> century, the park has repositioned itself to take advantage of the knowledge, skills and resources available through partnerships. Through participation in carrying out the park mission of preservation and interpretation, a growing cadre of citizen stewards is moving from interest to understanding to caring to advocacy. This takes significant staff time to continue to grow, develop and nurture but we believe that this is the most important element in preserving this park for the future.

### Relevance and Engaging Communities

Like many national parks, Valley Forge NHP struggles to meet the changing expectations of visitors and to ensure that visitors and our surrounding communities understand, value, and support the park.

National demographics, visitor expectations, learning styles, and technology have changed rapidly in the past decade. Digital experiences that modern visitor expect to find are not available here. The park tries to keep pace with these changes, and has some success with social media, cell phone

tours, QR codes, Distance Learning, etc. The park still harbors outdated media and limited staff capacity and funds to research, pilot and develop new programs and media.

While Valley Forge NHP was established by Congress in 1976 for historical purposes, the National Park Service inherited a park with a century of recreational tradition and facilities. Recreational users (walkers, hikers, bird-watchers, bicyclists, horseback riders, dog-walkers, picnickers) are far and away the more numerous users of the park. This poses both an interpretive opportunity and challenge. The park must meet these visitors “where they are” and provide meaningful, engaging interpretation at times and in forms that are attractive and convenient to foster an appreciation for the park’s national significance and engage this audience in park stewardship. The park has made some progress through the development of park trailhead kiosks, the establishment of the Revolutionary Run, and the creation of cell phone tours, yet there is much more to be done. We do understand that the visitors who come here primarily for recreation are our regional neighbors, and they tend to come frequently and have strong feelings about the park. They represent our greatest potential for expanding education and understanding and also for stewardship and advocacy.

We have little empirical knowledge of our visitors: where they come from, how they use the park, whether the interpretive experience is effective and engaging, and how to better tell the story to meet the needs and desires of today’s audience.

The park is challenged with engaging diverse communities, who are well represented in our region, through culturally relevant education experiences. Funding shortages for school trips and changing expectations for curriculum-based activities and hands-on learning pose challenges and opportunities for the park’s education programs. While the park has had some recent successes with new education programs and partnerships such as the Pennsylvania Writing and Literature Program and the Franklin Institute Camp the opportunities for educational programs in a huge metropolitan area are enormous.

The park landscape today – bucolic, green, beautiful, commemorative – provides few hints to the untrained eye of what the landscape was like at the time of the encampment – muddy, dirty, fortified, noisy, smelly and denuded of vegetation. Visitors need help to make sense of the landscape and visualize the encampment. Additionally, most visitors never experience the one-fourth of the park that lies to the North of the Schuylkill River – an area that was vital to the encampment but is poorly interpreted. The American Revolution was long ago, and the lack of media (photographs, videos, material culture) representing this period combined with the changed landscape make it hard to bring the story alive and make it relevant for some visitors. This creates interpretive challenges.

### **Improving the Condition of Natural and Cultural Resources**

The immediate surroundings of the park have been fully developed, growing into the most densely populated area in the state. The build-out of the region has left the park as one of the few large regional natural areas, heightening its value both as open space for people and also an important refuge for plants and animals. While the park’s legislated purpose and national significance focus on its place in history, the GMP recognized that the natural resources also have inherent value beyond being a backdrop to the historic scene, and should be managed for their habitat value. The park’s white-tailed deer management program has made enormous strides in addressing the over-browsing that changed the park’s ecosystems and prevented forest regeneration. Managing deer is a long-term commitment that involves significant park resources. Exotic species also threaten park

ecosystems, diminishing their value for habitat. The park lies toward the bottom of the watersheds for both Valley Creek and the Schuylkill River. These park resources can only be effectively managed through a watershed approach.

The park has significant challenges with the protection and interpretation of the park's cultural landscapes due to overlaying layers of significance, highways and utility corridors, heavy commuter traffic, noise pollution, and modern developments right on the park boundary that figure prominently in the viewshed.

Effective partnership with state and local governments and interest groups are very important in managing these issues.

The park has a rich and significant museum collection, less than 5% of which is on display to the public due to a lack of display space. Better physical and virtual exhibit planning can make the collections more accessible.

### **Aging Facilities**

The built environment at Valley Forge includes 12 encampment period structures, 66 historic buildings built after the encampment, and many aging non-historic structures and infrastructure that date to the period when the park was managed by the Commonwealth of Pennsylvania. Some of the historic buildings are used for park offices, storage, or housing. While this keeps the buildings heated and prevents vandalism, maintenance costs are not fully recaptured, resulting in a net loss to the park budget. While most of the building envelopes of the encampment-era structures have been secured, many remain unfinished on the inside, with no public interpretive use and no revenue source to support their rehabilitation or maintenance. The General Management Plan identified many of these structures for lease or opening to the public for interpretive use, yet many are not ready candidates for leasing due to small size or non-compliance with building codes, and the park does not have the funding or staffing to open them for interpretive use. Additionally the park has not had the staff time to dedicate fully to a leasing or adaptive reuse program.

Modern structures such as the maintenance facility, administration building, theater, and Visitor Center also are aging, with building systems that are both environmentally unsustainable and also well past their service lives. The park's utility infrastructure (water and sewer lines) also is aging and failing. Significant park resources go toward the maintenance and operation of trails and facilities to support recreational use.

### **Organizational Capacity**

In this time of accelerated change and increasing fiscal challenges, it is paramount to plan ahead and ensure that the park's scarce resources are being effectively used, that dwindling staff resources are positioned to meet the park's greatest needs, and that work is effectively prioritized. It is equally important that staff have the training, support, and skills they need to operate in an increasingly complex environment. Like many parks, Valley Forge experienced years of flat budgets coupled with increasing costs, inflation, and additional workload. More recently, the park has experienced budget cuts which have forced the staff to shrink through attrition. The combination of Valley Forge and Hopewell Furnace NHS under one park management has created both organizational opportunities and challenges. Strategic management and a focus on priorities will be critical to determine which work can be sustained and which assets can be preserved given rapidly eroding budgets.

Valley Forge today lies within one of the most developed and traffic-choked areas in the country. Traffic and pressures to upgrade infrastructure impact both resources and visitor experience. The demand occupies much of the time of park administrative, maintenance, and resource management staff. The numerous state roads that traverse the park carry over 20,000 cars per day, primarily commuters and local residents, and accidents and incidents related to recreation use and through-traffic take up the majority of law enforcement time.

# 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:

[Comiskey, J. A. 2013](#). Forest vegetation monitoring: Mid-Atlantic Network 2012 summary report. Natural Resource Data Series NPS/MIDN/NRDS—2013/555. National Park Service, Fort Collins, Colorado.

[Comiskey, J. A. and S. M. Wakamiya. 2011](#). Mid-Atlantic Network forest vegetation monitoring: 2007 to 2010. Natural Resource Technical Report NPS/MIDN/NRTR—2011/471. National Park Service, Fort Collins, Colorado.

[Fisichelli, N. 2013](#). Climate Change Trends for the State of the Park Report, Valley Forge National Historical Park, Pennsylvania. NPS Climate Change Response Program. Fort Collins, Colorado. 6 pp.

[Kenworthy, J. P., C. C. Visaggi, and V. L. Santucci. 2006](#). Paleontological resource inventory and monitoring, mid-Atlantic network. TIC D-800, National Park Service, Geologic Resources Division, Denver, CO.

[Kohut R.J. 2004](#). Ozone risk assessment for Mid-Atlantic Network. National Park Service. Fort Collins, Colorado. Available at: [https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=152846&file=OzoneRiskAssessment\\_NRTR2007\\_001.pdf](https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=152846&file=OzoneRiskAssessment_NRTR2007_001.pdf).

[Kohut, R.J. 2007](#). Ozone risk assessment for Vital Signs Monitoring Networks, Appalachian National Scenic Trail, and Natchez Trace National Scenic Trail. NPS/NRPC/ARD/NRTR—2007/001. National Park Service, Fort Collins, Colorado. Available at: [https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=152846&file=OzoneRiskAssessment\\_NRTR2007\\_001.pdf](https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=152846&file=OzoneRiskAssessment_NRTR2007_001.pdf)

[Kunkel, K.E., L.E. Stevens, S.E. Stevens, L. Sun, E. Janssen, D. Wuebbles, J. Rennells, A. DeGaetano, and J.G. Dobson. 2013](#). Regional Climate Trends and Scenarios for the U.S. National Climate Assessment: Part 1. Climate of the Northeast U.S. National Oceanic and Atmospheric Administration Technical Report NESDIS 142-1, Washington, DC.

[National Park Service. 2013](#). White-tailed deer management at Valley Forge National Historical Park. Website.

[National Park Service, Air Resources Division. 2013](#). Air quality in national parks: trends (2000–2009) and conditions (2005–2009). Natural Resource Report NPS/NRSS/ARD/NRR—2013/683. National Park Service, Denver, Colorado. Available at: <http://nature.nps.gov/air/who/npsPerfMeasures.cfm>.

[Santucci, V. L., J. Kenworthy, and R. Kerbo. 2001](#). An inventory of paleontological resources associated with National Park Service caves. Geologic Resources Division Technical Report NPS/NR-GRD/GRDTR—01/02. National Park Service, Lakewood, Colorado, USA.

[Sharpe, P. J., S. C. Smith, A. M. Schreffler, and C. T. White. 2012.](#) Wetland inventory and mapping report, Valley Forge National Historical Park. Natural Resource Technical Report NPS/MIDN/NRTR—2012/634. National Park Service, Fort Collins, Colorado.

Sherwin, L. S., K. Brubaker, P. Sharpe, J. Kozak, M. May, A. Lashaway, K. Jensen, and K. L. Gordon. 2014. Valley Forge National Historical Park natural resource condition assessment. Natural Resource Report NPS/VAFO/NRR—2014/xxx. National Park Service. Fort Collins, Colorado.

Soto, Limaris. 2013. Valley Forge National Historical Park Cave and Karst Resource Summaries draft report, NPS Geologic Resources Division

[Sullivan, T. J., G. T. McPherson, T. C. McDonnell, S. D. Mackey, and D. Moore. 2011a.](#) Evaluation of the sensitivity of inventory and monitoring national parks to acidification effects from atmospheric sulfur and nitrogen deposition: main report. Natural Resource Report NPS/NRPC/ARD/NRR—2011/349. National Park Service, Denver, Colorado. Available at [https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=428429&file=main\\_acidification-eval\\_2011-05.pdf](https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=428429&file=main_acidification-eval_2011-05.pdf).

[Sullivan, T. J., G. T. McPherson, T. C. McDonnell, S. D. Mackey, and D. Moore. 2011b.](#) Evaluation of the sensitivity of inventory and monitoring national parks to acidification effects from atmospheric sulfur and nitrogen deposition: Mid-Atlantic Network (MIDN). Natural Resource Report NPS/NRPC/ARD/NRR—2011/362. National Park Service, Denver, Colorado. Available at [https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=428441&file=midn\\_acidification-eval\\_2011-05.pdf](https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=428441&file=midn_acidification-eval_2011-05.pdf).

[Sullivan, T. J., T. C. McDonnell, G. T. McPherson, S. D. Mackey, and D. Moore. 2011c.](#) Evaluation of the sensitivity of inventory and monitoring national parks to nutrient enrichment effects from atmospheric nitrogen deposition: main report. Natural Resource Report NPS/NRPC/ARD/NRR—2011/313. National Park Service, Denver, Colorado. Available at [https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=427566&file=main\\_n\\_sensitivity\\_2011-02\\_updated.pdf](https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=427566&file=main_n_sensitivity_2011-02_updated.pdf).

[Sullivan, T. J., T. C. McDonnell, G. T. McPherson, S. D. Mackey, and D. Moore. 2011d.](#) Evaluation of the sensitivity of inventory and monitoring national parks to nutrient enrichment effects from atmospheric nitrogen deposition: Mid-Atlantic Network (MIDN). Natural Resource Report NPS/NRPC/ARD/NRR—2011/315. National Park Service, Denver, Colorado. Available at [https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=425353&file=midn\\_n\\_sensitivity\\_2011-02.pdf](https://irma.nps.gov/App/Reference/DownloadDigitalFile?code=425353&file=midn_n_sensitivity_2011-02.pdf).

[Thornberry-Ehrlich, T. 2010.](#) Valley Forge National Historical Park: geologic resources inventory report. Natural Resource Report NPS/NRPC/GRD/NRR—2010/236. National Park Service, Fort Collins, Colorado.

[Wakamiya S. 2012.](#) Breeding bird monitoring: Mid-Atlantic Network 2011 summary report. Natural Resource Data Series. NPS/MIDN/NRDS—2012/331. National Park Service. Fort Collins, Colorado.

Blondino, Joseph R. and Jesse West-Rosenthal. 2011. Results and Interpretations of 2009/2010 Archaeological Investigations at Washington's Headquarters (36Mg31), Valley Forge National Historical Park, Upper Merion Township, Montgomery County, PA. Volumes 1–2. On file, Valley Forge National Historical Park.

Blondino Joseph R., Jesse West-Rosenthal, and Matthew Kalos. 2012. *Results and Interpretations of 2011 Archaeological Investigations at Washington's Headquarters (36mg31), Valley Forge National Historical Park, Upper Merion Township, Montgomery County, PA*. Volumes 1–2. On file, Valley Forge National Historical Park.

Cooper, Allen H. 1988. *Archeological Investigations at Conway's Brigade, Valley Forge National Historical Park, Valley Forge, Pennsylvania*. On file, Northeast Region Archeology Program, National Park Service, Lowell, MA.

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 <a href="#">Climate Friendly Park</a> 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 over 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 <a href="#">Inventory and Monitoring Program</a> . The <a href="#">Mid-Atlantic I&amp;M Network</a> 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.